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# Math Genius!

## Teacher's Resource Manual



ORANGE

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**Phone:** 011-43776600

**Website:** www.orangeeducation.in

**E-mail:** info@orangeeducation.in

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# PREFACE

The Teacher's Resource Manual is specially developed for teachers using **Orange Education's Math Genius!** Coursebooks. The manual has been designed to provide the teacher with additional materials and support that they may require to effectively teach the coursebook. Each **Teacher's Resource Manual** is completely mapped with its coursebook. The method of teaching/learning suggested in the book is completely based on the Learning-by-doing method which supports guidelines and aids of classroom teaching as per the New Education Policy 2020. The classroom teaching/learning activity helps to allay the fear of Mathematics from the minds of the learners and develops an inherent link for the subject.

Each **Teacher's Resource Manual** has two segments—Chapter-wise detailed **Lesson Plans based on 6E model** and **Practice Materials** in the form of **Worksheets**.

**Features of the Teacher's Resource Manual:**

**Detailed Lesson Plan:** It contains Topics to be covered in the chapter, Suggested Allocation of Periods, Teaching Objectives, Learning Objectives and Suggested Teaching Aids.

- **Each lesson plan is based on 6E's:** The 6E lesson plan is based on an instructional model that consists of six phases or steps: Engage, Explore, Explain, Elaborate, Evaluate and Enhance.
- **ENGAGE:** It enhances students' curiosity, interest, and engagement and help them access prior knowledge. .
- **Explore:** It provides students with opportunities to construct learning experience through activities.
- **Explain:** students acquire opportunities to explain their learning experiences with the current learning and to conceptualise the topic's main ideas.
- **Elaborate:** Students apply their knowledge to real-world applications.
- **Evaluate:** it allows teachers and students to recognize the learning effect and review and assess what they have learned and how they have learned it.
- **Enhance:** Provides students time to think, plan, investigate, and organize collected information.

**Worksheets:** This segment has worksheets for each chapter which can be used for practice and evaluation of learners' understanding of the concepts taught. At the end, answers to each worksheet have been given.

A teacher has to use his/her experience and expertise in teaching the subject. This **Teacher's Resource Manual** provides some methodology in this regard but in no way does it limit the scope of the teaching. As per the interest, experience and proficiency of the teaching, you are advised to make suitable additions and modifications to the methodology being discussed.

Suggestions for the improvement of the book will be gratefully acknowledged by the teacher's community.

**—Publisher**





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# Large Numbers

## Learning Objectives

**After studying this chapter, students will be able to...**

- read and write numbers made up to 6 digits
- find the face value and the place value of the digits in a number
- compare and order the large numbers up to 6 digits
- form numbers by using given digits without and with repetition of digits
- round off the numbers to the nearest tens, hundreds and thousands
- read and write large Roman numerals

# LESSON PLAN

**Suggested number of periods:** 15

**Suggested Teaching Aids:** Book: Math Genius! 4, Textbook, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like clock, pen, pencils, number/Flash Cards, Spike abacus, number and place chits, A-4 size sheet, newspapers/magazines.

**Keywords:** Periods, Places, Thousands, Ten thousands, Lakhs, Place value, Face value, Expanded form, Short form, Smallest and greatest numbers, Successor, Predecessor, Rounding up, Rounding down, Roman numerals, Hindu-Arabic numerals.

**Pre-requisite knowledge:** Students must be familiar with numbers up to 4 digits, their number names, the smallest and greatest 4-digit numbers, etc.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1 – 4 | Topics: Recap; 5- and 6-digit numbers; Reading and writing numbers; Numbers on the Abacus | Suggested extra teaching aids: Abacus, Newspapers<br>Math Genius 4 pages 8–13 |
|---|---|---|

## ENGAGE

The teacher can start the topic in the classroom in an interactive method. For this, she can ask some questions related to the students' real life. For example,

- How many members are there in your family?
- Who is/are earning members in your family? What are their works?

- Can you guess your family's monthly income/expenses?
- How much do you pay school fee every month? and so on.

After the students' responses, she can introduce the lesson Large numbers.

## EXPLORE

Divide the class into groups of 3–4 students. Provide a newspaper to each group and instruct them to search any three numbers made up of 3 to 6 digits. They will underline the information and note down the numbers in their notebook. After 5–10 minutes, tell the students to read numbers noted aloud and write it on the black/whiteboard. In case of 5- and 6-digit numbers, the teacher should assist them in reading.

**[Experiential Learning]**

## EXPLAIN

- The teacher will revise the learners' previous knowledge of 4-digit numbers with the help of the "Get Ready" and "Let's Recall" sections of the book for this purpose.

Next, ask some questions related to the topic to build the concept, like:

(*a*) Which is the smallest 4-digit number?

(*b*) Which is the greatest 4-digit number?

Write on the board 9999 → Greatest 4-digit number.

When we add 1 to 9999, we get 10000, it is the smallest 5-digit number. It is read as 'ten thousand'. Counting ahead, we get 10001, 10002, 10003, …., 10009, 10010, 10011, …., 10099, …., 99999. These all are 5-digit numbers. 99999 is the greatest 5-digit number.

Refer Math Genius 4, pages 8–10 for more explanation. **[Conceptual Understanding]**

## ELABORATE

Draw a Place Value chart on the black/whiteboard and demonstrate how to present 5-digit numbers in the table and using it read the numbers as well as write the number name.

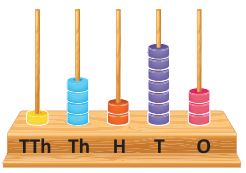
| **Periods →** | **Thousands** | | **Ones** | | |
|---|---|---|---|---|---|
| **Places →** | **Ten Thousands (TTh)** | **Thousands (Th)** | **Hundreds (H)** | **Tens (T)** | **Ones (O)** |
| **Values of Places →** | **(10000)** | **(1000)** | **(100)** | **(10)** | **(1)** |
| (*a*) | 2 | 3 | 7 | 5 | 2 |
| (*b*) | 3 | 8 | 9 | 0 | 5 |

To write the numbers without using a place value chart, we separate the periods by a comma (,). Thus, we can write and read these numbers as:

(*a*) 23,752— Twenty-three thousand seven hundred fifty-two

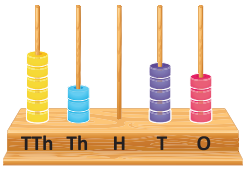
(*b*) 38,905 — Thirty-eight thousand nine hundred five

Next, take a 5-spiked abacus and demonstrate how to visualise 5-digit numbers on it using different coloured beads.




**For example**, 14,273 can be shown by putting 1 bead in TTh spike, 4 beads in Th spike, 2 beads in H spike, 7 beads in T spike and 3 beads in O spike.

**Note:** We do not put beads in any spike if there is 0 at the corresponding place in the number. For example, 73,046 is shown as




Furthermore, refer pages 11–13 and explain about the 6-digit numbers along with presentation and demonstration. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q.1, 4 of Practice Time 1A.

**Homework:** Ask to practice Q. 2, 3, 5 and 6 of Practice Time 1A.

## ENHANCE

- Ask students to write the address of any two friends/relatives including the Pin/area code.

| Periods: 5–6 | Topic: Face value and Place value; Expanded form and Short form; Predecessor and Successor | Suggested extra teaching aids: Number cards, place value paper strips<br>Math Genius 4 pages 14–16 |
|---|---|---|

## ENGAGE

Write the last 5/6 digits of your mobile number on the board, e.g., xxxxx23654.

Instruct the students to identify the places for each digit and note down in their notebook.

Think about face value and place value of each digit. Accept their responses.

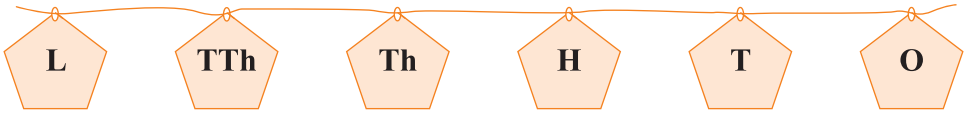
Tell them to arrange the digits in ascending/descending order. Ask: If the place value of any digit is changed, do face values of digits also change?

Tell them to discuss about the answers among the classmates. **[Discussion-based Learning]**

## EXPLORE

**Card Game**

- Write the places L, TTh, Th, H, T, O on the board. Or, string the place value cards and fix it on the wall in front of the class.




- Divide the class into groups of five/six students.
- Give each group a deck of cards from 0 to 9.
- Then ask the students to shuffle the cards and take five/six cards at random and stand in a row under the places fixed.
- Ask the rest students to say the number shown by group and tell the place values of each one.
- Instruct them to write an addition expression using the place values of all the digits.

Then, introduce the Expanded form of numbers. **[Experiential Learning]**

## EXPLAIN

Refer Math Genius 4, page 14 for explanation. Draw a place value table on the board and write a number in it. Hence describe the term face value and place value considering each digit of the number written. For example, In 3,41,975, we can find the face value and place value of each digit as shown on the next page.

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| 3 | 4 | 1 | 9 | 7 | 5 |

| Face value | × | Value of the place | = | Place value |
|---|---|---|---|---|
| 5 | × | 1 | = | 5 |
| 7 | × | 10 | = | 70 |
| 9 | × | 100 | = | 900 |
| 1 | × | 1000 | = | 1000 |
| 4 | × | 10000 | = | 40000 |
| 3 | × | 100000 | = | 300000 |

Next explain about the short form and expanded form of the number.

3,41,975 = 3 lakhs + 4 ten thousands + 1 thousand + 9 hundreds + 7 tens + 5 ones

= 3 × 100000 + 4 × 10000 + 1 × 1000 + 9 × 100 + 7 × 10 + 5 × 1

= 300000 + 40000 + 1000 + 900 + 70 + 5

} Expanded form

The number 3,41,975 is in its short form. For more examples, go through page 15 and tell the students to attempt Quick Check given here. **[Conceptual Understanding]**

## ELABORATE

Use paper snake strips to create a reusable math manipulative that reinforces place value concepts and expanded form.

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 2 | 7 | 9 | 3 | 8 |




**Predecessor and Successor**

Repeat the card game and ask the students to tell the number that comes just before/after the number formed.

| Predecessor (Number – 1) | Number | | | | | Successor (Number + 1) |
|---|---|---|---|---|---|---|
| | TTh | Th | H | T | O | |
| 58908 | 5 | 8 | 9 | 0 | 9 | 58910 |

Furthermore, refer page 16 and explain about the Predecessor and Successor of a number.

**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 1B. Think and Answer given on page 16.

**Homework:** Ask to practice Q. 2, 3, 4 and 5 of Practice Time 1B.

## ENHANCE

Ask students to write any five 3- or 4-letter words. Hence, replace the letter with their positional value in the English alphabet and write a number. For example, PEN

Positional value of: P → 16, E → 5, N → 14

So, the number → 16514

Then, write the number name, expanded form, predecessor and successor of the number formed.

**[Cross-curricular Learning]**

| Periods: 7 – 9 | Topic: Comparing and Ordering of Numbers; Formation of numbers by using given digits without and with repetition of digits | Suggested extra teaching aids: Number cards, place value chart<br>Math Genius 4 pages 17–21 |
|---|---|---|

## ENGAGE

Divide the class into pairs. Tell each student to write any number using 4–6 digits in their notebook. Instruct the pairs to compare their numbers. The student with greater number will reward a point. Repeat the activity till 5 to 6 rounds.

Next, one student will write a number on the paper. His/her partner has to write any three numbers smaller/greater than that number in sequence. Now they will change their turn and do similar steps.

The teacher will walk around in the class and guide if the students are unable to perform the activity.

**[Discussion-based Learning]**

## EXPLORE

Refer the Maths Lab Activity given at the end of the chapter and involve the class in a card game. Instruct them to form the greatest/smallest number using the number cards picked up. Discuss how the digits appear in such number formation. **[Experiential Learning]**

## EXPLAIN

Refer Math Genius 4, page 17 for explanation about the comparison of numbers having different number of digits/same number of digits. After understanding the concept of comparing numbers, move on to the next page and explain how to arrange the given numbers in ascending/descending order using a place value table.

**Forming greatest and smallest Numbers**

Going through pages 19–20, explain why digits are arranged in descending/ascending order to form the greatest/smallest number. Emphasis on the place of 0 in case of the formation of the smallest number. Focus on the digit that has to be repeated at higher places while repetition of digits is allowed.

**[Conceptual Understanding]**

## ELABORATE

Draw a place value chart on the board. Divide the class into 4–5 teams and invite one student from each team near the board. Instruct each one to write a number in the table.

| Team | Numbers | | | | | Order of numbers from smallest to greatest |
|---|---|---|---|---|---|---|
| | TTh | Th | H | T | O | |
| A | 5 | 8 | 9 | 0 | 9 | iv |
| B | 2 | 7 | 9 | 1 | 4 | iii |
| C | 6 | 0 | 3 | 9 | 4 | v |
| D | 1 | 8 | 7 | 6 | 8 | ii |
| E | | 9 | 9 | 9 | 2 | i |

Now ask the class to arrange the numbers written on the table in the ascending order. For this, first of all we need to identify the number having least number of digits. Here, it is 9992 with 4 digits. So it is the smallest number. Others have 5 digits, so compare the digits at the highest place, *i.e.*, TTh place.

These are 5, 2, 6 and 1; and $1 < 2 < 5 < 6$. So the numbers are $18768 < 27914 < 58909 < 60394$.

Hence, the numbers in ascending order are: 9992 < 18768 < 27914 < 58909 < 60394.

Further invite another students and demonstrate how they can arrange the number in descending order.

| Team | Numbers | | | | | | Order of numbers from greatest to smallest |
|---|---|---|---|---|---|---|---|
| | L | TTh | Th | H | T | O | |
| A | | | 8 | 9 | 0 | 9 | v |
| B | 7 | 2 | 7 | 9 | 1 | 4 | ii |
| C | | 4 | 0 | 3 | 9 | 4 | iv |
| D | | 4 | 8 | 7 | 6 | 8 | iii |
| E | 9 | 0 | 9 | 9 | 9 | 2 | i |

727914 and 909992 have 6 digits. Comparing the left most digits, we have **9**09992 > **7**27914.

40394 and 48768 have 5 digits their left most digits are same. So, comparing the digits at next higher place, we have 4**8**768 > 4**0**394. 8909 has only 4 digits so it is the smallest number.

Hence, the numbers in descending order are: 909992 > 727914 > 48768 > 40394 > 8909.

**[Conceptual Learning]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 1C; Maths Connect on page 19, and Think and Answer given on page 20.

**Homework:** Ask to practice Q. 2, 3, 4 of Practice Time 1C, and Q. 1–3 of Practice Time 1D.

## ENHANCE

- Ask students to search internet and list the 5 batsmen who could score above 10000 ODI runs/Test match runs.

**[Cross-curricular Learning]**

| Periods: 10–11 | Topic: Rounding off the numbers to the nearest tens, hundreds and thousands | Suggested extra teaching aids: Newspapers/Old magazines Math Genius 4 pages 21–24 |
|---|---|---|

## ENGAGE

Divide the class into 4–5 groups. Provide Newspapers/Old magazines to each group and tell them to underline headings that have numbers written along with the words near, about, around, approximately, etc. For example,




After finding out some numbers, ask what they think about such numbers. Are they showing the exact number of items?

**[Discussion-based Learning]**

## EXPLORE

Invite 5 students in front of the class. Take five A4 sheets and write a number on each sheet such that two of them are consecutive tens and others are lying between them. Tell the students to pick a sheet and stand in a row showing their numbers to the class. Instruct them to arrange themselves in order and keep the gaps in between according to their numbers.

For example,




Next, instruct the three students who are standing between two tens to move to the nearer tens. Ask the class to say whether they have moved to the right side or not. Repeat the similar steps for two consecutive hundreds by inviting other groups of students. Ask: Discuss what you observe. **[Experiential Learning]**

## EXPLAIN

Refer Math Genius 4, pages 21–23 for explanation about the rounding off numbers. First, discuss the use of Rounded/estimated numbers by talking about some real life situations.

Then explain how numbers can be rounded off to the nearest tens, hundreds and thousands by considering the digits at ones, tens and hundreds places respectively.

Reinforce the concept of rounding up and rounding down through examples. Using place value chart and number line is helpful.

## ELABORATE

Draw a place value chart on the board. Demonstrate some example to explain the rounding off numbers to the nearest tens, hundreds and thousands.

| To be rounded off to the | Numbers | | | | | Rule | Round up or Round down | Rounded numbers |
|---|---|---|---|---|---|---|---|---|
| | TTh | Th | H | T | O | | | |
| nearest tens | | | 2 | 7 | 3 | • If the digit at the ones place is 1, 2, 3, or 4, keep the tens place digit as it is and replace the ones place digit with 0. ← **Round down** | Ones digit is 3, round down | 270 |
| | | 1 | 9 | 5 | 8 | • If the digit at the ones place is 5, 6, 7, 8, or 9, increase the tens place digit by 1 and replace the ones place digit with 0. ← **Round up** | Ones digit is 8, round up | 1960 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| nearest hundreds | | 7 | 9 | 1 | 4 | • If the digit at the tens place is 1, 2, 3, or 4, keep the hundreds place digit as it is and replace the tens and ones places digits with 0. ← **Round down** | Tens digit is 1, round down | 7900 |
| | 2 | 2 | 6 | 5 | 7 | • If the digit at the tens place is 5, 6, 7, 8, or 9, increase the hundreds place digit by 1 and replace the tens and ones places digits with 0. ← **Round up** | Tens digit is 5, round up | 22700 |
| nearest thousands | | 5 | 4 | 8 | 4 | • If the digit at the hundreds place is 1, 2, 3, or 4, keep the thousands place digit as it is and replace the hundreds, tens and ones places digits with 0. ← **Round down** | Hundreds digit is 4, round down | 5000 |
| | 7 | 9 | 6 | 5 | 7 | • If the digit at the hundreds place is 5, 6, 7, 8, or 9, increase the thousands place digit by 1 and replace the hundreds, tens and ones places digits with 0. ← **Round up** | Hundreds digit is 6, round up | 80000 |

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Quick Check given on page 23.

**Homework:** Ask to practice Q1–3 of Practice Time 1E.

## ENHANCE

- Ask students to estimate monthly expenses of their family on different heads by talking about their parents.

| Periods: 12–13 | Topic: Roman Numerals | Suggested extra teaching aids:<br>Newspapers/Old magazines<br>Math Genius 4 pages 24–25 |
|---|---|---|

## ENGAGE

Tell students today we will learn how to read and convert the Roman Numerals to Hindu-Arabic numbers and vice versa through the use of a visual Roman Numeral Converter. Share with students that you're going to give them the secret tricks on how to read the Roman numerals easily.

Ask:

What Symbols are used for Roman Numerals?

Where do you see Roman numerals written in your surroundings?

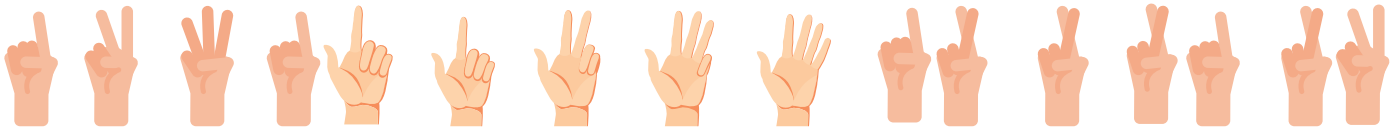
## EXPLORE

Divide the class into small groups and provide them ice-cream sticks or matchsticks, glue and chart paper. Tell them to make first 10 numerals by arranging and pasting the sticks on the chart paper.



**[Art Integration]**

Now divide class into two teams. One team show any Roman numeral using their fingers and another team has to identify it. For example,



I II III IV V VI VII VIII IX X XI XII

For every correct response, the team will get a point. **[Experiential Learning]**

## EXPLAIN

Refer Math Genius 4, pages 24–25 for explanation about the Roman Numerals. First, recall the value of seven basic symbols.

| Roman Numerals | I | V | X | L | C | D | M |
|---|---|---|---|---|---|---|---|
| Hindu-Arabic Numerals | 1 | 5 | 10 | 50 | 100 | 500 | 1000 |

Then explain how to read and write Roman Numerals using these symbols. Remember these 3 steps on how to read the Roman Numerals:

- Memorize the basic Roman numeral symbols and their values.
- Start reading the symbols from left to right, adding the value of the current symbol to the total, except…
- If the value of the current symbol is less than the next one, subtract the current symbol's value from the next symbol's value and add the result to the total.

Write some examples on the board and explain the rules.

## ELABORATE

Focus on the notes given with each rule.

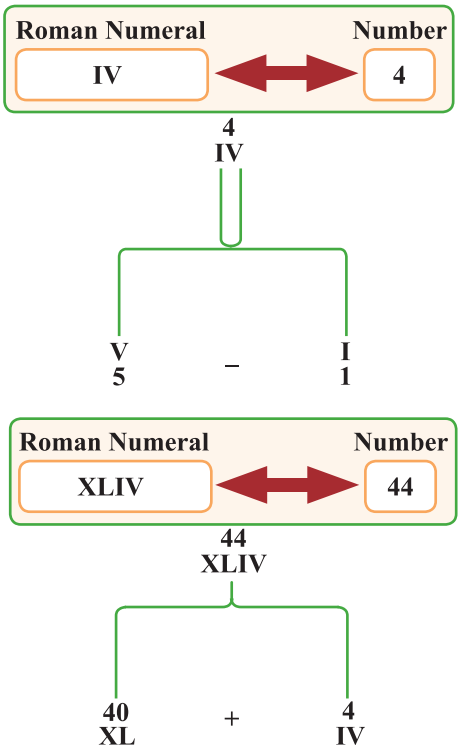
**Note:**

1. The symbols I, X, C and M can be repeated up to three times only.
2. V, L and D are not repeated.
3. Roman numeral 'I' can only be subtracted from V and X. X can be subtracted from L and C only. C can be subtracted from D and M only.
4. V, L and D are never subtracted.

Demonstrate the formation of some special numbers where students may confuse. For example, Number 4.

- Input the number "4" in the number box of the converter.
- Tell the class to look at the example showing how roman numeral 4 (IV) is broken down by the Roman Numeral converter…
- What the converter is showing is how the number 4 (IV) is expressed in Roman numerals as 5 minus 1. The value of the 'I' preceding the 'V' is what triggers that last rule, where when you read the symbols from left-to-right, if you encounter a symbol with a larger value you need to subtract.
- Input the number "44" in the number box of the converter.

Here's another example of the Roman Numeral converter's visual representation of the number 44…



- The number 44 (XLIV) is expressed in Roman numerals as 40 plus 4, where 40 is expressed as 50 minus 10 and 4 is expressed as 5 minus 1.

Similarly, discuss about the formation of numbers 9, 49, 90, 99 and so on. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Think and Answer given on page 25 and Q3 of Practice Time 1F.

**Homework:** Ask to practice Q1, 2 and 4 of Practice Time 1F.

## ENHANCE

- Ask students to find how numbers are written in different regional languages in India, and try to learn at least 2 of them.

| Periods: 14–15 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 26–29 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. And start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths, Maths Fun, Chapter Assessment, Brain Sizzlers and Maths Connect.

## ELABORATE

Discuss questions 1 to 5 in the chapter assessment and accept students answer, if any confusion or error then explain and correct it. Discuss Brain Sizzlers and motivate students to solve Mental Maths.

## EVALUATE

**Classwork:** Ask to practice Q1 to 4 of Chapter Assessment and Maths Connect given on page 29.

**Homework:** Ask to practice Q5 to 12 of Chapter Assessment given on page 29.

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# ASSIGNMENT–1

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Write the following numbers in ascending order: 29980, 60000, 28990, 61000

(*a*) 28990 < 29980 < 60000 < 61000 (*b*) 60000 < 29980 < 28990 < 61000

(*c*) 61000 < 60000 < 28990 < 29980 (*d*) 29980 < 61000 < 28990 < 60000

**2.** What is the place value of 4 in 40600?

(*a*) 4000 (*b*) 400 (*c*) 40000 (*d*) 40

**3.** Which number has a 3 in the tens place and a 3 in the hundreds place?

(*a*) 6332 (*b*) 6233 (*c*) 6323 (*d*) 3362

**4.** A Bakery made 423 sandwiches in one day. The number of sandwiches rounded off to the nearest hundred is

(*a*) 400 (*b*) 500 (*c*) 420 (*d*) 430

**5.** There are 4 cards numbered 9, 2, 5 and 6. Using these cards, the largest six-digit number that can be formed is:

(*a*) 925666 (*b*) 966652 (*c*) 996652 (*d*) 999652

**6.** There are 4 cards numbered 9, 2, 0 and 6. Using these cards the smallest five-digit number that can be formed is:

(*a*) 20269 (*b*) 20069 (*c*) 02669 (*d*) 20696

**7.** The predecessor of largest 5-digit number is:

(*a*) 89999 (*b*) 98989 (*c*) 99998 (*d*) 98888

**8.** How many Roman numerals can be written using the symbols I, V and X only once?

(*a*) 1 only (*b*) 2 only (*c*) 3 only (*d*) more then 4

**9.** Which of the following is true?

(*a*) 50294 < 40295 (*b*) 20459 > 20495 (*c*) 02459 = 20459 (*d*) 40259 < 42059

**10.** The place value of 5 in the numeral 83656 is more than its place value in the numeral by:

(*a*) 5287 (*b*) 7508 (*c*) 62345 (*d*) 543210

**11.** 70 Th + 100 H + 50 O =

(*a*) 70150 (*b*) 71050 (*c*) 80500 (*d*) 80050

**12.** 42587 is

(*a*) Successor of 42588 (*b*) Predecessor of 42588

(*c*) Predecessor of 42586 (*d*) None of these

ORANGE

# ASSIGNMENT–2

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. The smallest 5-digit even number formed with different digits is ..... .
2. If we add 1 to the greatest 4-digit number, we get the smallest ..... number.
3. The difference between successor and predecessor of a number is ..... .
4. The successor of 398 can be written in Roman numeral as ..... .
5. 3 tens + 1 hundred + 6 ten thousands + 8 lakhs + 4 ones = ..... .

## B. Label True or False.

1. 3 lakhs > 30 thousands. .....
2. The numbers in ascending order are written as: 14650 < 5460 < 2564 < 645. .....
3. If 6529 is rounded to the nearest hundreds, it is 7000. .....
4. The place value and face value of a digit at ones place is always the same. .....
5. The predecessor of the smallest 6-digit number is 99999. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. Eighty-two thousand nine hundred fifty-six | (*a*) 32611 |
| 2. Nine lakh five thousand four hundred eighty | (*b*) 70077 |
| 3. Thirty-two thousand six hundred eleven | (*c*) 703568 |
| 4. Seventy thousand seventy-seven | (*d*) 905480 |
| 5. Seven lakh three thousand five hundred sixty-eight | (*e*) 82956 |

## D. Utilise Your Brain.

Use the clues to create a number in standard form.

- In the thousands place, the digit is an odd number greater than 5 but less than 9.
- The hundreds place is 5 less than the thousands place.
- The tens and ones place are both the smallest odd digit.
- Ten thousands place is the greatest even digit.
- The lakhs place is 1 more than the ten thousands place.




# Addition and Subtraction

## Learning Objectives

**After studying this chapter, students will be able to...**

- add 5 and 6-digit numbers without and with regrouping
- understand the properties of addition
- subtract 5 and 6-digit numbers without and with regrouping
- understand the properties of subtraction
- estimate sum and difference
- apply the concept to solve real-life problems

## LESSON PLAN

**Suggested number of periods:** 12

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like clock, pen, pencils, number/Flash Cards, Spike abacus, number and place chits, A-4 size sheet, newspapers/magazines.

**Keywords:** Addition, Addends, Sum, Subtraction, Minuend, Subtrahend, Difference, Estimation.

**Pre-requisite knowledge:** Students must be familiar with addition and subtraction up to 4-digit numbers, solving simple word problems

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Recap; Addition of 5 and 6-digit numbers without and with regrouping | Suggested extra teaching aids: Abacus<br>Math Genius 4 pages 32–35 |
|---|---|---|

### ENGAGE

The teacher can start the topic in the classroom through an interactive method. For this, she can ask some questions related to the students' real life. For example,

- Can you guess how many men, women and children are there in your colony/village? Find the total population.
- Do you know how much your parents spent on admission, dresses and book/stationery when you were enrolled in this class? If yes, find the total expenses.

By asking the questions she can introduce the addition of large numbers.

- The teacher will revise the learners' previous knowledge of addition up to 4-digit numbers with the help of the "Get Ready" and "Let's Recall" sections given in the book.

## EXPLORE

Divide the class into pairs. Instruct each student to write a 4/5/6-digit number in his/her notebook. Next, he/she will ask and note down the number that his/her partner has written. He/she will write it below the first number, and then find their sum. For example,

Student A writes: 25640 and Student B writes: 63125

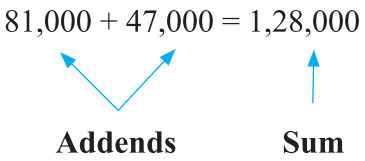
Then, they will add the two numbers as shown here.

| Student A finds: | Student B finds: |
|---|---|
| 25640 | 63125 |
| + 63125 | + 25640 |
| **88765** | **88765** |

Hence, they will compare their sum and rectify the errors, if any. Repeat the activity for 3–4 rounds.

Monitor students' participation and engagement during the activities. **[Collaborative Learning]**

## EXPLAIN



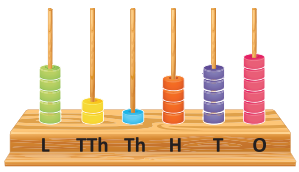
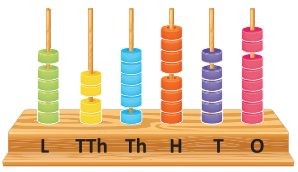
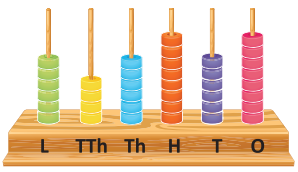

Write the terms associated with "addition" on the board and briefly define each term.

Explain that addition is the process of combining two or more numbers to find the total. Tell them that addition of 5- and 6-digit numbers can be done same as addition of 4-digit numbers.

Refer Math Genius 4, pages 32–35 and explain addition without regrouping as well as with regrouping with examples solving on the board. **[Conceptual Understanding]**

## ELABORATE

Take an abacus and demonstrate how to add 5- and 6-digit numbers. Suppose, we have to find 521456 + 125412.

| For this, take a 6-spiked abacus and show the first addend on it using different coloured beads. | Next, put more beads in spikes at different places for the second addend. | Now count all the beads in each spike and write the number as its sum. |
|---|---|---|
|  |  |  |
| L TTh Th H T O<br>5 2 1 4 5 6 | L TTh Th H T O<br>5 2 1 4 5 6<br>+ 1 2 5 4 1 2 | L TTh Th H T O<br>5 2 1 4 5 6<br>+ 1 2 5 4 1 2<br>6 4 6 8 6 8 |

Furthermore, demonstration addition with regrouping. For this, we put a bead to the next higher place if a spike has 10 or more beads. For example, if there are 14 beads in ones spike, we keep only 4 beads at this place and put a bead at the tens place. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Think and Answer given on page 35, and Q.1 of Practice Time 2A.

**Homework:** Ask to practice Q. 2 of Practice Time 2A.

## ENHANCE

Ask students to find a palindromic number using continued addition. For example,

Consider a number, say 7325

Reverse the digits and add the new number to the original one.

7325 (original number) + 5237 (Reverse of original number) = 12562

Repeat it until you get a palindrome.

12562 + 26521 = 39083

39083 + 38093 = 77176

77176 + 67177 = 144353

144353 + 353441 = 497794 (Palindrome)

| Periods: 3–4 | Topic: Properties of addition; Addition word problems | Suggested extra teaching aids: Math Genius 4 pages 36–39 |
|---|---|---|

## ENGAGE

Recall the properties of addition learnt in previous classes by asking some questions.

- Which number is to be added to the greatest 4-digit number to get the smallest 5-digit number?
- There are 1234 girls and 2568 boys in School A and 2568 girls and 1234 boys in School B. Which school has more students?
- When a numbers is added to 258963, the result is 258963. Which number is added?

Tell the students to discuss about the answers with their bench partners. **[Discussion-based Learning]**

## EXPLORE

Divide the class into groups of 3 students each. Instruct each student to write a 4/5-digit number in his/her notebook. Next, he/she will ask and note down the numbers that his/her partners have written. He/she will write them below the first number, and then find their sum. For example,

Student A writes: 52640, Student B writes: 25406, and Student C writes: 63125

Then, they can add the three numbers as shown here.

Student A finds:

| | | | | | |
|---|---|---|---|---|---|
| | 5 | 2 | 6 | 4 | 0 |
| | 2 | 5 | 4 | 0 | 6 |
| + | 6 | 3 | 1 | 2 | 5 |
| **1** | **4** | **1** | **1** | **7** | **1** |

Student B finds:

| | | | | | |
|---|---|---|---|---|---|
| | 2 | 5 | 4 | 0 | 6 |
| | 6 | 3 | 1 | 2 | 5 |
| + | 5 | 2 | 6 | 4 | 0 |
| **1** | **4** | **1** | **1** | **7** | **1** |

Student C finds:

| | | | | | |
|---|---|---|---|---|---|
| | 6 | 3 | 1 | 2 | 5 |
| | 5 | 2 | 6 | 4 | 0 |
| + | 2 | 5 | 4 | 0 | 6 |
| **1** | **4** | **1** | **1** | **7** | **1** |

Hence, they will compare their sum and rectify the errors, if any. Repeat the activity for 2–3 rounds.

Monitor students' participation and engagement during the activities. **[Collaborative Learning]**

## EXPLAIN

Refer textbook pages 36–37 for explanation. Write any simple addition problem on the board and tell the students to find the sum using different strategies. Ask whether they get the same result by following any ways.

Solve few questions of Practice Time 2B on the board and explain the concept. Next, tell the students to attempt Think and Answer given on page 37. **[Experiential Learning]**

## ELABORATE

Consider any real life situations based on addition. Encourage students to read and understand what the information is given in the problem and what is being asked to find out.

For example,

The cost of a bicycle is ₹7945, the cost of a tricycle is ₹1680 more than that of a bicycle. What is the cost of the tricycle?

**Given:** The cost of a bicycle = ₹7945

**To find:** The cost of the tricycle

**Think:** What to do?

**Also, we have:** The cost of a tricycle is ₹1680 **more than** that of a bicycle.

Here, **more than** means **addition**. Therefore,

The cost of a tricycle = The cost of a bicycle + ₹1680

= ₹7945 + ₹1680 = ₹9625

Thus, the cost of a tricycle is ₹9625.

Next, refer example given on page 38. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q.1–2 of Practice Time 2B, Q.2, 5 of Practice Time 2C.

**Homework:** Ask to practice Q. 3–5 of Practice Time 2B. Q.1, 3, 4, 6 of Practice Time 2C.

## ENHANCE

- Ask students to list 2–3 gadgets/furniture/other items that they see at home. They have to enquiry about their costs from their parents/elders and calculate the total cost of those articles.
- Visit web portal for worksheets/assignments and download from the link "fullmarksonline.com".

**[Holistic Learning]**

| Periods: 5–6 | Topic: Subtraction of 5- and 6-digit numbers without and with regrouping | Suggested extra teaching aids: Math Genius! 4 pages 39–43 |
|---|---|---|

## ENGAGE

Recall the concept of addition-subtraction facts with an example. Write an addition fact on the board and ask the students to write the corresponding two subtraction facts.

For example, 2100 + 35000 = 37100 ← Addition fact

37100 – 2100 = 35000 and 37100 – 35000 = 2100 ← Subtraction facts

Then, tell them to identify the minuend, subtrahend and difference in the subtraction facts written.

Also ask the students to write one more example of addition-subtraction facts themselves and identify the terms. Hence, introduce subtraction of large numbers. **[Experiential Learning]**

## EXPLORE

Write some hobbies that class 4 students would like to do in free time on the board. Also, write their first four letters as codes. For example,

| **Hobbies** | Reading | Drawing | Dancing | Playing | Chatting |
|---|---|---|---|---|---|
| **Code** | READ | DRAW | DANC | PLAY | CHAT |

Tell the student to write the code of his/her hobby and transform it into a numeral by putting the order value of each letter in English alphabet. Suppose a student like Drawing, then he/she will write DRAW and transform it as 418123. Next, he/she will have to rearrange the digits to form the greatest/smallest number and find how much less/more his/her hobby code than that number.

Here, the greatest number = 843211, so difference = 843211 – 418123 = 425088

And the smallest number = 112348, so difference = 418123 – 112348 = 305775

Further, instruct them to group together who have same hobbies and compare their findings. Discuss if they do not find the same result. **[Discussion-based Learning]**

## EXPLAIN

Refer textbook pages 39–41, and explain the subtraction of 5- and 6-digit numbers without and with regrouping on the board. Focus on such example when the minuend has zeros. After understanding the concept of subtraction, move on to the next page and explain how to check it using addition.

**[Conceptual Understanding]**

## ELABORATE

Write 2–3 questions as given below on the board.

- What must be added to 67,284 to get 80,000?
- What must be subtracted from 85,214 to get 45,663?

And discuss which operation would be performed to find the answer. For this, express the problem as an equation and ask them to think about.

1. ____?____ + 67,284 = 80,000

By writing the corresponding subtraction fact, we have ____?____ = 80,000 – 67,284

2. 85,214 – ____?____ = 45,663

By using the fact Minuend – Subtrahend = Difference, we have

Minuend = Subtrahend + Difference

Or, Minuend – Difference = Subtrahend

So, ____?____ = 85,214 – 45,663

Solve few questions on the board and encourage students to practice more questions themselves.

**[Conceptual learning]**

## EVALUATE

**Classwork:** Ask to practice Q.1 and 6 of Practice Time 2D.

**Homework:** Ask to practice Q.2, 3, 4, 5 of Practice Time 2D.

## ENHANCE

- Ask students to search internet and list the top 5 batsmen. Find the difference between their ODI runs and Test match runs. **[Cross-curricular Learning]**

| Periods: 7–8 | Topic: Properties of subtraction; Subtraction word problems | Suggested extra teaching aids: pictures related to real life<br>Math Genius 4 pages 44–45 |
|---|---|---|

## ENGAGE

Recall the properties of subtraction learnt in previous classes by asking some questions.

- Which number is to be subtracted from the smallest 6-digit number to get the greatest 5-digit number?
- When a numbers is subtracted from 28963, the result is 28963. Which number is subtracted?
- What happens when a number is subtracted from itself?

Tell the students to discuss about the answers with their bench partners.

**[Discussion-based Learning]**

## EXPLORE

Divide the class into pairs. One student will write a 4/5-digit number and another student try to express it as a sum of 4 to 5 different numbers. For example, if student A writes 20156, then student B can express it as 20000 + 100 + 50 + 6 or 10000 + 10000 + 100 + 50 + 6 or any other ways.

Further, the second student will write a number and the first one has to express it as a difference of two numbers. For example, if student B writes 65410, then student A can express it as 65411 – 1; 65500 – 90; 66000 – 590; 70000 – 4590; and so on.

The teacher should walk around and assist the pairs who need help. **[Experiential Learning]**

## EXPLAIN

Refer textbook page 44, and explain the properties of subtraction. Next, discuss the strategies of subtraction as explained on the same page and encourage students to use it wherever they can apply.

Further, talk about some real life problems based on subtraction and demonstrate how to solve it. Reinforce the keywords (more/less than, left, remain, increase/decrease, etc.) used in the problems so that the learners can understand which operation they should perform.

## ELABORATE

Consider any real life situations based on addition. Encourage students to read and understand what the information is given in the problem and what is being asked to find out.

For example,

The award money for the Best Feature Film was given ₹2,50,000 and that for the Best Children's Film was given ₹1,50,000. How much more money was given to the Feature Film than the Children's Film?




**Given:** The award money for the Best Feature Film = ₹2,50,000

The award money for the Best Children's Film = ₹1,50,000

**To find:** The difference between two amounts

**Think:** What to do?

Subtraction

**Difference** = The award money for the Best Feature Film – The award money for the Best Children's Film

= ₹2,50,000 – ₹1,50,000

= ₹1,00,000

Thus, the Feature Film got ₹1,00,000 more than the Children's Film.

Next, refer example given on page 45. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 2E and Q.1, 2 of Practice Time 2F.

**Homework:** Ask to practice Q.2 of Practice Time 2E, and Q.3–6 of Practice Time 2F.

## ENHANCE

Show any picture and ask students to write any word problem based on it.



Then they will exchange the sheet/notebook with his/her bench partner and solve the problem. Hence, they will return the sheet/notebook and check the solution. Discuss the answers if any error. **[Holistic Learning]**

| Period: 9 | Topic: Addition and subtraction together | Suggested extra teaching aids: Math Genius 4 pages 45–46 |
|---|---|---|

## ENGAGE

Tell students to think of two numbers that represent the number males and females who live in their village or locality. Now, assume the number of people who can vote in the next Panchayat Election.

Hence, ask them to compute the number of people who are not voters. Discuss which operations will they perform for solving such problems.

## EXPLORE

Divide the class into small groups and tell them to write at least 3 situations where they need to do both addition and subtraction together. Now divide the class into two teams. One team reads the problem written and another team has to identify whether the problem involves the operations of + and – or not. For each correct response the team will score 1 point. At the end the team scoring more points will be declared the winner. **[Critical Thinking]**

## EXPLAIN

Refer textbook pages 45–46, and explain how to solve the problem involving + and – together. For this, let them know the steps to be followed.

- Add the numbers having +ve sign.
- Add the numbers having –ve sign.
- Subtract the sum obtained in the 2nd step from the sum obtained in 1st step.

Write some examples on the board and demonstrate for better understanding.

## ELABORATE

Consider a problem, such as:

A factory produced 7339 bulbs on Monday and 8751 bulbs on Tuesday. Out of these, 9945 bulbs were supplied to the distributors. How many bulbs are left now?

Solve it on the board following the steps involved.

- Express the problem as number sentence. 7339 + 8751 – 9945
- Add the numbers having +ve sign. 7339 + 8751 = 16090
- Subtract 9945 from the sum obtained in the previous step. 16090 – 9945 = 6145

Thus, 6145 bulbs are left in the factory.

**Alternative way:**

Production of bulbs on Monday = 7339
Production of bulbs on Tuesday = + 8751
Total production in two days = 16090

Number of bulbs supplied to the distributors = 9945

Number of bulbs left in factory = 16090 – 9945 = 6145. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1 (*d*), (*e*) and 2 of Practice Time 2G and Brain Sizzlers given on page 46.

**Homework:** Ask to practice Q1 (*a*)-(*c*) and 3 of Practice Time 2G.

## ENHANCE

- Ask students to talk about monthly income and expenses of their family at home and try to calculate savings. **[Holistic Learning]**

| Period: 10 | Topic: Estimating Sum and Difference | Suggested extra teaching aids: Math Genius 4 pages 47–48 |
|---|---|---|

## ENGAGE

Recall the concept of rounding off the numbers. For this, write few questions on the board and tell the students to solve them.

- Choose any number between 130 and 150 and round it to the nearest ten.
- Write any five numbers which when rounded off to the nearest hundred, it gives 4600.
- Round off 98765 to the nearest tens, hundreds and thousands.
- Write the greatest 5-digit number using three different digits. Round it to the nearest hundreds.

**[Critical Thinking]**

## EXPLORE

Divide the class into groups of 3–4 students and tell them to plan about a picnic. Hence, estimate the expenses on different heads such as conveyance, food, rides, etc. and share it with other groups. Discuss about the budget estimated.

## EXPLAIN

Start the class with interaction about any real life situations. For example, a person wants to buy a geyser and a washing machine. Guess what amount should he carry when he goes for shopping.

Let us assume that a geyser will be for ₹7000 and a washing machine for ₹13000. So, he should have about ₹7000 + ₹13000 = ₹20000. This is just an estimation. The exact value may be little more or less.

Refer textbook pages 47–48, and explain how to estimate sum and difference. Write some examples on the board and demonstrate for better understanding. Explain that rounding up or down the numbers help in estimation of sum and difference.

## ELABORATE

On the board, write a sum like 7339 + 8751 and estimate its value to the nearest thousands.

| | | |
|---|---|---|
| 7339 rounded down to the nearest thousand = | 7000 | (As hundreds digit 3 < 5) |
| 8751 rounded up to the nearest thousand = | + 9000 | (As hundreds digit 7 > 5) |
| Estimated sum = | **16000** | |

Similarly, take another problem like 45671 – 2584 and estimate the difference to the nearest hundreds.

| | | |
|---|---|---|
| 45671 rounded up to the nearest hundred = | 45700 | (As tens digit 7 > 5) |
| 2584 rounded up to the nearest hundred = | – 2600 | (As tens digit 8 > 5) |
| Estimated difference = | **43100** | **[Conceptual Understanding]** |

## EVALUATE

**Classwork:** Ask to practice Q1 (*c*) – (*f*) and 2 (*c*) – (*f*) of Practice Time 2H.

**Homework:** Ask to practice remaining questions of Practice Time 2H.

## ENHANCE

Divide the class into small groups and let them perform the activity given under 'Learning by Doing' section on page 52.

| Periods: 11–12 | Topic: (Revision)<br>Chapter Assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 49–52 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. And start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise. by using, Encapsulate, Chapter Assessment, Mental Maths and Maths Fun.

## ELABORATE

Discuss questions 1 to 4 in the chapter assessment and accept students answer, if any confusion or error then explain and correct it. Motivate students to solve mental maths.

## EVALUATE

**Classwork:** Ask to practice Q1 to 4 of Chapter Assessment and Mental Maths given on page 51.

**Homework:** Ask to practice Q5 to 9 of page no.50–51.

## ENHANCE

Ask students to do the task as discussed in Maths Fun on Page 51.

ORANGE

# ASSIGNMENT–3

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** The sum of the greatest 5-digit number and the least 6-digit number is

(*a*) 199998 (*b*) 100999 (*c*) 199999 (*d*) 999991

**2.** 14 thousands + 16 hundreds + 5 tens =

(*a*) 14605 (*b*) 15650 (*c*) 15565 (*d*) 166550

**3.** The difference of the greatest and smallest numbers formed by the digits 4, 7, 5, 9, 0, 1 is

(*a*) 925052 (*b*) 316377 (*c*) 782781 (*d*) 870831

**4.** The difference between the place values of 4 in 24978 and 540000 is

(*a*) 36000 (*b*) 396000 (*c*) 405013 (*d*) 44000

**5.** Estimated difference of 34510 – 12856 to the nearest thousands is

(*a*) 21000 (*b*) 22000 (*c*) 23000 (*d*) 20000

**6.** 64859 – 10000 =

(*a*) 74859 (*b*) 43859 (*c*) 54859 (*d*) 44858

**7.** When we add 45682 to 845610, we get

(*a*) 856428 (*b*) 864922 (*c*) 874592 (*d*) 891292

**8.** The number which is 3000 less than 13800 is

(*a*) 13500 (*b*) 10800 (*c*) 16200 (*d*) 21800

**9.** 125000 is one less than

(*a*) 125001 (*b*) 124099 (*c*) 124999 (*d*) 126000

**10.** Estimated sum of 4332 + 7610 to the nearest thousands is

(*a*) 11000 (*b*) 11942 (*c*) 12000 (*d*) 11900

**11.** Which of following facts will be completed by filling the number 1 in the blanks?

(*a*) 92122 – 0 = _____ (*b*) 34212 – 34212 = _____

(*c*) 126000 – _____ = 125999 (*d*) 78765 = _____ – 10000

**12.** Which of the following will give the result as 80083?

(*a*) 48156 + 1 = _____ (*b*) 67125 + 0 = _____

(*c*) 43719 + 37243 = _____ (*d*) 78083 + 8000 = _____

ORANGE

# ASSIGNMENT–4

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. The sum of the successor of 6489 and the predecessor of 34561 is ..... .
2. The difference between the predecessor of 90000 and the successor of 39999 is ..... .
3. ..... added to 71458 gives 80458.
4. 50 thousands 60 hundreds – 5060 tens = ..... .
5. In 8030 + ? = 9990, the hundreds digit of the missing number is ..... .

## B. Label True or False.

1. 25 thousands 17 hundreds 8 ones + 1000 = 26780 ones ..... 
2. The place value of thousands digit in the sum of 6537 + 5478 is 1000. .....
3. 100000 + 50000 + 4000 + 1 = 200000 – 45009 .....
4. 10000 – 730 tens = 270 tens. .....
5. The difference between 7 lakhs 23 tens and 723 thousands is 0. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. 100 less than 6000 | (*a*) 8096 |
| 2. 550 less than 2550 | (*b*) 925 |
| 3. 900 less than 8996 | (*c*) 899 |
| 4. 6 hundreds more than 325 | (*d*) 5900 |
| 5. 80 tens more than 99 ones | (*e*) 2000 |

## D. Utilise Your Brain.

The table shows the number of people visiting Amrit Udyan over 2 months in 2024.



| | February | March |
|---|---|---|
| Child | 254163 | 326454 |
| Adult | 158920 | ? |
| Senior | ? | 78531 |
| Total | 450000 | 500000 |

1. What is the total number of children that visited the Amrit Udyan in 2024?
2. How many adults visited the museum in March?
3. Compared to February, how many more seniors go to the Udyan in March?



# 3 Multiplication

## Learning Objectives

**After studying this chapter, students will be able to...**

- multiply 4-digit numbers by 1-digit number
- multiply 3- and 4-digit numbers by 2-digit numbers
- understand the properties of multiplication
- multiply the numbers by using Lattice multiplication
- solve real life problems based on multiplication
- multiply two 3-digit numbers together
- estimate the product

## LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, number/Flash Cards, Spike abacus, number and place chits, A-4 size sheet, newspapers/magazines.

**Keywords:** Multiplicand, Multiplier, Product, Estimation.

**Pre-requisite knowledge:** Students must be familiar with multiplication up to 3-digit numbers, solving simple word problems

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Recap; Multiplication by a 1-digit Number | Suggested extra teaching aids: Math Genius 4 pages 54–56 |
|---|---|---|

### ENGAGE

The teacher can start the topic in the classroom through an interactive method. For this, she can ask some questions based on real life situations. For example,

- How many members are there in your family?
- Assume your family are planning to go to movie, hometown, or somewhere else. Let a considerable ticket price and find how much you need to pay. Compare the amount calculated with your friend.

  By asking the questions she can introduce the multiplication of bigger numbers.
- The teacher will revise the learners' previous knowledge of multiplication up to 3-digit numbers with the help of "Get Ready" and "Let's Recall" sections given in the book.

## EXPLORE

Divide the class into pairs. Instruct each pair to choose any 4–5 digits and form two numbers using them. Hence find the product of two numbers. Rearrange the digits and form another pair of numbers and find their product. How many different products can you get? Explore when you obtain the greatest product and when the least one.

Monitor students' participation and engagement during the activities. **[Collaborative Learning]**

## EXPLAIN

Start the discussion with real life situation and explain how to multiply a 4/5/6-digit number by a 1-digit number using vertical as well as horizontal method.

Refer textbook pages 54–55 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

Take an example from current scenario, demonstration the process of multiplication on the board using standard algorithm. Suppose a movie based on the national patriotism is released on the occasion of Republic Day. This movie has been run in 5 shows in the first day and every show is houseful. How many people could watch the movie if the theatre has the capacity of 1236 seats?

Capacity of the theatre = 1236

Number of shows run = 5

So, number of total viewers = 1236 × 5

= 6180

| | | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 6 |
| × | | | | 5 |
| | 6 | 1 | 8 | 0 |

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 3A.

**Homework:** Ask to practice Q2 of Practice Time 3A.

## ENHANCE

Ask students to consider any one-digit number and double it mentally. Double again the number obtained. Continue it until they get a number greater than 1000. Ask: In how many times have they crossed the number 1000? They can also try to get thrice the number and go beyond 10000. They can use paper-pen if unable to do it mentally.

| Periods: 3–4 | Topic: Multiplication by a 2-digit Number; Multiplication by a 3-digit Number | Suggested extra teaching aids: Math Genius 4 pages 56–58 |
|---|---|---|

## ENGAGE

Divide the class into groups of 3 students each. Provide a sheet having a multiplication problem of 3/4-digit number by a 2-digit number to each group. Tell the first student to multiply the multiplicand by the ones digit of the multiplier. The second student will multiply it by the tens digit of the multiplier and the third student will add up the partial products. Then, they will discuss about the answer with their group members.

**[Discussion-based Learning]**

## EXPLORE

Divide the class into two teams. Write a multiplication problem with its incorrect calculation on the board. Ask the students to find the errors. For every error finding, they will score a point for the team. Repeat it with at least 5 problems. The team who scored more points will be winner. **[Critical Thinking]**

## EXPLAIN

Refer textbook pages 56–58 and explain how to multiply a 3/4-digit number by a 2/3-digit number using standard algorithm. Discuss why we put zero(s) at ones and tens places in the partial products while multiplying the number by tens/hundreds digits of the multiplier.

Solve few questions of Practice Time 3B and 3C on the board and explain the concept.

**[Experiential Learning]**

## ELABORATE

Consider an example when multiplier has zero and demonstrate how the students can skip the row of partial product for the multiplication by the 0 ones or tens. Refer examples 1 and 2 discussed on page 58.

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1–3 of Practice Time 3B, Q1, 2 and 5 of Practice Time 3C.

**Homework:** Ask to practice Q4–7 of Practice Time 3B. Q3, 4, and 6–8 of Practice Time 3C.

## ENHANCE

Ask students to enjoy Maths Fun given on page 58. **[Collaborative Learning]**

| Period: 5 | Topic: Multiplication by a Number ending with Zero; Properties of Multiplication | Suggested extra teaching aids: Math Genius 4 pages 58–61 |
|---|---|---|

## ENGAGE

Tell the students to write their roll numbers in their notebook. Then ask them to multiply it by the tens between which their roll numbers lie. Suppose a student has roll number 14. Then he/she will multiply it by 10 and 20 as $14 \times 10 = 140$ and $14 \times 20 = 280$. Also, ask them to multiply the roll number with corresponding hundreds/thousands. Discuss the result with bench partner. **[Experiential Learning]**

## EXPLORE

Divide the class into small groups and ask them to perform the Lab Activity as given under 'Learning by Doing' section on page 69. Explore the idea to verify the other properties by hands-on activity.

**[Collaborative Learning]**

## EXPLAIN

Refer textbook pages 58–60, and explain the multiplication of a number by a number ending with zeros such as 10, 20, 30, …, 90; 100, 200, 300, …, 900; 1000, 2000, 3000, …, 9000 citing with counter examples. After understanding the concept, discuss the properties of multiplication. To verify the order/commutative property of multiplication, tell the students to work in pairs. They have to take two numbers but arrange them in different order. Hence multiply and compare their result. For example, they take the numbers 23 and 54.

Student A multiplies as

| | | | | |
|---|---|---|---|---|
| | | | 2 | 3 |
| × | | | 5 | 4 |
| | | | 9 | 2 |
| + | 1 | 1 | 5 | 0 |
| | 1 | 2 | 4 | 2 |

Student B multiplies as

| | | | | |
|---|---|---|---|---|
| | | | 5 | 4 |
| × | | | 2 | 3 |
| | | 1 | 6 | 2 |
| + | 1 | 0 | 8 | 0 |
| | 1 | 2 | 4 | 2 |

Next they will compare their result and conclude. **[Conceptual Understanding]**

## ELABORATE

Make three columns on the board as given below for multiplying with tens, hundreds and thousands.

| Multiplying by tens | Multiplying by hundreds | Multiplying by thousands |
|---|---|---|
| × 10 | × 100 | × 1000 |
| × 20 | × 200 | × 2000 |
| × 30 | × 300 | × 3000 |
| × 40 | × 400 | × 4000 |
| × 50 | × 500 | × 5000 |
| × 60 | × 600 | × 6000 |
| × 70 | × 700 | × 7000 |
| × 80 | × 800 | × 8000 |
| × 90 | × 900 | × 9000 |

Ask the birth date of any student and strengthen the concept of multiplication. Suppose, one says 12. Then complete the table as follows.

| Multiplying by tens | Multiplying by hundreds | Multiplying by thousands |
|---|---|---|
| 12 × 10 = 12 × 1 ten = 12 tens = 120 | 12 × 100 = 12 × 1 hundred = 12 hundreds = 1200 | 12 × 1000 = 12 × 1 thousand = 12 thousands = 12000 |
| 12 × 20 = 12 × 2 tens = 24 tens = 240 | 12 × 200 = 12 × 2 hundreds = 24 hundreds = 2400 | 12 × 2000 = 12 × 2 thousands = 24 thousands = 24000 |
| 12 × 30 = 12 × 3 tens = 36 tens = 360 | 12 × 300 = 12 × 3 hundreds = 36 hundreds = 3600 | Similarly, 12 × 3000 = 36000 |
| 12 × 40 = 12 × 4 tens = 48 tens = 480 | Similarly, 12 × 400 = 4800 | 12 × 4000 = 48000 |
| 12 × 50 = 12 × 5 tens = 60 tens = 600 | 12 × 500 = 6000 | 12 × 5000 = 60000 |
| 12 × 60 = 12 × 6 tens = 72 tens = 720 | 12 × 600 = 7200 | 12 × 6000 = 72000 |
| 12 × 70 = 12 × 7 tens = 84 tens = 840 | 12 × 700 = 8400 | 12 × 7000 = 84000 |
| 12 × 80 = 12 × 8 tens = 96 tens = 960 | 12 × 800 = 9600 | 12 × 8000 = 96000 |
| 12 × 90 = 12 × 9 tens = 108 tens = 1080 | 12 × 900 = 10800 | 12 × 9000 = 108000 |

Hence, motivate the students to prepare a similar table for their own birth date. **[Conceptual learning]**

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 3C and 3D; Think and Answer given on pages 59, 60.

**Homework:** Ask to practice Q2 of Practice Time 3C and 3D.

## ENHANCE

- The teacher can organise a quiz for the Qs 1 of Practice Time 3C and 3D by dividing the class into two teams.

| Periods: 6–7 | Topic: Estimating product; Word Problems | Suggested extra teaching aids: Math Genius 4 pages 61–62 |
|---|---|---|

## ENGAGE

Write 4–5 digits on the board. Tell the students to use these digits only once and make any two numbers. Hence find their estimated product as well as actual product. Allow a reliable time and ask about their findings. Note down how many different products have they obtained.

Then discuss about the answers. **[Experiential Learning]**

## EXPLORE

Divide the class into pairs. Tell them to plan a birthday party. Think about the menu and number of invitees. Hence, guess how much amount you would require for it.

Suppose, you want to invite 18 friends or relatives, and decide to give a cupcake for ₹21, a samosa for ₹12, a fruity for ₹10 to each one. Then, you need the amount of money = 18 × (₹21 + ₹12 + ₹10)

Actual amount = ₹18 × 43 = ₹774

By rounding of each number to the nearest tens, we get

Estimated amount = ₹20 × 40 = ₹800, which is close to the actual amount.

The teacher should walk around and assist the pairs who need help. **[Holistic Learning]**

## EXPLAIN

Refer textbook page 61, and explain how to estimate the product by rounding of the numbers to the nearest tens/hundreds. Next, encourage students to use it wherever they can apply.

Further, talk about some real life problems based on multiplication and demonstrate how to solve it. For example, ask the price of maths book they have. Then tell the number of students present in the class and ask to find the total cost of all the maths books. **[Conceptual Understanding]**

## ELABORATE

Discuss that the numbers should be rounded off to their highest place while estimating product. Write few examples on the board and interact with the students to keep them attentive.

- 27 × 14; here both are two-digit numbers, so they can be rounded off to the nearest tens as 30 × 10 and estimated product = 300.
- 182 × 321; here both are three-digit numbers, so they can be rounded off to the nearest hundreds as 200 × 300 and estimated product = 60000.

- 517 × 86; here the first number has 3 digits and the second number has 2 digits, so they can be rounded off to the nearest hundreds and tens respectively as 500 × 90 and estimated product = 45000.

Furthermore, consider any real life situations based on multiplication. Encourage students to read and understand what the information is given in the problem and what is being asked to find out. Hence, deal few examples in the class and motivate the students to practice themselves. **[Conceptual Understanding]**

Next, refer example given on page 62.

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 3F and Q3–5 of Practice Time 3G.

**Homework:** Ask to practice Q2 of Practice Time 3F, and Q1–2, 6–9 of Practice Time 3G.

## ENHANCE

This game is a simple and reinforce multiplication tables! Students can play in pairs.

Shuffle three sets of digit cards and deal them between the two players.

At the same time, each player turns over one of their cards and puts it in the middle.

Race your partner to shout out the answer that you get when you multiply both the numbers together. For example, if you turned over an 8 and your partner turned over a 9, you would have to shout out 72, because 8 × 9 = 92.

The player who shouts out the correct answer first gets to keep both cards.

Keep playing until one player has run out of cards.

The player who collects more cards will be the winner! **[Critical Thinking]**

| Period: 8 | Topic: Lattice Multiplication | Suggested extra teaching aids: Math Genius 4 pages 63–65 |
|---|---|---|

## ENGAGE

Write two numbers on the board and tell students to think any other strategy to multiply these numbers. Let them share their strategies and accept the responses.

## EXPLORE

Divide the class into pairs. Instruct them to open their book randomly and look at the page numbers. Both of them will write their page numbers on a sheet. They will exchange one number and multiply it with another number by using any convenient way. For example, Student A opens pages 46–47 and Student B opens pages 124–125. If they exchange 26 with 124, then Student A will find 124 × 47 and Student B will find 125 × 46.

Instruct them to compare their answers and discuss. **[Discussion-based Learning]**

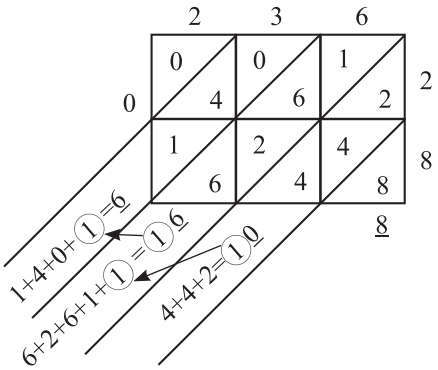
## EXPLAIN

Refer textbook pages 63–65, and explain how to multiply two numbers using Lattice multiplication method. For this, let them know the steps to be followed.

- Draw the squares in rows and columns as per the number of digits in the two numbers to be multiplied. Then divide each square diagonally into two triangles.
- Write the two numbers on top and right side of the table so formed.

- Multiply each digit of the number written on the top by each digit of the number written on the right side. Write the product in corresponding triangles such that ones digit in lower triangle and tens digit in upper triangle.
- Add the numbers diagonally. Carry over to next place, if any.
- Hence, read the answers from left to right.

Write some examples on the board and demonstrate for better understanding.




Use the lattice multiplication method to find 236 × 28.

Since, we have to multiply a 3-digit number by a 2-digit number, so, we draw a lattice of 3 × 2. Proceed as discussed in the previous example. The product is 6608

Thus, 236 × 28 = 6608. **[Conceptual Understanding]**

## ELABORATE

Teacher can consider the Lattice Multiplication method as an activity. Students will enjoy it like a hands-on learning. Instruct the class to take an A4 size sheet and follow the procedure as you demonstrate on the board. It can be started with smaller numbers and extend gradually as dealt in the textbook. Assist the students who feel difficulties. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1, 4 and 6 of Practice Time 3H.

**Homework:** Ask to practice the remaining questions of Practice Time 3H.

## ENHANCE

- Ask students to recite multiplication tables up to 20.
- Download worksheets from 'fullmarksonline.com' and provide students for practice.

| Periods: 9–10 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 65–69 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths, Brain Sizzlers, and Chapter Assessment.

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer, if any confusion or error then explain and correct it. Motivate students to solve Mental Maths.

## EVALUATE

**Classwork:** Ask to practice Q. 1 to 5 of Chapter Assessment and Brain Sizzlers given on page 66.

**Homework:** Ask to practice Q.6 to 14 of page 68.

ORANGE

# ASSIGNMENT–5

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Murari arranged some marbles as shown,



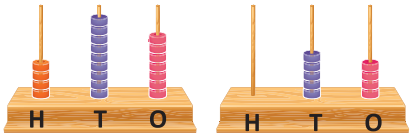
Which of the following facts is best represented by grouping of marbles?

(*a*) 5 + 5 + 5 + 5 (*b*) 4 × 5 (*c*) 4 + 4 + 4 + 4 + 4 (*d*) Both (*a*) and (*b*)

**2.** A factory manufactures 617 shoes in a day. How many shoes will it manufacture in a week?

(*a*) 4319 (*b*) 4309 (*c*) 5319 (*d*) 3419

**3.** The product of the two numbers shown on the spike abacuses is:




(*a*) 26388 (*b*) 26848 (*c*) 26838 (*d*) 27838

**4.** Study the given number sentences.

□ × △ = 27
△ + □ = 12

If these number sentences are true, which of the following may be correct?

(*a*) □ = 9, △ = 3 (*b*) □ = 3, △ = 9 (*c*) □ = 6, △ = 18 (*d*) □ = 5, △ = 15

**5.** Which of the following will be at ones place in the product of 1 × 2 × 3 × 4 × ... × 8 × 9?

(*a*) 1 (*b*) 2 (*c*) 0 (*d*) 3

**6.** How many zeros are there in the product of 625 × 16?

(*a*) 2 (*b*) 4 (*c*) 5 (*d*) None

**7.** If 72 × M = 72000, then 683 × M =

(*a*) 68300 (*b*) 6830 (*c*) 683000 (*d*) 72683

**8.** Estimated product of 418 × 184 is

(*a*) 80000 (*b*) 75600 (*c*) 76912 (*d*) 72000

**9.** A typist types 25 words per minute. How many words will she type in 3 hours?

(*a*) 1500 (*b*) 4500 (*c*) 450 (*d*) 15000

**10.** There are 90 general seats in one coach and 6 such coaches in a train. If minimum fare between two stations is ₹30, how much money can be collected from booking of all these seats?

(*a*) ₹2700 (*b*) ₹5400 (*c*) ₹1800 (*d*) ₹16200

ORANGE

# ASSIGNMENT–6

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. 100 × _____ = 99900
2. 125 × 8 = 10 × _____
3. 248 × 9 = (200 + _____ + 8) × 9
4. _____ × 4000 = 100000
5. 56 × 0 × 187 = _____

## B. Label True or False.

1. The product of successor and predecessor of greatest 2-digit number is 9800. .....
2. The place value of ten thousands digit in the product of 650 × 478 is 10000. .....
3. The sum and product of first three counting numbers are the same. .....
4. The product of the two place values of 5 in 85645 is 2500 tens. .....
5. 325 × (10 × 18) = 585 hundreds. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. 56 × 1000 | (*a*) 187 × 369 |
| 2. 369 × 187 | (*b*) 8 |
| 3. Tens digit of the product 2 × 4 × 6 × 8 | (*c*) 988000 |
| 4. 5 × (25 × 125) | (*d*) 56000 |
| 5. (999 + 1) × (989 – 1) | (*e*) (5 × 25) × 125 |

## D. Utilise Your Brain.

A hotel has 7 floors. The lobby, restaurant and gym are located on the ground floor. The guestrooms are on 1st to 6th floors.




1. If there are 35 standard rooms on each floor, how many standard rooms are there?
2. If each standard room can fit 2 guests, what is the maximum number of guests that all the standard rooms can accommodate?
3. There are 18 suites altogether in the hotel. Each suite has 3 beds and there is a bed side table beside each side of each bed. How many bed side tables are there in all the suites?




# Division

## Learning Objectives

**After studying this chapter, students will be able to...**

- divide 4- and 5-digit numbers by a 1-digit number
- divide 4- and 5-digit numbers by a 2-digit number
- use the properties of division
- estimate the quotient
- Solve the problems based on four fundamental operations together

# LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, number/Flash Cards, number and place chits, A-4 size sheet, newspapers/magazines.

**Keywords:** Dividend, Divisor, Quotient, Remainder, Estimation.

**Pre-requisite knowledge:** Students must be familiar with division up to 3-digit numbers by a 1-digit number, solving simple word problems

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Period: 1 | Topics: Recap; Division – Associated Terms; Properties of Division | Suggested extra teaching aids: Math Genius 4 pages 71–72 |
|---|---|---|

## ENGAGE

The teacher can start the topic in the classroom in an interactive method. For this, she can ask some questions based on real life situations. For example,

- How many members are there in your family? If you have to share a packet of 25 cookies among them equally, how many will you give to each member? Will there be any cookie leftover undivided?
- A packet of 10 pencils is for ₹60. Can you buy a pencil for ₹5? Why or why not? **[Critical Thinking]**

Then teacher will revise the learners' previous knowledge of division up to 3-digit numbers with the help of "Get Ready" and "Let's Recall" sections given in the book.

## EXPLORE

Divide the class into groups of 3 students each. Instruct each group to choose any 3-digit number and pick up a number card (from the well-shuffled four sets of 1–10 number cards). Then, one student of each group will divide the number chosen by the number appeared on the number card.

Suppose, he/she has chosen number 458 and card bearing number 7. Then, divide 458 by 7 and find Quotient and Remainder. Another student will check and verify the result.

Further, second student will change the order of digits in the number chosen as 845 and divide by 7. His/her answer will be checked or verified by the third student.

Now, the third student will change the order of digits in the number chosen as 584 and divide by 7. And, this will be verified by the first student.

Monitor students' participation and engagement during the activities. **[Collaborative Learning]**

## EXPLAIN

Start the discussion with real life situation where we need process of division. Recall the terms associated with division. Then, explain the properties of division by citing examples on the board.

Refer textbook pages 71–72 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

As students have learnt the properties of muliplication. Ask the students about it and write some examples on the board. Let them remind that division is the inverse process of multiplication and for every multiplication fact, they write two corresponding division facts.

| Multiplication fact | Division facts | Conclusion as a properties of division. |
|---|---|---|
| $12 \times 1 = 12$; $34 \times 1 = 34$ | $12 \div 1 = 12$; $34 \div 1 = 34$ | • When a number is divided by 1, the quotient is the number itself. |
| | $12 \div 12 = 1$; $34 \div 34 = 1$ | • When a number (other than 0) is divided by itself, the quotient is 1. |
| $14 \times 0 = 0$; $23 \times 0 = 0$ | $0 \div 14 = 0$; $0 \div 23 = 0$ | • Zero divided by any non-zero number gives the quotient zero. |
| | $14 \div 0$ = ---; $23 \div 0$ = ---; $0 \div 0$ = --- | • The division of any number by zero is not defined. |

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1, 3 and 6 of Practice Time 4A.

**Homework:** Ask to practice remaining questions of Practice Time 4A.

## ENHANCE

Ask students to consider any three-digit number and find its half mentally. Leave the remainder, if any. Halve the quotient again and ignore the remainder, if any. Continue it until they get the quotient 1. Repeat this activity to get one-third and quarter. They can use paper-pen if unable to do it mentally. Now, look at the remainders and discuss what they observe.

**Conclusion:** Remainder < Divisor

| Periods: 2–3 | Topic: Division of 4- and 5-digit numbers by 1-Digit number | Suggested extra teaching aids: Math Genius 4 pages 72–75 |
|---|---|---|

## ENGAGE

Divide the class into pairs. Write few division problems of 4/5-digit number by a 1-digit number on the board and ask the students to check whether they need regrouping in the very first step or not.

For example, 5)8745( ; 3)12589( ; 8)1246( ; 7)20691(

Tell the students to perform the division as they have learnt for 3-digit numbers. Then, they will discuss about the answer with their partners. **[Critical Thinking]**

## EXPLORE

**Division: Why not right to left?**

Addition, subtraction, and multiplication all proceed from right to left. But in the case of division, it is not so. Before introducing the traditional "long division" method, the teacher can start the "scaffold" (or sometimes "pyramid") method, which is one of the methods commonly taught today as a preparation.

In dividing, we are simply guessing a portion of the quotient, and subtracting to see what is left to be divided. If we start at the left, we can make efficient guesses; other ways will work, but will require extra steps.

Consider the example of 941 divided by 7. Here is one method of division that is often taught before the final long-division algorithm.

Here, rather than thinking about digits, we just think of pieces of the quotient that we will add up to get the entire quotient. The process amounts simply to subtracting any multiples of the divisor we want (in this case, 700, 210, and 28) until only a remainder is left. We write each quotient at the top, and then add them up at the end.

| | | | |
|---|---|---|---|
| | 1 | 3 | 4 |
| | | | 4 |
| | | 3 | 0 |
| | 1 | 0 | 0 |
| 7) | 9 | 4 | 1 |
| – | 7 | 0 | 0 |
| | 2 | 4 | 1 |
| – | 2 | 1 | 0 |
| | | 3 | 1 |
| – | | 2 | 8 |
| | | | 3 |

If we started at the right, we might do this:

| | | | |
|---|---|---|---|
| | 1 | 3 | 4 |
| | | | 9 |
| | | 2 | 0 |
| | 1 | 0 | 0 |
| | | | 5 |
| 7) | 9 | 4 | 1 |
| – | | 3 | 5 |
| | 9 | 0 | 6 |
| – | 7 | 0 | 0 |
| | 2 | 0 | 6 |
| – | 1 | 4 | 0 |
| | | 6 | 6 |
| – | | 6 | 3 |
| | | | 3 |

Note that our first step, which gave us 5, was sort of wasted: we ended up changing that digit of the quotient. This will be typical when you work from the right. That wasted step is our point: working from right to left isn't wrong, just inefficient.

## EXPLAIN

Refer textbook pages 72–75 and explain how to divide a 4/5-digit number by a 1-digit number using standard algorithm. Discuss why we put zero(s) in the quotient when we are unable to divide the partial dividend after bringing down the digit at any step(s).

Solve few questions on the board and explain the concept. **[Conceptual Understanding]**

## ELABORATE

Talk about the importance of short division method and discuss few examples in the class. Refer page 74 and encourage students to attempt questions given under Quick Check.

Also, consider an example when dividend has zero(s) and demonstrate how the students can skip the step by putting zero in the quotient for the division. Refer examples 2 on page 73 and 4 discussed on page 74.

In addition, focus on the common mistakes committed by students as shown on page 75.

**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1(*a*)–(*d*) and 2(*a*) of Practice Time 4B.

**Homework:** Ask to practice Q1(*e*)–(*h*) and 2(*b*)–(*c*) of Practice Time 4B.

## ENHANCE

Divide the class into small groups and ask them to perform the Lab Activity as given in 'Learning by Doing' on page 85. Explore the idea to verify the result. **[Discussion-based Learning, Collaborative Learning]**

| Periods: 4–5 | Topic: Division of 4- and 5-digit numbers by 2-digit number | Suggested extra teaching aids: Math Genius 4 pages 75–77 |
|---|---|---|

## ENGAGE

Division Race is a fast-paced activity that helps students practice division while also competing against their peers. To play, divide the class into pairs and give each pair a set of division problems. The first player in each pair solves a problem and passes it to their partner, who then solves the next problem. The first pair to correctly solve all their problems wins the race. **[Discussion-based Learning]**

## EXPLORE

Division Bingo is another fun activity to help students practice division. To play, create Bingo cards with division problems on them. Students then solve the division problems and mark the answer on their Bingo card. The first player to get five answers in a row (either vertically, horizontally, or diagonally) shouts "Bingo!" and wins the game. **[Critical Thinking]**

## EXPLAIN

Dividing by a two-digit number is a lot like single-digit division, but it does take a little longer and some practice. Since most of us haven't memorized the times tables of bigger numbers, this can take a little guesswork, but there's a handy trick you can learn to make it faster.

Refer textbook pages 75–76 and explain how to divide a 4/5-digit number by a 2-digit number using standard algorithm. Solve few questions on the board and explain the concept.

Let us consider 3472 ÷ 15.

- Write the problem as a long-division problem. Just like a simpler division problem, you can start by looking at the smaller number, and asking "Does it fit into the first digit of the larger number?"

15)3472
15 > 3 ✗

"Does 15 fit into 3?" Since 15 is definitely larger than 3, the answer is "no," and we move on to the next step.

- Look at the first two digits. Does 15 fit into 34? Yes, it does, so we can start calculating the answer.

15)3472
15 > 3 ✗
15 < 34 ✓

Use a little guesswork. Find out exactly how many times the first number fits into the other. You might know the answer already, but if you don't, try making a good guess and checking your answer with multiplication.

We need to solve 34 ÷ 15, or "how many times does 15 go into 34"? You're looking for a number you can multiply with 15 to get a number less than 34, but pretty close to it:

Does 1 work? 15 × 1 = 15, which is less than 34, but keep guessing.

Does 2 work? 15 × 2 = 30. This is still less than 34, so 2 is a better answer than 1.

Does 3 work? 15 × 3 = 45, which is greater than 34. Too high! The answer must be 2.

2
15)3472
15 × 1 = 15
15 × 2 = 30
15 × 3 = 45

- Write the answer above the last digit you used. If you set this up like a long division problem, this should feel familiar.

2
15)3472
– 30
4

Since you were calculating 34 ÷ 15, write the answer, 2, on the answer line above the "4."

Multiply your answer by the smaller number. Calculate 2 × 15 = 30. Write "30" underneath the "34."

Subtract the two numbers. Solve 34 – 30 and write the answer underneath them on a new line. The answer is 4. This 4 is still "left over" after we fit 15 into 34 two times, so we'll need to use it in the next step.

2
15)3472
– 30↓
47

- Bring down the next digit. Leave the 4 where it is and bring down the "7" from "3472" to make 47.
- Solve the next division problem. To get the next digit, just repeat the same steps you did above for the new problem. You can use guesswork again to find the answer.

23
15)3472
– 30↓
47
15 × 4 = 60 ✗
15 × 3 = 45 ✓

We need to solve 47 ÷ 15. 47 is bigger than our last number, so the answer will be higher. Let's try four: 15 × 4 = 60. Nope, too high!

We'll try three instead: 15 × 3 = 45. Smaller than 47 but close to it. Perfect.

The answer is 3, so we'll write that above the "7" on the answer line.

(**Note:** If we ended up with a problem like 13 ÷ 15, with the first number smaller, we would need to bring down a third digit before we could solve it.)

23
15)3472
– 30↓
47
– 45
2

3 × 15 = 45, so write "45" underneath the 47.

Solve 47 – 45 = 2. Write "2" underneath the 45.

- Find the last digit. As before, we bring down the next digit from the original problem so we can solve the next division problem. Repeat the steps above until you find every digit in the answer.

23
15)3472
– 30
47↓ 15 × 1 = 15 ✓
– 45
22 15 × 2 = 30 ✗

Bring down a digit to make 22 ÷ 15. 15 goes into 22 one time, so we write "1" at the end of the answer line. Our answer is now 231.

$1 \times 15 = 15$, so write 15 underneath the 22. Calculate $22 - 15 = 7$.

We have no more digits to bring down, so instead of more division we just write "remainder 7" or "R7" at the end of our answer.

The final answer: $3472 \div 15 = 231$ remainder 7

- Don't forget to check your answer.

**Checking:** Quotient × Divisor + Remainder = 231 × 15 + 7 = 3465 + 7 = 3472 = Dividend

```
   231
15)3472
 - 30
   47
 - 45
    22
  - 15
     7
   R = 7
```

**[Experiential Learning]**

## ELABORATE

Take an example from current scenario, demonstrate the process of division on the board using standard algorithm. For example, there are 1035 soldiers in an army camp. They have to go to the border and a van can accommodate only 45 soldiers. How many vans are required to go all of them?

Capacity of a van = 45

Number of soldiers = 1035

So, number of vans required = 1035 ÷ 45 = 23

```
15)1035(23
 - 90
   135
 - 135
     0
```

**[Conceptual learning]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 4C.

**Homework:** Ask to practice Q. 2 of Practice Time 4C.

## ENHANCE

'Division War' is a fun and interactive way to help students practice division. To play, divide the class into two teams and give each team a set of cards with numbers on them. One player from each team draws a card and races to divide the number on their card by a 2-digit number written on the board. The first player to correctly solve the division problem wins a point for their team. The game continues until all the cards have been played, and the team with the most points at the end wins. **[Collaborative Learning]**

| Periods: 6–7 | Topic: Division by 10, 100 and 1000; Estimating the Quotient | Suggested extra teaching aids: Math Genius 4 pages 77–80 |
|---|---|---|

## ENGAGE

Tell the students to check how many pages are there in textbooks of main subjects such as Maths, EVS, English, Hindi, etc. and note down in their notebooks. Then ask them to divide it by 10 and 100. Observe the quotient and remainder. Discuss about the result with bench partner.

Next, write few 4/5-digit numbers on the board and ask the students to divide it by 1000. Then talk about their findings. **[Experiential Learning]**

## EXPLORE

Divide the class into two teams. Put some slips, on which a division problem is written, upside down on the table. For example, 243 ÷ 10 ; 4238 ÷ 100 ; 4263 ÷ 100; 852 ÷ 10; 9514 ÷ 1000; 75394 ÷ 100; 465 ÷ 10 ; 78 ÷ 10; 75141 ÷ 100, etc. Invite one player from each team and ask them to pick a slip and speak aloud the answer. The player who speaks the correct answer will score a point for his/her team. Repeat the process with another pairs of players. After the participation of all players, the team with more points will be declared as the winner! **[Collaborative Learning]**

## EXPLAIN

Refer textbook pages 77–78, and explain the division of a number by 10, 100 and 1000 along with counter examples. After understanding this concept, discuss how to estimate the quotient.

Round to the nearest ten. It's not always easy to see how many times a two-digit number goes into a larger one. One useful trick is to round to the nearest multiple of 10 to make guessing easier. This comes in handy for smaller division problems, or for parts of a long division problem.

For example, let's say we're solving 146 ÷ 27, but we don't have a good guess at how many times 27 goes into 146.

Let's pretend we're solving 150 ÷ 30 instead.

27)146(

30) 150 (5
− 150
0

For more explanation, refer textbook page 79. **[Conceptual Understanding]**

## ELABORATE

Obtaining a result near the accurate or actual outcome is referred to as estimation. It means coming to certain conclusions or rounding a figure to the closest ones, tens, hundreds, and so on.

Estimation may be necessary for a variety of reasons. It is useful when there is insufficient information to determine a precise number. When calculating transaction amounts, accountants make estimations. We round the payout to the closest tens, hundreds, or thousands to calculate the quotient.

There are different ways to calculate the quotient. The teacher can demonstrate these ways.

**Estimating Quotient Using a Compatible Number**

Compatible numbers are easily divided. Such numbers are closer to the equal value of the actual numbers, making estimation and problem-solving easier. We can round the complex number to the nearest tens, hundreds, thousands, ten thousands, and so on to make them compatible. For example, 48 can be rounded off as 50, and 887 can be rounded off as 890 to make them compatible.

| Estimates | Quotient |
|---|---|
| 55304 ÷ 875 | |
| 56000 ÷ 800 | |
| 560 ÷ 8 | |
| = 70 | |

**Estimating Quotient Using Rounding Off to the highest places**

Refer textbook page 79

Hence, motivate the students to practice the given problems.

## EVALUATE

**Classwork:** Ask to practice Q.2, 3, 6, 7 of Practice Time 4D and Q.1 of Practice Time 4E; Think and Answer given on page 78.

**Homework:** Ask to practice remaining questions of Practice Time 4D and 4E.

## ENHANCE

The teacher can tell the students to write their height in cm. Then, express it in m and cm if 100 cm = 1 m.

| Period: 8 | Topic: Word Problems; The Four Operations Together | Suggested extra teaching aids: Math Genius 4 pages 80–81 |
|---|---|---|

## ENGAGE

Tell the students to think about any five real life situation where they need to divide something. Next write few problems on the board ask them to identify the operation needed to solve them. For example,

1. In a school, there are 12 classes and 30 teachers.

   (*a*) In each class, there are 35 students. How many students are there in total?

   (*b*) If the students are distributed equally among the teachers, what is the number of the students each teacher is responsible for?

   (*c*) On Friday, 5 classes went on a field trip. How many students were left at the school?

2. 6 printing machines together can print 222 pages in a minute. How many pages can each machine print per hour? **[Critical Thinking]**

## EXPLORE

Ask students to write at least three word problems based on any operation, *i.e.*, addition, subtraction, multiplication or division on a sheet of paper. Collect the sheets and shuffle them.

Then distribute among the students and tell them to identify the operation that they will use to solve the problem. Accept their responses and discuss their logic. **[Holistic Learning]**

## EXPLAIN

Refer textbook pages 80–81, and explain how to solve the given word problems based on division.

Further, talk about some real life problems based on any operation and tell them to focus on the key words used so that they can identify the operation required to solve it. Solve some questions from outside or from textbook Exercise to clear the concept. Teacher can encourage the students to attempt some questions in the class for better understanding. **[Conceptual Understanding]**

## ELABORATE

Explain the problems considered above.

1. (a) Given the number of students in each class. So, to find the total students in 12 classes, we need to multiply. Clearly, $35 \times 12 = 420$

   Thus, there are 420 students in total.

   (b) Now, 420 students are distributed among 30 teachers. So, we need to divide to know the number of students for whom each teacher is responsible. Clearly, $420 \div 30 = 14$

   Thus, each teacher is responsible for 14 students.

   (c) 5 out of 12 classes went on a field trip. so, we must subtract to know the remaining number of classes. Clearly, $12 - 5 = 7$ classes left.

   Now, the number students in these classes can be found using multiplication. That is, $7 \times 35 = 245$

   Thus, 245 students are left in the school.

2. Given 6 printing machines together print 222 pages. To know the number of pages printed by each machine, we must divide. Clearly, $222 \div 6 = 37$ pages per minute

   Now, 37 pages are printed by a machine in 1 minute. So, to know the number of pages printed in one hour, i.e., 60 minutes, we need to multiply. Clearly, $35 \times 60 = 2100$ pages.

   Thus, each machine will print 2100 page per hour. **[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1, 3, 5 and 10 of Practice Time 4F; Think and Answer given on page 81.

**Homework:** Ask to practice remaining questions of Practice Time 4F.

## ENHANCE

This is a challenge that triggers the concept of multiplication and division! Students can work in pairs.

In these multiplication facts each digit has been replaced by a letter and the order of the multiplication facts has been jumbled up! Can you work out which digit each letter stands for?

There are two sets of multiplication facts for you to complete. Try to spot patterns in the digits so you can rule out certain numbers and rule in others.

Can you work out which multiplication fact is the 11 multiplication fact or the 1 multiplication fact? Does the number of single-digit answers help you work out which multiplication fact it could be?

Solve the puzzle and record which digit each letter stands for on the challenge sheet.

M = ☐ N = ☐ P = ☐ Q = ☐ R = ☐

S = ☐ T = ☐ U = ☐ Y = ☐ Z = ☐

| | |
|---|---|
| Y × Z = Z | Z × Z = S |
| T × Z = YP | M × Z = YQ |
| N × Z = PY | YY × Z = ZZ |
| Q × Z = PT | U × Z = YU |
| YP × Z = ZM | P × Z = M |
| S × Z = PN | YR × Z = ZR |

**[Critical Thinking]**

| Periods: 9–10 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 82–84 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their concept before starting the revision.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths, Chapter Assessment, Life Skills and Brain Sizzlers.

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer, if any confusion or error then explain and correct it. Motivate students to solve Mental Maths.

## EVALUATE

**Classwork:** Ask to practice Q1 to 5 of Chapter Assessment and Brain Sizzlers given on page 84.

**Homework:** Ask to practice Q6 to 10 of Chapter Assessment and Life Skills on page 84.

ORANGE

# ASSIGNMENT–7

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Naved and his dad went fishing. Naved caught 7 fish and his dad caught 21 fish. How many times more fish did Naved's dad catch than Naved?

(*a*) 3 (*b*) 6 (*c*) 14 (*d*) 28

**2.** 222 ÷ 6 = _____

(*a*) 37 (*b*) 58 (*c*) 27 (*d*) 15

**3.** The product of two numbers is 476. If one number is 34, what is the other number?

(*a*) 442 (*b*) 104 (*c*) 14 (*d*) 24

**4.** If 5 transistors cost ₹1525, find the cost of each transistor.

(*a*) ₹305 (*b*) ₹35 (*c*) ₹350 (*d*) ₹303

**5.** Madhav divided 3250 by 18 and obtained a quotient of 179 and remainder of 28. For this problem, which of these checks will help Madhav to find out his mistakes?

(*a*) Check if remainder < dividend

(*b*) Check if Quotient × Divisor + Remainder = Dividend

(*c*) Check if remainder < divisor

(*d*) Check his calculations of 18 × 1, 18 × 7 and 18 × 9

**6.** Shalu has 57 beads. If she wants to split the beads evenly between her 4 friends, how many beads will she have left over?

(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4

**7.** 441 is completely divisible by which of these numbers?

(*a*) 3 (*b*) 2 (*c*) 5 (*d*) 6

**8.** 280 ÷ 8 = ?

(*a*) 35 (*b*) 38 (*c*) 40 (*d*) 42

**9.** 6504 ÷ 5 gives Q = _____ , R = _____

(*a*) 127, 2 (*b*) 130, 4 (*c*) 13, 4 (*d*) 31, 4

**10.** Dividing 4,509 by 9 gives

(*a*) 51 (*b*) 500 (*c*) 501 (*d*) 510

**11.** A roller coaster holds of 184 people. If each car holds 8 people, how many cars are there?

(*a*) 854 (*b*) 365 (*c*) 25 (*d*) 23

**12.** Dividing 860 by 4 and multiplying the result by 2 will give

(*a*) 215 (*b*) 430 (*c*) 645 (*d*) 105

ORANGE

# ASSIGNMENT–8

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. 1000 × _____ + 913 = 45913
2. 25 × 81 + 17 = _____
3. If 245 × 9 = 2205, then 2205 ÷ 9 = _____
4. Estimated quotient for 84205 ÷ 79 = _____
5. 222 ×_____ ÷ 37 = 0

## B. Label True or False.

1. In 728 ÷ 8 = 91, 91 is the product. .....
2. For the problem 2406 ÷ 6, the first digit of the quotient will be at hundreds place. .....
3. The sum of digits in the quotient of 4236 ÷ 12 is 11. .....
4. If quotient = 369, divisor = 15 and remainder 10, then dividend = 3705. .....
5. 32 hundreds ÷ 4 tens = 80 tens. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. 5600 × 8 | (*a*) 70 tens |
| 2. 5600 + 8 | (*b*) 1010 ones |
| 3. 5600 ÷ 8 | (*c*) 448 hundreds |
| 4. 5600 – 8 | (*d*) 5608 |
| 5. 9054 ÷ 9 + 4 | (*e*) 5592 |

## D. Utilise Your Brain.

A play centre has an indoor playground and 4 party rooms. Children can go in to play or have their birthday parties there.

1. There is a limit of 95 children in the indoor playground. If there are 67 children playing in the playground, how many more children can the staff let in?
2. The centre is open for 11 hours each day. Each party takes 3 hours. What is the maximum number of parties the centre can host in a day?
3. The party room costs ₹480 to rent. If there are more than 20 children, the center will charge each extra guest ₹25. How much will a party of 28 children cost?




# Factors and Multiples

## Learning Objectives

**After studying this chapter, students will be able to...**

- find factors and common factors of given numbers
- find multiples and common multiples of given numbers
- identify the numbers divisible by 2, 3, 4, 5, 6, 9, and 10 without dividing them
- identify prime and composite numbers
- do prime factorisation of a number

## LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, number/Flash Cards, number chart, multiplication table, A-4 size sheet, square grid paper.

**Keywords:** Factors, common factors, Multiples, Common multiples, Test of divisibility, Prime Numbers and composite numbers, Factorisation, Prime factorisation, Factor tree method, Division method

**Pre-requisite knowledge:** Students must be familiar with multiplication and division facts.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Recap; Factors; Properties of Factors; Common Factors | Suggested extra teaching aids: Concrete items, multiplication table<br>Math Genius 4 pages 86–91 |
|---|---|---|

### ENGAGE

The teacher can start the topic in the classroom through active participation of students. For this, she can call a group of students and ask them to stand in rows and columns. Ask rest of the students to write a multiplication/division fact for the arrangement. Hence, introduce the number of rows and columns as the factors of the number representing total students. Next, invite same number of another students and tell them to stand in different way compared to the previous one. Again, the students will tell the factors of that number.**[Collaborative Learning]** Then teacher will revise the learners' previous knowledge of multiplication/division facts with the help of the "Get Ready" and "Let's Recall" sections given in the book.

### EXPLORE

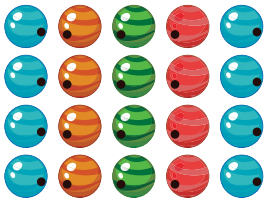
Divide the class into groups of 3 students each. Provide each group some beads, seeds, squared paper, etc. and ask them to make rectangles to show a particular number, say 20.



$1 \times 20 = 20$



$2 \times 10 = 20$



$4 \times 5 = 20$

Let them know that when we multiply two numbers to get a product, the numbers being multiplied are called factors.

Thus, 1, 2, 4, 5, 10 and 20 are the factors of 20.

Then, ask how many factors have they explored for that number. Also, discuss why 3, 6, 7, etc. are not factors of 20. For this, let them arrange the items in these numbers of rows and check whether each row has same number of items.

Monitor students' participation and engagement during the activities. **[Critical Thinking]**

## EXPLAIN

Start the discussion with an interaction based on any real life situations. For example,

Suppose you invite 36 guests on your next birthday. You want to arrange some items for them.

Let a packet contain 12 cookies, or carton holds 6 fruity packs, or tray has 9 cupcakes. How many sets of each item you take so that each person can get 1 item of each kind?

Accept the responses and explain the term factors. Then discuss how to find factors of a number using multiplication and division. Also, explain how to check whether a number is a factor of the given number. Next, talk about properties of factors.

Refer textbook pages 87–90 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

Bring a multiplication table in the class or display soft copy on projector.

| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 | 51 | 54 | 57 | 60 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 | 76 | 80 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | 90 | 96 | 102 | 108 | 114 | 120 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 | 91 | 98 | 105 | 112 | 119 | 126 | 133 | 140 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 | 104 | 112 | 120 | 128 | 136 | 144 | 152 | 160 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 99 | 108 | 117 | 126 | 135 | 144 | 153 | 162 | 171 | 180 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 11 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 111 | 132 | 143 | 154 | 165 | 176 | 187 | 198 | 209 | 220 |
| 12 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | 192 | 204 | 216 | 228 | 240 |
| 13 | 13 | 26 | 39 | 52 | 65 | 78 | 91 | 104 | 117 | 130 | 143 | 156 | 169 | 182 | 195 | 208 | 221 | 234 | 247 | 260 |
| 14 | 14 | 28 | 42 | 56 | 70 | 84 | 98 | 112 | 126 | 140 | 154 | 168 | 182 | 196 | 210 | 224 | 238 | 252 | 266 | 280 |
| 15 | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 | 195 | 210 | 225 | 240 | 255 | 270 | 285 | 300 |
| 16 | 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 256 | 272 | 288 | 304 | 320 |
| 17 | 17 | 34 | 51 | 68 | 85 | 102 | 119 | 136 | 153 | 170 | 187 | 204 | 221 | 238 | 255 | 272 | 289 | 306 | 323 | 340 |
| 18 | 18 | 36 | 54 | 72 | 90 | 108 | 126 | 144 | 162 | 180 | 198 | 216 | 234 | 252 | 270 | 288 | 306 | 324 | 342 | 360 |
| 19 | 19 | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 | 209 | 228 | 247 | 266 | 285 | 304 | 323 | 342 | 361 | 380 |
| 20 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 |

With the help of this table, find out the factors of two or more numbers. First talk about factor properties and then demonstarte what factors are common to them. Discuss about common factors referring textbook page 91. Hence, write few numbers on the board and give the opportunity to find out their common factors.

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q.1 and 4 of Practice Time 5A; Think and Answer given on pages 88 and 90.
**Homework:** Ask to practice remaining questions of Practice Time 5A.

## ENHANCE

Students can play this game in pairs.

For this, they will take a 1–100 number chart and two coloured pencils.

**Procedure**

Player A will choose any number on the grid and note it as his/her score. Player B will cross out all its proper factors, except the number itself and list them on his/her notebook and add. The sum of the proper factors will be the score of player B.

Now, player B will choose any number and add it his/her score. Player A will list the proper factors and get the sum as his/her score. Note that the selected number must have at least one proper factor on the board.

Repeat the procedure up to 10–15 rounds. The player with more points will be winner.

| Periods: 3–4 | Topic: Multiples; Properties of Multiples; Common Multiples | Suggested extra teaching aids: Number Charts, Square grid paper<br>Math Genius 4 pages 92–95 |
|---|---|---|

## ENGAGE

Divide the class into pairs.

On the board make a 3 × 3 grid and write the numbers 21, 24, 40, 60, 288 and 378 as shown below.

Then, ask the students to write the numbers 1–9 in the squares such that numbers in each row when multiplied together they will give the product written next to that row.

Also, keep in mind that the numbers in each column multiplied together will give the product under that column.

Tell the students to recall the multiplication tables and try to fill in the numbers. After giving sufficient time, discuss about the answers by completing the grid as shown here.

| | | | |
|---|---|---|---|
| | | | 24 |
| | | | 40 |
| | | | 378 |
| 60 | 21 | 288 | |

| | | | |
|---|---|---|---|
| 2 | 3 | 4 | 24 |
| 5 | 1 | 8 | 40 |
| 6 | 7 | 9 | 378 |

Hence, introduce the term multiple as the product of two or more numbers. For example, 24 is the product on 2, 3 and 4 so 24 is a multiple of each one, *i.e.*, 2, 3 and 4. Similarly, 40 is a multiple of 1, 5 and 8.

**[Critical Thinking]**

## EXPLORE

Students will work in pairs. Each pair will take a 100-number chart and two coloured pencils.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

Student A will choose any number less than 10 on the grid and ring all those numbers which come in the multiplication table of that number. Then he/she will list them in his/her notebook.

Similarly, Student B will choose any number less than 10 and ring all those numbers which come in the multiplication table of that number. Also, he/she will list them in his/her notebook.

Instruct them to find the numbers which are present in both the lists. Have them introduce these numbers as the common multiples of the numbers chosen.

Tell them to repeat the procedure and find the common multiples of other numbers. **[Experiential Learning]**

## EXPLAIN

Start the discussion with an interaction based on any real life situations. Refer textbook pages 92–94 for explanation and examples. Explain the term multiples with examples. Then discuss how to find multiples of a number by multiplying it with counting numbers. Also, explain how to check whether a number is a multiple of the given number.

Next, talk about properties of multiples and common multiples. Solve few questions on the board and explain the concept. **[Conceptual Understanding]**

## ELABORATE

After understanding the concept of multiples well, ask students to write the multiplication table of any number. Then ask few questions like:

- Which is the first multiple of that number?
- Is there any multiple smaller than that number?
- Up to which number can they write the multiples of that number?
- How many multiples can any number have?
- Is 1 a factor or multiple of every number?
- Is every number a factor or multiple of 1?

Accept the responses and discuss about the properties of multiples. Hence, encourage students to attempt questions given under Think and Answer on page 94. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q.3(a)-(d) and 4 (a) of Practice Time 5B.

**Homework:** Ask to practice remaining questions of Practice Time 5B.

## ENHANCE

Divide the class into small groups and ask them to perform the Lab Activity as given in 'Learning by Doing' section on page 105. **[Discussion-based Learning, Collaborative Learning]**

| Period: 5 | Topic: Test of Divisibility | Suggested extra teaching aids: Concrete items, paper, pencil<br>Math Genius 4 pages 95–96 |
|---|---|---|

## ENGAGE

Divide the class into groups of different sizes, such as 2, 3, 4, 5 or 6 students. Give a certain number of things, say 24 chalks to each group and tell them to share among themselves equally. Let them explain their observation. Discuss about the number of chalks left over in distribution and introduce the term divisible. The group of 2, 3, 4 and 6 students can share the 24 chalks equally but the group of 5 students not, so, 24 is divisible by 2, 3, 4 and 6 but not by 5. **[Experiential Learning]**

## EXPLORE

Write some 2/3/4-digit numbers on the board and tell the students select numbers to complete the table and then answer the following questions. They can use the numbers at more than one places.

| 35, 40, 88, 105, 350, 432, 117, 2000, 1256, 60, 2169 | |
|---|---|
| Even numbers | |
| Multiples of 3 | |
| Multiples of 5 | |
| Multiples of 4 | |
| Multiples of 10 | |

**[Critical Thinking]**

- Have any even numbers ones digit 1, 3, 5, 7, or 9?
- Is the sum of digits of a multiple of 3 lying in the multiplication table of 3?
- What are the digits at one place in the multiples of 5?
- Is every even number a multiple of 4?
- Which is the digit at one place in the multiples of 10?

After getting their responses, have them introduce rules of divisibility. **[Critical Thinking]**

## EXPLAIN

Refer textbook pages 95–96 and explain which number is divisible by a given number. Also, explain the divisibility rules for some numbers and have them understand its use. Solve few questions on the board and explain the concept. **[Conceptual Understanding]**

## ELABORATE

Interact with students and strengthen their concept through a game.

Divide the class into two teams.

Ask any member from first team to tell any two digits.

Then ask the other team members to make the greatest 3-digit number (divisible by any number say, 2, 3, 4, 5, 6, 9 or 10) using the two given digits and one digit of their own choice.

For each correct response, the team will score a point.

Suppose Team A gives the numbers 8 and 1. Teacher tell to make the greatest 3-digit number divisible by 3. And if Team B answers 981, then they be rewarded 1 point. For any other answers, they will not score any point.

Now, Team B will give the two digits and Team A have to form the number as per teacher's instruction.

Similar procedure will be continued till time permits. The team scoring more points will be winner!

**[Logical Thinking]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 5C.

**Homework:** Ask to practice Q. 2 of Practice Time 5C.

## ENHANCE

Ask students to read the Maths Fun section given on page 97 and do as directed. Hence answer the questions as asked here. **[Art integration]**

| Periods: 6–8 | Topic: Prime Numbers and composite numbers; Factorisation | Suggested extra teaching aids: Math Genius 4 pages 97–101 |
|---|---|---|

## ENGAGE

Tell the students to write their birth dates and roll numbers in their notebooks. Then each student will write all the factors of those numbers. For example, a student writes

Birth Date: 8 March and Roll Number: 12

Then he/she will list the factors as:

Factors of 8 are: 1, 2, 4 and 8

Factors of 12 are: 1, 2, 3, 4, 6 and 12

After listing the factors by all students, teacher will ask how many factors the numbers 1, 2, 3, 4, …, 31 have and classify the numbers into prime (numbers having only two factors) and composite (numbers having more than two factors) numbers.

Teacher can ask the students to raise their left hands if their roll numbers or birth dates are prime, *i.e.*, 2, 3, 5, 7, 11, 13, etc. and to raise their right hands if their roll numbers or birth dates are composite, *i.e.*, 4, 6, 8, 9, 10, 12, etc. **[Experiential Learning]**

Instruct the students to stand up whose roll number or birth dates are 1, *i.e.*, neither prime nor composite.

## EXPLORE

Divide the class into small groups. Ask each group to write any three 2-digit numbers on a sheet. Hence try to express the numbers as the product of two or more numbers. Teacher can walk around during the activity to watch the participation of the students. After allowing the reliable time, ask them to check whether their factors are prime or not. Invite the group one by one in front of the class and encourage them to tell about their workings.

Hence, reiterate the factorisation as well as prime factorisation. **[Collaborative Learning]**

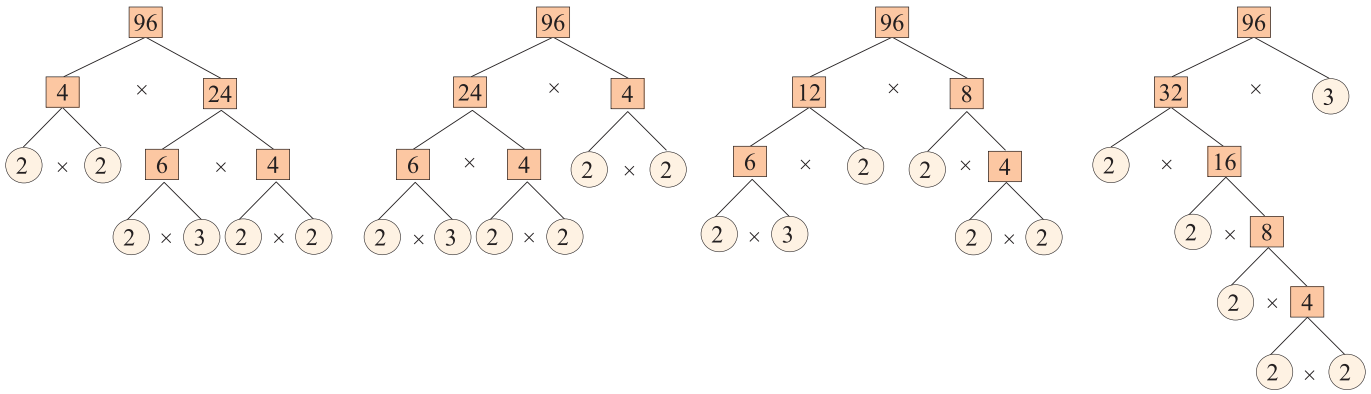
## EXPLAIN

Refer textbook pages 97–99, and explain about prime and composite numbers. Demonstrate how to check whether a given number is prime or composite by dividing the numbers with known prime numbers starting from 2, 3, 5, 7 and so on. Encourage the students to attempt Think and Answer given on page 99.

Next, write any composite number on the board and explain how to factorise it. Also, have them understand prime factorisation. For more explanation, refer textbook page 99. **[Conceptual Understanding]**

## ELABORATE

After understanding the concept of prime factorisation, discuss the methods – factor tree method and division method which are often used to get the prime factorisation of a composite number. Reinforce that more than one factor tree be possible for the same number. For example, factor tree of 96.




Refer textbook page 99 to focus on the fundamental property of prime factorisation. Also, demonstrate the process of division method for the same number and let the students know that they will get the same result if they use any method.

Prime Factorisation of 96

$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

$96 = 2^5 \times 3$

| | |
|---|---|
| 2 | 96 |
| 2 | 48 |
| 2 | 24 |
| 2 | 12 |
| 2 | 6 |
| 3 | 3 |
| | 1 |

Hence, motivate the students to practice the given problems.

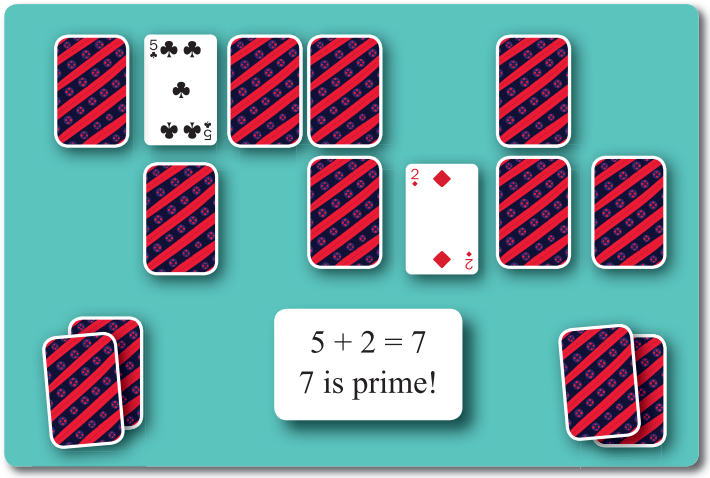
## EVALUATE

**Classwork:** Ask to practice Q.1 and 6 of Practice Time 5D; Think and Answer given on page 99.

**Homework:** Ask to practice remaining questions of Practice Time 5D.

## ENHANCE

**Card Game**




Take a pack of playing cards and play a fun mystery game to help students get the hang of prime numbers and composite numbers.

Shuffle a deck of playing cards, and remove the jokers. You may also choose to remove aces, jacks, queens, and kings, or you can assign them number values. For example, tell your students aces are 1, jacks are 11, queens are 12, and kings are 13. To keep it simple, you could also say all face cards are 11. Then lay 10 to 20 cards face-down in rows on a table or desk.

Students will take turns flipping over two playing cards at a time. The student whose turn it is will add the numbers together. If the resulting number is a prime number, he or she gets to keep the cards. If not, he or she will flip the cards back over, and the next student will take a turn.

Play will continue for however many rounds you choose or until no other prime numbers can be formed from the card combinations. The player with the most cards at the end of the game wins.

| Periods: 9–10 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 102–105 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries before starting the revision.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Brain Sizzlers, Chapter Assessment, Life Skills and Mental Maths.

## ELABORATE

Discuss questions 1 to 3 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths given on page 105.

## EVALUATE

**Classwork:** Ask to practice Q. 1 to 3 of Chapter Assessment and Brain Sizzlers given on page 102.

**Homework:** Ask to practice Q.4 to 8 of Chapter Assessment and Life Skills given on page 104.

ORANGE

# ASSIGNMENT–9

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Determine which is a factor of 40.

(*a*) 6 (*b*) 5 (*c*) 7 (*d*) 11

**2.** Determine which is a multiple of 8.

(*a*) 48 (*b*) 20 (*c*) 34 (*d*) 52

**3.** The first four multiples of 9 are

(*a*) 9, 18, 27, 36 (*b*) 9, 18, 36, 72 (*c*) 9, 27, 45, 63 (*d*) 18, 27, 36, 45

**4.** What are the first two common multiples of 2 and 5?

(*a*) 8 and 10 (*b*) 4 and 15 (*c*) 10 and 20 (*d*) 5 and 10

**5.** Which of the following is divisible by 2?

(*a*) 135 (*b*) 347 (*c*) 741 (*d*) 258

**6.** Which of the following is divisible by 3?

(*a*) 256 (*b*) 753 (*c*) 842 (*d*) 1024

**7.** Which of the following is a prime number?

(*a*) 43 (*b*) 69 (*c*) 81 (*d*) 75

**8.** Which of the following is incorrect?

(*a*) The greatest factor of a number is the number itself.

(*b*) 1 is the smallest multiple of every number.

(*c*) Every composite number can be expressed as the product of prime factors.

(*d*) The smallest prime number is even.

**9.** The prime factorization of the number 76 is

(*a*) $2 \times 2 \times 3 \times 7$ (*b*) $2 \times 3 \times 19$ (*c*) $2 \times 2 \times 2 \times 9$ (*d*) $2 \times 2 \times 19$

**10.** How many factors does the number 50 have?

(*a*) 2 (*b*) 3 (*c*) 6 (*d*) 7

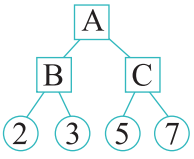
**11.** How many multiples of 7 lie between 40 and 85?

(*a*) 5 (*b*) 7 (*c*) 6 (*d*) 12

**12.** In the given factor tree, the values of A, B and C are -------, ---------- and --------- respectively.

(*a*) 210, 6, 35 (*b*) 210, 35, 6

(*c*) 6, 35, 210 (*d*) 35, 6, 210



ORANGE

# ASSIGNMENT–10

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. The 7th multiple of 8 is_____ .
2. The smallest factor of a number is _____ .
3. The first common multiple of the numbers 5 and 9 is _____ .
4. _____ is the smallest composite number.
5. The number divisible by 10 always has ones digit_____ .

## B. Label True or False.

1. Every number is the multiple of itself .....
2. 4 is a multiple of 28. .....
3. The greatest 2-digit number is a prime number. .....
4. The smallest 2-digit number is a composite number. .....
5. 3248 is divisible 6. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. The first odd composite number | (*a*) 710 |
| 2. Neither prime nor composite number | (*b*) 3 |
| 3. Number divisible by 5 | (*c*) 2 |
| 4. The greatest common factor of 3 and 12 | (*d*) 1 |
| 5. The smallest prime number | (*e*) 9 |

## D. Utilise Your Brain.

Select the numbers given below and write it in appropriate boxes.

**2, 6, 9, 11, 17, 88**

| | | | |
|---|---|---|---|
| Even number | | | |
| Odd number | | | |
| | Prime number | Factors of 18 | Multiples of 11 |



# 6 Fractions

## Learning Objectives

**After studying this chapter, students will be able to...**

- understand the concept of fractions
- find the fraction of a collection of objects or numbers
- write the equivalent fractions of a given fraction
- reduce a fraction to its simplest form
- identify different types of fractions (unit fractions, like and unlike fractions, proper, improper and mixed fractions)
- convert improper fractions to mixed fractions and vice versa
- compare and order the given fractions
- add and subtract like fractions

# LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, number/Flash Cards, paper strips, circular/rectangular/square paper cut outs, crayons/colour pencils.

**Keywords:** Fractions, Numerator, Denominator, Like and Unlike fractions, Equivalent fractions, Simplest form (Lowest terms), Proper, Improper, Unit and Mixed Fractions

**Pre-requisite knowledge:** Students must be familiar with parts of a whole or a collection as a fraction.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Recap; Fractions; Like and Unlike Fractions; Equivalent Fractions; Simplest Form (Lowest Terms) of a Fraction | Suggested extra teaching aids: Math Genius 4 pages 107–113 |
|---|---|---|

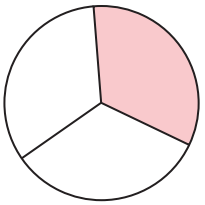
## ENGAGE

Draw a few shapes, like a rectangle, a square, a circle, etc. on the board and divide them equally into different number of parts. Shade a few parts using chalk and instruct students to write the fractions for the shaded parts with respect to the total number of equal parts. Also, tell them to identify the numerator and the denominator in the fraction they have written. Accept the responses.

Recall the numerator and the denominator of a fraction. For example,

In the given figure, total number of parts = 3

Number of shaded part = 1



Hence, we represent it in fraction as $\frac{1}{3}$, where numerator = 1 and denominator = 3

**[Experiential Learning]**

Then teacher will revise the learners' previous knowledge of fractions with the help of "Let's Recall" section given in the book.

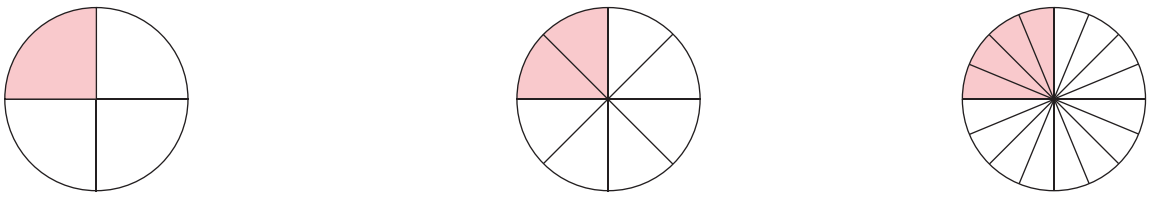
## EXPLORE

Divide the class into 3–4 students. Distribute paper strips to each group and tell the group members to divide the strip into 6, 7 or 8 equal parts, but each member of a group should have equal divisions. Then ask them to shade few parts as per their choice but same as shaded by other group members. Now they will note down the fraction for the shaded parts and observe the numerators and denominators of the fractions. Their fractions will have same denominator but different numerators. Let them know that such kind of fractions are called like fractions. Further, provide another set of strips and let them divide and shade as per their choice. Hence, write the fractions for the shaded portions. These are unlike fractions as their denominators are different.

Monitor students' participation and engagement during the activities. **[Experiential Learning]**

## EXPLAIN

After dealing the concept about Fractions and understanding the like/unlike fractions, talk about any real life situation connecting with equivalent fractions. For example, parts of a pie/pizza. Consider the circular cut-outs as a pizza and divide it into different parts. Then, highlight a particular section in each one and write the fractions representing them. Ask what they observe. Clearly, they show same amount of the pizza, their values are equal. We also say the fractions are equivalent.



$\frac{1}{4}$ = $\frac{2}{8}$ = $\frac{4}{16}$

You can also use maths lab activity given 'Learning by Doing' section on page 126.

Next, explain how to find the fractions equivalent to a given fraction using multiplication/division. Also, demonstrate how to check whether the two given fractions are equivalent or not. Refer textbook pages 107–110 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

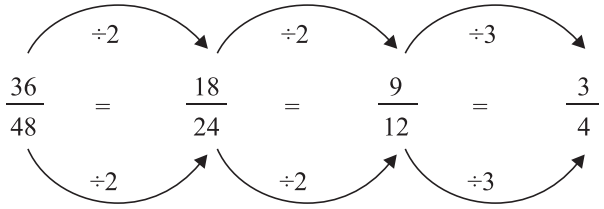
Write a few sets of equivalent fractions on the board. Ask the students to identify what kind of fractions these are. Try if they can write them into their lowest form. After the students' responses, demonstrate how to get the simplest form of a fraction.

Explain that fractions are said to be in the simplest form or lowest term if the numerator and denominator have only 1 as the common factor. Also, reiterate that a fraction is simplified to its lowest term by dividing the numerator and denominator with common factors until only 1 is left as a common factor.

For Example, reduce the fraction $\frac{36}{48}$ to its lowest term.

$$\frac{36}{48}=\frac{36\div 2}{48\div 2}=\frac{18\div 2}{24\div 2}=\frac{9\div 3}{12\div 3}=\frac{3}{4}$$

Thus, $\frac{3}{4}$ is the lowest term of $\frac{36}{48}$.




Refer textbook pages 111–112 for more explanation and examples.

Hence, motivate students to solve questions. **[Conceptual Understanding]**

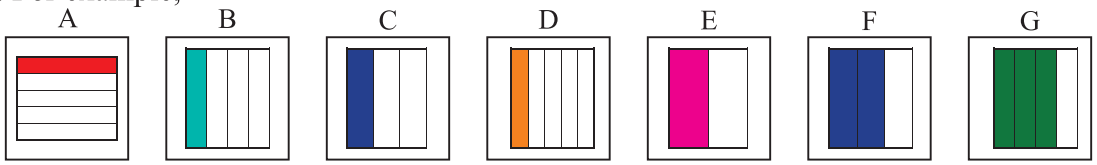
## EVALUATE

**Classwork:** Ask to practice Q5, 7 of Practice Time 6A and Q1 of Practice Time 6B; Quick Check given on page 108.

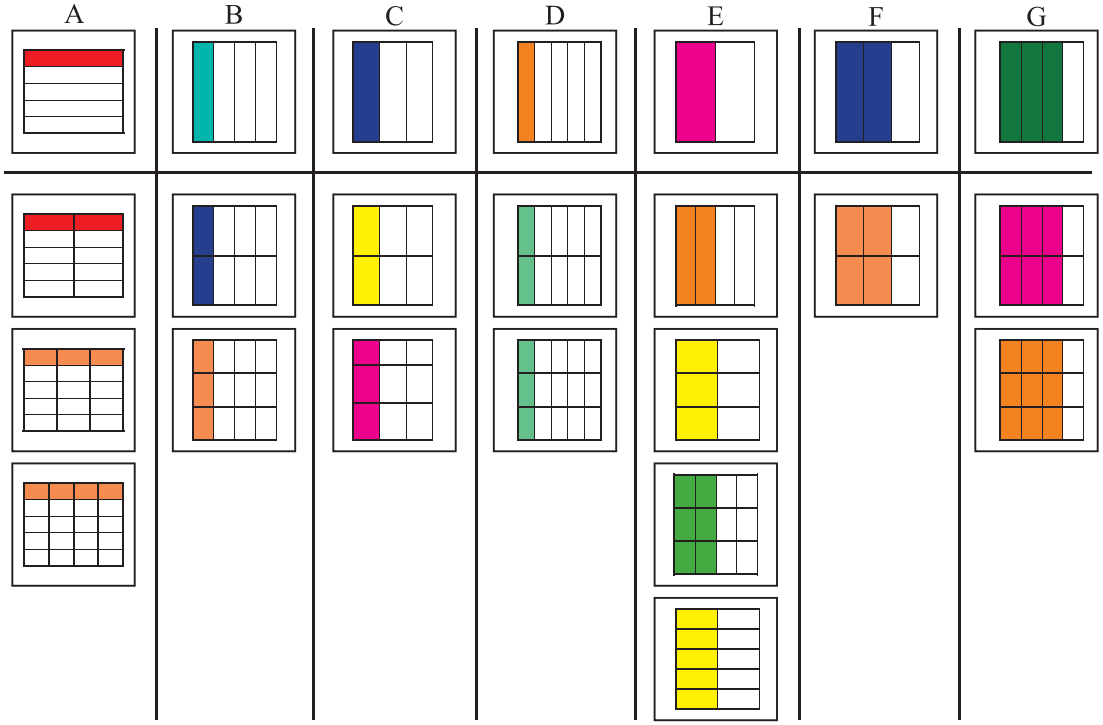
**Homework:** Ask to practice remaining questions of Practice Time 6A and 6B.

## ENHANCE

Divide the class into 4–5 teams. Ask each team to choose their team leader. Call the team leaders and provide each of them a paper piece. Ask them to make any shape, divide it as per their choice and shade some parts. Note that they should show different fractions. Then instruct them to fix their chits on the display board on the top row. For example,




Now provide a paper piece to each of the remaining students and instruct them to make similar design showing the fractions equivalent to their team leader. They all will fix their chits under their leader's chit.




The team showing maximum number of equivalent fractions will be the winner.

| Periods: 3–4 | Topic: Types of Fractions – Proper, Improper, Unit and Mixed Fractions | Suggested extra teaching aids: Math Genius 4 pages 113–115 |
|---|---|---|

## ENGAGE

Start the class by a story telling. You can consider a story similar to the story given below.

**Story**

Ram and Gopal, two friends, contributed some amount and bought a box of apples. After bringing the box at home, they decided to share them equally.

**Ask:** Can you say what part of it will each of them get? _____

They opened the box and counted the apples. They found 45 apples in all, so each one took $\frac{45}{2}$ apples.

**Ask:** Can you think how many apples this fraction represents?

They used the trick of repeated subtraction, picked up pair of apples 22 times and both of them took one-one every time. At last, they had 1 apple which was cut into halves and taken 1 piece by each friend. Thus, each one got $22\frac{1}{2}$ apples, *i.e.*, 22 whole and $\frac{1}{2}$ (one-half) apples.

Having an interaction, introduce: $\frac{1}{2}$ (box of apples) as a proper fraction, where numerator 1 < denominator 2

$\frac{45}{2}$ (apples) as an improper fraction, where numerator 45 > denominator 2; and

$22\frac{1}{2}$ (22 whole and a half apples) as a mixed fraction, which is a combination of a whole and a proper fraction.

**[Holistic Learning]**

## EXPLORE

Divide the class into pairs. Distribute some flash cards having different types of fractional numbers written on them. Tell the students to identify their numerators and denominators, and compare them. On the basis of their observations, tell what are the types of these fractions. Can you categories them as Proper, Improper, and Mixed Fractions? Accept the responses.

Also, introduce them unit fraction as the fraction with numerator 1. **[Experiential Learning]**

## EXPLAIN

Start the discussion with an interaction based on any real life situations. Ask students to look around and find the things for which they can use a fraction. Explain the types of fractions such as proper, improper, unit and mixed fractions along with their examples. Then discuss how to convert an improper fraction into a mixed fraction and vice versa. Also, explain how to check whether a number is a multiple of the given number. Refer textbook pages 113–115 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

Fractions which have greater denominator are called proper fractions, while the fractions which have greater numerator are called improper fractions.

Fractions having a whole number and a fraction along with it are called mixed fractions or mixed numbers.

Demonstrate the different types of fractions using visuals and citing the examples from daily life. Refer conversation given in "Get Ready" section. Next deal the concept of converting an improper fraction to a mixed fraction as

Improper fraction = Quotient $\frac{\text{Remainder}}{\text{Divisor}}$ = Mixed fraction

Example:

Improper fraction $\frac{15}{7}$ — 15 — Numerator, 7 — Denominator

**Step 1:** Divide the numerator with the denominator.

$15 \div 7 = 2$ R 1

**Step 2:** Assemble the mixed fraction.

$\frac{15}{7} = 2\frac{1}{7}$

$\mathbf{\frac{15}{7} = 2\frac{1}{7}}$ ← Mixed fraction

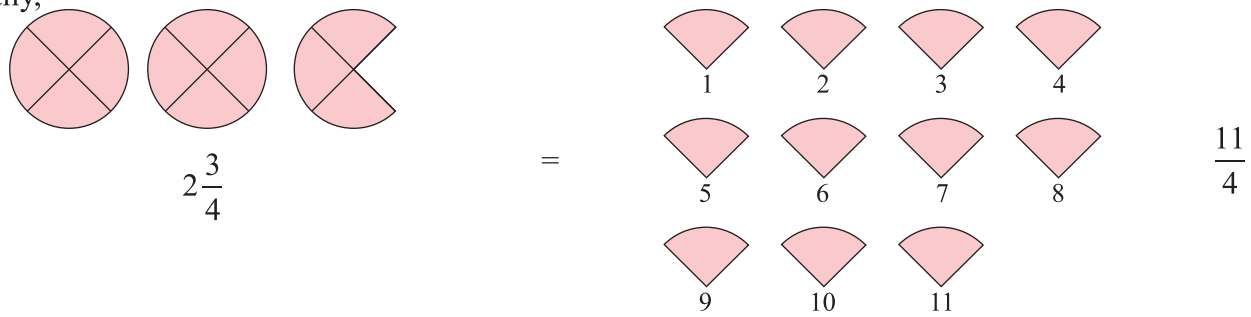
Further, show converting a mixed fraction to an improper fraction as

Mixed fraction = $\frac{\text{Denominator} \times \text{Whole} + \text{Numerator}}{\text{Denominator}}$ = Improper fraction

Example:

Mixed fraction $\longrightarrow 2\frac{3}{4} = \frac{(4\times 2)+3}{4} = \frac{8+3}{4} = \frac{11}{4} \longleftarrow$ Improper fraction

Pictorially,




Hence, encourage students to attempt questions given under Quick Check on page 114.

**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q3 and 6 of Practice Time 6C.

**Homework:** Ask to practice remaining questions of Practice Time 6C.

## ENHANCE

Divide the class into groups of 4–5 students. Put some flash cards of having mixed fractions written on them in one bowl and their corresponding improper fractions in another bowl. Invite two teams at a time and tell one team to pick up the flash cards having mixed fractions and another team to take out the cards having improper fractions. Then they have to show their cards to another team and make the pairs showing same fractions. Read aloud the fractions and stand in a row to display in the class. Repeat the activity with another groups.

| Periods: 5–6 | Topic: Comparing and Ordering Fractions | Suggested extra teaching aids: Math Genius 4 pages 116–117 |
|---|---|---|

## ENGAGE

Divide the class into groups of 5–6 students.

- Understanding the concept of like fractions

Invite any group in front of the class and tell them to express what fraction of the group is boys and girls. Write the fractions on the board and ask the class to identify which one is greater/smaller. Suppose there are 2 boys and 4 girls in Group A. Then,

Fraction of boys = $\frac{2}{6}$ and Fraction of girls = $\frac{4}{6}$; Clearly, $\frac{2}{6} < \frac{4}{6}$ or $\frac{4}{6} > \frac{2}{6}$

Further call another group and instruct them to do the same work. Now compare the fractions of boys or girls in the two groups. Suppose there are 3 boys and 3 girls in Group B. Then,

Fraction of boys = $\frac{3}{6}$ and Fraction of girls = $\frac{3}{6}$;

Now, comparing the fraction of boys in two groups, we see $\frac{2}{6} < \frac{3}{6}$

And comparing the fraction of girls in two groups, we see $\frac{4}{6} > \frac{3}{6}$

With the extension, they can observe $\frac{4}{6} > \frac{3}{6} > \frac{2}{6}$

- Understanding the concept of unlike fractions

Instruct one of the girls from the Group A to go back on her seat. Then, ask the group to express the number of remaining girls as a fraction. Certainly, it will be $\frac{3}{5}$.

Now compare it with the fraction of girls present in the Group B, *i.e.*, $\frac{3}{6}$.

Clearly, $\frac{3}{5} > \frac{3}{6}$. If the students couldn't understand (how?), you can ask them to let both groups share 30 candies among themselves. Then which group member will get more candies? **[Holistic Learning]**

## EXPLORE

Divide the class into pairs. Ask them to count the number of books and notebooks kept in their bags. Express them as fractions and compare the two fractions. Further, they can count the number of pencils, crayons, erasers, etc. and compare their fractions. If they get unlike fractions, instruct them to compare only the fractions with the same numerator. For this, they have to keep same number of a particular item in the groups but the total numbers will be different. **[Discussion-based and Collaborative Learning]**

## EXPLAIN

Refer textbook pages 116–117 and explain how to compare like and unlike fractions with same numerator.

When the fractions are like then compare their numerators. The like fraction with greater numerator will be greater, and the fraction with smaller numerator will be smaller, and if both the numerators of like fractions are same then those fractions will be equal fractions.

When the fractions are unlike but their numerators are same then compare their denominators. The fraction with greater denominator will be smaller, and the fraction with smaller denominator will be greater.
Also, explain the ordering of fractions having same numerator/denominator. Demonstrate some examples on the board. **[Conceptual Understanding]**

## ELABORATE

Interact with students and strengthen their concept connecting with other subjects. Write any word related to moral value or a quotation on the board. For example,
OBEY YOUR PARENTS! BE OBEDIENT!
Ask any two students randomly to stand up and tell the fractions for the consonants and vowels present in the word/quote. Hence, compare the two fractions.
Also, ask one student to write a word/quote and another to write the fractions and compare.
Suppose students A writes RESPECT. Then, student B will observe 5 consonants, viz. R, S, P, C, T and its fraction = $\frac{5}{7}$; and 2 vowels, viz. E, E and its fraction = $\frac{2}{7}$. Clearly, $\frac{5}{7} > \frac{2}{7}$.
**[Cross-curricular Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1 and 3 of Practice Time 6D. Think and Answer given on page 117.
**Homework:** Ask to practice Q2 and 4 of Practice Time 6D.

## ENHANCE

Ask students to complete the project work given on page 121.

| Periods: 7–8 | Topic: Addition and Subtraction of Like Fractions | Suggested extra teaching aids: Math Genius 4 pages 118–120 |
|---|---|---|

## ENGAGE

Start the discussion by connecting the students with real life. For this, ask some questions such as:
About how much water in litre can your bottle hold? What part of the water is left in the bottle? Think what part of water have you consumed.
Suman got a chocolate bar in the morning. It had 10 slabs. She gave 4 slabs to her friend Ria and 3 slabs to her brother Parth. Can you say what part of chocolates did she give in all? What part of chocolate is left with her?
Accept their responses, and introduce the concept of addition and subtraction. **[Experiential Learning]**

## EXPLORE

Divide the class into pairs. Give two paper strips to each of the pairs. Instruct them to mark equal number of divisions on the strips, shade the divisions as much as they can and then keep both the strips together. Ask them to count the total number of shaded parts in both strips together out to total divisions. Now, write the fractions for the shaded parts and find the sum of the fractions. Also, find the difference of the fractions.
Accept the responses. **[Collaborative Learning]**

## EXPLAIN

Write some real-life problem based on addition and subtraction of fractions on the board. For example, Alisa drank $\frac{4}{8}$ of a cup of milk at breakfast and $\frac{6}{8}$ of a cup of milk at lunch. How much more milk did she drink at lunch than at breakfast?
Instruct the students to read aloud the problem and think how to solve them.
Let them understand the problem and devise a plan to solve it. Then workout the solution and explain the concept. At last check the solution.
Refer textbook pages 118–120 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

Write some like fractions in pairs on the board but pairs should not be together. For example, have a look at the fractions given below.

| | | | | |
|---|---|---|---|---|
| $\frac{5}{10}$ | $\frac{4}{11}$ | $\frac{1}{8}$ | $1\frac{2}{3}$ | $\frac{8}{12}$ |
| $\frac{5}{8}$ | $\frac{9}{15}$ | $\frac{7}{11}$ | $\frac{1}{4}$ | |
| $\frac{3}{4}$ | $\frac{11}{12}$ | $\frac{5}{15}$ | $\frac{2}{10}$ | $\frac{1}{3}$ |

Ask students to find the pairs of like fractions and add and subtract in their notebooks. After allowing sufficient time, show the working on the board and let them make corrections if they have not done correctly.

To add fractions with the same denominators:

$\frac{5}{10} + \frac{2}{10} = \frac{\square}{\square}$ ← Add the numerators

← Use the same denominator

To subtract fractions with the same denominators:

$\frac{11}{12} - \frac{8}{12} = \frac{\square}{\square}$ ← Subtract the numerators

← Use the same denominator

Hence, motivate the students to practice the problems given in the book.

## EVALUATE

**Classwork:** Ask to practice Q1(*a*), (*d*), (*h*); 2 (*b*), (*f*), (g) and 3(*a*), (*c*) of Practice Time 6E.
**Homework:** Ask to practice remaining questions of Practice Time 6E.

## ENHANCE

Ask students to explore the use of fractions in daily life and list at least five situations. Apply the operation if they use to solve them. Refer the interactive exercise given on the portal fullmarksonline.com.

| Periods: 9–10 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 121–126 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify the doubts and rectify the errors.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths, Maths Fun, Chapter Assessment and Brain Sizzlers.

## ELABORATE

Discuss questions 1 to 3 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths and Maths Fun given on page 122.

## EVALUATE

**Classwork:** Ask to practice Q1 to 3 and 10 of Chapter Assessment and Brain Sizzlers given on page 125.
**Homework:** Ask to practice Q4 to 9 of Chapter Assessment.

ORANGE

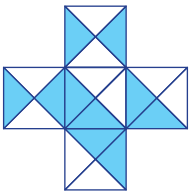
# ASSIGNMENT–11

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** What fraction of the given figure is shaded?



(*a*) $\frac{1}{3}$ (*b*) $\frac{1}{2}$ (*c*) $\frac{1}{4}$ (*d*) 00

**2.** One-third of 72 is

(*a*) 144 (*b*) 48 (*c*) 24 (*d*) 216

**3.** Identify the example of a proper fraction.

(*a*) $\frac{5}{7}$ (*b*) $\frac{4}{3}$ (*c*) $\frac{16}{15}$ (*d*) $1\frac{1}{21}$

**4.** Which of the following fractions is equal to $\frac{1}{8}$?

(*a*) $\frac{4}{16}$ (*b*) $\frac{3}{12}$ (*c*) $\frac{2}{14}$ (*d*) $\frac{4}{32}$

**5.** How can $2\frac{2}{5}$ be represented?

(*a*) $\frac{10}{15}$ (*b*) $\frac{9}{15}$ (*c*) $\frac{12}{5}$ (*d*) $\frac{12}{2}$

**6.** What is the sum of $\frac{4}{13}$, $\frac{3}{13}$ and $\frac{6}{13}$?

(*a*) $\frac{1}{3}$ (*b*) $\frac{12}{13}$ (*c*) 1 (*d*) $\frac{11}{13}$

**7.** What is the difference between $\frac{12}{19}$ and $\frac{4}{19}$?

(*a*) $\frac{8}{19}$ (*b*) $\frac{16}{38}$ (*c*) $\frac{16}{19}$ (*d*) 8

**8.** What should be added to $\frac{11}{17}$ to make it $\frac{14}{17}$?

(*a*) $\frac{25}{17}$ (*b*) 3 (*c*) $\frac{25}{34}$ (*d*) $\frac{3}{17}$

**9.** $\frac{3}{4} + \frac{2}{4}$ what type of fraction is it?

(*a*) A proper fraction (*b*) An improper fraction
(*c*) A mixed fraction (*d*) A unit fraction

**10.** If $\frac{7}{12} = \frac{10 + \square}{24}$, then $\square$ =

(*a*) 3 (*b*) 4 (*c*) 12 (*d*) 6

ORANGE

# ASSIGNMENT–12

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. The fraction having numerator 10 – 8 and denominator 10 + 8 is_____ .
2. The two or more fractions having the same denominator are called_____ fractions.
3. The simplest form of the fraction $\frac{48}{64}$ is _____ .
4. $\frac{8}{24}$ is _____ than $\frac{18}{24}$.
5. $\frac{1}{31}$ is an example of a/an _____ fraction.

## B. Label True or False.

1. A proper fraction is always less than 1. .....
2. The fractions $\frac{11}{21}, \frac{11}{19}, \frac{11}{16}, \frac{11}{10}$ are in descending order. .....
3. $\frac{41}{13}$ can be expressed as $3\frac{2}{13}$. .....
4. $\frac{1}{4} + \frac{1}{4} > \frac{3}{4} - \frac{1}{4}$. .....
5. There are 16 girls in a class of 36 students. So, fraction of boys in the class is $\frac{20}{36}$. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. $\frac{3}{9} = \frac{?}{45}$ | (*a*) 4 |
| 2. $\frac{11}{14} - \frac{?}{14} = \frac{1}{2}$ | (*b*) 6 |
| 3. $6\frac{1}{4} = \frac{? \times 4 + 1}{4}$ | (*c*) 15 |
| 4. $\frac{1}{4}$ of ? = 5 | (*d*) 14 |
| 5. $\frac{21}{42} = \frac{7}{?}$ | (*e*) 20 |

## D. Utilise Your Brain.

Sayon had 3 building sets and 18 toy cars in his toy box.

At his birthday party, he received 20 gifts. He got 3 train sets, 4 building sets and 9 toy cars. The rest of the gifts are comic books. $\frac{3}{4}$ of the gifts are wrapped. $\frac{1}{5}$ of the wrapped gifts are wrapped in blue wrapping paper.

1. What fraction of the gifts are comic books?
2. What fraction of his toy cars are new?
3. What fraction of his building sets are old?
4. How many gifts are wrapped in blue wrapping paper?






# Introduction to Decimals

## Learning Objectives

**After studying this chapter, students will be able to...**

- understand decimals.
- explore tenths and hundredths.
- represent decimal numbers in the place value chart.
- represent decimal numbers in expanded form.
- convert fractions to decimals and vice versa.

# LESSON PLAN

**Suggested number of periods:** 8

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, number/flash cards, number and place chits, A-4 size sheet

**Keywords:** Decimals, Tenths and Hundredths, Decimal Place Value and Expanded Form, Decimal Fractions

**Pre-requisite knowledge:** Students must be familiar with a fraction.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Understanding Decimals; Tenths and Hundredths | Suggested extra teaching aids: Math Genius 4 pages 127–130 |
|---|---|---|

## ENGAGE

Ask the students to recall the real life situations when they could see any number written using a dot. If they are unable to say, talk about the amount of money/price of an item, height or length of an object, weight of a fruit/vegetable, temperature of a patient, etc. Also, write some numbers on the board and tell them to read the numbers. Accept the responses.

Then introduce the term 'decimal' with the help of "Get Ready" section given in the book.

**[Holistic Learning]**

## EXPLORE

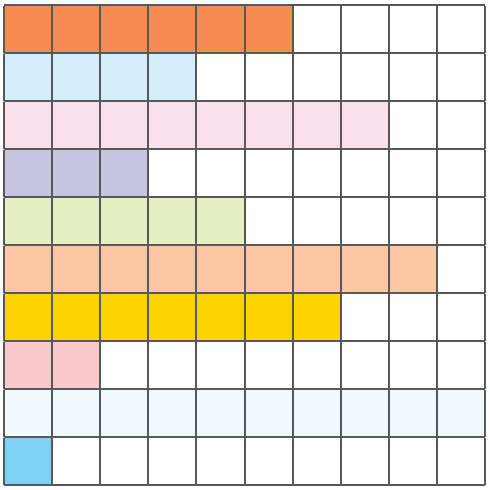
Divide the class into 10 students. Distribute paper strips to each group and tell the group members to divide the strip into 10 equal parts. Then ask them to shade few parts as per their choice and write the fraction for the shaded parts.

Instruct them to observe the numerators and denominators of the fractions. Have them know how to express such kind of fractions as decimals. For example, shade 6 out of 10.



$\frac{6}{10}$ is same as 0.6. It is read as six-tenths. We can also read 0.6 as zero point six.

Further, tell the group to put ten strips together on a sheet and count all the shaded parts. Hence, write the fraction for the shaded portions. Note that the ten strips each divided into 10 equal parts contain 100 equal divisions. So, write denominator as 100. For instance,

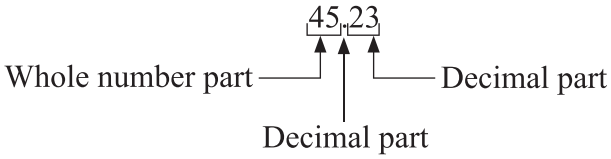


$\frac{55}{100}$ is same as 0.55. It is read as fifty-five-hundredths. We can also read 0.55 as zero point five five.

Monitor students' participation and engagement during the activities. **[Experiential Learning]**

## EXPLAIN

Refer textbook pages 128–129 and first, introduce the concept of decimals. Explain that the decimal point split a number into two parts – Whole number part (left side of the point) and decimal part (right side of the point). For example, a farmer buys a bundle of fencing wire which is 45 m 23 cm long. It can be also written as 45.23 m using decimal number 45.23. In this number, we see:

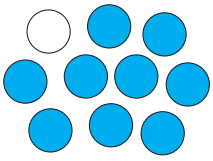



After understanding what a decimal is, deal the decimal fractions with denominators 10 and 100, *i.e.*, tenths and hundredths. **[Conceptual Understanding]**

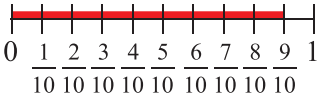
## ELABORATE

Demonstrate some visuals and show how to represent them using decimal numbers. For example,

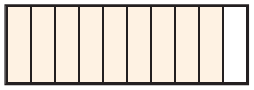
**Parts of a Group**



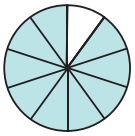
**Number Line**




**Fraction Bar**



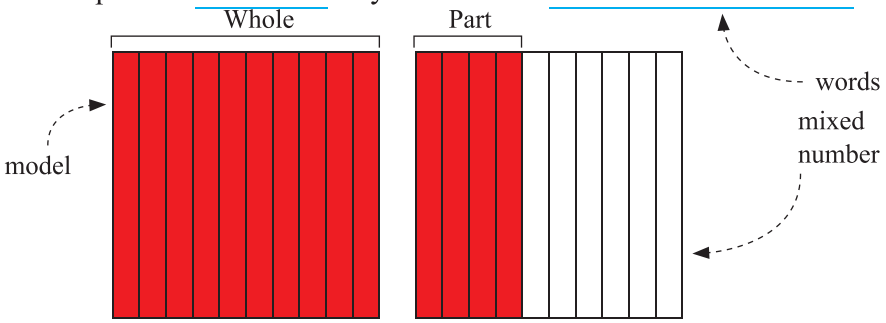
**Fraction Circle**



Each figure represents the fraction $\frac{9}{10}$ or 0.9 (nine-tenths)

Next, show a decimal greater than 1.

Each square is one whole. Jay has colored 1 whole and four-tenths red.




Write this as a mixed number. = $1\frac{4}{10}$

decimal

→ Write the decimal shown by the model.

Hint: Use a place value table to help you.

| Ones | • | Tenths |
|---|---|---|
| 1 | • | 4 |

= 1.4

Hence, motivate students to solve questions.

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 7A.

**Homework:** Ask to practice Q2 and 3 of Practice Time 7A.

## ENHANCE

Divide the class into 4–5 teams. Ask each team to do Lab Activity given in 'Learning by Doing' section on page 138.

| Periods: 3–4 | Topic: Representation of decimal Numbers on place value chart; Decimal Place Value and Expanded Form | Suggested extra teaching aids: Math Genius 4 pages 131–133 |
|---|---|---|

## ENGAGE

Start the class with an interaction. Ask the students about their height and weight. Express height in m and weight in kg. Write any decimal number on the board and ask the students to identify the places of digits. For example,

1. What digit is in the hundredths place for the number 213.05?
2. What digit is in the tenths place for the number 819.25?

   Further, tell them to identify the place of a digit and write its place value.
3. Identify the place value for each digit in the number 83.72.

| Digit | Place Value |
|---|---|
| 8 | |
| 3 | |
| 7 | |
| 2 | |

Accept their responses and reiterate about the places and place values. **[Critical Thinking]**

## EXPLORE

Divide the class into pairs. Make a place value chart on the board and instruct the students to copy it. Then, ask them to fill the digits in all the places and find place value of each digit.

| Places | Tens | Ones | Decimal point | Tenths | Hundredths |
|---|---|---|---|---|---|
| **Value of the Place** | 10 | 1 | . | $\frac{1}{10}$ | $\frac{1}{100}$ |
| **Number 1** | | | | | |
| **Number 2** | | | | | |

Hence, explore the pattern in place values and discuss about their findings. **[Collaborative Learning]**

## EXPLAIN

Make a place value chart on the board and fill the same digit in all the places. Write the place value of each digit and explain the pattern in place values and then discuss as given below.

| Places | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| **Number** | 4 | 4 | 4 | 4 |
| **Place value of each digit** | 4000 | 400 | 40 | 4 |
| **Observation** | | $\frac{1}{10}$ of $4000 = 400$ | $\frac{1}{10}$ of $400 = 40$ | $\frac{1}{10}$ of $40 = 4$ |

We see that when we move from right to left in the place value chart, the value of the places increases by 10 times.

Inversely, when we move from left to right in the place value chart, the value of the successive places decreases by 10 times. That is, the place value of the right place just after a place is one-tenth $\left(\frac{1}{10}\right)$ the place value of it. Hence, introduce what happens when we move to the right of ones place.

The place value of first right place after the ones place is tenths $\left(\frac{1}{10}\right)$ and again moving towards right of tenths place the place value will be hundredths $\left(\frac{1}{100}\right)$ and so on.

| **Places →** | **Tens** | **Ones** | **•** | **Tenths** | **Hundredths** |
|---|---|---|---|---|---|
| **Values of Places →** | **(10)** | **(1)** | • | $\left(\frac{1}{10}\right)$ | $\left(\frac{1}{100}\right)$ |

Write some numbers and demonstrate how to read and write number name using table. Next, explain about the place value and expanded form of decimal numbers. Refer textbook pages 131–133 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

Consider few decimal numbers and demonstrate how to find its place value and express it in expanded form.

| Places | Tens | Ones | Decimal point | Tenths | Hundredths |
|---|---|---|---|---|---|
| **Value of the Place** | 10 | 1 | . | $\frac{1}{10}$ | $\frac{1}{100}$ |
| **Number 1** | 3 | 8 | . | 9 | |
| **Place value of each digit** | 3 tens<br>$= 3 \times 10 = 30$ | 8 ones<br>$= 8 \times 1 = 8$ | | 9 tenths<br>$= \frac{9}{10} = 0.9$ | |
| **Expanded form** | $38.9 = 3 \text{ tens} + 8 \text{ ones} + 9 \text{ tenths}$<br>$= 3 \times 10 + 8 \times 1 + \frac{9}{10}$<br>$= 30 + 8 + 0.9$ | | | | |
| **Number 2** | 1 | 5 | . | 7 | 4 |
| **Place value of each digit** | 1 ten<br>$= 1 \times 10 = 10$ | 5 ones<br>$= 5 \times 1 = 5$ | | 7 tenths<br>$= \frac{7}{10} = 0.7$ | 4 hundredths<br>$= \frac{4}{100} = 0.04$ |
| **Expanded form** | $15.74 = 1 \text{ ten} + 5 \text{ ones} + 7 \text{ tenths} + 4 \text{ hundredths}$<br>$= 1 \times 10 + 5 \times 1 + \frac{7}{10} + \frac{4}{100}$<br>$= 10 + 5 + 0.7 + 0.04$ | | | | |

Hence, encourage students to attempt questions given under Think and Answer on page 133.

**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q3 and 5 of Practice Time 7B.

**Homework:** Ask to practice remaining questions of Practice Time 7B.

## ENHANCE

Ask students to complete the project work given on page 133.

| Periods: 5–6 | Topic: Conversion of fractions and Decimals | Suggested extra teaching aids: Math Genius 4 pages 134–135 |
|---|---|---|

## ENGAGE

Divide the class into small groups. Ask them to take a ruler and a measuring tape and find the length of some small objects like a pencil, a matchstick, an eraser, etc. and some long/tall object like table, chair, door, stick, etc. Express the measurement using decimals and convert it into fractions too. **[Collaborative Learning]**

## EXPLORE

Write some decimal fractions on the paper pieces. Put them in a bowl on the table. Ask the students to pick up a slip, write it on the board and express it in decimal form. After taking the turn of all the students, ring them which are incorrect and rectify with a brief discussion. **[Discussion-based Learning]**

## EXPLAIN

Refer textbook page 134 and explain how to convert fractions into decimals and vice versa. Demonstrate some examples on the board.

(*a*) $\frac{3}{10} = 0.3$ (*b*) $\frac{6}{100} = 0.06$ (*c*) $\frac{52}{100} = 0.52$

(*d*) $2\frac{6}{10} = 2.6$ (*d*) $35\frac{24}{100} = 35.24$ (*f*) $1\frac{7}{100} = 1.07$

A zero has been added before 6 in part (*b*) before 7 in part (*f*) to make two decimal places.

Further, explain that:

To convert a decimal into a decimal fraction, write the given decimal number as the numerator without the decimal point and in the denominator, write 1 followed by as many zeros as there are digits after the decimal point.

| | | | | | |
|---|---|---|---|---|---|
| (*a*) | $0.7 = \frac{7}{10}$ | (*b*) | $2.9 = \frac{29}{10} = 2\frac{9}{10}$ | (*c*) | $30.2 = \frac{302}{10} = 30\frac{2}{10}$ |
| (*d*) | $0.39 = \frac{39}{100}$ | (*e*) | $0.05 = \frac{5}{100}$ | (*f*) | $1.12 = \frac{12}{100} = 1\frac{12}{100}$ |

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q1(*a*), (*c*), (*h*), (*j*) and 2(*a*), (*b*), (*c*), (*f*) of Practice Time 7C.

**Homework:** Ask to practice remaining questions of Practice Time 7C.

## ENHANCE

Ask students to complete the Maths Connect given on page 137.

| Periods: 7–8 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 135–138 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Chapter Assessment, Mental Maths and Brain Sizzlers.

## ELABORATE

Discuss questions 1 to 4 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths given on page 137.

## EVALUATE

**Classwork:** Ask to practice Q1 to 4 and 10 of Chapter Assessment and Brain Sizzlers given on page 138.

**Homework:** Ask to practice Q5 to 8 of Chapter Assessment.

ORANGE

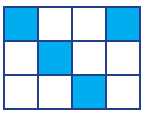
# ASSIGNMENT–13

Marks Obtained: _____

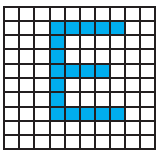
Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Which of the following shows 0.4?

(*a*)  (*b*)  (*c*)  (*d*) 

**2.** The shaded portion in the given figure can be represented as



(*a*) 18 hundredths (*b*) $\frac{18}{100}$

(*c*) 0.08 (*d*) all of these

**3.** The value of 6 tenths and 4 hundredths is

(*a*) 60.04 (*b*) 60.4 (*c*) 0.64 (*d*) 0.064

**4.** Write the decimals number for $\frac{48}{100}$

(*a*) 0.48 (*b*) 0.4 (*c*) 0.048 (*d*) 0.8

**5.** The decimal numeral 79.23 can be written as

(*a*) $79\frac{23}{100}$ (*b*) $89\frac{23}{100}$ (*c*) $29\frac{23}{100}$ (*d*) $23\frac{79}{100}$

**6.** The number name of 86.07 is

(*a*) eighty six (*b*) eighty-six point zero seven

(*c*) eighty-six point seven (*d*) eighty seven

**7.** Which of the following has the digit 1 at tens place?

(*a*) 31.2 (*b*) 0.13 (*c*) 13.0 (*d*) 1.3

**8.** The expanded form of 2.76 =

(*a*) 2 tens + 7 tenths + 6 hundredths (*b*) $2 \times 1 + \frac{7}{10} + \frac{6}{100}$

(*c*) 2 + 0.7 + 0.06 (*d*) all of these

**9.** Rename the following as hundredth 0.8

(*a*) 0.80 (*b*) 0.08 (*c*) 800 (*d*) 0.008

**10.** 1063 rupees 75 paise = _____

(*a*) ₹1063.75 (*b*) ₹10637.5 (*c*) ₹106.375 (*d*) ₹10.6375

**11.** $6 + \frac{6}{10} + \frac{8}{100}$ written in decimals as

(*a*) 66.8 (*b*) 6.68 (*c*) 0.668 (*d*) 6.78

ORANGE

# ASSIGNMENT–14

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. The fractions having denominators 10, 100, 1000, etc. are called _____ fractions.
2. The place value of 4 in the numeral 23.41 is_____ .
3. The decimal form of the fraction $\frac{481}{100}$ is _____ .
4. The numeral 143.75 can be read as _____.
5. $200 + 9 + \frac{7}{100} + \frac{3}{10}$ is the expanded form of _____.

## B. Label True or False.

1. The decimal part is always less than a whole. .....
2. The fraction $\frac{1782}{100}$ can be written as 82.17. .....
3. The place value of 2 in the numeral 2.45 is 200. .....
4. 3 tens is 100 times bigger than 3 tenths. .....
5. Twenty-one hundredths is written as 2100. .....

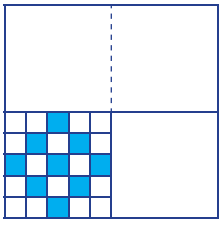
## C. Match the following.

| Column I | Column II |
|---|---|
| 1. $3\frac{17}{10}$ | (*a*) 1.4 |
| 2. 17 tens + 3 hundredths = | (*b*) 3.17 |
| 3. $7 + \frac{3}{100} + \frac{1}{10} =$ | (*c*) 170.03 |
| 4. 17 tenths + 3 tens = | (*d*) 7.13 |
| 5. $\frac{21}{10} - \frac{7}{10} =$ | (*e*) 31.7 |

## D. Utilise Your Brain.

Anmol has a square sheet. He folds it into halves and then quarters. Further, he divides its one-fourth into 25 equal parts and shades some parts as shown below.

1. Can you say what part of the sheet does he shade? Express your answer is decimal form.
2. If he makes same pattern in other parts also, what part of sheet will be left unshaded?





# 8 Geometry

## Learning Objectives

**After studying this chapter, students will be able to...**

- recall basic geometrical shapes
- measure and draw the line segment of the decimal measure
- learn different types of lines
- understand angle, open and closed figures
- describe polygons and their types
- identify and draw a circle and its parts
- know more about solids, make cube and cuboids using nets

# LESSON PLAN

**Suggested number of periods:** 16

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, flash cards, geometry box, paper cut-outs of different shapes, solid objects, tangram pieces.

**Keywords:** Geometry, Point, Line, Ray, Line Segment, Horizontal line, Vertical line, Slanting line, Angle, Open and Closed Figures, Polygons, Triangle, Quadrilateral, Square, Rectangle, Pentagon, Tangram, Circles, Solid Shapes, Cube and Cuboid, Nets of Solids.

**Pre-requisite knowledge:** Students must be familiar with plane and solid shapes.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–3 | Topics: Recap; Basics of Geometry; Measuring and Drawing a Line Segment | Suggested extra teaching aids: Math Genius 4 pages 141–144 |
|---|---|---|

## ENGAGE

Divide the class into pairs. Distribute the paper sheets to the pairs. Ask each student to make a dot using her/his sharpened pencil and identify what it represents. Let them understand it as a point. Next, ask how they will distinguish the two points marked by pair of students. Accept the responses and have them understand that we name them using capital letters, such as A, B, C, … to distinguish between them.

Then teacher will revise the learners' previous knowledge of Shapes and their properties with the help of "Get Ready" and "Let's Recall" sections given in the book. **[Experiential Learning]**

## EXPLORE

Divide the class into pairs. Instruct them to take a paper sheet and fold it to get a crease on it. Then, open the sheet and draw a line over the crease so formed. Mark arrowheads at the both end to show its extension in both directions. Tell them to identify the figure and name it by putting any two points on it. For example,




It is a line AB, denoted as $\overleftrightarrow{AB}$.

Make another crease and put arrowhead at only one end to show its extension in one direction only. Identify this figure also and name it by putting any two points on it as shown here.




It is a ray AB, denoted as $\overrightarrow{AB}$.

Similarly, make third crease and label its both ends without showing its extension in any direction. Identify this figure as shown here.




It is a line segment AB, denoted as $\overline{AB}$.

Monitor students' participation and engagement during the activities. **[Experiential Learning]**

## EXPLAIN

Explain the straight line from a point extended in one direction is called a ray and the straight line extended on both sides is called a line. Demonstrate the diagrams of a ray and a line along with their names on the board. Have them understand well that a ray AB is different from a ray BA as they have different initial points.




$\overrightarrow{AB}$ means the ray starts from A and goes towards B.




$\overrightarrow{BA}$ means the ray starts from B and goes towards A.

Next, mark Point A and Point B on the board. Sketch different paths from A to B. Discuss that the shortest way from A to B is known as a line segment. Hence, ask the students to identify it in the figure.

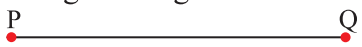



Further discuss how to measure and draw a line segment using a ruler. Refer textbook pages 142–144 for more explanation and examples. **[Conceptual Understanding]**

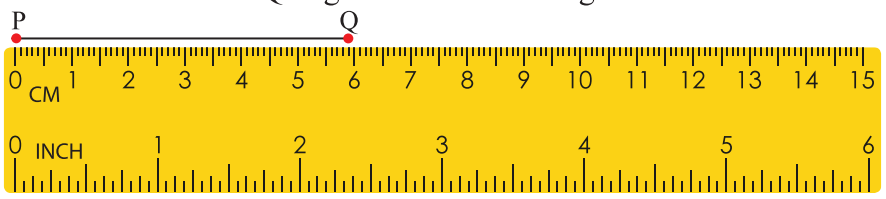
## ELABORATE

A line segment is a part of a line that goes from one point to another. Invite the students in small groups and demonstrate the procedure of measuring and drawing a line segment in decimal measure.

- Measuring the length of a line segment using a ruler

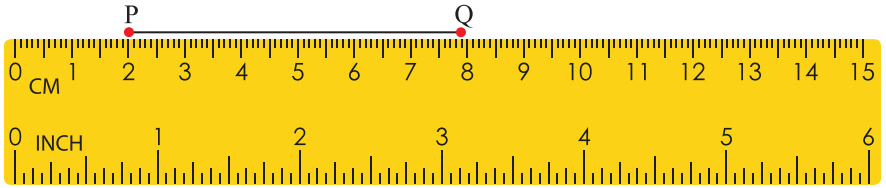



When measuring the length of a line segment, say PQ, place the end point P of the segment on the zero mark on the ruler, then see where it other end Q aligns with the markings on the ruler.




Here, Q aligns with the 9th marking after 5, the length of PQ = 5.9 cm.

Also, demonstrate how they can measure the line segment if some part of ruler from zero end is damaged.




We can see here point P aligns with 2 cm and Q aligns with 7.9 cm. In this case, the length of PQ = 7.9 – 2 = 5.9 cm, which is same as above.

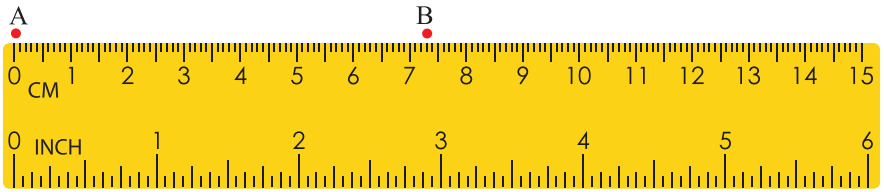
• Drawing a line segment of length 7.3 cm using a ruler

We are going to draw a line segment of length 7.3 cm using a ruler with the following steps:

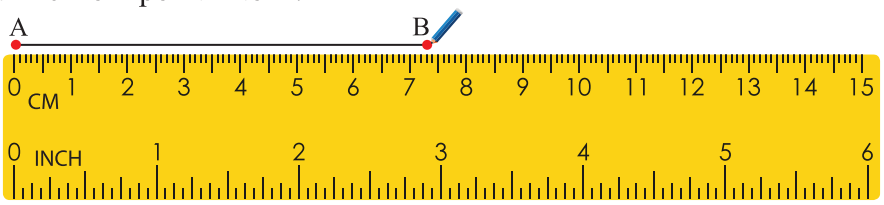
**Step 1:** Mark a point A on a plain paper.

**Step 2:** Place the '0' point of the ruler at point A.

**Step 3:** Now, mark a point B on the paper at 7.3 cm of the ruler.




**Step 4:** Now draw a line from point A to B.




Here, AB is the required line segment. 


Hence, motivate students to solve questions given in Think and Answer on page 143.

**[Conceptual Understanding]**

## EVALUATE

**Classwork:** Ask to practice Q.1, 2 and 5 of Practice Time 8A.

**Homework:** Ask to practice remaining questions of Practice Time 8A.

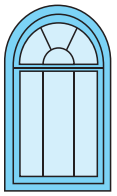
## ENHANCE

Ask students to write the similarity and difference among a line, a ray and a line segment.

| Periods: 4–5 | Topic: Types of Lines– Horizontal line Vertical line Slanting line; Angle | Suggested extra teaching aids: Math Genius 4 pages 145–146 |
|---|---|---|

## ENGAGE

Show a picture on projector or fix a large print out/poster on bulletin board and ask the students to identify different types of lines in the picture. For example, have a look at the window grill.

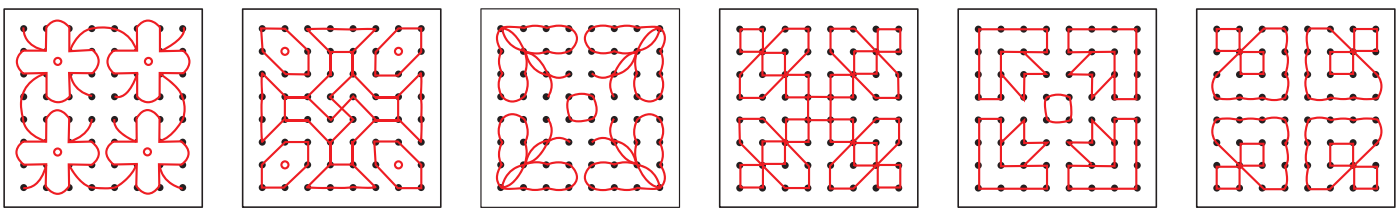


Accept their responses.

**[Experiential Learning]**

## EXPLORE

Divide the class into pairs. Distribute some dotted paper among the groups and instruct them to make any design as per their choices. After allowing a reliable time, take few sheets and introduce the types of lines, such as curved and straight lines – horizontal, vertical and slanting. Also, visualise them pair of parallel, intersecting and perpendicular lines and the angle if present in the picture.



Further, tell the students to mark these types of lines and angles in their designs.

**[Discussion-based Learning and Art Integration]**

## EXPLAIN

Start the discussion with an interaction based on any real life situations. Refer textbook pages 145–146, explain about different types of lines, such as curved and straight lines – horizontal, vertical and slanting; pair of parallel, intersecting and perpendicular lines.

After understanding the concept, deal the angle and its parts along with their examples. For checking their understanding, tell them to solve the questions embedded under Think and Answer sections on these pages.

**[Conceptual Understanding]**

## ELABORATE

For having fun, involve the students in a paper folding activity to make a paper boat, aeroplane, dog face, etc. During the procedure, interact and let them recognise the types of lines and the angle formed.

**The Bumble**

Built correctly, this bee-like beauty stays in the air for a long time.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1.** |  | **2.** |  | **3.** |  | **4.** |  |
| **5.** |  | **6.** |  | **7.** |  | **8.** |  |

1. Fold the paper in half horizontally.
2. Unfold the paper and fold each of the top corners into the center line.
3. Fold the peak down to meet the edge of the previous fold.
4. Fold the upper sides into the center line.
5. Fold the top edge $\frac{1}{2}$" (inch) away from you.
6. Fold the plane in half towards you.
7. Fold the wings down $\frac{1}{2}$" (inch) from the bottom of the plane.
8. Add double stick tape to the inside of the body. The finished plane should look like this.

**[Art Integration]**

## EVALUATE

**Classwork:** Ask to practice Q.1 of Practice Time 8B.

**Homework:** Ask to practice Q2 of Practice Time 8B.

## ENHANCE

Ask students to look around and find the things in which they observe different types of lines, such as curved and straight lines – horizontal, vertical and slanting; pair of parallel, intersecting and perpendicular lines and the angle.

| Periods: 6–8 | Topic: Open and Closed Figures; Polygons | Suggested extra teaching aids: Geo–board and rubber boards<br>Math Genius 4 pages 147–148 |
|---|---|---|

## ENGAGE

Divide the class into groups of 3–4 students. Tell each group to take a plane sheet and draw some figures without lifting the pencil from the paper. Then, ask them to

- Cross the figure which have different starting and end points.
- Tick the figure which have same starting and end points.
- Identify the figures which are made up of straight lines only.
- Shade the figures made with line segments only and without crossing themselves.

**[Critical Thinking]**

Look at their sheets and then introduce the term open and closed figures, simple closed figures and polygons with the help of some drawings on the board.

## EXPLORE

Divide the class into small groups. Provide each group a geoboard and some rubber bands. Ask them to perform the Maths Lab activity as given in 'Learning by Doing' section on page 157.

**[Experiential and Collaborative Learning]**

## EXPLAIN

Refer textbook pages 147–148 and explain what open and closed figures, simple closed figures and polygons are. Draw any polygon on the board and visualise its vertices, sides, angles, and diagonals. Motivate the students to draw any polygon in their notebook, label and write their vertices, sides, angles, and diagonals.

**[Conceptual Understanding]**

## ELABORATE

Take a square sheet and cut it into 7 pieces (tans) as marked in Activity given on page 148. You may take readymade plastic/cardboard pieces if it is available in Maths Lab. Show the pieces to the class and name the shape. Then, demonstrate how to arrange these pieces to make other polygons/objects. **[Art Integration]**

## EVALUATE

**Classwork:** Ask to practice Q.1, 2 and 5 of Practice Time 8C.

**Homework:** Ask to practice Q.3 and 4 of Practice Time 8C.

## ENHANCE

Ask students to make different types of polygons using matchsticks/toothpicks/broomsticks and recognise its sides and angles.

| Periods: 9–10 | Topic: Circles | Suggested extra teaching aids:<br>Math Genius 4 pages 149–151 |
|---|---|---|

## ENGAGE

Recall the concept of 2D shapes by asking some questions, such as:

- I am a plane shape. I have 4 sides and my opposite sides are equal in length. Who am I?
- I am a plane shape. I have 3 sides and 3 corners. Who am I?

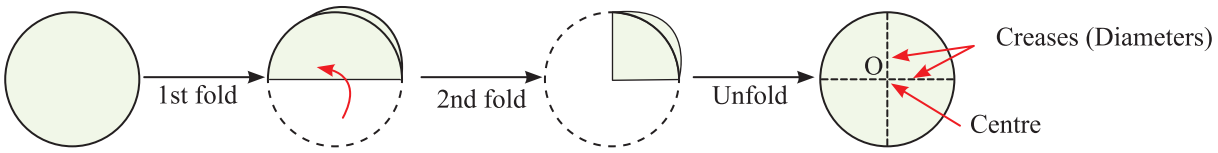
- I am a plane shape. I have no sides and corners. Who am I?
- I am a plane shape. I have 4 sides which are equal in length. Who am I?
- I am a plane shape. I have no sides and corners. I can slide but not roll. Who am I?

Accept their responses, and acknowledge them the correct answers. **[Critical Thinking]**

## EXPLORE

Students are aware about circular objects. They can trace the circle on a sheet of paper using any circular objects, such as bangle, bottle top, plate, can etc. and cut the circle using a pair of scissors.

Tell the students in advance to bring cut-outs of circles. Instruct the students to take a circle and fold it into halves. Fold it once more into halves and press to make creases. Now unfold the paper and mark the point where two creases intersect as centre O. Introduce the crease passing through the centre as the diameter of the circle, and the distance from the centre of the circle to the boundary of the circle, *i.e.*, half of the crease as a radius of the circle.




**[Experiential Learning]**

## EXPLAIN

With the help of circular cut-out or making a sketch on the board, explain the circle and its parts. Demonstrate how to draw a circle of given radius/diameters using a ruler and a compass. Also, discuss the relation between a diameter and a radius of a circle.

Refer textbook pages 149–150 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE

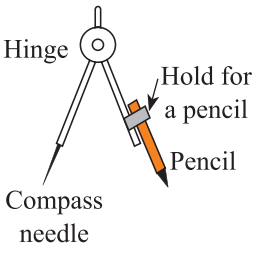
Discuss about the compass, a tool that can be used to draw a circle of exact radius.

**What is Meant by a Compass?**

The word compass literally means "encircle" which in other words is also called "to go around". A compass is an instrument that is usually a metal or plastic V-shaped drawing tool. It majorly consists of two movable arms, which are hinged together. It is used to draw circles or the parts of circles called arcs. A compass is also called a pair of compasses.

**Parts of a Compass**

As a compass has two arms, one arm holds a pencil while the other arm has a pointed end. A compass is designed for the users to grip it between their thumb and pointer finger. Keeping the same in mind, the handle length of the drawing compass is about 1.25 cm.




**Arms:** The space between the compass arms is adjustable. If we keep the arms of the compass apart, it is easier to construct a circle or arc with a greater radius. There is a clamp on one end to hold a pencil whereas, on the other end, there is a sharp point that keeps the tool steady on the drawing surface while the pencil moves.

**Hinge:** It is the handle of a compass. We hold it between our forefinger and thumb. Normally only one hand is used to draw a circle. The compass is turned by twisting between the forefinger and thumb.

**Compass Needle:** It is the point that is placed at the centre of the circle. The pencil tip is turned around this point. The gap between the compass needle and the pencil tip is the radius of the circle. It is set using a ruler. The gap can be changed by changing the angle between the arms of the compass.

**Hold for a Pencil:** A sharp pencil is clamped tightly at this place. The tip of the pencil is aligned to the compass needle by bringing the tip of the pencil and compass needle closer. Once, their tips have matched, the compass can be used to construct circles.

**Drawing with a Compass**

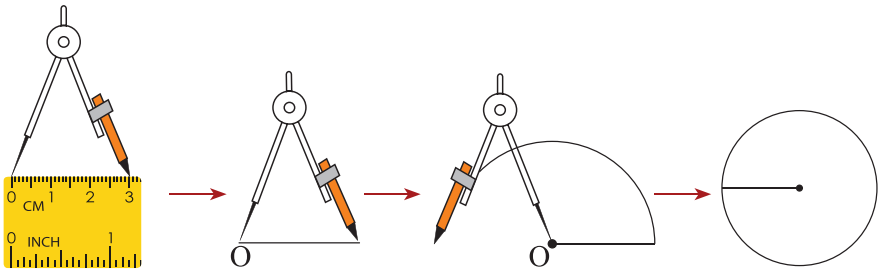
It is possible to construct circles, arcs, bisect lines, angle bisectors and determine mid-points using a compass. The steps to draw a circle using a compass are:

**Step 1:** Open the arms as per the measurement of radius for the circle to be drawn.

**Step 2:** We place the sharp point of the compass at the centre of the intended circle.

**Step 3:** Press down the needle, turn the knob at the top of the compass to draw a circle, and drag the pencil around the centre to draw the curve.

**Step 4:** A circle is drawn. You can mark its centre point, radius, or diameter if required.




**Step 1** **Step 2** **Step 3** **Step 4**

**Tips to Remember**

- Just make sure that the hinge at the top of the compass is tightened so that it does not slip.
- Do not apply any pressure to the pencil but tighten the hold for the pencil else the width of the circle will get changed.
- It should be taken care that the pencil lead is aligned with the compass's needle.
- A drawing compass can draw circles on any specific material (wood, metal, plastic, etc.). All you have to do is, put the needle on the surface/ page, on which the circle has to be drawn, fix it and rotate the other arm around while keeping the same angle on the hinge.
  Hence, motivate the students to practice themselves.

## EVALUATE

**Classwork:** Ask to practice Q1, 4 and 6 of Practice Time 8D.

**Homework:** Ask to practice remaining questions of Practice Time 8D.

## ENHANCE

Ask students to explore about the paths followed by planets to go around the Sun in solar system.

**[Cross-curricular Learning]**

| Periods: 11–13 | Topic: Solid Shapes; Nets of Solid | Suggested extra teaching aids: Math Genius 4 pages 151–153 |
|---|---|---|

## ENGAGE

Students are familiar with the solid shapes, such as cube, cuboid, sphere, cylinder, cone. Write few questions on the board and ask them to write its answer in their notebooks.

- Give two examples of each solid shape.
- Why solids are called 3-dimensional (3D) shapes?
- Draw the sketch of five basic 3D shape and write their names.

Accept their responses, and reinforce the concept by writing the answers on the board.

**[Experiential Learning]**

## EXPLORE

Divide the class into small groups. Provide them the wooden/plastic blocks of basic solid shapes. Instruct them to explore about the nature of surfaces each solid has. Then count the number of faces, edges and vertices and hence list them in a table. Hence, compare the table made by other group and discuss if any differences occur.

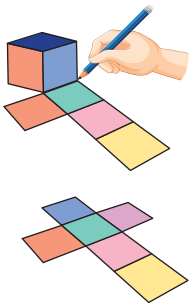
**[Collaborative Learning]**

## EXPLAIN

Bring some objects in the class and explain about their shapes. Introduce the term, face, edge and vertex visualising it in any object. Talk about the number of faces, edges and vertices of different types of 3d shapes. Hence, deal the term 'net of a solid' by opening a shoebox or any carton. Further, show them how to make solid shape by folding the net of a cube and cuboid.

Refer textbook pages 151–153 for more explanation and examples. **[Conceptual Understanding]**

## ELABORATE



Take a cubical block or a big die, trace its all faces on a paper. Note that turn face and keep it adjacent to the previous outline so that you can get its net.

Hence, demonstrate to fold the net obtained and make a cube. Next, remove its one face and show formation of an open cube and then a hollow cube by removing one more face.



## EVALUATE

**Classwork:** Ask to practice Q2 and 4 of Practice Time 8E.

**Homework:** Ask to practice remaining questions of Practice Time 8E.

## ENHANCE

Ask students to explore the nets of cubes and cuboid. They can bring the nets of small boxes used to pack sweets, cake, etc. and practice to make the box by proper folding and fixing its flaps.

| Periods: 14–16 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 154–157 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify the doubts or queries, if any they have.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Chapter Assessment, Brain Sizzlers, Mental Maths and Maths Fun.

## ELABORATE

Discuss questions 1 to 4 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Brain Sizzlers and Mental Maths given on page 156.

## EVALUATE

**Classwork:** Ask to practice Q1 to 4 of Chapter Assessment and Brain Sizzlers given on page 156.

**Homework:** Ask to practice Q5 to 8 of Chapter Assessment.

## ENHANCE

Ask students to enjoy the activity as suggested in the section of Maths Fun on page 157.

ORANGE

# ASSIGNMENT–15

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

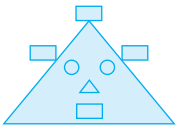
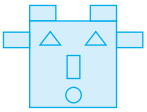
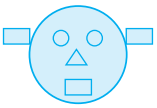
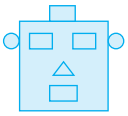
**1.** Which of the following can we use to trace a square?

(*a*) Cube (*b*) Coins (*c*) Ball (*d*) Notebook

**2.** Radius is _____ the diameter of the circle.

(*a*) Quarter (*b*) Half (*c*) One–third (*d*) Double

**3.** Which of the following figures contains exactly three rectangles?

(*a*)  (*b*)  (*c*)  (*d*) 

**4.** If the radius of a circle is 2.5 cm, its diameter is _____.

(*a*) 5 cm (*b*) 4 cm (*c*) 7.5 cm (*d*) 1.25 cm

**5.** How many lines can be drawn through two given points?

(*a*) Zero (*b*) One (*c*) Two (*d*) Infinitely many

**6.** What is the other name of a rectangle with four equal sides?

(*a*) Square (*b*) Parallelogram (*c*) Triangle (*d*) Rhombus

**7.** Which of the following is a simple closed curve but not a polygon?

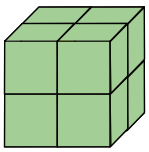
(*a*) Triangle (*b*) Circle (*c*) Cone (*d*) Rectangle

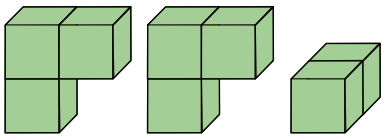
**8.** Which of the following points is not in line with the others?

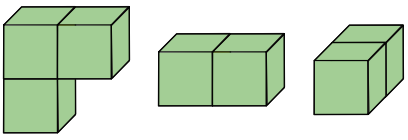


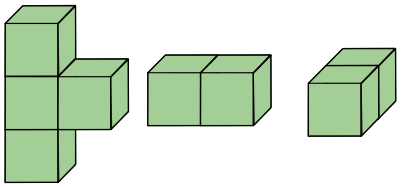

(*a*) R (*b*) Q (*c*) P (*d*) S

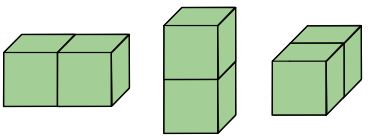
**9.** The cube in the figure was cut and separated into three pieces. Which of the following groups could be the three pieces of the cube?



(*a*) 

(*b*) 

(*c*) 

(*d*) 

**10.** How many line segments are there in the given figure?



(*a*) 8 (*b*) 9 (*c*) 12 (*d*) 10

ORANGE

# ASSIGNMENT–16

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. A line segment has ..... end points.
2. In an angle, ..... is the place where its two arms meet.
3. A ..... is a chord that passes through the centre of the circle.
4. The line segment that connects the centre to a point on the circle is called .....
5. The line segment joining two non-consecutive vertices of a polygon is called .....

## B. Label True or False.

1. A cylinder has 3 faces, 2 edges and 1 vertex. .....
2. A simple closed curve is known as a polygon. .....
3. A line is a collection of points that extends infinitely in both the directions. .....
4. A bowl is an example of a hemisphere. .....
5. A circle has neither side nor vertex. .....

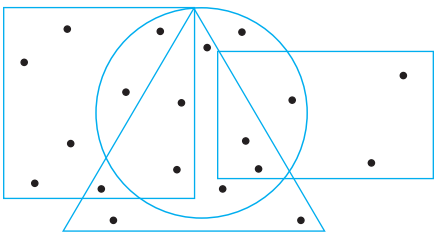
## C. Match the following.

| Column I | Column II |
|---|---|
| 1. A polygon with three sides | (*a*) Parallelogram |
| 2. The shape of a funnel | (*b*) Cube |
| 3. A simple closed curve without side and corner | (*c*) Cone |
| 4. A quadrilateral with opposite sides equal | (*d*) Triangle |
| 5. A solid with six square faces | (*e*) Oval |

## D. Utilise Your Brain.

Sugandha made the four plane shapes and mark some points in their interior regions as shown below.

Look at the figure and find how many points are there in the interior of:



1. the circle.
2. the square or rectangle but not in the circle.
3. the triangle only.



# 9 Symmetry and Patterns

## Learning Objectives

**After studying this chapter, students will be able to...**

- recognise the line(s) of symmetry in the objects around us and in various geometrical figures
- recognise the mirror image or reflection
- understand and create patterns of figures and numbers
- make patterns based on multiples of 9 and know about casting out 9
- understand the concept of tessellation
- understand the coding and decoding of messages

## LESSON PLAN

**Suggested number of periods:** 14

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, some symmetrical/asymmetrical cut–outs, square/isometic dotted paper, mirror, colours, scissors, A-4 size sheet, glue.

**Keywords:** Symmetry, asymmetry, line of symmetry, Mirror Image (reflection), Patterns, Tessellations (tiling), Coding and Decoding

**Pre-requisite knowledge:** Students must be familiar with symmetry and pattern of shapes and colours.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–4 | Topics: Recap; Symmetry; Mirror Image (reflection) | Suggested extra teaching aids: Picture of monuments Math Genius 4 pages 158–162 |
|---|---|---|

### ENGAGE

Start the class with discussion about the beauty of some monuments. Talk about their constructions. Ask some questions, such as:

Why they look so beautiful?

Would you like to be an architect in future?

What will an architect do? and so on.

Accept the responses and introduce the term 'Symmetry'.

Then teacher will revise the learners' previous knowledge of Symmetry and Patterns with the help of "Get Ready" and "Let's Recall" sections given in the book. **[Cross-curricular Learning]**

## EXPLORE

Divide the class into pairs. Distribute each group a sheet of paper. Tell one member to draw the figure of any item that he/she can divide into halves for sharing it equally with his/her partner. Instruct another member to draw an item which cannot be shared equally between the two members.

Monitor students' participation and engagement during the activities. After some time, invite the groups one by one to show their drawings and explain about it to the whole class.

**[Holistic Learning]**

## EXPLAIN

Start the class with an interaction regarding presence of symmetry in nature and surrounding. Explain the symmetry and asymmetry with respect to the sketches made by students in above activity. Then, draw some symmetrical shapes/figures/letters on the board and show their line or axis of symmetry. Also discuss if any figure has more than one line of symmetry.

You can conduct an activity as explained on the page 160. Hence, motivate students to solve questions given in Think and Answer.

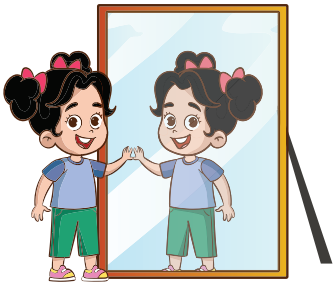
Further discuss about mirror image or reflection. Refer textbook page 161 for more explanation and examples.

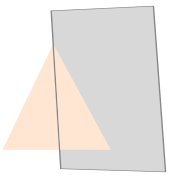
**[Conceptual Understanding]**

## ELABORATE

Bring a plane mirror in the class demonstrate the image formation of an object. Invite the students randomly in front of the mirror, tell them to do any movement of their hands and observe the difference in their images. Hence explain about the lateral inversion in image formation.

Further, draw only half of a figure and show how it looks complete by placing the mirror alongside.





**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1, 2 of Practice Time 9A and Q2 of Practice Time 9B.

**Homework:** Ask to practice remaining questions of Practice Time 9A and 9B.

## ENHANCE

Discuss the context given in Knowledge Desk on page 161. Ask students to write a message using reflection of letters, then show it to your friend and ask him/her to read the message. If unable, ask him/her to use a mirror for reading it correctly.

| Periods: 5–8 | Topic: Patterns | Suggested extra teaching aids: Math Genius 4 pages 162–165 |
|---|---|---|

## ENGAGE

Show some pictures having different kind of patterns on the projector or fix a large poster on bulletin board and ask the students to differentiate between two or identify each one. For example, feathers of a peacock, body of a zebra/dear/snake, fabrics, etc. Also, ask them to look around and find if any pattern is there on window grill, gate, boundary, fencing of garden, etc. Accept their responses. **[Experiential Learning]**

## EXPLORE

Divide the class into groups of 3–4 students. Tell them to open a drawing sheet and choose any shape/design and colour as per their choices. Draw their figures in order to make a pattern. Create at least three different patterns. Walk around the class and interact with students during activity.

You can also tell them to write few steps of any number/letter pattern on a sheet and exchange with other member. Hence, other one will try to write next steps to continue it.

10, 20, 30, 40, ....., ....., ....., .....

3, 5, 8, 12, 17, ....., ....., ....., .....

10, 20, 35, 55, 80, ....., ....., ....., .....

2, 2, 3, 3, 4, 4, 4, 4, ....., ....., ....., .....

1, 3, 6, 8, 11, 13, 16, ....., ....., ....., .....,

**[Creative Thinking and Art Integration]**

## EXPLAIN

Start the discussion with an interaction based on any real life situations. Refer textbook pages 162–165, explain different types of patterns, such as shape pattern, colour pattern, number pattern, patterns based on mathematical operations, *i.e.*, addition, subtraction, multiplication and division.

| | | |
|---|---|---|
| $9 + 1 = 10$ | $111 \div 3 = 37$ | $5 \times 5 = 25$ |
| $90 + 10 = 100$ | $222 \div 6 = 37$ | $55 \times 5 = 275$ |
| $900 + 100 = 1000$ | $333 \div 9 = 37$ | $555 \times 5 = 2775$ |
| $9000 + 1000 =$ _____ | $444 \div 12 = 37$ | $5555 \times 5 = 27775$ |
| $90000 + 10000 =$ _____ | $555 \div 15 =$ _____ | _____ |
| $90000 + 100000 =$ _____ | $666 \div 18 =$ _____ | _____ |

After dealing the concept, check their understanding by instruct them to solve the questions embedded under Quick Check and Think and Answer sections on these pages. **[Conceptual Understanding]**

## ELABORATE

For having fun, involve the students in a paper folding, cutting and pasting activity as suggested in the Learning by Doing section on page 174. During the procedure, interact and help the student/group who face difficulties. They can also take some objects like leaves, flowers, etc. to make patterns and decorate the classroom.

**[Art Integration]**

## EVALUATE

**Classwork:** Ask to practice Q.1 and 4 of Practice Time 9C.

**Homework:** Ask to practice Q.2, 3 of Practice Time 9C.

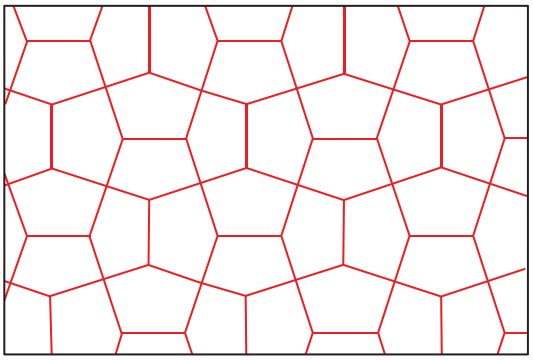
## ENHANCE

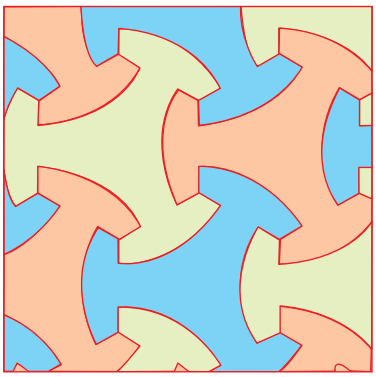
Ask students to make a rangoli pattern at home, click it using parents' mobile phone and share with friends/ media groups on social sites.

| Periods: 9–11 | Topic: Tessellations; Coding and Decoding | Suggested extra teaching aids: Printouts of tiling pattern, dotted paper<br>Math Genius! 4 pages 166–168 |
|---|---|---|

## ENGAGE

Interact with the students about the tiling pattern they have seen at their home on walls, floors, or on footpaths in the way coming to school, etc. Show some patterns in the class and tell to draw the figure/shape of tiles which are repeating there.



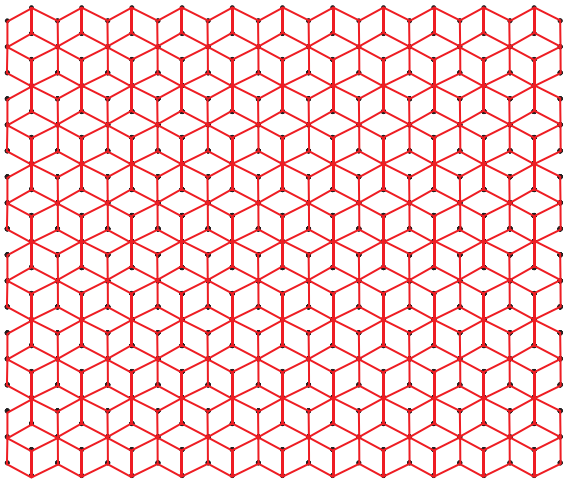


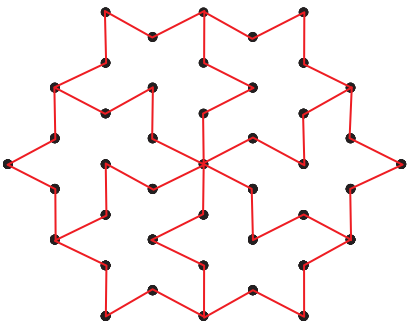
**[Critical Thinking]**

Look at their sheets and then draw the correct tile on the board. Also you can draw some shapes and ask them to tell whether the shape can tessellate or not. Accept their responses and justify logically.

## EXPLORE

Divide the class into small groups. Provide each group a dotted sheet. Ask them to make a tilling pattern by choosing the design of tile(s) which they would like to use in their dream house. For example,





**[Experiential and Collaborative Learning]**

## EXPLAIN

Refer textbook pages 166–168 and explain the term tilling or tessellation. Use some simple polygons to make a tilling pattern on the board. Have the students understand which tile can tessellate and which will leave a gap between them if they try to use. Further, encourage them to make the tilling patters on square or isometric dotted papers.

After understanding this concept, move on to the next topic and explain how to code and decode a message. For example, let us use the order number of letters in English alphabet to code the message.

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |

WE LOVE OUR INDIA! → 23 5 12 15 22 5 15 21 18 9 14 4 9 1!

**[Conceptual Understanding]**

## ELABORATE

To strengthen the concept of coding and decoding, write some symbols as codes corresponding to few letters on the board. For example,

| A | E | P | I | K | T | L | O | B | R | V | S |
|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | @ | # | $ | % | ^ | & | Ω | π | © | € | ¥ |

Then, write something using codes and tell the students to decode the message.

π £ ¥ % @ ^ π £ & & → B A S K E T B A L L

$ & Ω € @ ¥ # Ω © ^ ¥ → _____

Encourage them to solve the questions given in Think and Answer sections on pages 167 and 169.

**[Critical Thinking]**

## EVALUATE

**Classwork:** Ask to practice Q1, 2 of Practice Time 9D and Q2 of Practice Time 9E.

**Homework:** Ask to practice Q3 of Practice Time 9D and Q.1 of Practice Time 9E.

## ENHANCE

Ask students to think their own codes, write a message and ask their friend or siblings to decode it.

| Periods: 12–14 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 169–173 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths Brain Sizzlers and Chapter Assessment.

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths on page 169.

## EVALUATE

**Classwork:** Ask to practice Q1 to 5 of Chapter Assessment and Brain Sizzlers given on page 170.

**Homework:** Ask to practice Q6 to 11 of Chapter Assessment.

ORANGE

# ASSIGNMENT–17

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** How many lines of symmetry does the letter "X" have?



(*a*) 0 (*b*) 1 (*c*) 2 (*d*) 3

**2.** How many lines of symmetry does this shape have?

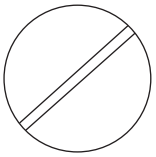
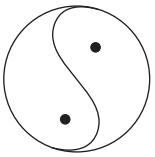
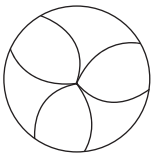
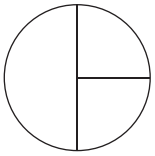


(*a*) 2 (*b*) 3 (*c*) 4 (*d*) 6

**3.** How many lines of symmetry does a rectangle have?

(*a*) 2 (*b*) 4 (*c*) 6 (*d*) 8

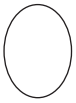
**4.** Which of the following is an asymmetrical figure?

(*a*)  (*b*)  (*c*)  (*d*) 

**5.** What will come next in the pattern? 1 2 4 7 11 _____

(*a*) 14 (*b*) 15 (*c*) 16 (*d*) 17

**6.** Which of these shapes can a title have?

(*a*)  (*b*)  (*c*)  (*d*) 

**7.** Which of the following has been reflected?

(*a*) R R (*b*) M M (*c*) N N (*d*) S S

**8.** Which of the following numbers will replace the '?' mark?

| | | | |
|---|---|---|---|
| | 8 | 4 | |
| 11 | 88 | 20 | 5 |
| 9 | ? | 150 | 10 |
| | 7 | 15 | |

(*a*) 16 (*b*) 63 (*c*) 60 (*d*) 130

ORANGE

# ASSIGNMENT–18

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

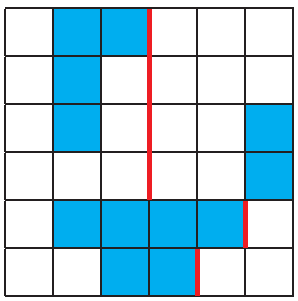
1. A circle has ..... lines of symmetry.
2. 5, 15, 35, 75, 155, .....
3. The ..... of a rhombus is its line of symmetry.
4. 1, 8, 27, 64, 125, .....
5. A triangle can have atmost ..... lines of symmetry.

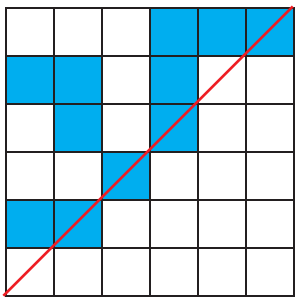
## B. Match the following.

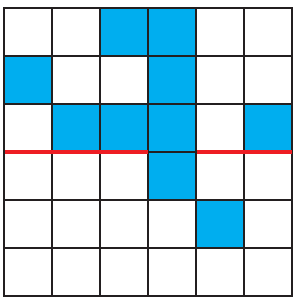
| Column I | Column II |
|---|---|
| 1.  | (*a*)  |
| 2.  | (*b*)  |
| 3.  | (*c*)  |
| 4.  | (*d*)  |
| 5.  | (*e*)  |

## C. Utilise Your Brain.

At least how many blocks would you shade so that the given line to be a line of symmetry of the whole figure?

1. 

2. 

3. 



# 10 Measurement

## Learning Objectives

**After studying this chapter, students will be able to...**

- understand metric system and different units of metric measures
- convert measuring units of lengths in bigger to smaller units and its vice versa
- add and subtract measuring units of length
- convert measuring units of weight in bigger to smaller units and its vice versa
- add and subtract measuring units of weight
- convert measuring units of capacity in bigger to smaller units and its vice versa
- add and subtract measuring units of capacity

# LESSON PLAN

**Suggested number of periods:** 16

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, ruler/meter rod/ measuring tape, weighing machine, weights and balance, measuring jars/cylinders, etc.

**Keywords:** Metric System, Length, Weight (mass), Capacity, Volume, Units of Measurement–Metre, Centimetre, Kilometre, Kilogram, Gram, Litre, Millilitre, Conversion.

**Pre-requisite knowledge:** Students must be familiar with standard units of measuring length, weight (mass) and capacity; conversion of units; addition and subtraction of simple measurements.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–3 | Topics: Recap; Metric System; Measuring Length | Suggested extra teaching aids: Math Genius 4 pages 176–180 |
|---|---|---|

## ENGAGE

Start the topic with 'why do we need to measure something?'. Before explaining it, ask some questions, such as:

What are the sizes of your shoes, shirt, pant, and so on? Can your elders or parents wear it?

Can you bring your lunch in a cooking pot or in a spoon? Why?

Why do you not bring drinking water in a bucket or a tub?

Acknowledge them that without measurement we cannot imagine our life. Suppose you are ill and doctor advices to take medicine. Think what will happen if you drink a whole bottle of medicine at a time. After having the students understand the importance of measurement, introduce metric system. **[Holistic Learning]**

Then teacher will revise the learners' previous knowledge of measurement with the help of "Get Ready" and "Let's Recall" sections given in the book.

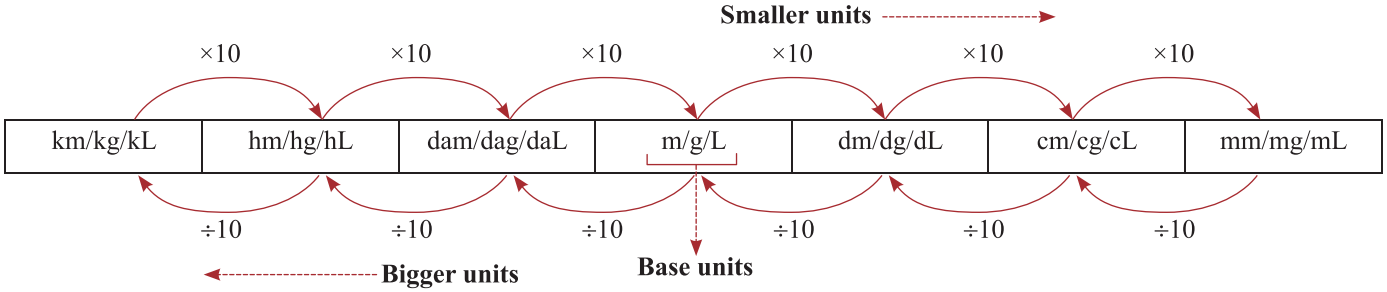
## EXPLORE

Divide the class into pairs. Tell them to look around in the class or remind the articles available at their homes and make a list of things those can be measured in cm and those in m. Also, instruct them to guess their sizes and write it. After sometime, call a group, give a tailor's tape or measuring rod and ask them to verify the measurement of the things present in the classroom. Similarly, invite other groups and give the chance one by one.

Monitor students' participation and engagement during the activities. **[Experiential Learning]**

## EXPLAIN

Start the class with a recall of base (standard) units m, g and L used for measuring length, weight (mass) and capacity (volume) respectively. Then explain about the derived units by putting the prefixes, such as kilo-, hecto-, deca-, deci-, centi- and milli- which are used alongwith the base unit.




Thereafter, refer textbook pages 177–178 to have them learn more about the measurement of length. Further, discuss about the inter-conversion of different units of length dealing with some examples on the board. Let them understand that:

- To convert a bigger unit into a smaller unit, we need to multiply the bigger unit.

For example, 7 m = 7 × 100 cm = 700 cm (since, 1 m = 100 cm)

14 km 185 m = 14 km + 185 m = (14 × 1000) m + 185 m (since, 1 km = 1000 m)

= 14000 m + 185 m = 14185 m

- To convert a smaller unit into a bigger unit, we need to divide the smaller unit.

For example, 3000 m = (3000 ÷ 1000) km = 3 km (since, 1000 m = 1 km)

65 mm = 60 mm + 5 mm = (60 ÷ 10) cm + 5 mm = 6 cm 5 mm (since, 10 mm = 1 cm)

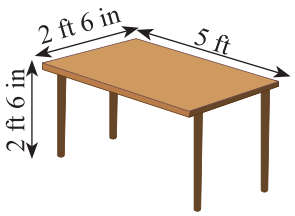
**[Conceptual Understanding]**

## ELABORATE



After understanding about the metric units of length, ask the students if they have heard the terms inch, foot, yard, mile, etc. Reiterate that these are other units commonly used for measuring length. You can show a picture of carpenter measuring the size of door and window in feet and inches.

Give some more real life examples and then demonstrate how to convert the units of given measurement. Take a 15 cm or 30 cm ruler and show the marking of inches on opposite edge. Further, explain how to measure the dimensions of a table or desk using it. Hence, convert the units.




Hence, motivate students to solve questions given in Quick Check and Think and Answer on page 179. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q5, 6 and 8 of Practice Time 10A.

**Homework:** Ask to practice remaining questions of Practice Time 10A.

## ENHANCE

Ask students to grow a plant in a pot or kitchen garden. Care it regularly and keep the record of its growth for 1 week, 2 weeks, 1 month, 2 months, etc. Also, visit your neighbours' or friends' garden and compare your plant's growth to theirs. **[Holistic Learning]**

| Periods: 4–5 | Topic: Addition and Subtraction of Length | Suggested extra teaching aids: Math Genius 4 pages 180–182 |
|---|---|---|

## ENGAGE

Go to the playground along with the class and have them realise how long a m, dam, hm or km as well as dm, cm and mm by measuring the distance between two places/length of an object actually. You can take the help of physical teacher. Instruct some students to stand at the corner of basketball/tennis/badminton court, or at the boundary of football/hockey/cricket field or somewhere else and ask other students to guess the distance between any two students. Hence, verify it by measuring. Find the difference between actual and estimated length. Accept their responses. You can also organise a 100-m race among them, or throwing a ball as far as possible, and so on. **[Cross-curricular and Holistic Learning]**

## EXPLORE

Tell the students in advance to bring ribbons, with their vibrant colours and varying lengths. Divide the class in small groups, ask them to arrange their ribbons from the shortest to the longest. Once arranged, they will use a ruler or tape to measure and determine the exact length of each ribbon. Hence instruct them to calculate the total length of their ribbons, and then compare from other groups and find how much longer or shorter their total length is. Accept their responses. **[Collaborative and Experiential Learning]**

## EXPLAIN

Start the class with an interaction based on a real life situation, such as a journey or travel. Ask where they have gone and which modes of transport they have used. Assume the distances they travelled and explain how to add or subtract them. Refer textbook pages 180–181 for more explanation and examples.

**[Conceptual Understanding]**

## ELABORATE

Write some questions on the board and demonstrate how to add or subtract the measurements of length. For example,

(*a*)

| | km | | m | | | cm | |
|---|---|---|---|---|---|---|---|
| | | (1) | (1) | (1) | | | |
| | 1 | 3 | 9 | 7 | 5 | 3 | 2 |
| + | | 5 | 6 | 8 | 8 | 5 | 5 |
| | 1 | 9 | 6 | 6 | 3 | 8 | 7 |

Thus, 13 km 975 m 32 cm + 5 km 688 m 55 cm
= 19 km 663 m 87 cm

(*b*)

| | m | | cm | | mm |
|---|---|---|---|---|---|
| | | (17) | (11) | | |
| | | ~~(7)~~ | ~~(1)~~ | (15) | |
| | ~~1~~ | ~~8~~ | ~~2~~ | ~~5~~ | 9 |
| – | | 9 | 7 | 6 | 4 |
| | | 8 | 4 | 9 | 5 |

Thus, 18 m 25 cm 9 mm – 9 m 76 cm 4 mm
= 8 m 49 cm 5 mm

## EVALUATE

**Classwork:** Ask to practice Q3 and 6 of Practice Time 10B.

**Homework:** Ask to practice Q1, 2, 4 and 5 of Practice Time 10B.

## ENHANCE

Ask students to check the measurement of length marked on the pack when they buy a cello-tape, wrapping foil, or string/thread. What length of it is left after its use first time. Also, it can be asked the students to find how long string they use to fly a kite or what length is left with them if their kite is cut by someone.

| Periods: 6–7 | Topic: Measuring weight (Mass) | Suggested extra teaching aids: Math Genius 4 pages 182–184 |
|---|---|---|

## ENGAGE

Students are aware with the units, such as gram (g) and kilogram (kg) which are used to measure the weight (mass) of objects. Ask the students to look around and list some objects which can be measured in g and kg. Write some questions on the board and instruct the students to write their answers.

Guess about how much heavy is your bag.

What is your weight? Can you write the answer in grams?

Who is heaviest in your family?

Name the heaviest animal found on land, and on earth. **[Logical Thinking]**

## EXPLORE

Is bigger thing always heavier than the smaller thing? To explore the answer of this question, students can be given an opportunity for doing an experiment.



Divide the class into small groups. Put a digital weighing machine, string, measuring tape and objects of different kind and sizes. In this activity, groups are given strings to wrap around various objects, such as an apple, a ball, a balloon, an eraser, a water bottle, etc. Once wrapped, they can compare and measure the lengths of these strings. Next, they will measure their weights and compare. It's a tactile way of understanding how different objects have different sizes and weights.

Monitor students' participation and engagement during the activities. Guide them if they need help.

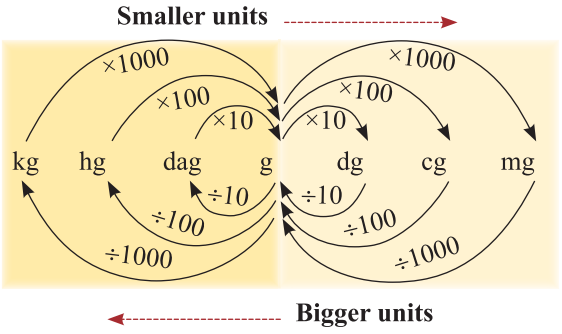
**[Experiential Learning]**

## EXPLAIN

Refer textbook pages 182–184, explain about the derived units of weight by putting the prefixes, kilo-, hecto-, deca-, deci-, centi- and milli- alongwith the base unit gram (g).

Further, discuss about the inter-conversion of different units of weight dealing with some examples on the board. Let them understand that:

- To convert a bigger unit into a smaller unit, we need to multiply the bigger unit.




For example, Let us convert 9 g 8 dg 7 cg 6 mg into mg.

9 g 8 dg 7 cg 6 mg = (9 × 1000) mg + (8 × 100) mg + (7 × 10) mg + 6 mg

(since, 1 g = 1000 mg, 1 dg = 100 mg and 1 cg = 10 mg)

= 9000 mg + 800 mg + 70 mg + 6 mg = 9876 mg

• To convert a smaller unit into a bigger unit, we need to divide the smaller unit.

For example, 8238 g = 8000 g + 238 g = (8000 ÷ 1000) kg + 238 g = 8 kg 238 g (since, 1000 g = 1 kg)

**[Conceptual Understanding]**

## ELABORATE



After understanding about the metric units of weight, ask the students if they have heard the terms quintal, ton, *mann*, etc.. Reiterate that quintals and tons are other units commonly used for measuring heavy weights. You can show a picture of a truck, tractor, freight train loaded with goods and commodities.

Give some more real life examples and then demonstrate how to convert the units of given measurement.

Hence, motivate students to solve questions given in the book. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1 and 4 of Practice Time 10C and Think and Answer on page 179.

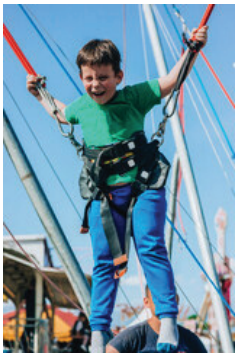
**Homework:** Ask to practice remaining questions of Practice Time 10C.

## ENHANCE

Ask students to go for shopping with their elders or parents. Look how seller weighs fruits, vegetables and other household items. Help their parents/elders in carrying the things. **[Holistic Learning]**

| Periods: 8–9 | Topic: Addition and Subtraction of Weight | Suggested extra teaching aids: Math Genius 4 pages 185–186 |
|---|---|---|

## ENGAGE



Talk about any real life situation where the persons having a particular range of weight are allowed. For example, this bungee trampoline allows the children only when they have their weights above 30 kg but not more than 40 kg.

Ask who are eligible to have enjoy on it. Check their weights on a weighing machine and categorise in three groups–Students who are less than 30 kg, between 30 kg and 40 kg and above 40 kg. Further, ask the students of first and third groups to find how much lighter/heavier they are from the given range. **[Collaborative and Experiential Learning]**

## EXPLORE

Write the name of some sports on the board and ask the students to choose the one which they like most. Then, write the weight/mass of the sports items which are used to play. For example,

Cricket ball: 160–163 g — Cricket bat: 1 kg 200 g–1 kg 400 g

Tennis ball: 56–60 g — Tennis racket: 280–310 g

Hockey ball: 156–163 g — Hockey stick: less than 735 g

Next tell them to find total weight of any two–three items, or difference between the weights of two items. Accept their responses. **[Cross-curricular and Holistic Learning]**

## EXPLAIN

Start the class with an interaction based on a real life situation, such as a home-made recipe. Ask which item their mother bake the delicious and crispy. Talk about the ingredients used in it and explain how to add or subtract their weights. Refer textbook pages 185–186 for more explanation and examples.

**[Conceptual Understanding]**

## ELABORATE

Write some questions on the board and demonstrate how to add or subtract the measurements of weight. For example,

(*a*)

| | kg | | g | | |
|---|---|---|---|---|---|
| | (1) | (1) | (1) | (1) | |
| | 3 | 8 | 2 | 7 | 8 |
| + | 5 | 6 | 7 | 8 | 3 |
| | 9 | 5 | 0 | 6 | 1 |

Thus, 38 kg 278 g + 56 kg 783 g = 95 kg 61 g

(*b*)

| | kg | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | | | | (9) | (9) | (9) | (11) | |
| | | (15) | (5) | (10) | (10) | (10) | (1) | (10) |
| | ~~1~~ | ~~5~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~2~~ | ~~0~~ |
| – | | 6 | 4 | 8 | 6 | 8 | 6 | 5 |
| | | 9 | 1 | 1 | 3 | 1 | 5 | 5 |

Thus, 15 kg 600 g 20 mg – 6 kg 486 g 865 mg
= 9 kg 113 g 155 mg

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 10D.

**Homework:** Ask to practice Q2 and 3 of Practice Time 10D.

## ENHANCE

Ask students to check the weight marked on the pack of biscuits, cheese, chips, etc. when they buy it. Weigh them on a weighing machine and assure the product has right weight.

| Periods: 10–11 | Topic: Measuring Capacity (Volume) | Suggested extra teaching aids: Math Genius 4 pages 187–188 |
|---|---|---|

## ENGAGE

Students are aware with the units, such as Litre (L) and Millilitre (mL) which are used to measure the Capacity (Volume) of a container. Ask the students to make a list of some containers whose capacity can be measured in L and mL. Write some questions on the board and instruct the students to write their answers.

What is the capacity of your water bottle?

Guess about how much water have you drunk today from your bottle.

What amount of water did you use for having bath this morning?

How much milk is consumed in your family daily?

Do you know which unit is used to express the capacity of a tanker or an overhead water storage tank?

Name the largest water bodies found on the earth.

Accept their responses and interact if the students have any doubt or query. **[Critical Thinking]**

## EXPLORE

### Measuring Ingredients



One of the best measurement activities examples in daily life is cooking. When kids get involved in baking or cooking, they naturally engage with measurements. By using measuring cups and spoons, they learn about volume and quantity. It's a delicious way to understand measurements and enjoy the results!

Ask students to learn about a recipe at home and help parents/elders in measuring ingredients. **[Holistic Learning]**

## EXPLAIN

Refer textbook pages 187–188, explain about the derived units of capacity by putting the prefixes, kilo-, hecto-, deca-, deci-, centi- and milli- alongwith the base unit litre (L).

Further discuss about the inter-conversion of different units of capacity dealing with some examples on the board. Let them understand that:

- To convert a bigger unit into a smaller unit, we need to multiply the bigger unit.

For example, 3 kL 650 L = 3 kL + 650 L = (3 × 1000) L + 650 L (since, 1 kL = 1000 L)

= 3000 L + 650 L = 3650 L

- To convert a smaller unit into a bigger unit, we need to divide the smaller unit.

For example, 8823 mL = 8000 mL + 823 mL = (8000 ÷ 1000) L + 238 L (since, 1000 mL = 1 L)

= 8 L 238 mL **[Conceptual Understanding]**

## ELABORATE

After understanding about the metric units of capacity, talk about some other units, such as a barrel and a gallon which are used in the International trade of crude oil. Refer Knowledge Desk given on page 188.

**[Cross-curricular Learning]**

Hence, motivate students to solve questions given in the book.

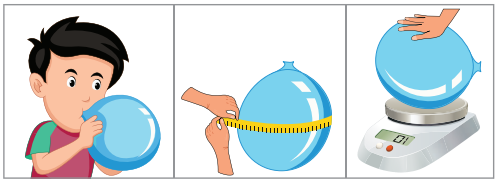
## EVALUATE

**Classwork:** Ask to practice Q2 and 3 of Practice Time 10E.

**Homework:** Ask to practice remaining questions of Practice Time 10E.

## ENHANCE

Balloons are more than just party decorations; they're tools for measuring weight activities. By inflating balloons to various sizes, students can measure their circumferences. This helps them understand how much air each balloon holds and how air capacity relates to the size and stretch of the balloon's material.



**[Experiential Learning]**

| Periods: 12–13 | Topic: Addition and Subtraction of Capacities | Suggested extra teaching aids: Math Genius 4 pages 189–190 |
|---|---|---|

## ENGAGE

Talk about the importance of water and liquid in our diet. During the interaction, ask some questions, such as:

Why is water necessary for our life?

What a doctor does when a patient is suffering from dehydration?

When would you like to intake more water, in summer or in winter? Why?

A camel can drink as much as 100 litres of water at a time. If the camel gets only 45 L 500 mL of water, how much more water does he need?

Accept the responses and discuss about the correct answers. **[Cross-curricular and Holistic Learning]**

## EXPLORE

Tell the students to explore the water consumption in different activities of their family. For this, make table for activities, such as cooking, brushing, flushing, bathing, washing clothes and utensils, cleaning home, vehicles, watering plants. Think how much water will you require for a day, a week, and a month.

Compare your data with your bench partner and check which family consume less water and by how much. Accept their responses. **[Collaborative and Experiential Learning]**

## EXPLAIN

Start the class with an interaction based on a real life situation. Refer textbook pages 189–190, explain how to add or subtract capacities. Let them know that they can perform the operation as they have learnt in case of addition and subtraction of length and weight. **[Conceptual Understanding]**

## ELABORATE

Write some questions on the board and demonstrate how to add or subtract the measurements of capacity. For example,

(*a*)

| | L | | | mL | | |
|---|---|---|---|---|---|---|
| | (1) | (1) | | | (1) | |
| | 1 | 6 | 5 | 2 | 4 | 0 |
| | 1 | 0 | 6 | 3 | 2 | 5 |
| + | 2 | 6 | 8 | 0 | 1 | 5 |
| | 5 | 3 | 9 | 5 | 8 | 0 |

Thus, 165 L 240 mL + 106 L + 325 mL + 268 L 15 mL = 539 L 580 mL

(*b*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | | | | (9) | (9) | (9) | (9) | |
| | (7) | (15) | (0) | (10) | (10) | (10) | (10) | (10) |
| | ~~8~~ | ~~5~~ | ~~1~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| − | 6 | 8 | 0 | 4 | 5 | 0 | 6 | 5 |
| | 1 | 7 | 0 | 5 | 4 | 9 | 3 | 5 |

Thus, 85 kL 100 L – 68 kL 45 L 65 mL = 17 kL 54 L 935 mL

## EVALUATE

**Classwork:** Ask to practice Q1, 4 and 5 of Practice Time 10F.

**Homework:** Ask to practice Q2 and 3 of Practice Time 10F.

## ENHANCE

Ask students to solve the Life Skills given on page 194.

| Periods: 14–16 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 191–194 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Mental Maths, Chapter Assessment, Maths Connect and Brain Sizzlers**.**

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Maths Connect on page 193.

## EVALUATE

**Classwork:** Ask to practice Q1 to 5 of Chapter Assessment and Maths Connect given on page 193.

**Homework:** Ask to practice Q6 to 10 of Chapter Assessment. and Brain Sizzlers given on page 193.

## ENHANCE

Involve students to perform the activity as discussed in 'Learning by Doing' section on page 194.

ORANGE

# ASSIGNMENT–19

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** 500 grams of ghee is _____ a kilogram.

(*a*) more than (*b*) less than (*c*) equal (*d*) none of these

**2.** How many centimetres are there in 21 m 8 cm?

(*a*) 218 cm (*b*) 2108 cm (*c*) 2180 cm (*d*) 21008 cm

**3.** 10 glasses of 100 mL make _____.

(*a*) 1 litre (*b*) half of a litre (*c*) 2 litre (*d*) Quarter of a litre

**4.** After taking 3 doses each of 5 mL for 2 days, it is left _____ mL in the bottle of 100 mL medicine.

(*a*) 15 (*b*) 30 (*c*) 70 (*d*) 85

**5.** 250 mg + _____= 1 g

(*a*) 750 g (*b*) 650 mg (*c*) 75 dg (*d*) 75 cg

**6.** Quarter of a km is _____.

(*a*) 250 m (*b*) 25 dam (*c*) 250 dm (*d*) Both (a) and (b)

**7.** 2 L 500 mL = 800 mL + _____ + 1 L 250 mL.

(*a*) 350 mL (*b*) 200 mL (*c*) 450 mL (*d*) 2 L 50 mL

**8.** Which pair of numbers make the sum more than one quintal?

(*a*) 25 kg and 75 kg (*b*) 50 kg and 60 g (*c*) 63 kg and 75000 g (*d*) 800 g and 500 g

**9.** How many millilitres are there in 2 kL?

(*a*) 20000 (*b*) 200 (*c*) 2000 (*d*) none of these

**10.** A water bottle can hold 2 litres of water. How many such water bottles are needed to fill a bucket whose capacity is 3 dag?

(*a*) 15 (*b*) 5 (*c*) 10 (*d*) 20

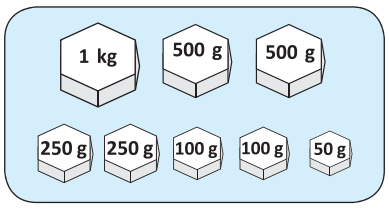
**11.** 8 m 75 cm + 1 m 25 cm =

(*a*) 1 m (*b*) 10 m (*c*) 100 m (*d*) 1 km

**12.** 5 kg 35 g – 3 kg 625 g =

(*a*) 141 g (*b*) 410 g (*c*) 1410 g (*d*) 2590 g

**13.** In how many different ways can we combine the weights shown in the figure to get 2 kg?




(*a*) 2 (*b*) 3 (*c*) 4 (*d*) 5

ORANGE

# ASSIGNMENT–20

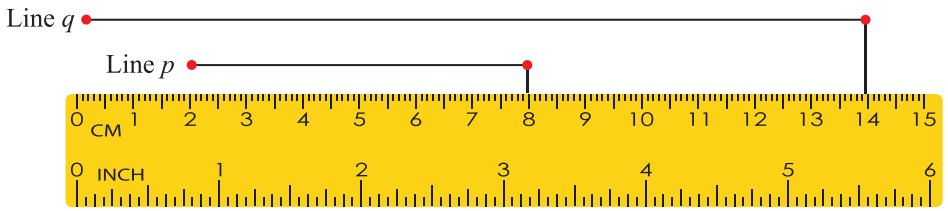
Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. To convert litre into millilitre, we _____ it by 1000.
2. To convert centimetre into metre, we divide it by _____.
3. Line $q$ is longer than line $p$ by _____ cm.




4. The weight of the cauliflower kept on the balance is _____ g.




5. The amount of water in a container is 2 L 75 mL. If the capacity of the container is 5 L, then _____ more water is needed to fill the container up to its brim.

## B. Label True or False.

1. The weight of a tennis ball is about 50 mg. .....
2. The height a table is 6 ft 2 in. .....
3. There is about 10 mL liquid in a bottle of eye-drop. .....
4. The length of a bedsheet is about 2 m. .....
5. The weight of a refrigerator is about 25 kg. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. 5 km + 6 km 25 m | (*a*) 3235 kg |
| 2. 10 m – 3 m 75 cm | (*b*) 10375 L |
| 3. 3 ton + 2 quintal 35 kg | (*c*) 5620 g |
| 4. 15 kL – 4 kL 625 L | (*d*) 625 cm |
| 5. 6 hg + 20 dag + 5 kg | (*e*) 11025 m |

## D. Utilise Your Brain.

Jolly wants to make some cookies and cupcakes for her mother. The recipe for cookies needs 120 g flour and 600 dg sugar. The recipe for cupcake needs 15 dag flour and 5000 cg sugar.

1. Which recipe needs more sugar?
2. How many grams of flour does she need altogether?




# Perimeter and Area

## Learning Objectives

**After studying this chapter, students will be able to...**

- understand the concept of perimeter and find the perimeter of plane closed figures
- understand the concept of area and find the area of the plane closed figures by counting squares

# LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, A-4 size sheet, square grid paper, Geo-dotted paper, ruler, string, rubber bands and geo-board

**Keywords:** Perimeter, Plane closed figure, Polygon, Triangle, Rectangle, Square, Irregular Shape, Area, Geo-dotted Paper and Geo-board

**Pre-requisite knowledge:** Students must be familiar with standard units of measuring length and plane shapes.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–4 | Topics: Perimeter; Perimeter of a Polygon, Triangle, Rectangle, Square; Perimeter of an Irregular Shape | Suggested extra teaching aids: Math Genius 4 pages 195–199 |
|---|---|---|

## ENGAGE

Start the topic with a recall of measuring length and polygons. Draw 2–3 polygons on the board and instruct the students to sketch the similar figures in their notebooks. Then, measure the length of each sides and add them.

Ask: What is called the sum of sides of the plane figure?

Accept the responses. Hence, introduce perimeter of a closed plane figure. **[Experiential Learning]**

## EXPLORE

The teacher can interact with the students referring "Get Ready" section given in the book and help them understand where we need to find perimeter.

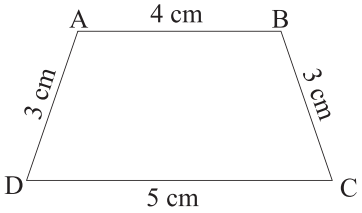
Divide the class into pairs. Tell them to look around the articles available and using a tailor's tape or measuring rod find the perimeter. For example, they can find the perimeter of their desk, teacher's table top, cover page of a book/notebook, floor tile, etc. Further, instruct them to compare their findings with other groups and discuss.

Monitor students' participation and engagement during the activities. You can also conduct the activity as suggested in Learning by Doing section on page 207. **[Collaborative Learning]**

## EXPLAIN

Explain that the perimeter of a closed figure is the sum of lengths of all its sides. Tell that unit of perimeter is same as unit of length of sides. So, its units can be expressed in cm, m, km, etc.

Thereafter, refer textbook pages 195–198 to have them learn about the perimeter of different polygons, such as a triangle, quadrilateral, rectangle and a square. For example, consider the quadrilateral ABCD.




The sum of all its sides is AB + BC + CD + DA = 4 cm + 3 cm + 5 cm + 3 cm = 15 cm

The perimeter of the quadrilateral shown here is 15 cm.

Solve some questions on the board and encourage the students to solve questions given in the book for self-understanding. **[Conceptual Understanding]**

## ELABORATE

Take reference of the textbook to explain the perimeter formula for rectangle and square.

Perimeter of a rectangle = $2 \times (l + b)$, where $l$ = length and $b$ = breadth

Perimeter of the square = $4 \times a$, where $a$ = side

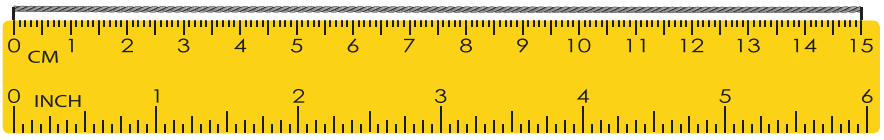
After understanding that the perimeter is the length of boundary of a closed figure, demonstrate how to find the perimeter of any irregular shape using a string and a ruler.

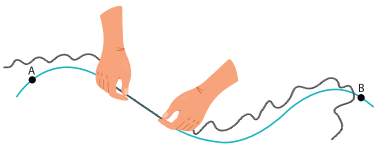
Consider the curvy shape given here.



Clearly, we cannot measure the boundary length by ruler directly. So, follow these steps to measure the perimeter of curved shape:

- Take a thread/string.
- Lay it around the shape tightly once and mark the end.
- Measure the length of marked thread/string along the ruler.




- Length of the thread/string gives the perimeter of the shape.

Hence, motivate students to do Activity as suggested on page 199. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q2, 3 and 5 of Practice Time 11A.

**Homework:** Ask to practice remaining questions of Practice Time 11A.

## ENHANCE

Ask students to find how much fencing they will need for their kitchen garden, or length of coloured strip for decorating the project file or wood required for making a photo-frame for their family photograph.

**[Holistic Learning]**

| Periods: 5–8 | Topic: Area; Finding Area using Geo Dotted Paper | Suggested extra teaching aids: Math Genius 4 pages 200–204 |
|---|---|---|

## ENGAGE

Refer some real-life objects and ask questions based on area. For example,

For which you need more space – to keep a Carom board or a Ludo board?

If you are asked to clean a door or a window pan, for which one will you take less time?

On which sheet can you draw a bigger smiley – on a drawing sheet or on a notebook page?

Accept their responses and talk about their logic behind. Thereafter, introduce the term Area.

**[Logical Thinking]**

## EXPLORE

Divide the class into pairs. Tell the pairs to take a square grid paper and instruct each partner to draw a rectilinear figure. Then, they will find the perimeter of the figures drawn and count how many squares are there inside the figures. Compare the result for the two figures. **[Collaborative and Experiential Learning]**

## EXPLAIN

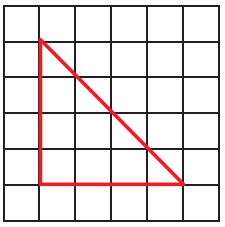
Start the class with an interaction based on a real life situation, such as buying bedsheets or blankets for a single bed and a double bed. Ask about the difference between their sizes. For better understanding, invite two groups of students with their notebook. Tell one group to lay their notebooks without overlapping or leaving gap on a table. Similarly, instruct another group to lay the notebooks on a desk. Count the number of notebooks and find which one has larger area – a table top or a desk top.

Now explain the concept of area and its unit. Refer textbook pages 200–203 for more explanation and examples.

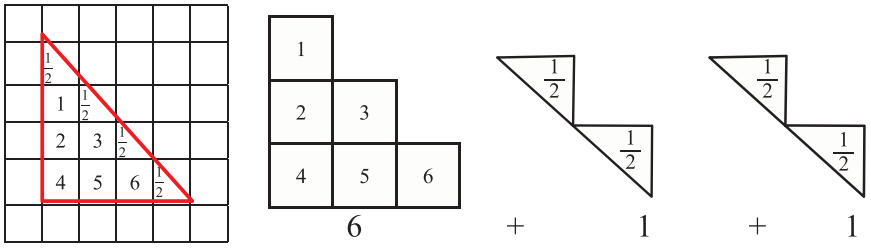
**[Conceptual Understanding]**

## ELABORATE

Consider any figure that have also some half squares on a square grid paper. Demonstrate how to calculate its area by counting the unit squares. For example, look at the triangle given alongside.



Here, the triangle does not contain all complete squares. It has 6 complete squares and 4 half squares.



Number of complete squares = 6 + 2

So, the area of the triangle is 8 square units.

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 11B and Think and Answer given on page 202.

**Homework:** Ask to practice Q2 of Practice Time 11B.

## ENHANCE

Ask students to do activity as suggested on page 203.

| Periods: 9–10 | Topic: (Revision) Chapter assessment | Suggested extra teaching aids: Math Math Genius 4 pages 204–207 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify the doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Maths Connect, Chapter Assessment, and Brain Sizzlers

## ELABORATE

Discuss questions 1 to 3, and 8 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Maths Connect on page 193.

## EVALUATE

**Classwork:** Ask to practice Q1 to 3 and 8 of Chapter Assessment and Maths Connect given on page 204.

**Homework:** Ask to practice Q4–7 and 9 of Chapter Assessment and Brain Sizzlers given on page 206.

## ENHANCE

Involve students to perform an activity as discussed under Maths Fun section on page 207.

ORANGE

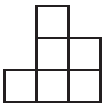
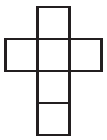
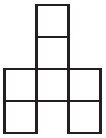
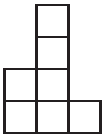
# ASSIGNMENT–21

Marks Obtained: _____

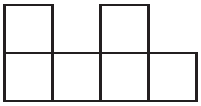
Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Each of the figures below is made up of identical 2 cm squares. Which one of the figures has the greatest perimeter?

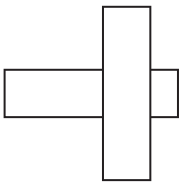
(*a*)  (*b*)  (*c*)  (*d*) 

**2.** The given figure (not drawn to scale) is made up of 6 identical squares. The perimeter of the figure is 112 cm. What is the length of each side of the square?



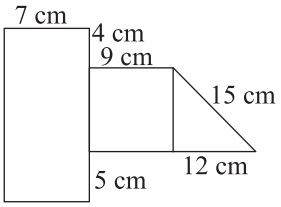
(*a*) 8 cm (*b*) 9 cm (*c*) 10 cm (*d*) 7 cm

**3.** The given figure is obtained by placing a rectangle on top of another identical rectangle. The length of a rectangle is 7 cm and its breadth is 2 cm. Find the perimeter of the figure.



(*a*) 14 cm (*b*) 28 cm (*c*) 32 cm (*d*) 18 cm

**4.** The given figure (not drawn to scale) is made up of a rectangle, a square and a triangle. Find the perimeter of the figure.




(*a*) 68 cm (*b*) 72 cm (*c*) 85 cm (*d*) 86 cm

**5.** Perimetre of a square is 20 cm, find the side of the square.

(*a*) 10 cm (*b*) 5 cm (*c*) 6 cm (*d*) 2 cm

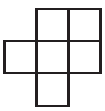
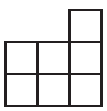
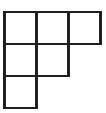
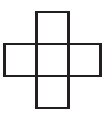
**6.** If perimeter of a rectangle is 30 cm, which of the following can be length and breadth?

(*a*) 19 cm, 11 cm (*b*) 15 cm, 9 cm (*c*) 9 cm, 6 cm (*d*) 10 cm, 4 cm

**7.** Two sides of a triangle are 4 cm and 7 cm respectively. If its perimeter is 20 cm, what will be the length of its third side?

(*a*) 5 cm (*b*) 9 cm (*c*) 11 cm (*d*) 10 cm

**8.** The perimeter of all these figures are same. Which figure has the least area?

(*a*)  (*b*)  (*c*)  (*d*) 

ORANGE

# ASSIGNMENT–22

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

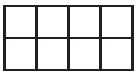
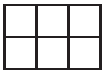
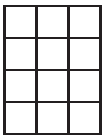
1. Perimeter of a polygon = _____
2. Perimeter of a square = 4 × _____
3. If length = 22 cm and breadth = 18 cm, then perimeter of a rectangle = _____
4. The length of the _____ of a closed figure is called its perimeter.
5. The amount of surface enclosed by a plane closed figure is called the _____ .

## B. Label True or False.

Anshika's mother wants to stitch a table cloth for the table which is 5 ft. long and 3 ft. wide.

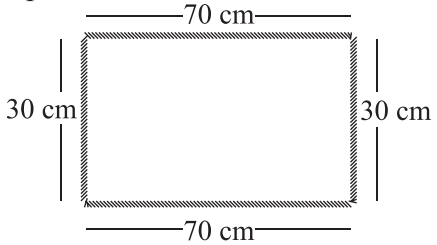
1. Perimeter of the table top is 15 ft. .....
2. Mother needs only 16 ft. of lace for the table cloth. .....
3. Table cloth would be in the shape of a rectangle. .....
4. If she has a roll of 20 ft. long lace, then 5 ft. of lace would be left. .....
5. The area of the table top is 15 sq. ft. .....

## C. Match the following.

| Column I | Column II (Perimeter) | Column III (Area) |
|---|---|---|
| 1.  | (*a*) 12 units | A. 7 square units |
| 2.  | (*b*) 10 units | B. 4 square units |
| 3.  | (*c*) 14 units | C. 6 square units |
| 4.  | (*d*) 16 units | D. 12 square units |
| 5.  | (*e*) 8 units | E. 8 square units |

## D. Utilise Your Brain.

Jhilmil aunty wants to stitch the border of a pillow as given below. If she has 3 m long lace, then how much lace would be left after completing her pillow?






# Time

## Learning Objectives

**After studying this chapter, students will be able to...**

- read and write time in hours, minutes and seconds
- convert 12-hour format to 24-hour format and vice-versa
- convert units of times
- add and subtract measures of time
- find time duration between two events
- convert days, months, years to each other
- calculate the number of days between two events

# LESSON PLAN

**Suggested number of periods:** 12

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, clocks/dummy clocks, calender, A-4 size sheet.

**Keywords:** Time, Hours, Minutes, Seconds, 12-hour format, 24-hour format, Conversion, Time Duration, Days, Months, Years

**Pre-requisite knowledge:** Students must be familiar reading time in clocks at 5 minutes interval. Also, they should be aware about a calendar.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–2 | Topics: Recap; Reading and writing time in hours and minutes | Suggested extra teaching aids: Math Genius 4 pages 208–210 |
|---|---|---|

## ENGAGE

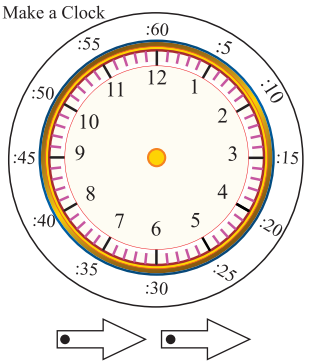
To introduce students to telling time, gather together in small groups and brainstorm.

On chart paper, write "TELLING TIME" in the middle and encourage students to brainstorm what they know about telling time and clocks and write down what they come up with.

ASK: "What is time?", "How do you tell time?", "How many hours are there in a day?", "What types of clocks are there?", "What is the difference between the short-hand and long hand?"

Accept their answers. Then teacher will revise the learners' previous knowledge of telling time with the help of "Let's Recall" section given in the book. **[Holistic Learning]**

## EXPLORE




Provide each student a "Make a Clock" template and a fastener pin. Students will create their own analog clock. Have them put together the clock.

Teacher will say a time (example: 5 o'clock) and the students will have to make that time on their analog clock. Once everyone has their clock set, ask a volunteer to show that time in front of the class on the whiteboard to see if they are correct (do this 10–20 times with different times).

Monitor students' participation and engagement during the activities.

**[Experiential Learning]**

## EXPLAIN

Start the class with a quick recall of analog clock terminology (example: clock face). Explain that the short-hand is the hour and the long-hand is the minute. Tell the different ways how they say what time it is and show those times on a manipulative/interactive clock (example: you SAY "it is 5 o'clock" or "it is 8:15" or "it is half past 3"). Have them understand how they can write the time down (example: 5:00, 8:15, 3:30).

Thereafter, refer textbook pages 209–210 to explain how to tell time in hours and exact number of minutes. Make an analog clock either on the whiteboard or a have digital version up in front of the classroom. Set the hands of clocks at different times and reiterate the reading time. **[Conceptual Understanding]**

## ELABORATE

Write the time on the chart paper and instruct students to visualize the time during discussion. Make sure that the students can set an analog clock to a specific time, and determine what time it is by reading the clock.

Hence, motivate students to solve questions given in the book. **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 12A.

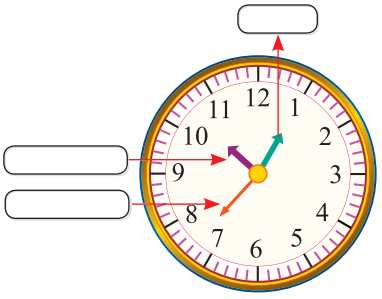
**Homework:** Ask to practice Q2 of Practice Time 12A.

## ENHANCE

Ask students to explore which types of clocks the early people use to tell time. **[Cross-curricular Learning]**

| Periods: 3–4 | Topic: Time in Hours, Minutes and Seconds; 24-Hour Clock | Suggested extra teaching aids: Math Genius 4 pages 211–216 |
|---|---|---|

## ENGAGE




Draw an analog clock on the board or show the picture using projector.

Ask some questions about the clock and time.

Identify the hands of the clock.

How many numbers are there on the face of the clock?

Into how many parts is the dial divided?

Name the hand that moves the fastest on the dial.

Name the hand that moves the slowest on the dial.

How many times does the minute hand move around the clock face in a day?

How many times does the thinnest hand move around the clock face in 1 hour?

Accept the students' responses and introduce the second hand. **[Critical Learning]**

## EXPLORE

Divide the class in small groups, ask them to list some activities and think about the time that those activities take to complete. Accept their responses. Then instruct them to do the task as asked in Maths Fun on page 212.

**[Collaborative and Experiential Learning]**

## EXPLAIN

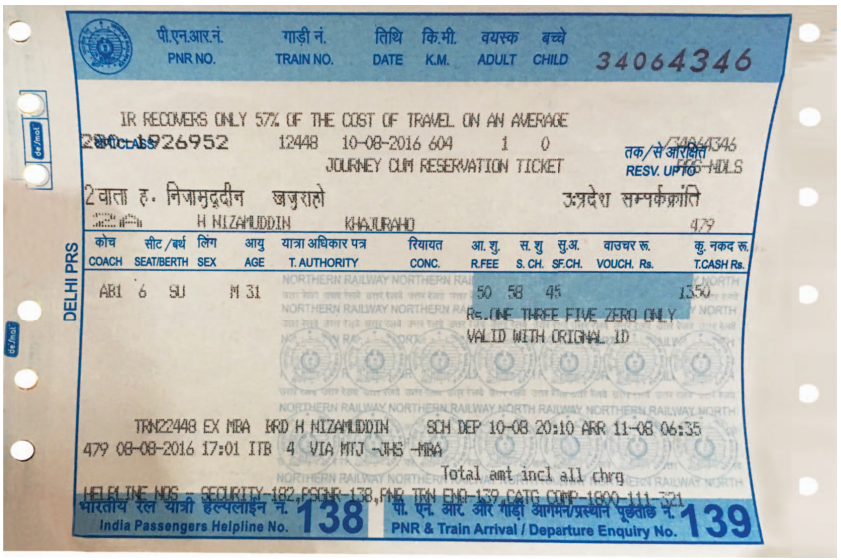
Start the class with an interaction based on a real life situation, such as a journey or travel. Ask where they have gone and how long they spend there. Discuss the time of departure from home and arrival at the destination. Thereafter, explain the duration of a day equals to 24 hours, 1 hour = 60 minutes and 1 minute = 60 seconds. Have them realise the period of a minute and a second by digital/analog clock in the class.

Furthermore, discuss why we use 24-hour format and how to express a 12-hour clock time into a 24-hour clock time and vice versa. Refer textbook pages 213–215 for more explanation and examples.

**[Conceptual Understanding]**

## ELABORATE

Bring any train/air ticket in the class and show the time of journey. Demonstrate the conversion of 12-hour clock time and 24-hour clock time. For example, have a look at the ticket shown here.




It has mentioned: The departure time on 10-08-2016 from H Nizamuddin is 20:10, which means 8:10 p.m.

**Explanation:** Here the first two digits show hour 20. It is more than 12, so subtract 12 from 20. 20 – 12 = 8. The last two digits show 10 minutes, so keep it as it is and suffix p.m. to indicate the time between noon to midnight. Hence, 20:10 hours = 8:10 p.m., which indicates evening time.

The arrival time on 11-08-2016 to Khajuraho is 06:35, which means 6:35 a.m.

**Explanation:** Here the first two digits show hour 06. It is less than 12, so no need to subtract 12 from 6. The last two digits show 35 minutes, so keep it as it is and suffix a.m. to indicate the time between midnight to noon. Hence, 06:35 hours = 6:35 a.m., which indicates morning time.

Next have them understand how to express the time in hours if given in a.m./p.m.

| 12-hour clock | Method to convert | Examples |
|---|---|---|
| 12 midnight to 12:59 a.m. | Subtract 12 hours and write the time without a.m. | 12:05 a.m. ⟶ 00:05 hours<br>12:55 a.m. ⟶ 00:55 hours |
| 1:00 a.m. to 12:59 p.m. | Write the same time without a.m. or p.m. | 2:45 a.m. ⟶ 02:45 hours<br>11:38 a.m. ⟶ 11:38 hours<br>12:28 p.m. ⟶ 12:28 hours |
| 1:00 p.m. to 11:59 p.m. | Add 12 hours and write the time without p.m. | 1:40 p.m. ⟶ 13:40 hours<br>4:23 p.m. ⟶ 16:23 hours<br>10:15 p.m. ⟶ 22:15 hours |

## EVALUATE

**Classwork:** Ask to practice Q1 of Practice Time 12B and Q3, 4 of Practice Time 12C.
**Homework:** Ask to practice Q2 of Practice Time 12B and Q1, 2 of Practice Time 12C.

## ENHANCE

Ask students to complete the Project given on page 214.

| Periods: 5–6 | Topic: Conversion of Units of Time | Suggested extra teaching aids: Math Genius 4 pages 216–218 |
|---|---|---|

## ENGAGE

Start the class with an interaction based on real life. Ask the students some questions related to their daily activity.
How long do you watch your favourite cartoon on TV?
Is there any advertisement telecast during that period? If yes, guess how much time does it take?
Can you tell how many seconds are there in a minute?
How much time do you take to have your breakfast? Try to write your answer in seconds.
Suppose you spend 5 hours daily in your class. Can you tell how many minutes do you stay in the class?

**[Logical Thinking]**

## EXPLORE

Make a list of some activities, such as singing, dancing, playing a musical instrument, storytelling, writing, drawing, etc. Instruct the students to choose any one. Ask how much time they will take to perform it in the class. Invite some students randomly to showcase the talent, instruct other students to note down the time and convert it in seconds.

**[Experiential Learning]**

## EXPLAIN

Refer textbook pages 216–218, explain how to convert units of time, including converting between seconds, minutes and hours. Recall that

1 hour = 60 minutes or 60 minutes = 1 hour.

1 minute = 60 seconds or 60 seconds = 1 minute.

- To convert hours into minutes, we multiply the number of hours by 60.
- To convert minutes to seconds, we multiply the number of minutes by 60.

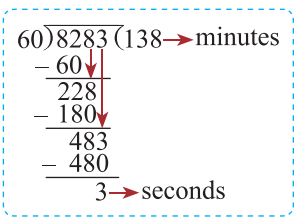
For example, 4 minutes = 4 × 60 seconds = 240 seconds

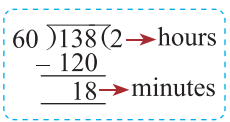
8 hours 15 minutes = 8 × 60 minutes + 15 minutes = 480 minutes + 15 minutes = 495 minutes

- To convert seconds into minutes, divide seconds by 60.
- To convert minutes into hours, divide minutes by 60.

For example, 8283 seconds = (8283 ÷ 60) minutes
= 138 minutes + 3 seconds
= (138 ÷ 60) hours + 3 seconds
= 2 hours + 18 minutes + 3 seconds

**[Conceptual Understanding]**




Hence, motivate students to solve questions given in book.

## ELABORATE

Give some more real life examples and then demonstrate how to apply the concept of converting the units of time. Suppose a ride on the giant wheel is complete in 4 minutes. And it takes 6 minutes in climbing on/coming off the people. How many rides can the wheel complete if it is operated for 3 hours a day?

Total time required for a ride = (4 + 6) minutes = 10 minutes

Operational time of the wheel in day = 3 hours = 3 × 60 minutes = 180 minutes

So, number of rides that can be completed daily = 180 ÷ 10 minutes = 18 **[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q1(*c*), (*d*), (*e*) and 2(*b*), (*d*) of Practice Time 12D.

**Homework:** Ask to practice remaining questions of Practice Time 12D.

## ENHANCE

Ask students to express their sleeping time in minutes and seconds.

| Periods: 7–8 | Topic: Addition and Subtraction of Time; Time Duration; Finishing Time | Suggested extra teaching aids: Math Genius 4 pages 218–221 |
|---|---|---|

## ENGAGE

Talk about their daily routine work. Ask how much time they spend in doing different kind of works, such as:

How much time do you take in completing homework? How long do you do self-study?

Find the total time spent on the study at home.

Do you study longer/shorter in school than at home? How much?

Teacher can also ask about some other activities, such as when they go to bed and when get up. Find the sleeping hours. Then instruct them to compare their responses with the bench partner.

**[Collaborative and Experiential Learning]**

## EXPLORE

Tell the students to check how many seconds they can hold their breath. For this, they can use stopwatch in the mobile phone of their parents. They can also check the same of their family members. Hence find the difference between the longest and the shortest duration of breath holding time.

Also, they can be told to explore about the time required for baking their favourite recipe. They will ask their mothers and note down how much time it takes in preparation of materials and how long it takes in cooking. Hence, they will find the total time required.

Next tell them to find the finishing time of baking if they start the preparation at 10:00 a.m. Accept their responses. **[Cross-curricular and Holistic Learning]**

## EXPLAIN

Start the class with an interaction based on a real life situation. For example,

Anuj spent 6 h 35 min with family members and 4 h 55 min with friends on the last Sunday.

(*a*) How much time did he spend in all with family and friends?

(*b*) With whom did he spend longer time and by how much?

Explain how to solve such a problem on the board.

(*a*) The time spent with family members = 6 h 35 min

The time spent with friends = 4 h 55 min

| | h | min |
|---|---|---|
| | 6 | 35 |
| + | 4 | 55 |
| | 10 | 90 = 60 + 30 |
| + | 1 | |
| | **11** | **30** |

So, total time spent with family and friends = 6 h 35 min + 4 h 55 min = 11 h 30 min

(*b*) The time spent with family members = 6 h 35 min

The time spent with friends = 4 h 55 min

Clearly, 6 h 35 min > 4 h 55 min. That is, he spent more time with his family.

Now difference between the time spent with family and friends

= 6 h 35 min – 4 h 55 min = 1 h 40 min

| | h | min |
|---|---|---|
| | ⑤ | ⑨⑤ |
| | ~~6~~ | ~~35~~ |
| – | 4 | 55 |
| | **1** | **40** |

Refer textbook pages 218–219 for more explanation and examples. Have the students understand the concept and then tell them to solve some questions of Practice Time 12 E. Thereafter, deal the next topics Time Duration and Finding Finishing Time along with real life examples.

**[Conceptual Understanding]**

## ELABORATE

After learning how to add and subtract time periods, have them understand that they can calculate time elapsed/time duration using subtraction. Demonstrate it with examples.

Calculation of time elapsed/time duration

A T20 cricket match started at 3:48 p.m. and got over at 8:19 p.m. How long did the match last?

**Using formula:** Elapsed Time = End Time – Start Time

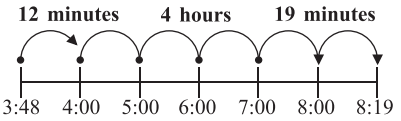
= 8:19 p.m. – 3:48 p.m.

= 8 h 19 min – 3 h 48 min

= 4 h 31 min

**Using number line:** To calculate the duration of time, we draw a line with the start time at one end and the end time at the other.

Here, the start time is not directly on the hour, so add up the minutes to the next greatest hour. Do the same with the end time but to the next smallest hour. Add up the hours in between. Then, add the minutes as shown below.




12 minutes + 19 minutes = 31 minutes

4 hours and 31 minutes

Next, show how to find finishing time using addition of elapsed time. Demonstrate it with examples.

Ashi started her journey at 5:00 am and reached her destination in 7 hours. At what time did she reach her destination?

Given, elapsed time = 7 hours and start time = 5:00 am.

Using the elapsed time formula, we have:

Elapsed Time = End Time – Start Time

So, End Time = Start Time + Elapsed Time

⇒ End time = 5:00 am + 7 hours = 12 noon

Hence, Ashi reached her destination at 12 noon.

Encourage the students to practice the questions given in the book.

## EVALUATE

**Classwork:** Ask to practice Q3, 4, 5 of Practice Time 12E and Q1 and 4 of Practice Time 12F.

**Homework:** Ask to practice Q1 and 2 of Practice Time 12E and Q2, 3 and 5 of Practice Time 12F.

## ENHANCE

Ask students to note down the time spent in different activities on weekend or on a holiday.

Hence, order the activities according to longest to the shortest periods of time. Also, find the sum and difference of the longest and the shortest duration.

| Periods: 9–10 | Topic: Calendar; Conversion of Years, Months, Weeks and Days; Calculating Days | Suggested extra teaching aids: Math Genius 4 pages 222–225 |
|---|---|---|

## ENGAGE

Students are aware with the Calendar. Bring a current year calendar in the class and gather the students in small groups to talk about. Ask to find the day and date of some festivals or any important events.

You can also ask them to count the number of days between any two dates or identify the date for a particular day such as 3rd Saturday of June, 2nd Sunday of October, etc.

Accept their responses and interact if the students have any doubt or query. **[Discussion-based Learning]**

## EXPLORE

Divide the class into pairs of students. Provide each group a calendar. Ask them to mark the birth date and find how many days are away from today or how many days have passed to till date. They can also find the number of days between the birthdates of two partners. **[Experiential Learning]**

## EXPLAIN

Refer textbook pages 222–224, explain about the use of a calendar. Have the students learn how many days are there in different months of a year. To remember the number of days they can learn the trick of using knuckles as explained in Remember section on page 224. Also, deal the concept of a leap year as explained under Knowledge Desk section on page 222.

Then explain how to convert a week/month/year into days and vice versa. Hence deal the concept of finding the number of days between two dates, or finding the starting/closing date when the closing/starting date along with number of days for any event are given. Solve some examples in the class and encourage the students to attempt the questions given in the book.

Amrit Udyan, New Delhi is opening for public on Feb 2nd, 2024 to March 31st, 2024. How many days would the Amirit Udayan be open for the Udyan Utsav?

Number of days from 2nd February to 29th February = 28 days. (Since, 2024 is a leap year)

Number of days fron 1st March to 31st March = 31 days

So, the Amirit Udayan would be open for 28 + 31 = 59 days in 2024. **[Conceptual Understanding]**

## ELABORATE

Students are familiar with smaller units of time, such as hours, minutes and seconds; and also have learnt about their inter-conversion. Now, write the relation among bigger units of time, such as days, week, months and year.

1 week = 7 days

1 month = 30 days or 4 weeks

1 year = 365 days or 12 months

Demonstrate how to change them from one to another on the board.

(*a*) How many months are there in 5 years 4 months?

5 years 4 months = 5 × 12 months + 4 months = 60 months + 4 months = 64 months

(*b*) How many weeks are there in a leap year?

We know that a leap year has 366 days and 7 days are there in a week.

To know the equivalent time of 366 days into weeks and days, we divide 366 by 7.

We get 52 complete weeks and 2 days leftover.

```
7 )366(52 → weeks
  – 35
    16
  – 14
     2 → days
```

**[Cross-curricular Learning]**

Hence, motivate students to solve questions given in the book.

## EVALUATE

**Classwork:** Ask to practice Q1, 5 and 6 of Practice Time 12G and Quick Check given on page 222.
**Homework:** Ask to practice remaining questions of Practice Time 12G.

## ENHANCE

Ask the students to complete the project work given on page 225. **[Life Skills]**

| Periods: 11–12 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 226–228 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Chapter Assessment, Mental Maths and Life Skills.

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths given on page 227.

## EVALUATE

**Classwork:** Ask to practice Q1 to 4 of Chapter Assessment.
**Homework:** Ask to practice Q5 to 8 of Chapter Assessment. and Life Skills given on page 228.

## ENHANCE

Involve students to perform the activity as discussed in ‘Learning by Doing’ section on page 228.

ORANGE

# ASSIGNMENT–23

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** How many weeks are there in 161 days?

(*a*) 27 (*b*) 21 (*c*) 23 (*d*) 22

**2.** Sumanth was born in 1996. How old was he in 2023?

(*a*) 23 years (*b*) 27 years (*c*) 28 years (*d*) 29 years

**3.** A TV film starts at 5:15 p.m. on a Sunday. It runs for 2 hours 15 minutes. At what time does it end?

(*a*) 7:30 p.m. (*b*) 8:45 p.m. (*c*) 7:45 p.m. (*d*) 8:00 p.m.

**4.** How many minutes are there in a day?

(*a*) 720 (*b*) 1440 (*c*) 1540 (*d*) 420

**5.** The sum of 6 years 8 months and 3 years 6 months is

(*a*) 66 months (*b*) 104 months (*c*) 122 months (*d*) 108 months

**6.** Sneha reached the library at 12:25 p.m. The bus ride to the library lasted 55 minutes. At what time did Sneha board the bus?

(*a*) 11:30 a.m. (*b*) 12:40 a.m. (*c*) 11:30 p.m. (*d*) 1:20 p.m.

**7.** Nagesh spent 3 hours 40 minutes over two days on his homework. If he spent the same amount of time each day, how much time was spent per day?

(*a*) 1 hour 40 minutes (*b*) 1 hour 70 minutes

(*c*) 1 hour 20 minutes (*d*) 1 hour 50 minutes

**8.** A clock is found to be slow by 5 minutes at 10 a.m. on Saturday. It started gaining time and was found to be 5 minutes fast at 10 p.m. on Sunday. When was it correct?

(*a*) 10 p.m., Saturday (*b*) 10 a.m., Sunday

(*c*) 4 a.m., Sunday (*d*) 4 p.m., Saturday

**9.** A train leaves town P at 12:05 p.m. At what time will it reach town Q, if the journey takes 1 hour and 42 minutes?

(*a*) 13:37 hours (*b*) 13:47 hours (*c*) 15:47 hours (*d*) 14:47 hours

**10.** Pragya ran a race in 109 seconds. She ran 12 seconds faster than Chandni. How long did Chandni take to run the race?

(*a*) 1 minutes 37 second (*b*) 1 minutes 39 seconds

(*c*) 1 minute 42 seconds (*d*) 2 minutes 1 second

**11.** How many weeks are there in 1 year?

(*a*) 55 (*b*) 53 (*c*) 51 (*d*) 52

**12.** How many days were there in February 2019?

(*a*) 27 (*b*) 28 (*c*) 29 (*d*) 30

ORANGE

# ASSIGNMENT–24

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. If the day before yesterday was Thursday, then it will be _____ on tomorrow.
2. If the first Friday is on May 4, then the last Tuesday will be on _____ .
3. There are _____seconds in 1 hour.
4. There are _____ hours in a week.
5. There are _____ days in the last six months of a year.

## B. Label True or False.

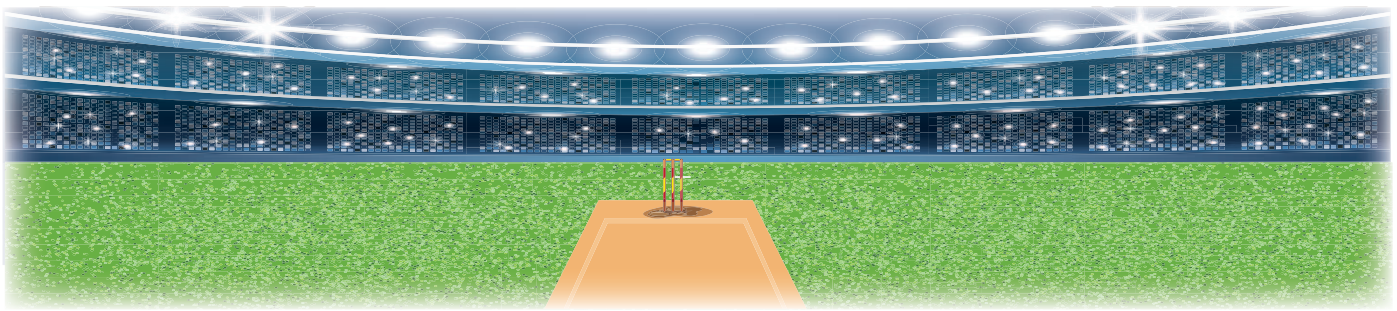
1. The year 2100 will be a leap year. .....
2. Mitali started reading a book at 20:10 hours. She read it in 1 hour 45 minutes. So her finishing time was 9:55 am. .....
3. 210 minutes = 3 hours 30 minutes. .....
4. There are 1440 seconds in a day. .....
5. Seema is going on holiday for 3 weeks starting on the 11th November, she will come back on 1st December. .....

## C. Match the following.

| Column I | Column II |
|---|---|
| 1. 3:25 hours before 12 noon | (*a*) 12:01 p.m. |
| 2. 4:40 hours before 12 midnight | (*b*) 2:40 a.m. |
| 3. 2 hours 5 minutes before 14:00 hours | (*c*) 19:20 hours |
| 4. 160 minutes after 12 midnight | (*d*) 08:35 hours |
| 5. 300 seconds after 11:56 hours | (*e*) 11:55 a.m. |

## D. Utilise Your Brain.

Harsh is waiting for his 2 friends at the cricket stadium. Sawan left his house at 9:20 a.m. and walked for 25 minutes before he arrived at the stadium. Smith left his house at 8:45 a.m. and walked for 55 minutes before he arrived at the stadium. Who arrived at the stadium earlier?






# Money

## Learning Objectives

**After studying this chapter, students will be able to...**

- compute the total amount of money given
- add and subtract the amount of money
- multiply and divide the given amount by any number
- understand and prepare a bill for a purchase
- solve the real life problems involving money

# LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, dummy notes and coins, stickers and chits of some items, A-4 size sheet.

**Keywords:** Money, currency, notes, coins, amount, bills, customer, seller

**Pre-requisite knowledge:** Students must be familiar with Indian currency. Also, they should aware about counting the amount of money.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–4 | Topics: Recap; Computing the Total Amount of Money; Addition and Subtraction of Money | Suggested extra teaching aids: Math Genius 4 pages 229–233 |
|---|---|---|

## ENGAGE

Interact with students and ask some questions to recall the previous knowledge of money.

What is money? What are its uses?

Which Indian currency are in circulation?

How much pocket allowance do you receive?

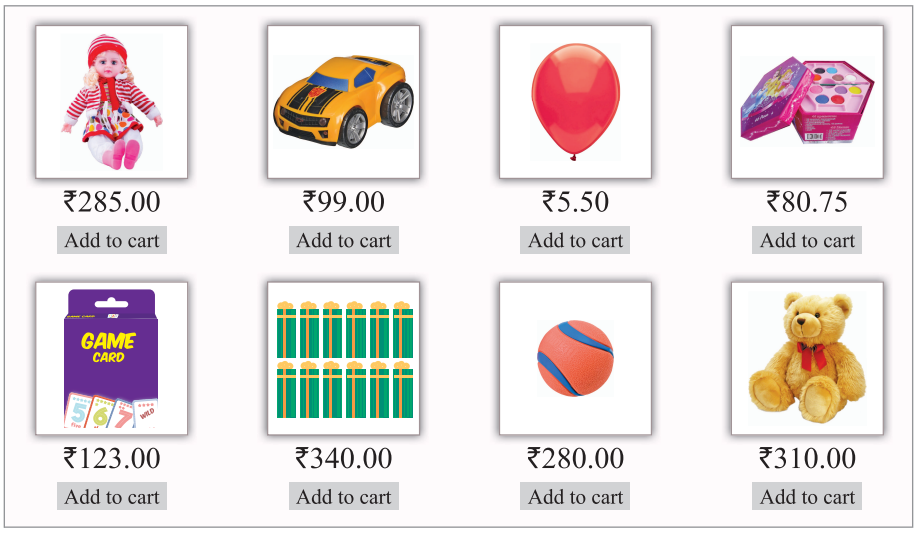
Would you like to save pocket money? Why?

Accept their responses. Then teacher will revise the learners' previous knowledge about Money with the help of "Get Ready" and "Let's Recall" sections given in the book. **[Holistic Learning]**

## EXPLORE

Divide the class into pairs. Put some dummy notes and coins. Also, keep a catalogue of some articles.

Invite the pair of students one by one. Tell one student to act as a seller and another as a buyer. Buyer has to select any item(s) and seller will calculate the amount to take. He asks the buyer to pay the amount and he will deliver the items at the customer's home. Buyer will check the amount and pay using dummy notes/coins. He will get back, if any from seller.




Monitor students' participation and engagement during the activities.

**[Experiential Learning]**

## EXPLAIN

Start the class with an interaction regarding any real life situation. Ask the students for what price they have bought something like their shoes, school uniform, bag, etc. You can also share your expenses on different things purchased last weekend. Then explain how to calculate the total payment and the balance amount.

Refer textbook pages 230–232 for explanation and examples. To check their understanding, reinforce them to solve the questions given in Think and Answer sections on pages 231 and 232.

**[Conceptual Understanding]**

## ELABORATE

Use digital copy of notes of different denomination, visualise it on projector and explain about the details printed on it. If possible, you can show it using original notes and instruct the student to see at their home. Next, demonstrate how to count amount of money when there are several notes and coins. Thereafter, solve few problems on the board.

Hence, motivate students to solve questions given in the book.

## EVALUATE

**Classwork:** Ask to practice Q.1, 3 of Practice Time 13A and Q.1, 3 and 8 of Practice Time 13B.

**Homework:** Ask to practice remaining questions of Practice Time 13A and 13B.

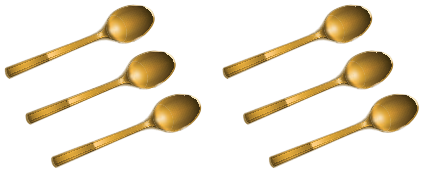
## ENHANCE

Ask students to explore which modes of payment people use these days. **[Cross-curricular Learning]**

| Periods: 5–8 | Topic: Multiplication of Money; Division of Money; Bills | Suggested extra teaching aids: Math Genius 4 pages 233–236 |
|---|---|---|

## ENGAGE

Start the class with a talk about the shopping. Ask students to share their experience if they have gone to the market or a nearby shop. Instruct them to tell how they select which item is better/cheaper. Then draw a table as shown below and ask the students to complete it.

| | | |
|---|---|---|
| 1. |  |  |
| | 1 shuttlecock for ₹35 | 4 shuttlecocks for ₹_____ |
| 2. |  |  |
| | 1 pack of birthday return gift is for ₹_____ | 12 packs of birthday return gift is for ₹348 |
| 3. | Set A  | Set B  |
| | Set of 3 spoons is for ₹180 | Set of 6 spoons is for ₹300 |
| | Which set is cheaper? _____ | |

Accept the students' responses and introduce the operation of multiplication and division of money.

**[Critical Learning]**

## EXPLORE

Divide the class in small groups, ask them to perform the activity as suggested in 'Learning by Doing' section on page 240.

**[Collaborative and Experiential Learning]**

## EXPLAIN

Refer textbook pages 233–236, explain the operation of multiplication and division of money by solving some examples on the board.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ₹ | | 3 | 4 | 8 | . 2 | 5 |
| × | | | | | | 1 | 2 |
| | ₹ | | 6 | 9 | 6 | 5 | 0 |
| + | ₹ | 3 | 4 | 8 | 2 | 5 | 0 |
| | ₹ | 4 | 1 | 7 | 9 | . 0 | 0 |

Hence, ₹348.25 × 12 = ₹4179.00

14)213.50(15.25
−14
73
−70
35
−28
70
−70
0

Hence, ₹213.50 ÷ 14 = ₹15.25

After understanding it, explain about the bill by showing them a real bill of any purchase done last month.

**[Conceptual Understanding]**

## ELABORATE

Divide the class into groups of 3–4 students. Assign a task to each group. Ask them to make a list of items and their quantities they need for the celebration of Teacher's Day, Children's Day, Republic Day, Diwali, Christmas, etc. Write the unit price of the items listed on the board and instruct the class to make a bill for their purchase. For instance, make a bill in the class so that they could learn how to prepare it.

| Bill No.<br>0718 | Name and Address:<br>Maya,<br>F-6, Punjabi Bagh,<br>Delhi | | All-in-One Shop<br>Paschim Vihar, Delhi<br>Phone: 011-xxxxxxxxxx<br>Date: 14/10/20xx | |
|---|---|---|---|---|
| **S.No.** | **Items** | **Quantity** | **Rate** | **Amount** |
| | | | ₹ | ₹ |
| 1. | Tricolour Balloons | 3 packets | ₹50 per packet | 150 |
| 2. | Flags | 4 dozen | ₹120 per dozen | 480 |
| 3. | Sweets | 2 kg | ₹360 per kg | 720 |
| 4. | Flowers | 500 g | ₹240 per kg | 120 |
| | | | **Grand Total =** | **1470** |

## EVALUATE

**Classwork:** Ask to practice Q3, 4, 8, 9 of Practice Time 13C and Q1 of Practice Time 13D.

**Homework:** Ask to practice remaining questions of Practice Time 13C and 13D.

## ENHANCE

Ask students to complete the Life Skills given on page 236.

| **Periods: 9–10** | **Topic: (Revision)**<br>**Chapter assessment** | **Suggested extra teaching aids:**<br>**Math Math Genius 4 pages 237–240** |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts and queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Chapter Assessment, Mental Maths and Brain Sizzlers.

## ELABORATE

Discuss questions 1 to 5 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Mental Maths given on page 239.

## EVALUATE

**Classwork:** Ask to practice Q1 to 5 of Chapter Assessment.

**Homework:** Ask to practice Q6 to 10 of Chapter Assessment. and Brain Sizzlers given on page 239.

ORANGE

# ASSIGNMENT–25

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

**1.** Jai has 50 coins of ₹10, 60 coins of ₹5, 30 coins of ₹2, 20 coins of ₹20. How much money Jai has?

(*a*) ₹900 (*b*) ₹980 (*c*) ₹1060 (*d*) ₹1260

**2.** See the table below and answer the following questions:

| Items | Price |
|---|---|
| Dozen of Spoons | ₹300 |
| Dozen of Plates | ₹710 |
| Dozen of Tea cups | ₹410 |
| A pot | ₹230 |
| A bowl | ₹130 |
| Total | ? |

What is the total cost of items on the price list?

(*a*) ₹1870 (*b*) ₹1780 (*c*) ₹2000 (*d*) ₹1060

**3.** Lara bought a packet of peanuts for ₹130. If she paid ₹500, how much change did she receive?

(*a*) ₹630 (*b*) ₹270 (*c*) ₹470 (*d*) ₹370

**4.** Nishi parked her scooty at a parking for 2 hours in which 1 hour costs ₹10. On paying she gave ₹50. How much change did she receive?

(*a*) ₹30 (*b*) ₹40 (*c*) ₹20 (*d*) ₹60

**5.** Fire crackers cost ₹120 and a Christmas tree costs ₹53. If I pay ₹200 for a fire cracker and a Christmas tree, how much will my balance be?

(*a*) ₹27 (*b*) ₹30 (*c*) ₹80 (*d*) ₹90

**6.** A day at the hotel costs ₹600. If I spend 8 days and pay ₹5,000 at the reception, how much is my change going to be?

(**a**) ₹0 (*b*) ₹100 (*c*) ₹200 (*d*) ₹400

**7.** John had ₹500 to buy drinks and sandwiches for his birthday party. He bought 5 small bottles of drinks at ₹24 per bottle and 8 sand sandwiches at ₹16 per piece. How much money was left after the shopping?

(*a*) ₹232 (*b*) ₹230 (*c*) ₹252 (*d*) ₹248

**8.** Price of two tables is equal to the price of five chairs. Arwind buys 4 tables and 4 chairs and paid ₹4396. Find the cost of 7 chairs.

(*a*) ₹2198 (*b*) ₹2083 (*c*) ₹2188 (*d*) ₹2298

ORANGE

# ASSIGNMENT–26

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

1. _____ 50-paise coins make ₹20.
2. The cost of 500 mL cooking oil at the rate of ₹125 per litre is_____ .
3. Three ₹5 coins, six ₹10 coins, seven ₹20 coins and two ₹50 notes amount to _____ .
4. The sum of ₹96.45 + ₹128.25 + ₹104.75 = ---------- p.
5. ₹176 ÷ 4 = ₹11 ×_____.

## B. Label True or False.

1. The difference between ₹75 and ₹56.50 is ₹19.50. .....
2. Sujit earns ₹180 by selling 12 kg guavas. His earning is ₹15 for 1 kg guavas. .....
3. Chand sells candies at ₹0.50 per piece. He will give 25 candies for ₹50. .....
4. A shopkeeper buys wheat at ₹23 per kg and sells it at ₹25 per kg. He earning will be ₹200 per quintal. .....
5. A fruit seller sells bananas at the rate of ₹60 per dozen. So he will give 15 bananas for ₹80. .....

## C. Match the following.




| Column I | Column II |
|---|---|
| 1. 2 samosas and 1 cold drink | (*a*) ₹132 |
| 2. 3 patties, 2 teas and 1 coffee | (*b*) ₹67 |
| 3. 4 sandwiches and 2 cold drinks | (*c*) ₹44 |
| 4. 1 samosa, 2 patties and 1 sandwich | (*d*) ₹140 |
| 5. 6 samosas, 1 cold drink and 5 teas | (*e*) ₹71 |

## D. Utilise Your Brain.

Two bags of sugar cost ₹740 and buying one bag of sugar only costs ₹390. How much do you save by buying two bags of sugar at the same time rather than one at a time?




# Data Handling

## Learning Objectives

**After studying this chapter, students will be able to...**

- organise data using tally chart
- represent the data using pictograph and interpret it
- represent the data using bar graph and interpret it

# LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Book: Math Genius! 4, notebook, chalk, blackboard or whiteboard, projector, smartboard, some real-life objects like eraser, pen, pencil, information, some stickers or real objects, A-4 size sheet.

**Keywords:** Data, Tally Chart, Pictograph, Bar graph

**Pre-requisite knowledge:** Students must be familiar with data as a numerical information.

**NEP feature:** The way of teaching provides experiential learning opportunities to the students and allows them to work with the support of each other which helps in their holistic development.

| Periods: 1–4 | Topics: Recap; Data; Organising Data; Pictorial Representation of Data: A Pictograph | Suggested extra teaching aids: Math Genius 4 pages 241–246 |
|---|---|---|

## ENGAGE

Interact with students and ask what are their favourite subjects. Make a table as shown below and instruct the students to put a bar ( | ) in the corresponding row of the subject.

| Subject | Tally marks | No. of students |
|---|---|---|
| English | | |
| Hindi | | |
| Mathematics | | |
| EVS | | |
| GK | | |

Have them understand that we draw four vertical lines up to four observations and the fifth observation is represented by a line runs diagonally over the previous vertical four lines, such as |||| .

After taking their responses, ask some questions based on the data collected.
Which subject is liked the most?
How many students like EVS the most?
How many more/less students like Mathematics than English?
Then teacher will revise the learners' previous knowledge about Data Handling with the help of "Get Ready" section given in the book. **[Holistic and Experiential Learning]**

## EXPLORE

Divide the class into groups of 4–5 students. Assign a task to each group for collecting data, such as number of students present/absent in different classes/sections of a class, students having any pet, modes of transport they use to come school, and so on. After tabulation of data, instruct them to show them pictorially and describe what it represents.

Monitor students' participation and engagement during the activities.

**[Collaborative and Experiential Learning]**

## EXPLAIN

Start the class with an interaction regarding any real life situation. Consider any data and demonstrate how to represent it pictorially using symbols and pictures. Further, display any pictograph on the projector and explain how to interpret it. Refer textbook pages 241–245 for explanation and examples.

**[Conceptual Understanding]**

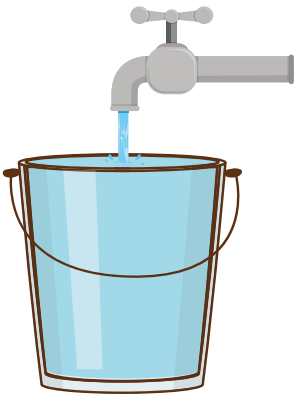
## ELABORATE

Display a pictograph/tally chart on the screen or on the board. Tell the students to observe it and explain what they think about.

The graph given below shows the number of buckets filled in 30 minutes by different taps.

| Taps | Bucket |
|---|---|
| Tap A | |
| Tap B | |
| Tap C | |
| Tap D | |
| Tap E | |
| Tap F | |

= 1 full bucket = half bucket



For interpretation the graph, ask some questions, such as:

In which tap water flows the fastest?

How many buckets can be filled in 1 hour by the tap in which water flows the slowest?

How many buckets can be filled by tap A in 2 hours?
If a full bucket holds 20 L of water, how much water flows from tap B in 30 minutes?
Arrange the taps in order showing lowest to fastest running water.
Discuss the answers of these questions. Hence, motivate students to solve questions given in the book.

**[Experiential Learning]**

## EVALUATE

**Classwork:** Ask to practice Q.1, 3 and 5 of Practice Time 14A.
**Homework:** Ask to practice remaining questions of Practice Time 14A.

## ENHANCE

Ask students to solve Maths Connect section given on page 244. **[Cross-curricular Learning]**

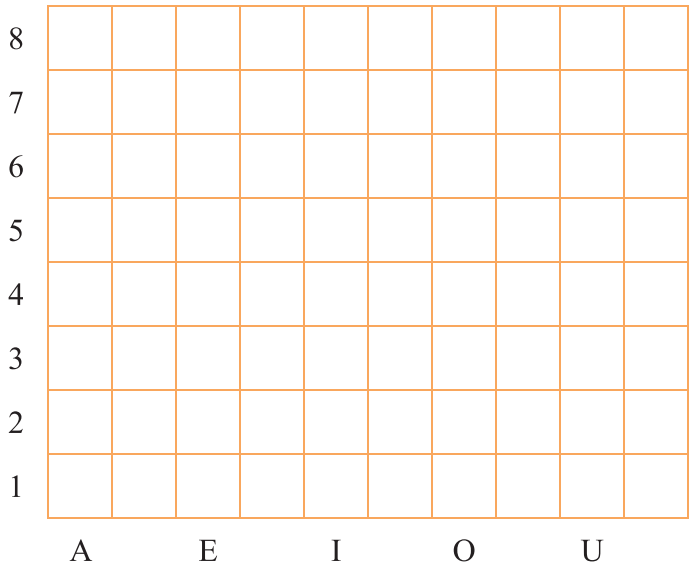
| Periods: 5–8 | Topic: Bar Graph | Suggested extra teaching aids: Math Genius 4 pages 247–249 |
|---|---|---|

## ENGAGE

Start the class with a hands-on. Ask students to write 5 lines about their favourite cartoon character. Instruct them to count the number of different vowels appear in their writing. **[Critical Learning]**

## EXPLORE

Tell the students to take a square grid paper. Write the five alphabets at the bottom of the sheet, leaving a gap of one box as shown below. Then colour the number of boxes as the number of vowels they have noted down earlier.




Have them understand that they have made a bar graph. Instruct them to compare their graphs with their bench partner and discuss. **[Collaborative and Experiential Learning]**

## EXPLAIN

Refer textbook pages 247-248, explain that bar graph is another way of representation of data. Demonstrate how to represent data through a bar graph and how to read the information from a given bar graph. Every bar graph has:

(*a*) a title explaining the information given in the graph.
(*b*) the horizontal and vertical axes.

(*c*) the labels explaining the meaning of each bar.

(*d*) the scale that is chosen for given data.

Focus on these terms through an example.

The bar graph drawn alongside represents marks obtained by Riya in the unit tests.

In this bar graph, we observe that:

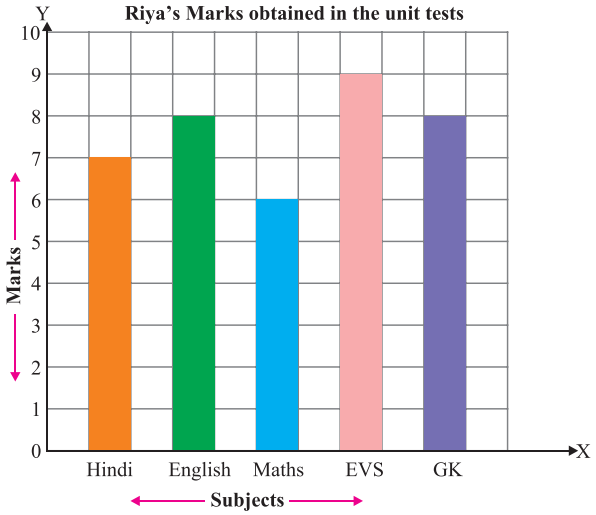
(*a*) **Title:** Riya's marks obtained in unit tests.

(*b*) **Axes:** Horizontal axis ⟶ X-axis.
Vertical axis ⟶ Y-axis.

(*c*) **Labels:** Subjects are labelled on X-axis and marks on Y-axis.

(*d*) **Scale:** On vertical axis, 1 unit length = 1 mark.

**[Conceptual Understanding]**




## ELABORATE

Divide the class into groups of 3–4 students. Ask the groups to do the activity as suggested under in Life Skills section on page 249.

## EVALUATE

**Classwork:** Ask to practice Q1 and 3 of Practice Time 14B.

**Homework:** Ask to practice Q2 of Practice Time 14B.

## ENHANCE

Ask students to complete the Project given on page 251.

| Periods: 9–10 | Topic: (Revision)<br>Chapter assessment | Suggested extra teaching aids:<br>Math Genius 4 pages 250–254 |
|---|---|---|

## ENGAGE

Make students comfortable, so that they can ask any question on any previously taught topics. Clarify the doubts or queries and start the revision of the exercise.

## EXPLAIN

Start the revision of the exercise by using Encapsulate, Brain Sizzlers and Chapter Assessment.

## ELABORATE

Discuss questions 1 and 5 in the Chapter Assessment and accept students answer. If they have any confusion or do any error then explain and correct it. Motivate students to solve Brain Sizzlers given on page 250.

## EVALUATE

**Classwork:** Ask to practice Q1 and 5 of Chapter Assessment and Brain Sizzlers given on page 250.

**Homework:** Ask to practice Q2 to 4 of Chapter Assessment.

## ENHANCE

Ask students to perform the activity as suggested in Learning by Doing section given on page 254.

ORANGE

# ASSIGNMENT–27

Marks Obtained: _____

Student's Name: _____ Section: _____

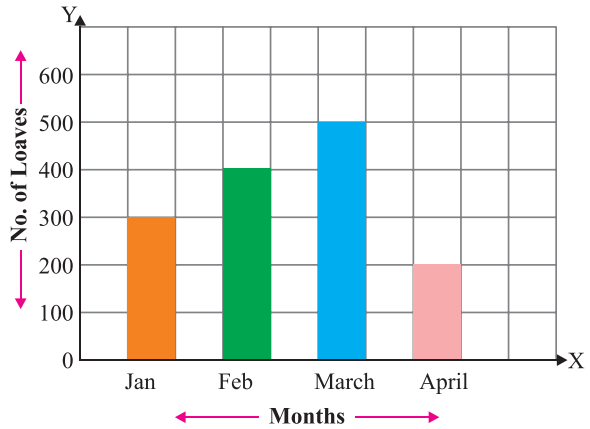
Roll Number: _____ Date: _____

**Directions (Q.1–5):** 60 children visit the zoo. They each vote for their favourite animal. Complete the table and answer the questions that follows:

| Favourite Animal | Tally Marks | Number of Children |
|---|---|---|
| Cheetah | 𝍸 \|\| | |
| Lion | | 22 |
| Tiger | 𝍸 𝍸 \|\|\| | |
| Panther | | 8 |
| Leopard | 𝍸 𝍸 | |

1. Maximum number of children voted for
   (*a*) Leopard (*b*) Panther (*c*) Lion (*d*) Tiger
2. How many children voted for Leopard?
   (*a*) 7 (*b*) 8 (*c*) 10 (*d*) 13
3. How many more children voted for Tiger than Panther?
   (*a*) 5 (*b*) 4 (*c*) 3 (*d*) 2
4. Minimum number of children voted for
   (*a*) Panther (*b*) Lion (*c*) Tiger (*d*) Cheetah
5. How many fewer children voted for Cheetah than Lion?
   (*a*) 13 (*b*) 15 (*c*) 12 (*d*) 9

**Directions (Q.6-7):** The graph given below shows the number of loaves of bread baked in a bakery in the first four months of a year. Study the graph and answer the questions that follows:




6. How many more loaves were baked in March than in April?
   (*a*) 100 (*b*) 200 (*c*) 300 (*d*) 400
7. How many loaves of bread were baked in all?
   (*a*) 1000 (*b*) 700 (*c*) 1200 (*d*) 1400

ORANGE

# ASSIGNMENT–28

Marks Obtained: _____

Student's Name: _____ Section: _____

Roll Number: _____ Date: _____

## A. Fill in the blanks.

These two pictographs compare how many cups of coffee and tea a shop sold in 5 weeks.

| Week | Cups of Coffee |
|---|---|
| Week 1 | |
| Week 2 | |
| Week 3 | |
| Week 4 | |
| Week 5 | |

= 60 cups = 30 cups

| Week | Cups of Tea |
|---|---|
| Week 1 | |
| Week 2 | |
| Week 3 | |
| Week 4 | |
| Week 5 | |

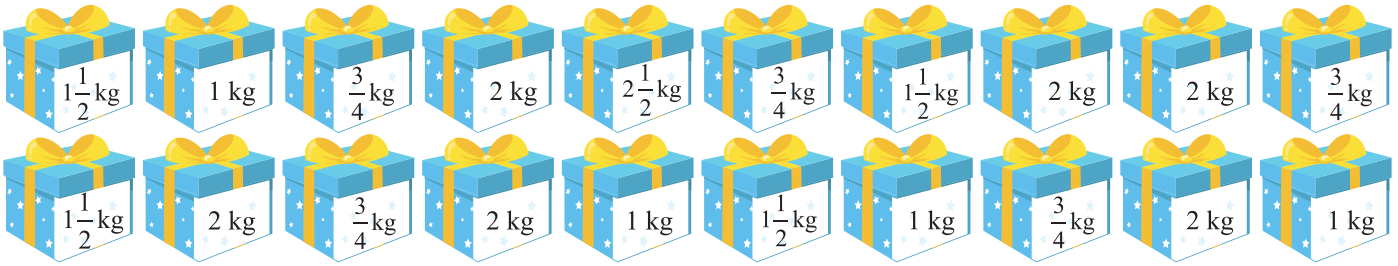
= 100 cups = 50 cups

Study the pictograph and complete the following statements.

1. _____ cups of coffee were sold on week 4.
2. On week _____ the shop sold 210 cups of coffee.
3. The shop sold _____ less cups of tea on week 1 than week 2.
4. On week _____ they sold more than 400 cups of tea.
5. _____ cups of coffee and tea were sold in the 3rd week.

## B. Label True or False.

A courier agency got some parcels whose weights are given below.




1. 5 parcels have less than 1 kg weight. .....
2. 10 parcels have more than 1 kg weight. .....
3. 6 parcels have 2 kg weight. .....
4. Total 4 parcels have their weight between 1 kg and 2 kg. .....
5. Total weight of these parcels is more than 30 kg. .....

## C. Utilise Your Brain.

In a class, 24 students like to play indoor game, 25 students like to play outdoor game and 11 students like both type of game. If every students like at least one game, how many students are there in the class?

# ANSWERS OF THE ASSIGNMENTS

## ASSIGNMENT-1

**1.** (*a*) **2.** (*c*) **3.** (*a*) **4.** (*a*) **5.** (*d*)
**6.** (*b*) **7.** (*c*) **8.** (*b*) **9.** (*d*) **10.** (*c*)
**11.** (*c*) **12.** (*b*)

## ASSIGNMENT-2

**A. 1.** 10234 **2.** 5-digit **3.** 2 **4.** CCCXCIX
**5.** 860134
**B. 1.** True **2.** False **3.** False **4.** True **5.** True
**C. 1.** (*e*) **2.** (*d*) 3. (*a*) **4.** (*b*) **5.** (*c*)
**D.** 987211

## ASSIGNMENT-3

**1.** (*c*) **2.** (*b*) **3.** (*d*) **4.** (*a*) **5.** (*b*)
**6.** (*c*) **7.** (*d*) **8.** (*b*) **9.** (*a*) **10.** (*c*)
**11.** (*c*) **12.** (*d*)

## ASSIGNMENT-4

**A. 1.** 41050 **2.** 49999 **3.** 9000 **4.** 5400 **5.** 9
**B. 1.** False **2.** False **3.** False **4.** True **5.** False
**C. 1.** (*d*) **2.** (*e*) **3.** (*a*) **4.** (*b*) **5.** (*c*)
**D. 1.** 580617 **2.** 95015 **3.** 41614

## ASSIGNMENT-5

**1.** (*d*) **2.** (*a*) **3.** (*c*) **4.** (*a*) **5.** (*c*)
**6.** (*b*) **7.** (*c*) **8.** (*a*) **9.** (*b*) **10.** (*d*)

## ASSIGNMENT-6

**A. 1.** 999 **2.** 100 **3.** 40 **4.** 25 **5.** 0
**B. 1.** True **2.** True **3.** True **4.** True **5.** True
**C. 1.** (*d*) **2.** (*a*) **3.** (*b*) **4.** (*e*) **5.** (*c*)
**D. 1.** 210 **2.** 420 **3.** 108

## ASSIGNMENT-7

**1.** (*a*) **2.** (*a*) **3.** (*c*) **4.** (*a*) **5.** (*c*)
**6.** (*a*) **7.** (*a*) **8.** (*a*) **9.** (*b*) **10.** (*c*)
**11.** (*d*) **12.** (*b*)

## ASSIGNMENT-8

**A. 1.** 45 **2.** 2042 **3.** 245 **4.** 1000 **5.** 0
**B. 1.** False **2.** True **3.** True **4.** False **5.** False
**C. 1.** (*c*) **2.** (*d*) **3.** (*a*) **4.** (*e*) **5.** (*b*)
**D. 1.** 28 **2.** 12 **3.** ₹680

## ASSIGNMENT-9

**1.** (*b*) **2.** (*a*) **3.** (*a*) **4.** (*c*) **5.** (*d*)
**6.** (*b*) **7.** (*a*) **8.** (*b*) **9.** (*d*) **10.** (*c*)
**11.** (*b*) **12.** (*a*)

## ASSIGNMENT-10

**A. 1.** 56 **2.** 1 **3.** 45 **4.** 4 **5.** 0
**B. 1.** True **2.** True **3.** False **4.** True **5.** False
**C. 1.** (*e*) **2.** (*d*) **3.** (*a*) **4.** (*b*) **5.** (*c*)
**D.**

| | | | |
|---|---|---|---|
| Even number | 2 | 6 | 88 |
| Odd number | 17 | 9 | 11 |
| | Prime number | Factors of 18 | Multiples of 11 |

## ASSIGNMENT-11

**1.** (*b*) **2.** (*c*) **3.** (*a*) **4.** (*d*) **5.** (*c*)
**6.** (*c*) **7.** (*a*) **8.** (*d*) **9.** (*b*) **10.** (*b*)

## ASSIGNMENT-12

**A. 1.** $\frac{2}{18}$ **2.** like **3.** $\frac{3}{4}$ **4.** less **5.** unit
**B. 1.** True **2.** False **3.** True **4.** True **5.** True
**C. 1.** (*c*) **2.** (*a*) **3.** (*b*) **4.** (*e*) **5.** (*d*)
**D. 1.** $\frac{4}{20}$ or $\frac{1}{5}$ **2.** $\frac{9}{27}$ or $\frac{1}{3}$ **3.** $\frac{3}{7}$ **4.** 3 gifts

## ASSIGNMENT-13

**1.** (*a*) **2.** (*d*) **3.** (*c*) **4.** (*a*) **5.** (*a*)
**6.** (*b*) **7.** (*c*) **8.** (*d*) **9.** (*a*) **10.** (*a*)
**11.** (*b*)

## ASSIGNMENT-14

**A. 1.** decimal **2.** 4 tenths or 0.4 **3.** 4.81
**4.** One hundred forty-three point seven five **5.** 209.37
**B. 1.** True **2.** False **3.** False **4.** True **5.** False
**C. 1.** (*b*) **2.** (*c*) **3.** (*d*) **4.** (*e*) **5.** (*a*)
**D. 1.** $\frac{9}{100}$ or 0.09 **2.** $\frac{64}{100}$ or 0.64

## ASSIGNMENT-15

**1.** (*a*) **2.** (*b*) **3.** (*c*) **4.** (*a*) **5.** (*b*)
**6.** (*a*) **7.** (*b*) **8.** (*d*) **9.** (*a*) **10.** (*b*)

## ASSIGNMENT-16

**A. 1.** two **2.** vertex **3.** diameter **4.** Radius **5.** diagonal
**B. 1.** False **2.** False **3.** True **4.** True **5.** True
**C. 1.** (*d*) **2.** (*c*) **3.** (*e*) **4.** (*a*) **5.** (*b*)
**D. 1.** 10 **2.** 7 **3.** 2

## ASSIGNMENT-17

**1.** (*c*) **2.** (*d*) **3.** (*a*) **4.** (*b*) **5.** (*c*)
**6.** (*d*) **7.** (*d*) **8.** (*b*)

## ASSIGNMENT-18

**A. 1.** infinite **2.** 315 **3.** diagonal
**4.** 216 **5.** 3
**B. 1.** (*d*) **2.** (*a*) **3.** (*e*) **4.** (*c*) **5.** (*b*)
**C. 1. 6** 2. 7 3. 8

## ASSIGNMENT-19

**1.** (*b*) **2.** (*b*) **3.** (*a*) **4.** (*c*) **5.** (*d*)
**6.** (*d*) **7.** (*c*) **8.** (*c*) **9.** (*d*) **10.** (*a*)
**11.** (*b*) **12.** (*c*) **13.** (*b*)

## ASSIGNMENT-20

**A. 1.** multiply **2.** 100 **3.** 8 **4.** 650
**5.** 2 L 925 mL
**B. 1.** False **2.** False **3.** True **4.** True **5.** True
**C. 1.** (*e*) **2.** (*d*) **3.** (*a*) **4.** (*b*) **5.** (*c*)
**D. 1.** Cookies **2.** 270 g

## ASSIGNMENT-21

**1.** (*c*) **2.** (*a*) **3.** (*b*) **4.** (*d*) **5.** (*b*)
**6.** (*c*) **7.** (*b*) **8.** (*d*)

## ASSIGNMENT-22

**A. 1.** Sum of its sides **2.** Side **3.** 80 cm
**4.** boundary **5.** area
**B. 1.** True **2.** False **3.** True **4.** False **5.** True
**C. 1.** (*e*) B **2.** (*a*) E **3.** (*d*) A **4.** (*b*) C **5.** (*c*) D
**D.** 1 m

## ASSIGNMENT-23

**1.** (*c*) **2.** (*b*) **3.** (*a*) **4.** (*b*) **5.** (*c*)
**6.** (*a*) **7.** (*d*) **8.** (*c*) **9.** (*b*) **10.** (*d*)
**11.** (*d*) **12.** (*b*)

## ASSIGNMENT-24

**A. 1.** Sunday **2.** May 29 **3.** 3600
**4.** 168 **5.** 184
**B. 1.** False **2.** False **3.** True **4.** False **5.** True
**C. 1.** (*d*) **2.** (*c*) **3.** (*e*) **4.** (*b*) **5.** (*a*)
**D.** Smith

## ASSIGNMENT-25

**1.** (*d*) **2.** (*b*) **3.** (*d*) **4.** (*a*) **5.** (*a*)
**6.** (*c*) **7.** (*c*) **8.** (*a*)

## ASSIGNMENT-26

**A. 1.** 40 **2.** ₹62.50 **3.** ₹315 **4.** 32945 **5.** 4
**B. 1.** False **2.** True **3.** False **4.** True **5.** False
**C. 1.** (*c*) **2.** (*e*) **3.** (*d*) **4.** (*b*) **5.** (*a*)
**D.** ₹40

## ASSIGNMENT-27

**1.** (*c*) **2.** (*c*) **3.** (*a*) **4.** (*d*) **5.** (*b*)
**6.** (*c*) **7.** (*d*)

## ASSIGNMENT-28

**A. 1.** 240 **2.** 5 **3.** 50 **4.** 4 **5.** 550
**B. 1.** True **2.** False **3.** True **4.** True **5.** False
**C.** 38 students

# DETAILED SOLUTIONS

## CHAPTER 1 : LARGE NUMBERS

### Let's Recall

**1.** (*a*) 4379 = Four thousand three hundred seventy-nine.
(*b*) 8900 = Eight thousand nine hundred.
(c) 7159 = Seven thousand one hundred fifty-nine.
(*d*) 9999 = Nine thousand nine hundred ninety-nine.

**2.** (*a*) Three thousand seven hundred twenty = 3720.
(*b*) Five thousand eight hundred sixty-two = 5862.
(*c*) Eight thousand eighty-eight = 8088.
(*d*) Five thousand nine = 5009.

**3.** (*a*) The place value of 3 in 7301 is 300.
(*b*) The place value of 0 in 3067 is 0.
(*c*) 1000 more than 5688 is 6688.
(*d*) 6674 = 6 thousands + 6 hundreds + 7 tens + 4 ones.
(*e*) 6236 is the predecessor of 6237.

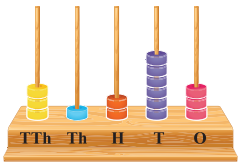
### Practice Time 1A

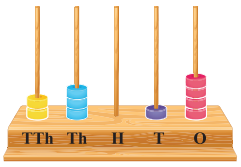
**1.**

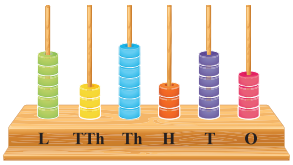
| | Lakhs (L) (100000) | Ten Thousands (TTh) (10000) | Thousands (Th) (1000) | Hundreds (H) (100) | Tens (T) (10) | Ones (1) |
|---|---|---|---|---|---|---|
| (*a*) | | 3 | 7 | 0 | 3 | 6 |
| (*b*) | | 4 | 3 | 6 | 4 | 5 |
| (*c*) | 3 | 8 | 6 | 4 | 4 | 9 |
| (*d*) | 6 | 4 | 0 | 3 | 9 | 6 |

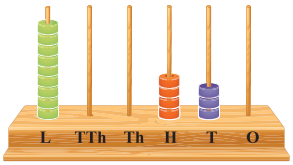
**2.** (*a*) Thirty-six thousand four hundred thirteen = 36413.
(*b*) Forty-three thousand ninety-eight = 43098.
(*c*) Four lakh ninety thousand two hundred twenty-three = 490223.
(*d*) Seven lakh four thousand eight nine = 704089.

**3.** (*a*) 32,064 = Thirty-two thousand sixty-four.
(*b*) 36,379 = Thirty-six thousand three hundred seventy-nine.
(*c*) 94,008 = Ninety-four thousand eight.
(*d*) 27,114 = Twenty-seven thousand one hundred fourteen.
(*e*) 4,13,066 = Four lakh thirteen thousand sixty-six.
(*f*) 7,36,395 = Seven lakh thirty-six thousand three hundred ninety-five.
(*g*) 4,49,078 = Four lakh forty-nine thousand seventy-eight.
(*h*) 2,57,141 = Two lakh fifty-seven thousand one hundred forty-one.

**4.** (*a*) 

(*b*) 

(*c*) 

(*d*) 


**5.** (*a*) 52,483 = Fifty-two thousand four hundred eighty-three.
(*b*) 60,135 = Sixty thousand one hundred thirty.
(*c*) 5,42,638 = Five lakh forty-two thousand six hundred thirty-eight.

**6.** (*a*) Numbers between 56,201 and 56,219
= 56,202; 56,203; 56,204; 56,205; 56,206; 56,207; 56,208; 56,209; 56,210; 56,211; 56,212; 56,213; 56,214; 56,215; 56,216; 56,217; 56,218
(*b*) to (*d*) — Same as part (*a*).

### Quick Check (Page 15)

**1.** 200000 + 50000 + 100 + 60 + 9 = 250169

**2.** 3 × 10000 + 7 × 1000 + 6 × 100 + 8 × 1 = 37608

### Think and Answer (Page 16)

**1.** Greatest 5-digit number = 99999
Successor = 99999 + 1 = 1,00,000

**2.** Greatest 6-digit number = 999999
Predecessor = 999999 – 1 = 999998
Number of digits = 6

## Practice Time 1B

**1.** (*a*) 46975 = 900 (*b*) 70347 = 70000
(*c*) 27364 = 7000 (*d*) 373640 = 0
(*e*) 436243 = 400000 (*f*) 508244 = 0

**2.** (*a*) We can express 47889 in the expanded form as
$47889 = 4 \times 10000 + 7 \times 1000 + 8 \times 100 + 8 \times 10 + 9 \times 1$
$= 40000 + 7000 + 800 + 80 + 9$

(*b*) We can express 80791 in the expanded form as
$80791 = 8 \times 10000 + 0 \times 1000 + 7 \times 100 + 9 \times 10 + 1 \times 1$
$= 80000 + 0 + 700 + 90 + 1$
$= 80000 + 700 + 90 + 1$

(*c*) We can express 578914 in the expanded form as
$578914 = 5 \times 100000 + 7 \times 10000 + 8 \times 1000 + 9 \times 100 + 1 \times 10 + 4 \times 1$
$= 500000 + 70000 + 8000 + 900 + 10 + 4$

(*d*) We can express 800450 in the expanded form as
$800450 = 8 \times 100000 + 0 \times 10000 + 0 \times 1000 + 4 \times 100 + 5 \times 10 + 0$
$= 800000 + 0 + 0 + 400 + 50 + 0$
$= 800000 + 400 + 50$

**3.** (*a*) $300000 + 8000 + 900 + 60 = 308960$

(*b*) $1L + 4TTh + 3Th + 6H + 2T + 9O$
$= 1 \times 100000 + 4 \times 10000 + 3 \times 1000 + 6 \times 100 + 2 \times 10 + 9 \times 1$
$= 1 + 100000 + 40000 + 3000 + 600 + 20 + 9$
$= 143629$

(*c*) $8 \times 100000 + 7 \times 10000 + 5 \times 1000 + 4 \times 100 + 2 \times 1$
$= 800000 + 70000 + 5000 + 400 + 2$
$= 875402$

**4.** (*a*) Predecessor of 34364 = 34364 – 1 = 34363
Successor of 34364 = 34364 + 1 = 34365

(*b*) Predecessor of 73648 = 73648 – 1 = 73647
Successor of 73648 = 73648 + 1 = 73649

(*c*) Predecessor of 11143 = 11143 – 1 = 11142
Successor of 11143 = 11143 + 1 = 11144

(*d*) Predecessor of 840068 = 840068 – 1 = 840067
Successor of 840068 = 840068 + 1 = 840069

(*e*) Predecessor of 154836 = 154836 – 1 = 154835
Successor of 154836 = 154836 + 1 = 154837

(*f*) Predecessor of 199999 = 199999 – 1 = 199998
Successor of 199999 = 199999 + 1 = 200000

**5.** (*a*) Sum of the place value of two 6s in 460246
= 60000 + 6 = 60006

(*b*) Place value of 4 in 740128 = 40000
Face value of 4 in 740128 = 4
Difference = 40000 – 4 = 39996

## Practice Time 1C

**1.** (*a*) 58,696 $\boxed{<}$ 9,98,769 (*b*) 63,201 $\boxed{<}$ 63,990
(*c*) 4,69,422 $\boxed{>}$ 4,66,422
(*d*) 9,99,989 $\boxed{<}$ 9,99,999

**2.** (*a*) Greatest number = 87,856
Smallest number = 38,857

(*b*) Greatest number = 4,88,332
Smallest number = 45,657

(*c*) Greatest number = 6,45,562
Smallest number = 6,45,172

(*d*) Greatest number = 5,78,960
Smallest number = 5,68,960

**3.** (*a*) First, we arrange the given numbers in the place value chart and then start comparing.

| TTh | Th | H | T | O | |
|---|---|---|---|---|---|
| 2 | 7 | 8 | 9 | 5 | → *ii* |
| 2 | 7 | 6 | 5 | 6 | → *i* |
| 8 | 8 | 9 | 7 | 5 | → *iv* |
| 7 | 5 | 6 | 9 | 0 | → *iii* |

27,656 is the smallest number and 88,975 is the greatest number.
Also, 27,895 is smaller than 75,690
So, 27,656 < 27,895 < 75,690 < 88,975.

(*b*) First, we arrange the given numbers in the place value chart and then start comparing.
39,850 is the smallest number and 49,560 is the greatest number.
Also, 39,856 is smaller than 39,876
So, 39,850 < 39,856 < 39,876 < 49,560.

| TTh | Th | H | T | O | |
|---|---|---|---|---|---|
| 3 | 9 | 8 | 5 | 0 | → *i* |
| Same 3 | 9 | 8 | 5 | 6 | → *ii* |
| 3 | 9 | 8 | 7 | 6 | → *iii* |
| 4 | 9 | 5 | 6 | 0 | → *iv* |
| | Same | | | | |

(*c*) Same as part (*b*)

(*d*) Same as part (*b*)

**4.** (*a*) First, we arrange the given numbers in the place value chart and then start comparing.

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 4 | 2 | 5 | 6 | 0 |
| 4 | 2 | 1 | 0 | 3 |
| 4 | 2 | 1 | 0 | 5 |
| 4 | 2 | 2 | 0 | 6 |
| | ↑ Same | ↑ Same | | |

42,560 is the greatest number and 42,103 is the smallest number.

Also, 42,206 is greater than 42,105

So, 42,560 > 42,206 > 42,105 > 42,103.

(*b*) Same as part (*a*)

(*c*) Same as part (*a*)

(*d*) Same as part (*a*)

## Practice Time 1D

**1.**

| | Digits | Greatest number | Smallest number |
|---|---|---|---|
| (*a*) | 2, 7, 3, 5, 1 | 75321 | 12357 |
| (*b*) | 7, 5, 4, 8, 0 | 87540 | 40578 |
| (*c*) | 9, 8, 3, 0, 2, 6 | 986320 | 203689 |
| (*d*) | 0, 1, 9, 6, 3, 7 | 976310 | 103679 |

**2.**

| | Digits | Greatest 5-digit number | Smallest 5-digit number |
|---|---|---|---|
| (*a*) | 5, 8, 3, 4 | 88543 | 33458 |
| (*b*) | 6, 0, 7 | 77760 | 60007 |
| (*c*) | 2, 7, 8 | 88872 | 22278 |
| (*d*) | 9, 6, 0 | 99960 | 60009 |
| (*e*) | 5, 0 | 55550 | 50000 |

**3.**

| | Digits | Greatest 6-digit number | Smallest 6-digit number |
|---|---|---|---|
| (*a*) | 1,9,7,5,0 | 997510 | 100579 |
| (*b*) | 2,4,6,8 | 888642 | 222468 |
| (*c*) | 3,7,0,9 | 999730 | 300079 |
| (*d*) | 6,8,9 | 999986 | 666689 |
| (*e*) | 4,7 | 777774 | 444447 |

## Practice Time 1E

**1.** (*a*) 843 = 840 (*b*) 785 = 790
(*c*) 997 = 1000 (*d*) 3265 = 3270
(*e*) 7545 = 7550 (*f*) 9048 = 9050
(*g*) 10,200 = 10200 (*h*) 14,563 = 14560

**2.** (*a*) 2,832 = 2,800 (*b*) 4,567 = 4,600
(*c*) 5,055 = 5,100 (*d*) 9,398 = 9,400
(*e*) 7,500 = 7,500 (*f*) 14,657 = 14,700
(*g*) 32,195 = 32,200 (*h*) 43,629 = 43,600

**3.** (*a*) 23,471 = 23,000 (*b*) 43,805 = 44,000
(*c*) 60,030 = 60,000 (*d*) 1,24,350 = 1,24,000
(*e*) 3,45,552 = 3,46,000 (*f*) 9,85,832 = 9,86,000
(*g*) 7,54,325 = 7,54,000 (*h*) 8,32,981 = 8,33,000

## Practice Time 1F

**1.** (*a*) 8 = 5 + 1 + 1 + 1 = VIII
(*b*) 18 = 10 + 5 + 1 + 1 + 1 = XVIII
(*c*) 25 = 10 + 10 + 5 = XXV
(*d*) 29 = 10 + 10 + 9 = XXIX
(*e*) 95 = 90 + 5 = XCV
(*f*) 100 = C
(*g*) 149 = 100 + 40 + 9 = CXLIX
(*h*) 259 = 100 + 100 + 50 + 9 = CCLIX
(*i*) 364 = 100 + 100 + 100 + 50 + 10 + 4 = CCCLXIV
(*j*) 369 = 100 + 100 + 100 + 50 + 10 + 9 = CCCLXIX

**2.** (*a*) XXIX = 10 + 10 + (10 – 1) = 29
(*b*) XLII = (50 – 10) + 1 + 1 = 40 + 2 = 42
(*c*) XLIX = (50 – 10) + (10 – 1) = 40 + 9 = 49
(*d*) XCVIII = (100 – 10) + 5 + 3 = 90 + 8 = 98
(*e*) LXXXIV = 50 + 10 + 10 + 10 + 4 = 84
(*f*) CLVII = 100 + 50 + 5 + 2 = 157
(*g*) CCLI = 100 + 100 + 50 + 1 = 251
(*h*) CCCV = 100 + 100 + 100 + 5 = 305
(*i*) CCCXXXV = 100 + 100 + 10 + 10 + 10 + 5 = 335
(*j*) CCCLVIII = 100 + 100 + 100 + 50 + 5 + 3 = 358

**3.** (*a*) X + IX = 10 + 9 = 19
(*b*) XXI – XVIII = 21 – 18 = 3
(*c*) XXXIII – XIV = 33 – 14 = 19
(*d*) XXVII + IX = 27 + 9 = 36

**4.** (*a*) 11 + 11 = XI + XI = XXII
(*b*) 50 – 1 = 49 = XLIX
(*c*) 100 + 50 = C + L = CL
(*d*) 100 + 100 = C + C = CC

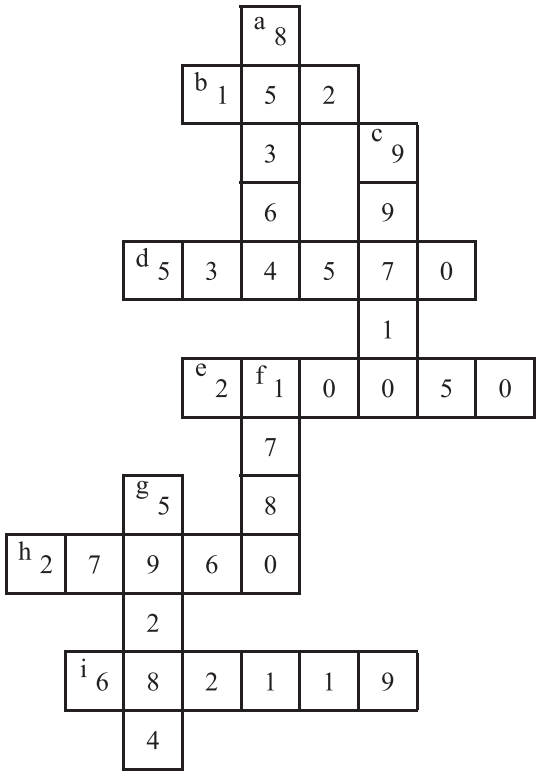
## Mental Maths (Page 26)

**1.** 70 tens = 70 × 10 = 700

**2.** Biggest number = 872500

**3.** CXXIV = 100 + 10 + 10 + 4 = 124

## Maths Fun (Page 26)




## Brain Sizzlers (Page 27)

1. The greatest 5-digit number with 0 at ones place and without repeating the digits = 98760.
2. The smallest 6-digit number with 0 at ones place and without repeating the digits = 123450.
3. The greatest 6-digit number with 0 at hundred place and without repeating the digits = 987065.

## Chapter Assessment

1. (*a*) (*iii*) 6,55,233.
   (*b*) (*i*) 395620 = 300000 + 90000 + 5000 + 600 + 20
   (*c*) (*ii*) Lakhs
   (*d*) (*iv*) 100 tens
2. Given number is 85704
   (*a*) The face value and place value of digit 5 are 5 and 5000 respectively.
   (*b*) 8 is at the ten thousands place.
   (*c*) Place value of the digit 0 in the number is 0.
   (*d*) Place value of the digit 7 is seven hundred.
   (*e*) 4 is the only non-zero digit whose place value is the same as its face value.
3. (*a*) – (*iv*) (∵ LIX + CLIX = 59 + 159 = 218 and CCXVIII = 100 + 100 + 10 + 8 = 218)
   (*b*) – (*i*) (∵ 300 + 109 = 409 and CDIX = (500 – 100) + 9 = 400 + 9 = 409)
   (*c*) – (*ii*) (∵ CCC + XLIX = 100 + 100 + 100 + (50 – 10) + 9 = 349)
   (*d*) – (*iii*) (∵ CXCIV + LXVIII = 100 + (100 – 10) + 50 + 10 + 8 = 100 + 90 + 4 + 50 + 10 + 8 = 262)
4. (*a*) Fifty-four thousand = 54,000 = 3 zeros.
   (*b*) Three lakh = 3,00,000 = 5 zeros.
   (*c*) Eighty thousand = 80,000 = 4 zeros.
5. (*a*) 56,305; 56,306; 56,307; 56,308; 56,309
   (*b*) 2,10,500; 2,10;400; 2,10,300; 2,10,200; 2,10,100
   (*c*) 3,82,354; 4,82,354; 5,82,354; 6,82,354; 7,82,354
6. (*a*) 105488, 105588, 105688, 105788, 105888, 105988
   (*b*) 691345, 692345, 693345, 694345, 695345, 696345
7. ₹3,25,501 = Three lakh twenty-five thousand five hundred one.
   Yes. For helping needy people donation is a good thing.
8.

| | | | | | |
|---|---|---|---|---|---|
| | | | (11) | | |
| | | | (7) | (1) | (15) |
| Number of sarees sold last year = | 1 | 0 | ~~8~~ | ~~2~~ | ~~5~~ |
| Number of sarees sold this year = – | 1 | 0 | 7 | 8 | 9 |
| Difference in sale of sarees = | 0 | 0 | 0 | 3 | 6 |

   Thus, she sold 36 sarees less in this year.
9. Money in saving account of Narayan's father = ₹4,53,900
   Money in saving account of Raman's father = ₹4,51,989
   Since ₹4,53,900 > ₹4,51,989
   Thus, Narayan's father has more money in his saving account.
10. Total number of 5-digit numbers = Greatest number – Smallest number + 1
    = 99999 – 10000 + 1 = 89999 + 1 = 90,000.
11. 10001, 100001 (answer may vary)
12. (*a*) False I can be subtracted from V and X
    (*b*) False V, L and D are never repeated.
    (*c*) False X, C and I can be repeated up to 3 times.
    (*d*) False X can be subtracted from L and C only.

## Maths Connect (Page 29)

1. Highest mountain is Kanchenjunga = 28,169 ft.
2. Heights in ascending order (ft.) = 22940 < 23760 < 24370 < 25446 < 25643 < 28169.

**3.** 22940 = Twenty-two thousand nine hundred forty ft.
23760 = Twenty-three thousand seven hundred sixty ft.
24370 = Twenty-four thousand three hundred seventy ft.
25446 = Twenty-five thousand four hundred forty-six ft.
25643 = Twenty-five thousand six hundred forty-three ft.
28169 = Twenty-eight thousand one hundred sixty-nine ft.

**4.** 22940 = 22900; 25643 = 25600; 28169 = 28200; 24370 = 24400; 23760 = 23800; 25446 = 25400

## CHAPTER 2 : ADDITION AND SUBTRACTION

### Let's Recall

**1.** (*a*)

| | | | | |
|---|---|---|---|---|
| | 2 | 8 | 5 | 4 |
| + | 3 | 1 | 4 | 5 |
| | 5 | 9 | 9 | 9 |

(*b*)

| | | | | |
|---|---|---|---|---|
| | 5 | 8 | 5 | 9 |
| – | 3 | 1 | 4 | 5 |
| | 2 | 7 | 1 | 4 |

**2.** 1150 + 676 + 1850 – 20

We first find the sum of 1150, 676 and 1850 and then find the difference between the sum obtained and 20 as shown below.

| | Th | H | T | O |
|---|---|---|---|---|
| | (1) | (1) | | |
| | 1 | 1 | 5 | 0 |
| | | 6 | 7 | 6 |
| + | 1 | 8 | 5 | 0 |
| | 3 | 6 | 7 | 6 |

| | Th | H | T | O |
|---|---|---|---|---|
| | 3 | 6 | 7 | 6 |
| – | | | 2 | 0 |
| | 3 | 6 | 5 | 6 |

Thus, 1150 + 676 + 1850 – 20 = 3656.

**3.**

| | H | T | O |
|---|---|---|---|
| | | (1) | |
| Population of village A = | 5 | 7 | 6 |
| Population of village B = + | 4 | 1 | 8 |
| Total population of two villages = | 9 | 9 | 4 |

And,

| | H | T | O |
|---|---|---|---|
| | | (6) | (16) |
| Population of village A = | 5 | ~~7~~ | ~~6~~ |
| Population of village B = – | 4 | 1 | 8 |
| Difference in their population = | 1 | 5 | 8 |

Thus, total population of two villages is 994 and difference of their population is 158.

**4.** Sohail read 5761 words and Samina read 5795.
Since, 5795 > 5761
Thus, Samina read 34 words more.

| | | | | |
|---|---|---|---|---|
| | 5 | 7 | 9 | 5 |
| – | 5 | 7 | 6 | 1 |
| | 0 | 0 | 3 | 4 |

### Think and Answer (Page 35)

**1.** 4 thousands + 3 hundreds + 12 tens + 2 ones
= 4000 + 300 + 120 + 2 = 4422.

**2.** 6 ten thousands + 2 thousands + 55 hundreds
= 6 × 10000 + 2 × 1000 + 55 × 100
= 60000 + 2000 + 5500 = 67500

**3.** 8 thousands + 13 hundreds + 11 ones
= 8000 + 1300 + 11 = 9311

### Practice Time 2A

**1.** (*a*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 7 | 1 | 2 | 5 | 3 |
| + | 2 | 3 | 4 | 0 | 1 |
| | 9 | 4 | 6 | 5 | 4 |

(*b*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 2 | 5 | 9 | 2 | 1 | 2 |
| + | 1 | 2 | 0 | 1 | 2 | 7 |
| | 3 | 7 | 9 | 3 | 3 | 9 |

(*c*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 7 | 5 | 6 | 2 | 0 | 0 |
| | 1 | 0 | 0 | 1 | 6 | 8 |
| + | | 1 | 3 | 3 | 2 | 1 |
| | 8 | 6 | 9 | 6 | 8 | 9 |

(*d*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | (1) | | (1) | |
| | 7 | 1 | 2 | 6 | 2 | 5 |
| + | 2 | 2 | 1 | 5 | 3 | 6 |
| | 9 | 3 | 4 | 1 | 6 | 1 |

(*e*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | (1) | (1) | | | | |
| | 7 | 5 | 6 | 2 | 0 | 0 |
| | | 6 | 4 | 1 | 4 | 0 |
| + | 1 | 2 | 2 | 5 | 2 | 6 |
| | 9 | 4 | 2 | 8 | 6 | 6 |

(*f*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | (1) | (1) | | (1) | | |
| | 2 | 5 | 6 | 4 | 2 | 1 |
| | 1 | 0 | 9 | 2 | 8 | 2 |
| + | 1 | 6 | 2 | 1 | 2 | 1 |
| | 5 | 2 | 7 | 8 | 2 | 4 |

**2.** (*a*) Arrange the digits of given numbers in the place value columns and add the numbers starting from the ones place.

**Step 1.** Add the ones.

2 ones + 1 one + 0 ones = 3 ones

Write 3 in the ones column

**Step 2.** Add the tens.

1 ten + 1 ten + 2 tens = 4 tens

Write 4 in the tens column.

**Step 3.** Add the hundreds.

3 hundreds + 1 hundred + 3 hundreds = 7 hundreds

Write 7 in the hundreds column.

**Step 4.** Add the thousands.

2 thousands + 1 thousand + 2 thousands = 5 thousands

Write 5 in the thousands column.

**Step 5.** Add the ten thousands.

4 ten thousands + 1 ten thousand + 0 ten thousands = 5 ten thousands

Write 5 in the ten thousands column.

**Step 6.** Add the lakhs.

1 lakh + 1 lakh + 2 lakhs = 4 lakhs

Thus, 142312 + 111111 + 202320 = 455743

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 1 | 4 | 2 | 3 | 1 | 2 |
| | 1 | 1 | 1 | 1 | 1 | 1 |
| + | 2 | 0 | 2 | 3 | 2 | 0 |
| | 4 | 5 | 5 | 7 | 4 | 3 |

(*b*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 3 | 1 | 4 | 0 | 7 | 0 |
| | 4 | 6 | 0 | 1 | 0 | 2 |
| + | 2 | 1 | 5 | 8 | 2 | 7 |
| | 9 | 8 | 9 | 9 | 9 | 9 |

(*c*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 5 | 1 | 1 | 4 | 2 | 3 |
| | | 2 | 2 | 3 | 3 | 0 |
| + | 1 | 5 | 5 | 2 | 4 | 1 |
| | 6 | 8 | 8 | 9 | 9 | 4 |

(*d*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 1 | 5 | 2 |
| | 3 | 5 | 4 | 8 | 2 | 7 |
| + | 3 | 1 | 1 | 0 | 2 | 0 |
| | 7 | 8 | 9 | 9 | 9 | 9 |

(*e*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | (1) | | | | | |
| | 7 | 8 | 9 | 2 | 6 | 1 |
| + | | 9 | 0 | 1 | 2 | 3 |
| | 8 | 7 | 9 | 3 | 8 | 4 |

(*f*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | (1) | | | | | |
| | 1 | 1 | 5 | 2 | 0 | 6 |
| | 2 | 5 | 2 | 6 | 2 | 1 |
| + | 5 | 6 | 2 | 1 | 3 | 1 |
| | 9 | 2 | 9 | 9 | 5 | 8 |

## Think and Answer (Page 37)

4256 + 10744 + 1354 = 16354

Checking: (Using grouping property of addition)

(4256 + 10744) + 1354 = 15000 + 1354 = 16354

4256 + (10744 + 1354) = 4256 + 12098 = 16354

## Practice Time 2B

**1.** (*a*) 1 + 499 = 500 (*b*) 999 + 1 = 1000

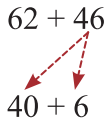
(*c*) 2436 + 0 = 2436 (*d*) 0 + 5364 = 5364

(*e*) 1796 + 0 = 1796 (*f*) 9999 + 1 = 10000

(*g*) 345 + 246 = 246 + 345

(*h*) 4021 + 2736 = 4021 + 2736

**2.** (*a*) 62 + 46



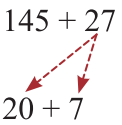

By splitting the smaller number

**Step 1.** 62 + 40 = 102

**Step 2.** 102 + 6 = 108

Thus, 62 + 46 = 108.

(*b*) 145 + 27



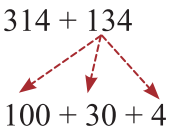

By splitting the smaller number

**Step 1.** 145 + 20 = 165

**Step 2.** 165 + 7 = 172

Thus, 145 + 27 = 172.

(*c*) 314 + 134




By splitting the smaller number

**Step 1.** 314 + 100 = 414

414 + 30 = 444

**Step 2.** 444 + 4 = 448

Thus, 314 + 134 = 448.

(*d*) 20 + 58 = 78 [Same as part (*b*)]

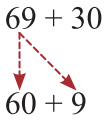
(*e*) 204 + 536 = 740 [Same as part (*b*)]

(*f*) 88 + 111 = 199 [Same as part (*b*)]

(*g*) 534 + 201 = 735 [Same as part (*b*)]

(*h*) 104 + 305 = 409 [Same as part (*b*)]

**3.** (*a*) 69 + 30



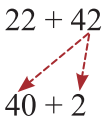

By splitting the bigger number

**Step 1.** 60 + 30 = 90

**Step 2.** 90 + 9 = 99

Thus, 69 + 30 = 99.

(*b*) 22 + 42



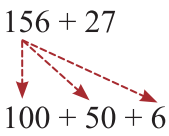

By splitting the bigger number

**Step 1.** 22 + 40 = 62

**Step 2.** 62 + 2 = 64

Thus, 22 + 42 = 64.

(*c*) 156 + 27




By splitting the bigger number

**Step 1.** 100 + 27 = 127

**Step 2.** 127 + 50 = 177

**Step 3.** 177 + 6 = 183

Thus, 156 + 27 = 183.

(*d*) 148 + 214 = 362 [Same as part (*c*)]

(*e*) 395 + 168 = 563 [Same as part (*c*)]

(*f*) 19 + 444 = 463 [Same as part (*c*)]

(*g*) 368 + 264 = 632 [Same as part (*c*)]

(*h*) 274 + 304 = 578 [Same as part (*c*)]

**4.** (*a*) 35 + 20

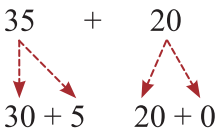
By splitting both the numbers

**Step 1.** 30 + 20 = 50

**Step 2.** 5 + 0 = 5

**Step 3.** 50 + 5 = 55

Thus, 35 + 20 = 55.




(*b*) 61 + 27

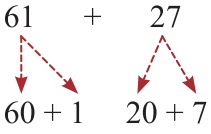
By splitting both the numbers

**Step 1.** 60 + 20 = 80

**Step 2.** 1 + 7 = 8

**Step 3.** 80 + 8 = 88

Thus, 61 + 27 = 88.




(*c*) 154 + 132

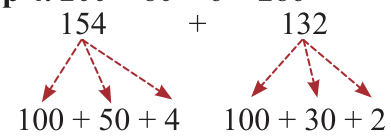
By splitting both the numbers

**Step 1.** 100 + 100 = 200

**Step 2.** 50 + 30 = 80

**Step 3.** 4 + 2 = 6

**Step 4.** 200 + 80 + 6 = 286




Thus, 154 + 132 = 286.

(*d*) 119 + 244 = 363 [Same as part (*c*)]

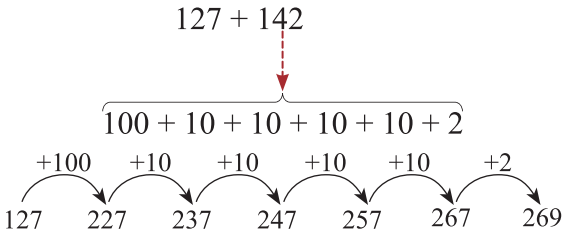
(*e*) 272 + 116 = 388 [Same as part (*c*)]

(*f*) 58 + 248 = 306 [Same as part (*c*)]

(*g*) 455 + 105 = 560 [Same as part (*c*)]

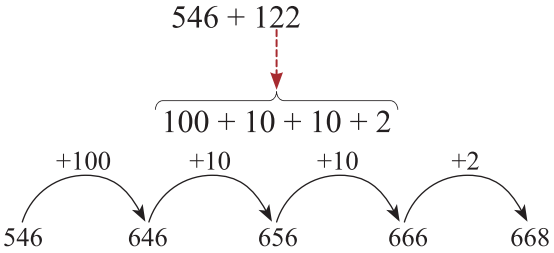
(*h*) 340 + 89= 429 [Same as part (*c*)]

**5.** (*a*) Counting in hundreds, tens and ones



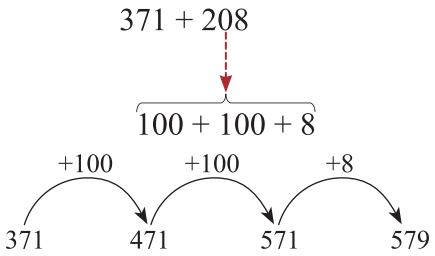

Thus, 127 + 142 = 269

(*b*) Counting in hundreds, tens and ones



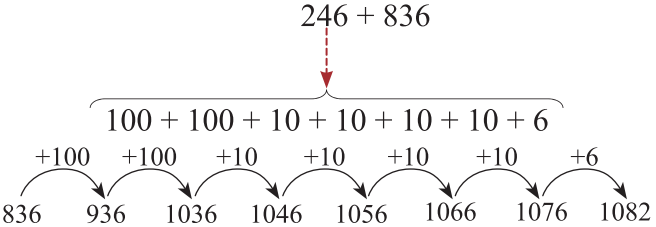

Thus, 546 + 122 = 668

(*c*) Counting in hundreds, tens and ones




Thus, 371 + 208 = 579

(*d*) Counting in hundreds, tens and ones




Thus, 246 + 836 = 1082

## Practice Time 2C

**1.**

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (1) | | | |
| Withdrawn on Monday = | ₹ | 2 | 6 | 8 | 0 | 0 |
| Withdrawn on Tuesday = + | ₹ | 3 | 7 | 4 | 0 | 0 |
| Total amount withdrawn = | ₹ | 6 | 4 | 2 | 0 | 0 |

Thus, Mr. Sohan withdrew ₹64200 from the bank in all.

**2.** (*a*)

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (1) | | | |
| Cost of computer = | ₹ | 4 | 5 | 8 | 5 | 0 |
| Cost of scanner = + | ₹ | 1 | 3 | 7 | 5 | 0 |
| Total cost of both items = | ₹ | 5 | 9 | 6 | 0 | 0 |

Thus, cost of computer and scanner is ₹59600.

(*b*)

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (1) | | | |
| Cost of computer = | ₹ | 4 | 5 | 8 | 5 | 0 |
| Cost of printer = + | ₹ | 1 | 8 | 9 | 9 | 0 |
| Total cost of both items = | ₹ | 6 | 4 | 8 | 4 | 0 |

Thus, cost of computer and printer is ₹64840.

(*c*)

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (1) | (1) | | |
| Cost of scanner = | ₹ | 1 | 3 | 7 | 5 | 0 |
| Cost of printer = + | ₹ | 1 | 8 | 9 | 9 | 0 |
| Total cost of both items = | ₹ | 3 | 2 | 7 | 4 | 0 |

Thus, cost of scanner and printer is ₹32740.

(*d*)

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (2) | (1) | | |
| Cost of printer = | ₹ | 1 | 8 | 9 | 9 | 0 |
| Cost of computer = | ₹ | 4 | 5 | 8 | 5 | 0 |
| Cost of scanner = + | ₹ | 1 | 3 | 7 | 5 | 0 |
| Total cost of three items = | ₹ | 7 | 8 | 5 | 9 | 0 |

Thus, total cost of all item is 78,590.

**3.**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (2) | (1) | | | |
| The population of city A = | | 2 | 5 | 3 | 0 | 1 |
| The population of city B = | | 3 | 5 | 7 | 0 | 1 |
| The population of city C = + | | 4 | 9 | 0 | 3 | 2 |
| Total population of three cities = | 1 | 1 | 0 | 0 | 3 | 4 |

Thus, total population of three cities = 110034.

**4.**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (2) | (2) | (1) | |
| Number of visitors came in January = | | 5 | 4 | 9 | 8 | 7 |
| Number of visitors came in February = | | 3 | 4 | 5 | 6 | 7 |
| Number of visitors came in March = + | | 2 | 5 | 7 | 9 | 3 |
| | 1 | 1 | 5 | 3 | 4 | 7 |

Thus, number of visitors visited the zoo in three month is 115347.

**5.**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (2) | (1) | (2) | (1) | |
| Number of toys produced in 2020 = | 1 | 0 | 9 | 0 | 7 | 7 |
| Number of toys produced in 2021 = | 1 | 2 | 8 | 8 | 5 | 9 |
| Number of toys produced in 2022 = + | 1 | 3 | 8 | 7 | 9 | 3 |
| | 3 | 7 | 6 | 7 | 2 | 9 |

Thus, the production of toys in these three years = 376729

**6.**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (2) | (2) | (1) | (1) | |
| Number of votes received by 1st candidate = | | 7 | 6 | 9 | 5 | 3 |
| Number of votes received by 2nd candidate = | | 7 | 5 | 2 | 4 | 3 |
| Number of votes received by 3rd candidate = + | | 9 | 8 | 9 | 3 | 4 |
| | 2 | 5 | 1 | 1 | 3 | 0 |

Thus, 251130 votes were polled.

## Practice Time 2D

**1.** (*a*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 5 | 3 | 7 | 5 | 3 |
| – | 3 | 0 | 4 | 2 | 2 |
| | 2 | 3 | 3 | 3 | 1 |

(*b*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 6 | 7 | 3 | 9 | 5 |
| – | 3 | 6 | 1 | 0 | 3 |
| | 3 | 1 | 2 | 9 | 2 |

(*c*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (7) | (12) | | (2) | (14) |
| | ~~8~~ | ~~2~~ | 6 | ~~3~~ | ~~4~~ |
| – | 4 | 5 | 6 | 2 | 7 |
| | 3 | 7 | 0 | 0 | 7 |

(*d*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (13) | |
| | | | (2) | ~~3~~ | (10) |
| | 5 | 8 | ~~3~~ | ~~4~~ | ~~0~~ |
| – | 2 | 3 | 0 | 6 | 8 |
| | 3 | 5 | 2 | 7 | 2 |

(*e*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (9) | (9) | (9) | |
| | (6) | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | (10) |
| | ~~7~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| – | 5 | 2 | 5 | 4 | 3 |
| | 1 | 7 | 4 | 5 | 7 |

(*f*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (9) | (9) | (9) | (9) | |
| | (3) | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | (10) |
| | ~~4~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| – | 1 | 3 | 6 | 1 | 3 | 3 |
| | 2 | 6 | 3 | 8 | 6 | 7 |

**2.** (*a*) Since, 56433 < 68654

So, we write 56433 below 68654 in the place value columns.

**Step 1.** Subtract the ones.

4 ones – 3 ones = 1 one

Write 1 in the ones column.

**Step 2.** Subtract the tens.

5 tens – 3 tens = 2 tens

Write 2 in the tens column.

**Step 3.** Subtract the hundreds.

6 hundreds – 4 hundreds = 2 hundreds.

Write 2 in the hundreds column.

**Step 4.** Subtract the thousands.

8 thousands – 6 thousands = 2 thousands.

Write 2 in the thousands column.

**Step 5.** Subtract the ten thousands.

6 ten thousands – 5 ten thousands = 1 ten thousand.

Write 1 in the ten thousands column.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 6 | 8 | 6 | 5 | 4 |
| – | 5 | 6 | 4 | 3 | 3 |
| | 1 | 2 | 2 | 2 | 1 |

Thus, 68654 – 56433 = 12221.

(*b*) Since, 523427 < 759638

So, we write 523427 below 759638 in the place value columns.

**Step 1.** Subtract the ones.

8 ones – 7 ones = 1 one

Write 1 in the ones column.

**Step 2.** Subtract the tens.

3 tens – 2 tens = 1 ten

Write 1 in the tens column.

**Step 3.** Subtract the hundreds.

6 hundreds – 4 hundreds = 2 hundreds.

Write 2 in the hundreds column.

**Step 4.** Subtract the thousands.

9 thousands – 3 thousands = 6 thousands.

Write 6 in the thousands column.

**Step 5.** Subtract the ten thousands.

5 ten thousands – 2 ten thousands = 3 ten thousands.

Write 3 in the ten thousands column.

**Step 6.** Subtract the lakhs.

7 lakhs – 5 lakhs = 2 lakhs.

Write 2 in the lakhs column.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 7 | 5 | 9 | 6 | 3 | 8 |
| – | 5 | 2 | 3 | 4 | 2 | 7 |
| | 2 | 3 | 6 | 2 | 1 | 1 |

Thus, 759638 – 523427 = 236211.

(*c*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | | (6) | (10) | |
| | 8 | 6 | 5 | ~~7~~ | ~~0~~ | 9 |
| – | 2 | 2 | 4 | 3 | 1 | 0 |
| | 6 | 4 | 1 | 3 | 9 | 9 |

(*d*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (9) | (9) | (9) | (9) | |
| | (4) | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | (10) |
| | ~~5~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| – | 3 | 3 | 5 | 2 | 1 | 3 |
| | 1 | 6 | 4 | 7 | 8 | 7 |

**3.** (*a*)

| | L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|
| | 8 | 8 | 4 | 9 | 3 | 2 | ← Minuend |
| – | 4 | 4 | 3 | 5 | 2 | 1 | ← Subtrahend |
| | 4 | 4 | 1 | 4 | 1 | 1 | ← Difference |

2 ones – 1 one = 1 one

3 tens – 2 tens = 1 ten

9 hundreds – 5 hundreds = 4 hundreds

4 thousands – 3 thousand = 1 thousand

8 ten thousands – 4 ten thousands = 4 ten thousand

8 lakhs – 4 lakhs = 4 lakhs

Thus, 884932 – 443521 = 441411

| | | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|---|
| Subtrahend → | | 4 | 4 | 3 | 5 | 2 | 1 |
| Difference → | + | 4 | 4 | 1 | 4 | 1 | 1 |
| Minuend → | | 8 | 8 | 4 | 9 | 3 | 2 |

**Check:** The result or the difference when added to the subtrahend must give the minuend. Hence, the answer is correct.

(*b*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 8 | 9 | 5 | 9 | 4 | 2 |
| – | 7 | 6 | 2 | 4 | 3 | 2 |
| | 1 | 3 | 3 | 5 | 1 | 0 |

(*c*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 7 | 9 | 5 | 6 | 2 | 1 |
| – | 5 | 3 | 2 | 4 | 1 | 1 |
| | 2 | 6 | 3 | 2 | 1 | 0 |

(*d*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (9) | (9) | (9) | (9) | |
| | (8) | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ |
| | ~~9~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| – | 8 | 4 | 3 | 2 | 5 | 4 |
| | 0 | 5 | 6 | 7 | 4 | 6 |

**4.** To get the required number, we subtracted 37,214 from 97,364. Arrange the number in columns and Subtract as shown here.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 9 | 7 | 3 | 6 | 4 |
| – | 3 | 7 | 2 | 1 | 4 |
| | 6 | 0 | 1 | 5 | 0 |

Checking

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 9 | 7 | 3 | 6 | 4 |
| – | 6 | 0 | 1 | 5 | 0 |
| | 3 | 7 | 2 | 1 | 4 |

Thus, 60,150 must be added to 37,214 to get 97364.

**5.** To get the required number, we subtract 89,327 from 1,65,342 and the check the answer.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (15) | | | | |
| | | ~~5~~ | (15) | | (3) | (12) |
| | 1 | ~~6~~ | ~~5~~ | 3 | ~~4~~ | ~~2~~ |
| – | | 8 | 9 | 3 | 2 | 7 |
| | 0 | 7 | 6 | 0 | 1 | 5 |

Checking

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (15) | | | | |
| | | ~~5~~ | (15) | | (3) | (12) |
| | 1 | ~~6~~ | ~~5~~ | 3 | ~~4~~ | ~~2~~ |
| – | | 7 | 6 | 0 | 1 | 5 |
| | 0 | 8 | 9 | 3 | 2 | 7 |

Thus, 76,015 must be subtracted from 1,65,342 to get 89,327.

**6.** To get the required number, we subtract 14,952 from 93,570.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (12) | | | |
| | (8) | ~~2~~ | (15) | (6) | (10) |
| | ~~9~~ | ~~3~~ | ~~5~~ | ~~7~~ | ~~0~~ |
| – | 1 | 4 | 9 | 5 | 2 |
| | 7 | 8 | 6 | 1 | 8 |

## Practice Time 2E

**1.** (*a*) 43189 – 0 = 43189 (*b*) 77782 – 1 = 77781
(*c*) 54135 – 54135 = 0 (*d*) 64871 – 0 = 64871
(*e*) 578521 – 100 = 578421
(*f*) 46340 – 0 = 46340 (*g*) 53956 – 0 = 53956
(*h*) 158950 – 158950 = 0
(*i*) 299100 – 299100 = 0

**2.** (*a*) 5846 – 304.

By splitting the smaller number using the place values.

5846 – 304
300 4

**Step 1.** 5846 – 300 = 5546

**Step 2.** 5846 – 4 = 5542

Also, we can have:

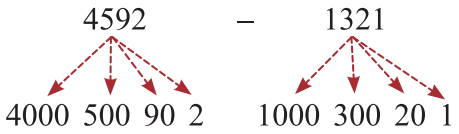
– 4 – 100 – 100 – 100

5542 5546 5646 5746 5846

So, 5846 – 304 = 5542.

(*b*) 4592 – 1321.

By splitting both the number using place values.




**Step 1.** 4000 – 1000 = 3000

**Step 2.** 500 – 300 = 200

**Step 3.** 90 – 20 = 70

**Step 4.** 2 – 1 = 1

**Step 5.** 3000 + 200 + 70 + 1 = 3271

So, 4592 – 1321 = 3271.

(*c*) 5859 – 1208.

By splitting both the number using place values.




**Step 1.** 5000 – 1000 = 4000

**Step 2.** 800 – 200 = 600

**Step 3.** 50 – 0 = 50

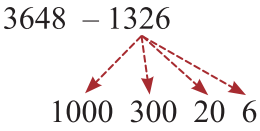
**Step 4.** 9 – 8 = 1

**Step 5.** 4000 + 600 + 50 + 1 = 4651

So, 5859 – 1208 = 4651.

(*d*) 3648 – 1326

By splitting the smaller number using the place values.




**Step 1.** 3648 – 1000 = 2648

**Step 2.** 2648 – 300 = 2348

**Step 3.** 2348 – 20 = 2328

**Step 4.** 2328 – 6 = 2322

So, 3648 – 1326 = 2322.

## Practice Time 2F

**1.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (14) | (15) | | |
| | (1) | ~~(4)~~ | ~~(5)~~ | (11) | |
| Number of bags of rice in the godown = | ~~2~~ | ~~5~~ | ~~6~~ | ~~1~~ | 5 |
| Number of bags sold = – | | 7 | 6 | 4 | 5 |
| Number of bags left in the godown = | 1 | 7 | 9 | 7 | 0 |

Thus, 17970 bags left in the godown.

**2.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (9) | (12) | | |
| | (1) | ~~(10)~~ | ~~(2)~~ | (10) | |
| Number of TV sets produced in 2021 = | ~~2~~ | ~~0~~ | ~~3~~ | ~~0~~ | 8 |
| Number of TV sets produced in 2020 = – | 1 | 3 | 4 | 5 | 2 |
| Increase in production of TV sets = | 0 | 6 | 8 | 5 | 6 |

Thus, increase in the production of TV set = 6856.

**3.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | (9) | (9) | |
| | | (6) | ~~(10)~~ | ~~(10)~~ | (10) |
| Milk produced in a day = | 8 | ~~7~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| Milk supplied in depot = – | | 2 | 5 | 0 | 2 |
| Milk left with dairy = | 8 | 4 | 4 | 9 | 8 |

Thus, 84498 litres milk left with dairy.

**4.**

| | | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| Cost of second hand car = | ₹ | 9 | 5 | 7 | 0 | 0 |
| Amount of money Rohan has = – | ₹ | 6 | 3 | 3 | 0 | 0 |
| More money required = | ₹ | 3 | 2 | 4 | 0 | 0 |

Thus, Rohan needs ₹32400 more to purchase the car.

**5.**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | (13) | (14) | (13) | |
| | | (2) | ~~(3)~~ | ~~(4)~~ | ~~(3)~~ | (10) |
| Total number of seating capacity in the stadium = | 1 | ~~3~~ | ~~4~~ | ~~5~~ | ~~4~~ | 0 |
| Number of seats remains vacant = – | | 2 | 9 | 7 | 8 | 1 |
| Number of people watched the event = | 1 | 0 | 4 | 7 | 5 | 9 |

Thus, the number of people watched the event is 104759.

**6.**

| | | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|---|
| | | | | | | (14) | |
| | | (2) | (17) | | (7) | ~~(4)~~ | (10) |
| Total sale of two months in a jewellery shop = | ₹ | ~~3~~ | ~~7~~ | 4 | ~~8~~ | ~~5~~ | ~~0~~ |
| The sale of first month = – | ₹ | 1 | 9 | 2 | 3 | 5 | 8 |
| The sale of second month = | ₹ | 1 | 8 | 2 | 4 | 9 | 2 |

Thus, the sale of second months is of ₹182492.

## Practice Time 2G

**1.** (*a*) 32,617 + 11,358 – 23,471

We first find the sum of 32,617 and 11, 358 and then find the difference between the sum obtained and 23,471 as shown below.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (1) | |
| | 3 | 2 | 6 | 1 | 7 |
| + | 1 | 1 | 3 | 5 | 8 |
| | 4 | 3 | 9 | 7 | 5 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 4 | 3 | 9 | 7 | 5 |
| – | 2 | 3 | 4 | 7 | 1 |
| | 2 | 0 | 5 | 0 | 4 |

Thus, 32,617 + 11,358 – 23,471 = 20,504.

(*b*) 45,243 + 13,648 – 17,647

We first find the sum of 45,243 and 13,648 and than find the difference between the sum obtained and 17,647 as shown below.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (1) | |
| | 4 | 5 | 2 | 4 | 3 |
| + | 1 | 3 | 6 | 4 | 8 |
| | 5 | 8 | 8 | 9 | 1 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (8) | (11) |
| | 5 | 8 | 8 | ~~9~~ | ~~X~~ |
| – | 1 | 7 | 6 | 4 | 7 |
| | 4 | 1 | 2 | 4 | 4 |

Thus, 45,243 + 13,648 – 17,647 = 41,244.

(*c*) and (*d*) — Same as above

(*e*) 2,71,409 – 4,67,521 – 1,10,216 + 389899

**Step 1.** Add the numbers having + sign.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | (1) | (1) | (1) | (1) | (1) | |
| | 2 | 7 | 1 | 4 | 0 | 9 |
| + | 3 | 8 | 9 | 8 | 9 | 9 |
| | 6 | 6 | 1 | 3 | 0 | 8 |

**Step 2.** Add the numbers having – sign.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 4 | 6 | 7 | 5 | 2 | 1 |
| + | 1 | 1 | 0 | 2 | 1 | 6 |
| | 5 | 7 | 7 | 7 | 3 | 7 |

**Step 3.** Subtract the sum obtained in step 2. from the sum obtained in step 1.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (15) | (10) | (12) | | |
| | (5) | ~~(6)~~ | ~~(0)~~ | ~~(2)~~ | (10) | |
| | ~~6~~ | ~~6~~ | ~~X~~ | ~~3~~ | ~~0~~ | 8 |
| – | 5 | 7 | 7 | 7 | 3 | 7 |
| | 0 | 8 | 3 | 5 | 7 | 1 |

Thus, 2,71,409 – 4,67,521 – 1,10,216 + 389899 = 83,571

**2.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (1) | (1) | | | |
| Number of people entered before the noon = | 1 | 5 | 9 | 4 | 2 |
| Number of people entered after the noon = + | 1 | 4 | 9 | 4 | 0 |
| | 3 | 0 | 8 | 8 | 2 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | (14) | | |
| | | (4) | ~~(4)~~ | (10) | |
| Number of persons accommodate in auditorium = | 6 | ~~5~~ | ~~5~~ | ~~0~~ | 7 |
| Number of people entered in auditorium = – | 3 | 0 | 8 | 8 | 2 |
| | 3 | 4 | 6 | 2 | 5 |

Thus, 34,625 more people can sit in the auditorium.

**3.**

| | Th | H | T | O |
|---|---|---|---|---|
| | | (1) | (1) | |
| Number of men visited the national museum = | 4 | 2 | 7 | 5 |
| Number of men visited the national museum = + | 3 | 5 | 4 | 9 |
| | 7 | 8 | 2 | 4 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (0) | (9) | (12) | (4) | (10) |
| Total number of people visited the national museum = | ~~X~~ | 0 | 2 | 5 | 0 |
| Number of men and women visited the national museum = – | | 7 | 8 | 2 | 4 |
| | | 2 | 4 | 2 | 6 |

Thus, 2426 children visited the national museum.

## Brain Sizzlers (Page 46)

Donation collected by the first society = ₹56987

Donation collected by the second society
= ₹56987 + ₹3452 = ₹60439

Donation collected by the third society
= ₹56987 – ₹6981 = ₹50006

Total donation amount
= ₹56987 + ₹60439 + ₹50006

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | ① | ① | ② | |
| | ₹ | 5 | 6 | 9 | 8 | 7 |
| | ₹ | 6 | 0 | 4 | 3 | 9 |
| + | ₹ | 5 | 0 | 0 | 0 | 6 |
| | ₹ 1 | 6 | 7 | 4 | 3 | 2 |

Thus, total amount collected in three societies is ₹167432.

## Practice Time 2H

**1.** (*a*) Rounding off 2,136 to the nearest 1000s = 2000 (Since hundreds digit, i.e. 1 < 5)
Rounding off 1,258 to the nearest 1000s = 1000 (Since hundreds digit, i.e. 2 < 5)

**Estimated Sum**

| Th | H | T | O |
|---|---|---|---|
| 2 | 0 | 0 | 0 |
| + 1 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 |

**Actual Sum**

| Th | H | T | O |
|---|---|---|---|
| | | ① | |
| 2 | 1 | 3 | 6 |
| + 1 | 2 | 5 | 8 |
| 3 | 3 | 9 | 4 |

Thus, 3,000 is the estimated sum and 3,394 is the actual sum.

(*b*) Rounding off 4,736 to the nearest 1000s = 5000 (Since hundreds digit, i.e., 7 > 5)
Rounding off 7,192 to the nearest 1000s = 7000 (Since hundreds digit, i.e., 1 < 5)

**Estimated Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| ① | | | | |
| | 5 | 0 | 0 | 0 |
| + | 7 | 0 | 0 | 0 |
| 1 | 2 | 0 | 0 | 0 |

**Actual Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | ① | | |
| | 4 | 7 | 3 | 6 |
| + | 7 | 1 | 9 | 2 |
| 1 | 1 | 9 | 2 | 8 |

Thus, 12,000 is the estimated sum and 11,928 is the actual sum.

(*c*) Same as part (*b*).

(*d*) Rounding off 12,733 to the nearest ten thousand → 10,000 (Since thousand digit, i.e., 2 < 5)
Rounding off 45,264 to the nearest ten thousand → 50,000 (Since hundreds digit, i.e., 5 = 5)

**Estimated Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 |
| + 5 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 |

**Actual Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 1 | 2 | 7 | 3 | 3 |
| + 4 | 5 | 2 | 6 | 4 |
| 5 | 7 | 9 | 9 | 7 |

Thus, 60,000 is the estimated sum and 57,997 is the actual sum.

(*e*) Rounding off 74,732 to the nearest ten thousand → 70,000 (Since thousand digit, i.e., 4 < 5)
Rounding off 22,486 to the nearest ten thousand → 20,000 (Since hundreds digit, i.e., 2 < 5)

**Estimated Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 7 | 0 | 0 | 0 | 0 |
| + 2 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 |

**Actual Sum**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | ① | ① | | |
| 7 | 4 | 7 | 3 | 2 |
| + 2 | 2 | 4 | 8 | 6 |
| 9 | 7 | 2 | 1 | 8 |

Thus, 90,000 is the estimated sum and 97,218 is the actual sum.

(*f*) to (*i*) — Same as part (*e*).

**2.** (*a*) Rounding off 3,136 to the nearest 1000s = 3000 (Since hundreds digit, i.e., 1 < 5)
Rounding off 1,285 to the nearest 1000s = 1000 (Since hundreds digit, i.e., 2 < 5)

**Estimated Difference**

| Th | H | T | O |
|---|---|---|---|
| 3 | 0 | 0 | 0 |
| – 1 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 |

**Actual Difference**

| Th | H | T | O |
|---|---|---|---|
| ② | ⑩ | ⑬ | |
| ~~3~~ | ~~X~~ | ~~3~~ | 6 |
| – 1 | 2 | 8 | 5 |
| 1 | 8 | 5 | 1 |

Thus, the estimated difference is 2000 and actual difference is 1851.

(*b*) Rounding off 4,736 to the nearest 1000s = 5000 (Since hundreds digit, i.e., 7 > 5)
Rounding off 3,192 to the nearest 1000s = 3000 (Since hundreds digit, i.e., 1 < 5)

**Estimated Difference**

| Th | H | T | O |
|---|---|---|---|
| 5 | 0 | 0 | 0 |
| – 3 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 |

**Actual Difference**

| Th | H | T | O |
|---|---|---|---|
| | ⑥ | ⑬ | |
| 4 | ~~7~~ | ~~3~~ | 6 |
| – 3 | 1 | 9 | 2 |
| 1 | 5 | 4 | 4 |

Thus, the estimated difference is 2000 and actual difference is 1544.

(*c*) Rounding off 27,783 to the nearest 10000s = 30,000 (Since thousands digit, i.e., 7 > 5)
Rounding off 4,572 to the nearest 1000s = 5,000 (Since hundreds digit, i.e., 5 = 5)

**Estimated Difference**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| ② | ⑩ | | | |
| ~~3~~ | ~~X~~ | 0 | 0 | 0 |
| – | 5 | 0 | 0 | 0 |
| 2 | 5 | 0 | 0 | 0 |

**Actual Difference**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| 2 | 7 | 7 | 8 | 3 |
| – | 4 | 5 | 7 | 2 |
| 2 | 3 | 2 | 1 | 1 |

Thus, the estimated difference is 25,000 and actual difference is 23,211.

(*d*) Rounding off 42,733 to the nearest 10000s = 40,000 (Since thousands digit, i.e., 2 < 5)
Rounding off 15,264 to the nearest 10000s = 20,000 (Since thousands digit, i.e., 5 = 5)

**Estimated Difference**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 4 | 0 | 0 | 0 | 0 |
| – | 2 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 |

**Actual Difference**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (12) | |
| | (3) | (12) | (6) | ~~(2)~~ | (13) |
| | ~~4~~ | ~~2~~ | ~~7~~ | ~~3~~ | ~~3~~ |
| – | 1 | 5 | 2 | 6 | 4 |
| | 2 | 7 | 4 | 6 | 9 |

Thus, the estimated difference is 20,000 and actual difference is 27,469.

(*e*) to (*i*) — Same as above.

**3.**

**Actual Sum**

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | | (1) | (1) | |
| Number of men = | | 6 | 5 | 2 | 3 | 4 |
| Number of women = | | 6 | 0 | 5 | 5 | 6 |
| Number of Children = + | | 7 | 8 | 9 | 5 | 4 |
| | 2 | 0 | 4 | 7 | 4 | 4 |

Difference between actual sum and estimated sum.

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | (9) | (9) | (9) | |
| | | (0) | ~~(10)~~ | ~~(10)~~ | ~~(10)~~ | (10) |
| | 2 | ~~X~~ | ~~0~~ | ~~0~~ | ~~0~~ | ~~0~~ |
| – | 2 | 0 | 4 | 7 | 4 | 4 |
| | 0 | 0 | 5 | 2 | 5 | 6 |

Thus, the approximate value of estimated sum is 2,10,000 and the difference between actual sum and estimated sum is 5256.

## Chapter Assessment

**1.** (*a*) – (*ii*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | (1) | (1) | | |
| | | 7 | 7 | 6 | 2 | 4 |
| + | | 3 | 3 | 3 | 9 | 1 |
| | 1 | 1 | **1** | **0** | 1 | 5 |

Hence, Option (*ii*) is correct

(*b*) – (*ii*) 6

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | (1) | | | | |
| | | 6 | 7 | * | * | 5 |
| + | | 3 | 4 | 1 | * | * |
| | 1 | 0 | 1 | * | * | * |

∵ Sum of digits at thousands column
= 7 + 4 = 11Th = 1TTh + 1Th

∴ Sum of digits at ten thousands column = 6 + 3 + (1) = 10TTh = 1L + 0TTh

Thus, the number of digits in the sum = 6.

(*c*) – (*i*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (9) | | | |
| | (2) | ~~(10)~~ | (14) | (4) | (11) |
| Minuend = | ~~3~~ | ~~0~~ | ~~4~~ | ~~5~~ | ~~X~~ |
| Difference = – | | 4 | 9 | 3 | 7 |
| Subtrahend = | 2 | 5 | 5 | 1 | 4 |

Thus, subtrahend is 25514.

(*d*) – (*iv*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (4) | (10) | | | |
| | ~~5~~ | ~~0~~ | 9 | 8 | 9 |
| – | | 6 | 0 | 0 | 0 |
| | 4 | 4 | 9 | 8 | 9 |

∵ 45,463 > 44,989

Thus, 45,463 > 50,989 – 6000.

(*e*) – (*iv*) ∵ 46370 – 23817 = 22553 and
23817 – 1264 = 22553

∴ 22553 = 22553

Hence, option (*iv*) is correct.

**2.** (*a*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 5 | 7 | 3 | 9 | 5 | 2 |
| – | **2** | 5 | 0 | 8 | **6** | 4 |
| | 3 | 2 | **3** | 0 | 8 | **8** |

(*b*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 6 | 7 | 2 | 9 | 3 | 4 |
| – | 3 | **8** | 4 | 6 | 2 | **8** |
| | 2 | 8 | **8** | 3 | **0** | 6 |

(*c*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | 8 | 4 | 7 | 2 | 8 | 0 |
| – | 5 | **3** | 8 | **0** | 9 | **2** |
| | 3 | 0 | **9** | 1 | **8** | 8 |

**3.**

| | | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|---|
| | | | (1) | | | | |
| Raj's saving = | ₹ | | 5 | 5 | 0 | 0 | 0 |
| Rahul's saving = + | ₹ | | 6 | 7 | 0 | 0 | 0 |
| Rajeev's saving = + | ₹ | | 4 | 3 | 0 | 0 | 0 |
| Total saving = | ₹ | 1 | 6 | 5 | 0 | 0 | 0 |

| | | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|---|
| Money required to begin the start-up = | ₹ | 3 | 0 | 0 | 0 | 0 | 0 |
| And the total saving = – | ₹ | 1 | 6 | 5 | 0 | 0 | 0 |
| | ₹ | 1 | 3 | 5 | 0 | 0 | 0 |

Thus, ₹1,35,000 more is needed to begin their start-up.

**4.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| Workers in first shift = | 1 | 0 | 7 | 5 | 0 |
| Workers in second shift = + | 1 | 2 | 6 | 5 | 0 |
| Total worker of both shift = | 2 | 3 | 4 | 0 | 0 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| Total worker in the factory = | 3 | 5 | 6 | 7 | 5 |
| Total workers in first and second shift – | 2 | 3 | 4 | 0 | 0 |
| Workers come in the third shift = | 1 | 2 | 2 | 7 | 5 |

Thus, 12275 workers come in the third shift.

**5.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| Kits distributed by Ruhani = | 4 | 5 | 6 | 8 | 0 |
| Diff. between no. of kits distributed by two sisters = – | 1 | 4 | 0 | 2 | 8 |
| Kits distributed by her sister = | 3 | 1 | 6 | 5 | 2 |

Thus, 31652 first aid kits distributed by her sister.

**6.** Number of votes A secured = 60,008
Number of votes B secured = 50,352
Number of votes C secured = 78,980
Clearly, 78,980 > 60,008 < 50,352. Thus, candidate C is the winner. Now,

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| Number of votes C secured = | 7 | 8 | 9 | 8 | 0 |
| Number of votes A secured = – | 6 | 0 | 0 | 0 | 8 |
| Number of votes by which C won the election = | 1 | 8 | 9 | 7 | 2 |

That is, C won the election by 18,972 votes.

**7.**

| | Th | H | T | O | |
|---|---|---|---|---|---|
| | (1) | | | | |
| Distance travelled in the first part = | 2 | 4 | 5 | 0 | km |
| Distance travelled in the second part = + | 3 | 5 | 0 | 0 | km |
| Distance travelled in the third part = + | 2 | 7 | 0 | 0 | km |
| | 8 | 6 | 5 | 0 | km |

| | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| Total distance between two major cities = | 1 | 2 | 6 | 0 | 0 | km |
| Distance travelled in first, second and third parts = – | | 8 | 6 | 5 | 0 | km |
| Distance need to cover = | | 3 | 9 | 5 | 0 | km |

Thus, 3950 km distance has to be covered in the fourth part to complete the journey.

**8.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | (12) | |
| | (6) | (15) | (7) | ~~(2)~~ | (10) |
| Mohan's monthly income = ₹ | ~~7~~ | ~~5~~ | ~~8~~ | ~~3~~ | ~~0~~ |
| Radhika's monthly income = – ₹ | 5 | 9 | 0 | 8 | 9 |
| Difference between their monthly income = ₹ | 1 | 6 | 7 | 4 | 1 |

Thus, difference between their monthly income is ₹16741.

**9.**

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (9) | (9) | | |
| | (4) | ~~(10)~~ | ~~(10)~~ | (10) | |
| Funds needed by an NGO = ₹ | ~~5~~ | ~~0~~ | ~~0~~ | ~~0~~ | 0 |
| Funds collected so far = – ₹ | 1 | 8 | 7 | 5 | 0 |
| Short off money = ₹ | 3 | 1 | 2 | 5 | 0 |

Thus, the short off money for the NGO is ₹31,250.

## Mental Maths (Page 51)

**1.** (*a*) 5000 + 8 + 18 = 5026

| | Th | H | T | O |
|---|---|---|---|---|
| | | | (1) | |
| | 5 | 0 | 0 | 0 |
| | | | | 8 |
| + | | | 1 | 8 |
| | 5 | 0 | 2 | 6 |

(*b*) 6567 + 9845 + 372 = 16784

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (1) | (1) | (1) | (1) | |
| | | 6 | 5 | 6 | 7 |
| | | 9 | 8 | 4 | 5 |
| + | | | 3 | 7 | 2 |
| | 1 | 6 | 7 | 8 | 4 |

(*c*) 8 ten thousands + 5 thousands + 15 hundreds + 12 tens.

= 8 × 10000 + 5000 + 1500 + 12 × 10

= 8 × 10000 + 5000 + 1500 + 120 = 86620

(*d*) The difference between 8095 and 3002 is 5093

| | Th | H | T | O |
|---|---|---|---|---|
| | 8 | 0 | 9 | 5 |
| − | 3 | 0 | 0 | 2 |
| | 5 | 0 | 9 | 3 |

**2.** (*a*) ∵ 10000 + 45555 = 55555

Thus, the two numbers are 10000 and 45555.

(*b*) ∵ 800000 + 98989 = 898989

Thus, the two numbers are 800000 and 98989.

## CHAPTER 3 : MULTIPLICATION

### Let's Recall

**1.** (*a*) 24 × 15 = 360

(*b*) 3555 × 100 = 355500

(*c*) 20 × 10 × 5 = 20 × 10 × 5

**2.** (*a*)

| | Th | H | T | O |
|---|---|---|---|---|
| | | | (2) | |
| | | 3 | 1 | 3 |
| × | | | 1 | 2 |
| | | 6 | 2 | 6 |
| + | 3 | 1 | 3 | 0 |
| | 3 | 7 | 5 | 6 |

(*b*)

| | Th | H | T | O |
|---|---|---|---|---|
| | | (1) | (2) | |
| | | 1 | 2 | 5 |
| × | | | 1 | 5 |
| | | 6 | 2 | 5 |
| + | 1 | 2 | 5 | 0 |
| | 1 | 8 | 7 | 5 |

**3.** Cost of one toy = ₹125

Cost of 8 toys = ₹125 × 8

Thus, the cost of 8 toys is ₹1000.

### Practice Time 3A

**1.** (*a*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (1) | (2) | | (1) | |
| | | 3 | 7 | 2 | 4 |
| × | | | | | 3 |
| | 1 | 1 | 1 | 7 | 2 |

(*b*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (4) | (5) | (1) | |
| | | 6 | 7 | 8 | 2 |
| × | | | | | 7 |
| | 4 | 7 | 4 | 7 | 4 |

(*c*)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (2) | (8) | (8) | |
| | | 7 | 2 | 8 | 9 |
| × | | | | | 9 |
| | 6 | 5 | 6 | 0 | 1 |

**2.** (*a*) **Step 1.** Multiply 4 ones by 4.

4 × 4 = 16 ones

1 ten 6 ones

Write 6 in the ones column and carry 1 to the tens column.

| | Th | H | T | O |
|---|---|---|---|---|
| | | (1) | (1) | |
| | 1 | 2 | 3 | 4 |
| × | | | | 4 |
| | 4 | 9 | 3 | 6 |

**Step 2.** Multiply 3 tens by 4.

3 × 4 = 12 and 12 tens + 1 ten (carried over)

13 tens = 1 hundred 3 tens

Write 3 in the tens column and carry 1 to the hundreds column.

**Step 3.** Multiply 2 hundred by 4.

2 × 4 = 8 hundreds and 8 hundreds + 1 hundred (carried over)

= 9 hundreds

Write 9 in the hundreds column.

**Step 4.** Multiply 1 thousand by 4.

1 × 4 = 4 thousand

Write 4 in the thousands column.

Thus, 1234 × 4 = 4936

(*b*) **Step 1.** Multiply 9 ones by 3.

9 × 3 = 27 ones

= 2 tens 7 ones

Write 7 in the ones column and carry 2 to the tens column.

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | (1) | | (2) | (2) | |
| | | 6 | 1 | 6 | 9 |
| × | | | | | 3 |
| | 1 | 8 | 5 | 0 | 7 |

**Step 2.** Multiply 6 tens by 3.

6 × 3 = 18 tens and 18 tens + 2 tens (carried over)

= 20 tens = 2 hundreds 0 tens

Write 0 in the tens column and carry 2 to the hundreds column.

**Step 3.** Multiply 1 hundred by 3.

1 × 3 = 3 hundreds and 3 hundreds + 2 hundred (carried over) = 5 hundreds

Write 5 in the hundreds column.

**Step 4.** Multiply 6 thousands by 3.

6 × 3 = 18 thousands

Write 8 in the thousands column and carry 1 to the ten thousands column.

Thus, 6169 × 3 = 18507.

(c)

| Th | H | T | O |
|---|---|---|---|
| (1) | (1) | | |
| 2 | 3 | 4 | 1 |
| × | | | 4 |
| 9 | 3 | 6 | 4 |

(d)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | (4) | (2) | | |
| | 7 | 6 | 4 | 1 |
| × | | | | 7 |
| 5 | 3 | 4 | 8 | 7 |

(e)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| (8) | (7) | | | |
| | 9 | 8 | 1 | 1 |
| × | | | | 9 |
| 8 | 8 | 2 | 9 | 9 |

(f)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| (3) | | (3) | (2) | |
| | 8 | 7 | 6 | 5 |
| × | | | | 5 |
| 4 | 3 | 8 | 2 | 5 |

(g)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| (7) | (6) | (5) | (3) | |
| | 9 | 8 | 7 | 4 |
| × | | | | 8 |
| 7 | 8 | 9 | 9 | 2 |

(h)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | (5) | (4) | (2) | |
| | 6 | 8 | 7 | 4 |
| × | | | | 6 |
| 4 | 1 | 2 | 4 | 4 |

## Practice Time 3B

**1.** **Step 1.** Write the multiplicand 248 and multiplier 27 in proper place value columns.

| Th | H | T | O | |
|---|---|---|---|---|
| | | (1) | | |
| | (3) | (5) | | |
| | 2 | 4 | 8 | ← Multiplicand |
| × | | 2 | 7 | ← Multiplier |
| 1 | 7 | 3 | 6 | ← 248 × 7 ones |
| + 4 | 9 | 6 | 0 | ← 248 × 2 tens |
| 6 | 6 | 9 | 6 | ← Product |

**Step 2.** Multiply 248 by 7 ones.

248 × 7 = 1736 ones

**Step 3.** Multiply 248 by 2 tens.

248 × 2 tens = 4960 ones

**Step 4.** Add both partial products.

1736 + 4960 = 6696

Thus, 248 × 27 = 6696.

**2.**

| TTh | Th | H | T | O | |
|---|---|---|---|---|---|
| | | 3 | 0 | 1 | ← Multiplicand |
| × | | | 5 | 9 | ← Multiplier |
| | 2 | 7 | 0 | 9 | ← 301 × 9 ones |
| + 1 | 5 | 0 | 5 | 0 | ← 301 × 5 tens |
| 1 | 7 | 7 | 5 | 9 | ← Product |

**3.**

| Th | H | T | O |
|---|---|---|---|
| | 5 | 4 | 3 |
| × | | 1 | 8 |
| 4 | 3 | 4 | 4 |
| + 5 | 4 | 3 | 0 |
| 9 | 7 | 7 | 4 |

**4.**

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | 1 | 4 | 9 | 5 |
| × | | | 6 | 4 |
| | 5 | 9 | 8 | 0 |
| + 8 | 9 | 7 | 0 | 0 |
| 9 | 5 | 6 | 8 | 0 |

**5.**

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | 2 | 4 | 3 | 2 |
| × | | | | 5 | 8 |
| | 1 | 9 | 4 | 5 | 6 |
| + 1 | 2 | 1 | 6 | 0 | 0 |
| 1 | 4 | 1 | 0 | 5 | 6 |

**6.**

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | 3 | 0 | 4 | 6 |
| × | | | | 4 | 2 |
| | | 6 | 0 | 9 | 2 |
| + 1 | 2 | 1 | 8 | 4 | 0 |
| 1 | 2 | 7 | 9 | 3 | 2 |

**7.**

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | 4 | 0 | 7 | 8 |
| × | | | | 3 | 7 |
| | 2 | 8 | 5 | 4 | 6 |
| + 1 | 2 | 2 | 3 | 4 | 0 |
| 1 | 5 | 0 | 8 | 8 | 5 |

## Practice Time 3C

**1.** Expand the multiplier 249 and start multiplying by using the following steps:

| TTh | Th | H | T | O | |
|---|---|---|---|---|---|
| | | 3 | 2 | 5 | |
| × | | 2 | 4 | 9 | ← 200 + 40 + 9 |
| | 2 | 9 | 2 | 5 | ← 325 × 9 |
| 1 | 3 | 0 | 0 | 0 | ← 325 × 40 |
| + 6 | 5 | 0 | 0 | 0 | ← 325 × 200 |
| 8 | 0 | 9 | 2 | 5 | ← Product |

**Step 1.** Multiply 325 by 9 ones.

325 × 9 = 2925

**Step 2.** Multiply 325 by 4 tens.

325 × 40 = 13000

**Step 3.** Multiply 325 by 2 hundreds.

325 × 200 = 65000

**Step 4.** Add the partial products.

2925 + 13000 + 65000 = 80925

Thus, 325 × 249 = 80925.

**2.** Expand the multiplier 413 and start multiplying by using the following steps:

| L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| | | | 7 | 0 | 9 | |
| × | | | 4 | 1 | 3 | ← 400 + 10 + 3 |
| | | 2 | 1 | 2 | 7 | ← 709 × 3 |
| | | 7 | 0 | 9 | 0 | ← 709 × 10 |
| + 2 | 8 | 3 | 6 | 0 | 0 | ← 709 × 400 |
| 2 | 9 | 2 | 8 | 1 | 7 | ← Product |

**Step 1.** Multiply 709 by 3 ones.

$709 \times 3 = 2127$ ones

**Step 2.** Multiply 709 by 1 ten.

$709 \times 10 = 7090$

**Step 3.** Multiply 709 by 4 hundreds.

$709 + 400 = 283600$

**Step 4.** Add the partial products.

$3127 + 7090 + 283600 = 292817$

Thus, $709 \times 413 = 292817$.

**3.**

| | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| | | | 3 | 7 | 2 | |
| × | | | 1 | 6 | 5 | ← 100 + 60 + 5 |
| | | 1 | 8 | 6 | 0 | ← 372 × 5 |
| | 2 | 2 | 3 | 2 | 0 | ← 372 × 60 |
| + | 3 | 7 | 2 | 0 | 0 | ← Product |
| | 6 | 1 | 3 | 8 | 0 | ← 372 × 100 |

Thus, $372 \times 165 = 61380$

**4.**

| | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| | | | 2 | 4 | 8 | |
| × | | | 4 | 0 | 3 | ← 400 + 0 + 3 |
| | | | 7 | 4 | 4 | ← 248 × 3 |
| | | 0 | 0 | 0 | 0 | ← 248 × 0 |
| + | 9 | 9 | 2 | 0 | 0 | ← 248 × 400 |
| | 9 | 9 | 9 | 4 | 4 | ← Product |

Thus, $248 \times 403 = 99944$

**5.**

| | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| | | | 2 | 7 | 3 | |
| × | | | 3 | 0 | 4 | ← 300 + 0 + 4 |
| | | 1 | 0 | 9 | 2 | ← 273 × 4 |
| | | 0 | 0 | 0 | 0 | ← 273 × 0 |
| + | 8 | 1 | 9 | 0 | 0 | ← 273 × 300 |
| | 8 | 2 | 9 | 9 | 2 | ← Product |

Thus, $273 \times 304 = 82992$

**6.**

| | L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|
| | | | | 5 | 0 | 4 | |
| × | | | | 3 | 3 | 2 | ← 300 + 30 + 2 |
| | | | 1 | 0 | 0 | 8 | ← 504 × 2 |
| | | 1 | 5 | 1 | 2 | 0 | ← 504 × 30 |
| + | 1 | 5 | 1 | 2 | 0 | 0 | ← 504 × 300 |
| | 1 | 6 | 7 | 3 | 2 | 8 | ← Product |

Thus, $504 \times 332 = 167328$

**7.**

| | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|
| | | | 5 | 5 | 5 | |
| × | | | 1 | 2 | 5 | ← 100 + 20 + 5 |
| | | 2 | 7 | 7 | 5 | ← 555 × 5 |
| | 1 | 1 | 1 | 0 | 0 | ← 555 × 20 |
| + | 5 | 5 | 5 | 0 | 0 | ← 555 × 100 |
| | 6 | 9 | 3 | 7 | 5 | ← Product |

Thus, $555 \times 125 = 69375$

**8.**

| | L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|
| | | | | 5 | 8 | 9 | |
| × | | | | 2 | 5 | 1 | ← 200 + 50 + 1 |
| | | | | 5 | 8 | 9 | ← 589 × 1 |
| | | 2 | 9 | 4 | 5 | 0 | ← 589 × 50 |
| + | 1 | 1 | 7 | 8 | 0 | 0 | ← 589 × 200 |
| | 1 | 4 | 7 | 8 | 3 | 9 | ← Product |

Thus, $589 \times 251 = 147839$

## Think and Answer (Page 59)

∵ 1 bundle contains 100 notes

∴ 17 bundles contain $17 \times 100 = 1700$ notes.

∴ 1700 notes of ₹10 each will amount to $1700 \times$ ₹10 = ₹17000.

## Practice Time 3D

**1.** (*a*) $37 \times 10 = \underline{370}$ (*b*) $268 \times 100 = \underline{26800}$

(*c*) $3412 \times 30 = \underline{102360}$ (*d*) $\underline{93} \times 1000 = 93000$

(*e*) $246 \times \underline{10} = 2460$ (*f*) $43 \times 400 = \underline{17200}$

**2.** (*a*) $372 \times 20 = 7440$ (*b*) $45 \times 30 = 1350$

(*c*) $578 \times 40 = 23120$ (*d*) $478 \times 800 = 382400$

(*e*) $274 \times 100 = 27400$ (*f*) $372 \times 2000 = 744000$

(*g*) $278 \times 300 = 83400$ (*h*) $48 \times 4000 = 192000$

## Think and Answer (Page 60)

**1.** $5 \times 8$ tens $= 5 \times 80 = 400$

**2.** $250 \times 4 \times 4 = 1000 \times 4 = 4000$

**3.** $1001 \times 10 = 10010$; The number of zeros are 3

**4.** Cost of one book = ₹180

Cost of 100 books = ₹180 × 100 = ₹18000

## Practice Time 3E

**1.** (*a*) $457 \times 0 = 0$ (*b*) $761 \times 1 = 761$

(*c*) $278 \times 1 = 278$ (*d*) $321 \times 1 = 321$

(*e*) $3241 \times 0 = 0$ (*f*) $48 \times 165 = 165 \times 48$

(*g*) $432 \times 522 = 522 \times 432$

(*h*) $169 \times 215 = 215 \times 169$

(*i*) $12 \times (16 \times 19) = (12 \times 16) \times 19$

(*j*) $62 \times (93 \times 49) = (62 \times 93) \times 49$

(*k*) $27 \times (9 + 15) = (27 \times 9) + (27 \times 15)$

(*l*) $102 \times (100 + 58) = (102 \times 100) + (102 \times 58)$

**2.** (*a*) – (*iv*) (*b*) – (*iii*)

(*c*) – (*i*) (*d*) – (*v*)

(*e*) – (*ii*)

## Practice Time 3F

**1.** (*a*)

| | Th | H | T | O | | | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 7 | 8 | → | | | | 8 | 0 | ← Rounded up to the nearest ten |
| × | | | 8 | 2 | → | × | | | 8 | 0 | ← Rounded down to the nearest ten |
| | | | | | | | 6 | 4 | 0 | 0 | ← Estimated product |

Actual product = $78 \times 82 = 6396$

(*b*)

| | Th | H | T | O | | | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 4 | 2 | → | | | | 4 | 0 | ← Rounded down to the nearest ten |
| × | | | 6 | 8 | → | × | | | 7 | 0 | ← Rounded up to the nearest ten |
| | | | | | | | 2 | 8 | 0 | 0 | ← Estimated product |

Actual product = 2856

(*c*)

| | TTh | Th | H | T | O | | | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3 | 9 | 7 | → | | | | 4 | 0 | 0 | ← Rounded up to the nearest ten |
| × | | | | 2 | 6 | → | × | | | | 3 | 0 | ← Rounded up to the nearest ten |
| | | | | | | | | 1 | 2 | 0 | 0 | 0 | ← Estimated product |

Actual product = 10322

(*d*)

| | Th | H | T | O | | | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2 | 5 | 4 | → | | | 2 | 5 | 0 | ← Rounded down to the nearest ten |
| × | | | 1 | 4 | → | × | | | 1 | 0 | ← Rounded down to the nearest ten |
| | | | | | | | 2 | 5 | 0 | 0 | ← Estimated product |

Actual product = 3556

(*e*)

| | L | TTh | Th | H | T | O | | | L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 | 2 | 7 | → | | | | | 4 | 3 | 0 | ← Rounded up to the nearest ten |
| × | | | | 2 | 6 | 8 | → | × | | | | 2 | 7 | 0 | ← Rounded up to the nearest ten |
| | | | | | | | | | 1 | 1 | 6 | 1 | 0 | 0 | ← Estimated product |

Actual product = 114436

(*f*)

| | L | TTh | Th | H | T | O | | | L | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3 | 3 | 1 | → | | | | | 3 | 3 | 0 | ← Rounded down to the nearest ten |
| × | | | | 5 | 2 | 7 | → | × | | | | 5 | 3 | 0 | ← Rounded up to the nearest ten |
| | | | | | | | | | 1 | 7 | 4 | 9 | 0 | 0 | ← Estimated product |

Actual product = 174437

**2.** (*a*)

| | TTh | Th | H | T | O | | | TTh | Th | H | T | O | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 7 | 6 | → | | | | 2 | 0 | 0 | ← Rounded up to the nearest hundred |
| × | | | 2 | 4 | 8 | → | × | | | 2 | 0 | 0 | ← Rounded down to the nearest hundred |
| | | | | | | | | 4 | 0 | 0 | 0 | 0 | ← Estimated product |

Actual product = 43648

(*b*)

| | L | TTh | Th | H | T | O |
|---|---|---|---|---|---|---|
| | | | | 3 | 2 | 5 |
| × | | | | 6 | 7 | 8 |

→ Rounded down to the nearest hundred
→ Rounded up to the nearest hundred

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 3 | 0 | 0 |
| | | | 7 | 0 | 0 |
| 2 | 1 | 0 | 0 | 0 | 0 |

← Estimated product

Actual product = 220350

(*c*)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | | 9 | 0 |
| | | 6 | 2 | 7 |

→ Rounded up to the nearest hundred
→ Rounded down to the nearest hundred

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | 1 | 0 | 0 |
| | | 6 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 |

← Estimated product

Actual product = 56430

(*d*)

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 2 | 3 | 5 |
| × | | | 7 | 6 | 8 |

→ Rounded down to the nearest hundred
→ Rounded up to the nearest hundred

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 2 | 0 | 0 |
| | | | 8 | 0 | 0 |
| 1 | 6 | 0 | 0 | 0 | 0 |

← Estimated product

Actual product = 180480

(*e*)

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 5 | 5 | 4 |
| × | | | 6 | 5 | 4 |

→ Rounded up to the nearest hundred
→ Rounded up to the nearest hundred

| L | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 6 | 0 | 0 |
| | | | 7 | 0 | 0 |
| 4 | 2 | 0 | 0 | 0 | 0 |

← Estimated product

Actual product = 362316

(*f*)

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | 2 | 0 | 4 |
| × | | 3 | 2 | 0 |

→ Rounded down to the nearest hundred
→ Rounded down to the nearest hundred

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | 2 | 0 | 0 |
| | | 3 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 |

← Estimated product

Actual product = 65280

## Practice Time 3G

**1.** Cost of one earring = ₹64
Total cost of 99 earrings = ₹64 × 99 = ₹6336

| | Th | H | T | O |
|---|---|---|---|---|
| | | | 6 | 4 |
| × | | | 9 | 9 |
| | | 5 | 7 | 6 |
| + | 5 | 7 | 6 | 0 |
| ₹ | 6 | 3 | 3 | 6 |

Thus, the cost of 99 earrings is ₹6336

**2.** Price of one book = ₹98
Price of 485 books = 485 × 98 = ₹47530

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 4 | 8 | 5 |
| × | | | | 9 | 8 |
| | | 3 | 8 | 8 | 0 |
| + | 4 | 3 | 6 | 5 | 0 |
| ₹ | 4 | 7 | 5 | 3 | 0 |

Thus, the cost of 485 earrings is ₹47530

**3.** Number of passengers who can sit in a bus = 65
Number of passengers who can sit in 435 buses
= 435 × 65 = 28275

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | 4 | 3 | 5 |
| × | | | 6 | 5 |
| | 2 | 1 | 7 | 5 |
| + | 2 | 6 | 1 | 0 | 0 |
| 2 | 8 | 2 | 7 | 5 |

Thus, 28275 passengers can sit in 435 buses.

**4.** Number of mangoes contained in a box = 144
Number of mangoes contained in 208 boxes
= 144 × 208 = 29952

| TTh | Th | H | T | O |
|---|---|---|---|---|
| | | 1 | 4 | 4 |
| × | | | 2 | 0 | 8 |
| | 1 | 1 | 5 | 2 |
| + | 2 | 8 | 8 | 0 | 0 |
| 2 | 9 | 9 | 5 | 2 |

Thus, 29952 mangoes are there in 208 boxes.

**5.** Number of book in one almirah = 353
Number of books in 234 almirah
= 353 × 234 = 82602

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 3 | 5 | 3 |
| × | | | 2 | 3 | 4 |
| | | 1 | 4 | 1 | 2 |
| | 1 | 0 | 5 | 9 | 0 |
| + | 7 | 0 | 6 | 0 | 0 |
| | 8 | 2 | 6 | 0 | 2 |

Thus, 82602 books can be kept in 234 almirah.

**6.** The price of one table = ₹1165
The price of 100 tables = ₹1165 × 100
[Add '00' after 1165 × 1]
= ₹116500
Thus, the price of 100 tables is ₹116500.

**7.** Company price of one tricycle = ₹2553
Price of 200 tricycles = ₹2253 × 200
[Add '00' after 2253 × 2]
= ₹510600
Thus, the price of 200 tricycles is ₹510600.

**8.** Packs of playing cards in a box = 500
Number of playing cards in each pack = 52
Number of playing cards in the box = 500 × 52
[Add '00' after 500 × 5]
Thus, 26000 playing cards are there in the box.

**9.** Number of apples in one tree = 195
Number of apples in 184 trees = 195 × 184
= 35880

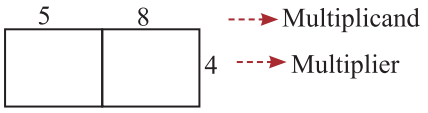
| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | | | |
| | | | 1 | 9 | 5 |
| × | | | 1 | 8 | 4 |
| | | | 7 | 8 | 0 |
| | 1 | 5 | 6 | 0 | 0 |
| + | 1 | 9 | 5 | 0 | 0 |
| | 3 | 5 | 8 | 8 | 0 |

Thus, estimated number of apples to the nearest hundred is 35900.

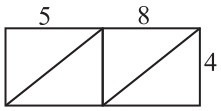
## Practice Time 3H

**1.** Draw a 2 × 1 table as 58 × 4 has 2-digit and 1-digit numbers respectively and follow the given steps:

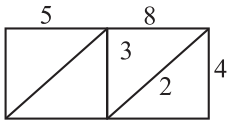
**Step 1.** Write the two numbers on the top and side of the table as shown.



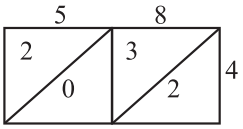

**Step 2.** Draw the diagonal in each box as shown



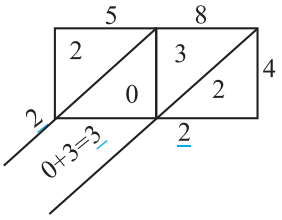

**Step 3.** Multiply 8 by 4 and write product in the box below 8 as shown.




**Step 4.** Multiply 5 by 4 and write the product same as before.

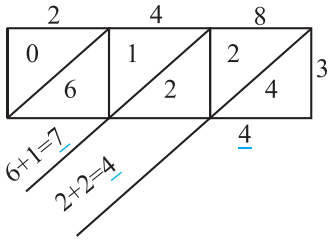



**Step 5.** Add the number of boxes diagonally as shown.



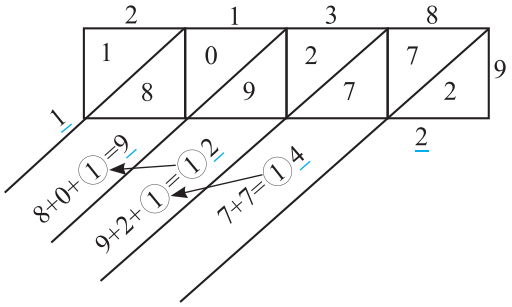

The answer is read from left to right.
Product = 232
Thus, 58 × 4 = 232

**2.** Here, we have to multiply a 3-digit number by a 1-digit number, So, we draw 3 × 1 table as shown and proceed further as above.



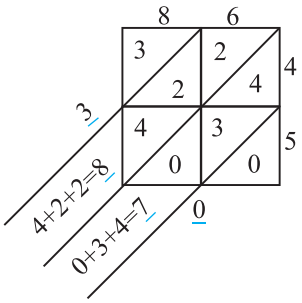

Thus, 248 × 3 = 744

**3.** Here, we have to multiply a 4-digit number by 1-digit number, so, we draw a 4 × 1 table and proceed as before.



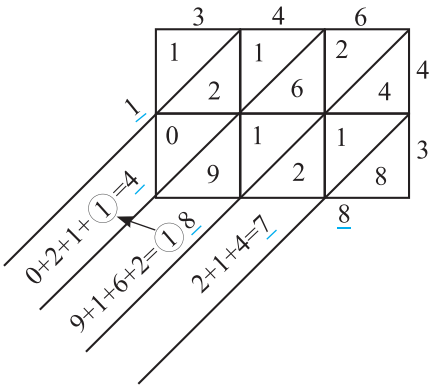

Thus, 2138 × 9 = 19242

**4.** Here, we have to multiply a 2-digit number by 2-digit number, so, we draw a 2 × 2 table and proceed as shown alongside.



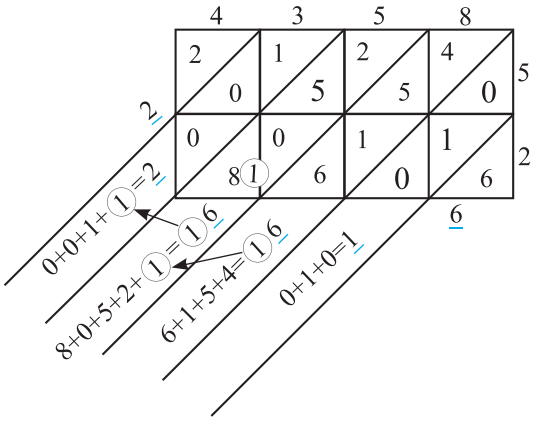

Thus, 86 × 45 = 3870

**5.** Since, we have to multiply a 3-digit number by a 2-digit, so, we draw a lattice of 3 × 2 and proceed as shown alongside. The product is 14878.




Thus, 346 × 43 = 14878

**6.** Here, we have to multiply a 4-digit number by a 2-digit number, so, we draw a 4 × 2 lattice multiplication and do the process. The product is 226616.




Thus, 4358 × 52 = 226616.

## Mental Maths (Page 65)

**1.** (*c*); 100 × 25 × 0 = 0

**2.** (*a*); 325 × 48 = 325 × 40 + 325 × 8

**3.** (*b*); 48 × (24 × 20 ) = (48 × 24) × 20

**4.** (*c*); 9999 × 1000 = 1000 × 9999

**5.** (*a*); 65 × 0 × 287 = 0

## Brain Sizzlers (Page 66)

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | A | A | A |
| × | | | A | A | A |
| | A | B | C | B | A |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | | 1 | 1 | 1 |
| × | | | 1 | 1 | 1 |
| | | | 1 | 1 | 1 |
| | | 1 | 1 | 1 | 0 |
| + | 1 | 1 | 1 | 0 | 0 |
| | 1 | 2 | 3 | 2 | 1 |

Thus, A = 1, B = 2, C = 3

## Chapter Assessment

**1.** (*a*) – (*iii*); If any number is multiplied by 500, minimum number of zeros will be 2.

(*b*) – (*ii*); 15 notes of ₹500 = ₹7500
20 notes of ₹200 = ₹4000
Total withdrawn money
= ₹7500 + ₹4000 = ₹11,500

(*c*) – (*ii*);

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | 2 | 3 | 0 | 7 |
| × | | | | | A |
| | 1 | 1 | 5 | B | 5 |

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | (1) | | (3) | |
| | | 2 | 3 | 0 | 7 |
| × | | | | | **5** |
| | 1 | 1 | 5 | **3** | 5 |

(*d*) – (*iii*); 25 × 140 × 54 is not same as 25 × 8 × 20 × 54

(*e*) – (*iii*); Labourer earns ₹300 daily
5 months 5 days = 5 × 30 + 5 = 155 day
Total money earned in 155 days = 155 × ₹300
= ₹46500

**2.** Each sack weighs = 65 kg
50 sacks weigh = (65 × 50) = 3250 kg
Total weight of wheat being transported by three trucks = 3250 × 3 = 9750 kg
Thus, 9750 kg of wheat being transported.

**3.** Number of books printing in a day = 985
Number of books printing in month of march = 985 × 31 = 30535 books
Thus, total number of books printed in the month of march is 30535.

**4.** Cost of one toy train = ₹350
Cost of 7 toy trains = ₹350 × 7 = ₹2450
Cost of one teddy bear = ₹250
Cost 7 teddy bears = ₹250 × 7 = ₹1750
Total amount paid = ₹2450 + ₹1750 = ₹4200

**5.** Distance covered in 1 hour = 252 km
Distance covered in 15 hours = 252 × 15 = 3780 km
Thus, distance covered in 15 hours is 3780 km.

**6.** Number of rows = 456
Number of seats in each row = 20
Number of seats in the stadium = 456 × 20 = 9120
Thus, there are 9120 seats in the stadium.

**7.** Average fare collected for each rider of Delhi Metro = ₹40
Number of people for ride in quarter of an hour = 2599
Amount of money collected in one hour
= 2599 × 40 × 4 = ₹415840
Thus, ₹415840 was collected in hour.

**8.** Money each student contributed for flood relief fund = ₹75
Number of students studying in the school = 2718
Total amount collected = 2718 × ₹75 = ₹2,03,850
Thus, Total amount collected is ₹2,03,850.

**9.** Amount of calories in one small bar of chocolate = 235
Amount of calories in 125 bars of chocolates
= 235 × 125 = 29375
Thus, 125 small bars of chocolate contains 29375 calories.
We should burn 300–500 calories in exercise daily to stay healthy.

**10.** Number of people in each sector = 600 approx.
Number of people in 150 sectors = 600 × 150
= 90000
Thus, approximate population of city = 90000.

**11.** Number of sheets in one ream of paper = 500
Number of sheets in 225 ream of paper
= 500 × 225 = 112500
Thus, 112500 sheets are there in 225 such reams.

**12.** Number of guests = 25
Number of friends each guest will bring = 2
Number of guests for Mr. Khurana
= 25(1 + 2) = 25 × 3 = 75
Number of momos everyone eats = 7
Number of momos Mr. Khurana should order
= 75 × 7 = 525.

**13.** Total Number of students in art class
= 285 × 2 = 570
Cost of each brush = ₹55
Total cost of brushes= 570 × ₹55 = ₹31,350
Thus, the total cost of brushes is ₹31,350.

**14.** Cost of apples = ₹120 per kg
Cost of grapes = ₹178 per kg
Cost of mangoes = ₹85 per kg
Cost of oranges = ₹45 per kg

(*a*) Cost of 5 kg of grapes = ₹178 × 5 = ₹890
Cost of 3 kg of mangoes = ₹85 × 3 = ₹255
Total cost = ₹(890 + 255) = ₹1145

(*b*) Cost of 8 kg of oranges = ₹45 × 8 = ₹360
Cost of 4 kg of apples = ₹120 × 4 = ₹480
Total cost = ₹(360 + 480) = ₹840

(*c*) Cost of 2 kg of apples = ₹120 × 2 = ₹240
Cost of 2 kg of grapes = ₹178 × 2 = ₹356
Cost of 2 kg of mangoes = ₹85 × 2 = ₹170
Cost of 2 kg of oranges = ₹45 × 2 = ₹90
Total cost of these items
= ₹(240 + 356 + 170 + 90) = ₹856

(*d*) Cost of 2 kg apples = ₹120 × 2 = ₹240
Cost of 3 kg of oranges= ₹45 × 3 = ₹135
Cost of 1 kg of grapes = ₹178
Total cost of these items
= ₹(240 + 135 + 178) = ₹553
Since, 553 > 500, she has not enough money to purchase these quantity of fruits.

## CHAPTER 4 : DIVISION

### Let's Recall

**1.** (*a*) To divide 15 by 3, we read the table of 3 till 15.
1 × 3 = 3; 2 × 3 = 6; 3 × 3 = 9; 4 × 3 = 12; 5 × 3 = 15 (Stop)
Thus, 15 ÷ 3 = 5.

(*b*) To divide 64 by 8, we read the table of 8 till 64.

$1 \times 8 = 8$; $2 \times 8 = 16$; $3 \times 8 = 24$; $4 \times 8 = 32$; $5 \times 8 = 40$; $6 \times 8 = 4\,8$; $7 \times 8 = 56$; $8 \times 8 = 64$ (Stop)

Thus, $64 \div 8 = 8$.

(*c*) To divide 81 by 9, we read the table of 9 till 81.

$1 \times 9 = 9$; $2 \times 9 = 18$; $3 \times 9 = 27$; $4 \times 9 = 36$; $5 \times 9 = 45$; $6 \times 9 = 54$; $7 \times 9 = 63$; $8 \times 9 = 72$; $9 \times 9 = 81$ (Stop)

Thus, $81 \div 9 = 9$.

**2.** (*a*) $75 \div 5 = 15$; $75 \div 15 = 5$

(*b*) $480 \div 4 = 120$; $480 \div 120 = 4$

(*c*) $384 \div 48 = 8$; $384 \div 8 = 48$

**3.** (*a*)

Dividend

Divisor → 2 ) 54 ( 27 ← Quotient

− 4

14

− 14

0 ← Remainder

**Checking:** Quotient × Divisor + Remainder
= 27 × 2 + 0 = 54 = Dividend
Thus, the answer is correct.

(*b*)

Dividend

Divisor → 7 ) 56 ( 8 ← Quotient

− 56

0 ← Remainder

**Checking:** Quotient × Divisor + Remainder
= 8 × 7 + 0 = 56 = Dividend
Thus, the answer is correct.

(*c*) Divisor → 3 ) 547 ( 182 ← Quotient

− 3

24

− 24

07

− 6

1 ← Remainder

**Checking:** Quotient × Divisor + Remainder
= 182 × 3 + 1 = 546 + 1 = 547 = Dividend
Thus, the answer is correct.

**4.** Cost of 1 dozen eggs = ₹96

Cost of 1 egg = ₹96 ÷ 12 = ₹8

(∵ 1 dozen = 12)

Thus, cost of 1 egg is ₹8.

12 ) 96 ( 8

− 96

0

## Practice Time 4A

**1.** 9 ) 153 ( 17

− 9

63

− 63

0

Dividend = 153 Divisor = 9

Quotient = 17 Remainder = 0

**2.** 8 ) 215 ( 26

− 16

55

− 48

07

Dividend = 215 Divisor = 8

Quotient = 26 Remainder = 7

**3.** $4216 \div 1 = 4216$ **4.** $712 \div 712 = 1$

**5.** $0 \div 152 = 0$ **6.** $0 \div 278 = 0$

**7.** $0 \div 1024 = 0$ **8.** $3247 \div 3247 = 1$

## Quick Check (Page 74)

**1.** 6 ) $37^{1}26$ (6 21)

**2.** 8 ) $50^{2}5^{1}6$ (6 3 2)

**3.** 9 ) $88^{7}204$ (9 800 R4)

## Practice Time 4B

**1.** (*a*) We write the dividend inside the division brackets and the divisor outside the brackets as shown.

2 ) 5029 ( 2514 ← Q

− 4

10

− 10

02

− 2

09

− 8

1 ← R

**Step 1.** Start dividing from the highest place. Since, 5 > 2. Divide 5 thousands by 2. We have quotient 2 and the remainder 1.

**Step 2.** Bring down 0 hundreds along with the remainder 1, making it 10 hundred.

**Step 3.** Divide 10 hundreds by 2. We have quotient 5 and the remainder 0.

**Step 4.** Bring down tens digit 2 and divide 2 tens by 2. We have quotient 1 and remainder 0.

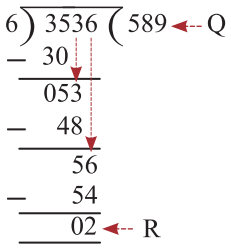
**Step 5.** Bring down ones digit 9 and divide 9 ones by 2. We have quotient 4 and remainder 1.

So, the quotient is 2514 and the remainder is 1.

**Checking:** Divisor × Quotient + Remainder
= 2 × 2514 + 1 = 5028 + 1 = 5029 = Dividend
So, the answer is correct.

Thus, quotient = 2514 and Remainder = 1.

(*b*) **Step 1.** Since, 6 < 3, so, divide 35 hundred by 6. We have, quotient = 5 and remainder = 5.




**Step 2.** Bring down 3 tens along with the remainder 5, making it 53 tens.

**Step 3.** Divide 53 tens by 6. We have quotient 8 and the remainder 5.

**Step 4.** Bring down 6 ones along with the remainder 5, making it 56 ones.

**Step 5.** Divide 56 ones by 6. We have quotient 9 and the remainder 2.

So, the quotient is 589 and the remainder is 2.

Thus, Q = 589 and R = 2.

(*c*) to (*h*) — Do it yourself (same as above)

**2.** (*a*) Given, Quotient = 809; Divisor = 6, Dividend = 4858

We know that, Remainder = Dividend – Quotient × Divisor

Remainder = 4858 – 809 × 6 = 4858 – 4854 = 4

(*b*) Quotient = 568, Divisor = 5, Dividend = 2843 (Given)

According to formula,

Remainder = Dividend – Quotient × Divisor

Remainder = 2843 – 568 × 5 = 2843 – 2840 = 3

(*c*) Quotient = 914, Divisor = 9, Dividend = 8234

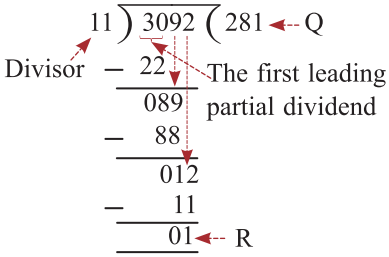
According to formula,

Remainder = Dividend – Quotient × Divisor

Remainder = 8234 – 914 × 9 = 8234 – 8226 = 8

## Practice Time 4C

**1.** (*a*) **Step 1.** Since, 3 < 11, so, divide the first leading partial dividend 30 by 11.




Now, 11 × 2 = 22 and 11 × 3 = 33

As, 22 < 30 and 33 > 30

Thus, 11 goes into 30 by two times.

Write 2 at the hundreds place of the quotient and 22 below 30.

**Step 2.** Subtract 22 from 30 to get 8 as the remainder.

Bring down 9 to make it 89.

**Step 3.** Divide 89 by 11.

11 goes into 89 by 8 times as 11 × 8 = 88 < 89 and 11 × 9 = 99 > 89

Write 8 at the tens place of the quotient and 88 below 89

**Step 4.** Subtract 88 from 89 to get 1 as the remainder. Bring down 2 to make it 12.

**Step 5.** Divide 12 by 11.

11 goes into 12 by 1 time as 11 × 1 = 11 < 12 and 11 × 2 = 22 > 12

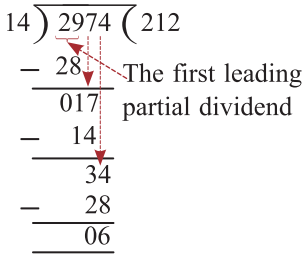
**Step 6.** Subtract 11 from 12 to get 1 as the remainder.

Thus, Q = 281 and R = 1

**Checking:** Quotient × Divisor + Remainder
= 281 × 11 + 1
= 3091 + 1 = 3092 = Dividend

Thus, the answer is correct.

(*b*) **Step 1.** Since, 2 < 14, so, divide the first leading partial 14 dividend 29 by 14.




Now, 14 × 2 = 28 and 14 × 3 = 42

As, 28 < 29, 42 > 29.

Thus, 14 goes into 29 by two times.

Write 2 at the hundreds place of the quotient and 28 below 29.

**Step 2.** Subtract 28 from 29 to get 1 as the remainder.

Bring down 7 to make it 17.

**Step 3.** Divide 17 by 14.

14 goes into 17 by 1 time as 14 × 1 = 14 < 17 and 14 × 2 = 28 > 17

Write 1 at the tens place of the quotient and 14 below 17.

**Step 4.** Subtract 14 from 17 to get 3 as the remainder. Bring down 4 to make it 34.

**Step 5.** Divide 34 by 14.

14 goes into 34 by 2 times as $14 \times 2 = 28 < 34$ and $14 \times 3 = 42 > 34$

**Step 6.** Subtract 28 from 34 to get 6 as the remainder.

Thus, Q = 212 and R = 6

**Checking:** Quotient × Divisor + Remainder
= 212 × 14 + 6
= 2968 + 6 = 2974 = Dividend
Thus, the answer is correct.

(*c*) to (*h*) — Do it yourself (same as above)

**2.** (*a*) 7256 ÷ 12

```
12 ) 7256 ( 604 ← Q
   - 72
     056
   -  48
      08 ← R
```

Thus, Q = 604, R = 8

(*b*) 5872 ÷ 18

```
18 ) 5872 ( 326 ← Q
   - 54
     47
   - 36
     112
   - 108
       4 ← R
```

Thus, Q = 326, R = 4

(*c*) 3897 ÷ 63

```
63 ) 3897 ( 61 ← Q
   - 378
     117
   -  63
      54 ← R
```

Thus, Q = 61, R = 54

(*d*) 8775 ÷ 21

```
21 ) 8775 ( 417 ← Q
   - 84
     037
   -  21
     165
   - 147
      18 ← R
```

Thus, Q = 417, R = 18

(*e*) 25284 ÷ 14

```
14 ) 25284 ( 1806 ← Q
   - 14
     112
   - 112
     084
   -  84
       0 ← R
```

Thus, Q = 1806, R = 0

(*f*) 29045 ÷ 28

```
28 ) 29045 ( 1037 ← Q
   - 28
     0104
   -  84
      205
   - 196
      009 ← R
```

Thus, Q = 1037, R = 9

(*g*) 13207 ÷ 17

```
17 ) 13207 ( 776 ← Q
   - 119
     0130
   - 119
     0117
   - 102
       15 ← R
```

Thus, Q = 776, R = 15

(*h*) 28700 ÷ 26

```
26 ) 28700 ( 1103 ← Q
   - 26
     27
   - 26
     100
   - 78
     022 ← R
```

Thus, Q = 1103, R = 22

## Practice Time 4D

**1.** 78 ÷ 10

```
10 ) 78 ( 7
   - 70
     08
```

Q = 7, R = 8

**2.** 420 ÷ 10

```
10 ) 420 ( 42
   - 40
     20
   - 20
      0
```

Q = 42, R = 0

**3.** $936 \div 100$

$100\overline{)936}\,(9$
$-\,900$
$36$

$Q = 9, R = 36$

**4.** $2796 \div 10$

$10\overline{)2796}\,(279$
$-\,20$
$079$
$-\,70$
$096$
$-\,90$
$06$

$Q = 279, R = 6$

**5.** $2365 \div 100$

$100\overline{)2365}\,(23$
$-\,200$
$0365$
$-\,300$
$065$

$Q = 23, R = 65$

**6.** $23708 \div 100$

$100\overline{)23708}\,(237$
$-\,200$
$0370$
$-\,300$
$0708$
$-\,700$
$008$

$Q = 237, R = 8$

**7.** $5064 \div 1000$

$1000\overline{)5064}\,(5$
$-\,5000$
$0064$

$Q = 5, R = 64$

**8.** $2033 \div 1000$

$1000\overline{)2033}\,(2$
$-\,2000$
$0033$

$Q = 2, R = 33$

**9.** $13655 \div 1000$

$1000\overline{)13655}\,(13$
$-\,1000$
$3655$
$-\,3000$
$0655$

$Q = 13, R = 655$

**10.** $23009 \div 1000$

$1000\overline{)23009}\,(23$
$-\,2000$
$03009$
$-\,3000$
$0009$

$Q = 23, R = 9$

**11.** $99867 \div 1000$

$1000\overline{)99867}\,(99$
$-\,9000$
$09867$
$-\,9000$
$867$

$Q = 99, R = 867$

**12.** $101568 \div 1000$

$1000\overline{)101568}\,(101$
$-\,1000$
$001568$
$-\,1000$
$568$

$Q = 101, R = 568$

## Practice Time 4E

**1.** (*a*) (*ii*) ∵ 93 rounded off to the nearest tens is 90 and 27 rounded off to the nearest tens is 30 ∴ $90 \div 30 = 3$

(*b*) (*iv*) ∵ 903 rounded off to the nearest hundreds is 900 and 62 rounded off to the nearest tens is 60

∴ $900 \div 60 = 15$

(*c*) (*iii*) ∵ 573 rounded off to the nearest hundreds is 600 and 61 rounded off to the nearest tens is 60

∴ $600 \div 60 = 10$

(*d*) (*i*) ∵ 305 rounded off to the nearest hundreds is 300 and 63 rounded off to the nearest tens is 60

∴ $300 \div 60 = 5$

**2.** (*a*) 88 rounded off to the nearest tens is 90.

34 rounded off to the nearest tens is 30.

**Estimated quotient**

$30\overline{)90}\,(3$
$-\,90$
$0$

$90 \div 30 = 3$

Thus, the estimated quotient = 3.

(*b*) 257 rounded off to the nearest hundreds is 300.

28 rounded off to the nearest tens is 30.

**Estimated quotient**

$30\overline{)300}\,(10$
$-\,30$
$00$
$-\,00$
$0$

$300 \div 30 = 10$

Thus, the estimated quotient = 10.

(*c*) and (*d*) — Do it yourself (same as above)

(*e*) 2402 rounded off to the nearest thousands is 2000.

44 rounded off to the nearest tens is 40.

**Estimated quotient**

$40\overline{)2000}\,(50$
$-\,200$
$00$
$-\,00$
$0$

$2000 \div 40 = 50$

Thus, the estimated quotient = 50.

(*f*) to (*h*) — Do it yourself (same as above)

## Think and Answer (Page 81)

In 60 seconds hummingbird flap wings = 4800 times

In 20 seconds hummingbird flap wings

$= (4800 \div 60) \times 20 = 80 \times 20 = 1600$ times.

## Practice Time 4F

**1.** Cost of one pen = ₹8

Total amount = ₹472

Number of pens can be bought

= ₹472 ÷ ₹8 = 59 pens

Thus, 59 pens can bought for ₹472

```
8) 472 (59
 - 40
   72
 - 72
    0
```

**2.** Total number of pages = 1224

Number of notebooks = 12

Number of pages in each notebook

= 1224 ÷ 12 = 102

Thus, number of pages in each notebook is 102.

```
12) 1224 (102
 - 12
   024
 - 24
    0
```

**3.** Total number of students = 812

Number of groups = 14

Number of students in each group

= 812 ÷ 14 = 58

Thus, number of students in each group is 58.

```
14) 812 (58
 - 70
   112
 - 112
     0
```

**4.** Total number of balls = 690

Number of boxes = 30

Number of ball in each box

= 690 ÷ 30 = 23

Thus, number of balls in each box is 23.

```
30) 690 (23
 - 60
   090
 - 90
    0
```

**5.** Greatest 4-digit number = 9999

Greatest 2-digit number = 99

And, 9999 ÷ 99 = 101

Thus, here we get **no** remainder.

```
99) 9999 (101
 - 60
   099
 - 99
    0
```

**6.** Total number of chairs = 3657

Number of rows = 80

Number of chairs in each row

= 3657 ÷ 80

⇒ Q = 45 and R = 57

Thus, number of chairs in each row is 45 and 57 chairs are left

```
80) 3657 (45
 - 320
   0457
 - 400
    057
```

**7.** Total number of book in the library = 4008

Number of shelves = 24

Number of books in each shelf

= 4008 ÷ 24 = 167

Thus, number of books in each shelf is 167.

```
24) 4008 (167
 - 24
   160
 - 144
    168
 - 168
      0
```

**8.** Total amount with Gyan = ₹56,488

Amount given to Suhana = Half of the amount Gyan has

= 56,488 ÷ 2 = 28,244

Money left with Gyan = ₹28,244

Estimated amount = ₹30000

Thus, Gyan has approximately ₹30,000 left with him.

```
2) 56488 (28244
 - 4
   16
 - 16
   04
 - 4
   08
 - 8
   08
 - 8
    0
```

**9.** Number of notebooks sold in first month

= 255 dozens = 255 × 12 = 3060

Number of notebooks sold in second month

= 325 dozens= 325 × 12 = 3900

Difference in sales of notebooks

= 3900 – 3060= 840 notebooks

Thus, in the second month he sold **840** notebooks more.

**10.** Number of apples = 235

Number of pears = 184

Number of oranges = 122

Total number of fruits

= 235 + 184 + 122 = 541

Number of fruits in each basket = 25

Number of baskets required = 541 ÷ 25

Thus, she makes 21 baskets and 16 fruits are left over.

```
25) 541 (21
 - 50
   41
 - 25
   16
```

## Mental Maths (Page 82)

**1.** (*b*); 8000 ÷ 100 = 80;

```
100) 8000 (80
 - 800
    00
 -  00
     0
```

**2.** (*a*); Divisor × Quotient + Remainder = Dividend

**3.** (*d*); Double of a number = 1020

So, the number itself = 1020 ÷ 2 = 510

So, half of the number = 510 ÷ 2 = 255

**4.** (*c*); 999 is the quotient when 9999 is divided by 10.

```
10) 9999 (999 <-- Q
 - 90
   099
 - 90
   099
 - 90
    09 <-- R
```

**5.** (*a*); We cannot divide a number by 0.

## Chapter Assessment

**1.** (*a*) – (*i*); Divide 1331 by 11.

```
11) 1331 (121
  – 11
    23
  – 22
    011
  –  11
      0
```

Thus, the remainder is 0

(*b*) – (*ii*); The largest remainder possible on dividing a number by 17 is 16.

(*c*) – (*iv*); 232323 ÷ 23 = 10101.

```
23) 232323 (10101
  – 23
    023
  –  23
     023
  –   23
       0
```

(*d*) – (*ii*); 112 ÷ 7 = 16 and remainder is 0.

```
7) 112 (16
  – 7
    42
  – 42
     0
```

**2.** (*a*) False; A number divided by itself gives 1.

Let the number be 25. Then,

$$25 \div 25 = 1 \neq 0$$

(*b*) False; 0 divided by any number always gives 0.

Let the number be 5. Then 0 ÷ 5 = 0

(*c*) False;

The quotient may be greater than the divisor.

Let the dividend be 15 and divisor be 3.

According to question

```
3) 15 (5
  – 15
     0
```

Here, quotient 5 > divisor (3).

(*d*) False; A number divided by itself always gives one (1).

Division by 1 is possible $\left(\because \frac{6}{1} = 6\right)$

(*e*) True;

Quotient = 4, Divisor = 9 and Remainder = 5

Dividend = Quotient × Divisor + Remainder

41 = 4 × 9 + 5

41 = 41

Thus, statement is true.

(*f*) False.

```
100) 4007 (40 ← Q
   – 400
      07 ← R
```

4007 ÷ 100

Q = 40, R = 7

**3.**

| | Question | Rounds to 10 | Actual Q and R | Estimated Q and R |
|---|---|---|---|---|
| (*a*) | 81 ÷ 18 | 80 ÷ 20 | 4, 9 | 4, 0 |
| (*b*) | 56 ÷ 23 | 60 ÷ 20 | 2, 10 | 3, 0 |
| (*c*) | 312 ÷ 59 | 310 ÷ 60 | 5, 17 | 5, 10 |
| (*d*) | 681 ÷ 53 | 680 ÷ 50 | 12, 45 | 13, 30 |
| (*e*) | 691 ÷ 51 | 690 ÷ 50 | 13, 28 | 13, 40 |

**4.** Total number of crayons = 6398

Number of crayons in each packet = 24

Number of packets = 6398 ÷ 24

```
24) 6398 (266 ← Q
  – 48
    159
  – 144
    0158
  –  144
      14 ← R
```

⇒ Q = 266 and R = 14

Thus, number of packet is 266 and 14 crayons are left over.

**5.** Product of two numbers = 9823

Smaller number = 47

Bigger number = 9823 ÷ 47

Thus, bigger number is 209.

```
47) 9823 (209
  – 94
    0423
  –  423
      0
```

**6.** Distance covered by aeroplane in 18 hours

= 9396 km

Distance covered by aeroplane in 1 hour

= 9396 ÷ 18

```
18) 9396 (522
  – 90
    039
  –  36
     036
  –   36
       0
```

Thus, aeroplane flies 522 km in one hour.

7. Required distance to travel by participants of cycle race in 12 laps = 2700 m

Required distance to travel by participants of cycle race in 1 lap = (2700 ÷ 12) m

```
12) 2700 (225
  – 24
    030
  –  24
     060
  –   60
       0
```

Thus, 225 m should be covered in each lap.

8. (*a*)

```
6) 7  0  8  4  5 (1 [1] [8] [0] [7]
  – 6
    [1] [0]
  – [0] [6]
        [4] [8]
  –     [4] [8]
            [0] [4] [5]
  –               [4] [2]
                      [3]
```

(*b*)

```
8) 8  0  8  0  8 (10 [1] [0] [1]
  – [8]
    [1] [1] [8]
  –         [8]
            [0] [0] [8]
  –                 [8]
                    [0]
```

9. Total amount collected = ₹2560

Amount of thirteen notes of ₹20 = ₹20 × 13 = ₹260

Remaining amount = ₹2560 – ₹260 = ₹2300

∴ Number of ₹100 notes = 2300 ÷ 100 = 23

Thus, Sudheshna have 23 notes of ₹100.

10. Boxes of apples bought by the shopkeeper = 9

Number of apples in each box =150

Total number of apples = 150 × 9 = 1350

Number of fresh apples = 1350 – 30 = 1320

(∵ 30 apples are rotten)

Number of apples in each of 6 boxes

= 1320 ÷ 6 = 220

Thus, 220 apples packed in each box.

## Life Skills (Page 84)

Number of fields in cooperative form = 80

Each field yields = 325 kg of rice

Total rice yields in cooperative form

= 325 × 80 = 26000 kg

```
75) 26000 (346
  – 225
    0350
  –  300
      500
  –   450
       50
```

Number of farmers = 75

Weight of rice each farmer got = 26000 ÷ 75

⇒ Q = 346 kg and R = 50 kg

Thus, each farmer got 346 kg of rice and 50 kg of rice given to old-age home.

## Brain Sizzlers (Page 84)

Number of members in Mr. Verma family = 12

The ticket price for combo ride package for 3 people = ₹2175

The ticket price for 12 people = ₹(2175 × 4)

(∵ 12 = 3 × 4)

= ₹8700

Thus, Mr. Verma had to pay ₹8700 for tickets.

# CHAPTER 5 : FACTORS AND MULTIPLES

## Let's Recall

2. 18 = 1 × 18 = 2 × 9 = 3 × 6
3. 20 = 1 × 20 = 2 × 10 = 4 × 5
4. 24 = 1 × 24 = 2 × 12 = 3 × 8 = 4 × 6

## Think and Answer (Page 88)

Multiplication facts of 24

= 1 × 24, 2 × 12, 3 × 8, 4 × 6

Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

## Think and Answer (Page 90)

1. If there was just one boat, 90 people got into it.
2. If there were two boats, 45 people got into it.
3. If there were 30 people in a boat, there were 3 boats required.
4. If a small boat has a maximum capacity of 12 people, then, 8 such boats would be required keeping in mind that no one should be left behind.

## Practice Time 5A

1. (*a*) True (*b*) False
   (*c*) False (*d*) False

**2.** (*a*) $1 \times 12 = 12$; 1 and 12 are the factors of 12.
$2 \times 6 = 12$; 2 and 6 are the factors of 12.
$3 \times 4 = 12$; 3 and 4 are the factors of 12.
Since, there are no pairs of numbers left whose product is 12.
So, 1, 2, 3, 4, 6 and 12 are factors of 12.

(*b*) $1 \times 28 = 28$; 1 and 28 are the factors of 28.
$2 \times 14 = 28$; 2 and 14 are the factors of 28.
$4 \times 7 = 28$; 4 and 7 are the factors of 28.
Since, there are no pairs of numbers left whose product is 28.
So, 1, 2, 4, 7, 14 and 28 are factors of 28.

(*c*) $1 \times 45 = 45$; 1 and 45 are the factors of 45.
$3 \times 15 = 45$; 3 and 15 are the factors of 45.
$5 \times 9 = 45$; 5 and 9 are the factors of 45.
Since, there are no pairs of numbers left whose product is 45.
So, 1, 3, 5, 9, 15 and 45 are factors of 45.

(*d*) and (*e*) — Do it yourself (same as above)

**3.** (*a*) We divide 24 by all possible counting numbers.
$24 \div 1 = 24$; 1 and 24 are factors of 24.
$24 \div 2 = 12$; 2 and 12 are factors of 24.
$24 \div 3 = 8$; 3 and 8 are factors of 24.
$24 \div 4 = 6$; 4 and 6 are factors of 24.
$24 \div 6 = 4$; 6 and 4 are factors of 24.
$24 \div 8 = 3$; 8 and 3 are factors of 24.
$24 \div 12 = 2$; 12 and 2 are factors of 24.
$24 \div 24 = 1$; 24 and 1 are factors of 24.
Thus, 1, 2, 3, 4, 6, 8, 12 and 24 are factors of 24.

(*b*) $36 \div 1 = 36$
$36 \div 2 = 18$
$36 \div 3 = 12$
$36 \div 4 = 9$
$36 \div 6 = 6$
Thus, the factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36.

(*c*) $54 \div 1 = 54$
$54 \div 2 = 27$
$54 \div 3 = 18$
$54 \div 6 = 9$
Thus, the factors of 54 are 1, 2, 3, 6, 9, 18, 27 and 54.

(*d*) and (*e*) — Do it yourself (same as above)

**4.** (*a*) Divide 140 by 12.

$$\begin{array}{r} 11 \\ 12\overline{)140} \\ -\,12\downarrow \\ \hline 020 \\ -\,12 \\ \hline 08 \end{array}$$

Since, the division of 140 by 12 leaves remainder 8, so 12 is not a factor of 140

(*b*) Divide 160 by 10.

$$\begin{array}{r} 16 \\ 10\overline{)160} \\ -\,10\downarrow \\ \hline 060 \\ -\,60 \\ \hline 0 \end{array}$$

Since, the division of 160 by 10 leaves no remainder, so 10 is a factor of 160.

(*c*) Divide 176 by 8.

$$\begin{array}{r} 22 \\ 8\overline{)176} \\ -\,16\downarrow \\ \hline 16 \\ -\,16 \\ \hline 0 \end{array}$$

Since, the division of 176 by 8 leaves no remainder, so 8 is a factor of 176.

(*d*) Divide 220 by 15.

$$\begin{array}{r} 14 \\ 15\overline{)220} \\ -\,15\downarrow \\ \hline 70 \\ -\,60 \\ \hline 10 \end{array}$$

Since, the division of 220 by 15 leaves remainder 10, so 15 is not a factor of 220.

**5.** (*a*) The factors of 18 are (1), (2), (3), (6), 9 and 18.
The factors of 24 are (1), (2), (3), 4, (6), 8 12 and 24.
So, the common factors of 18 and 24 are 1, 2, 3 and 6.

(*b*) The factors of 10 are (1), 2, (5) and 10.
The factors of 25 are (1), (5), and 25.
So, the common factors of 10 and 25 are 1 and 5.

(*c*) The factors of 21 are (1), 3, (7) and 21.
The factors of 35 are (1), 5, (7) and 35.
So, the common factors of 21 and 35 are 1 and 7.

(*d*) The factors of 42 are (1), (2), (3), (6), 7, 14, 21 and 42.

The factors of 54 are (1), (2), (3), (6), 9, 18, 27 and 54.

So, the common factors of 42 and 54 are 1, 2, 3 and 6.

(*e*) The factors of 60 are (1), (2), (3), 4, (5), (6), (10), 12, (15), 20, (30) and 60.

The factors of 90 are (1), (2), (3), (5), (6), 9, (10), (15), 18, (30), 45 and 90.

So, the common factors of 60 and 90 are 1, 2, 3, 5, 6, 10, 15 and 30.

(*f*) The factors of 24 are (1), (2), 3, (4), 6, (8), 12 and 24.

The factors of 32 are (1), (2), (4), (8), 16 and 32.

So, the common factors of 24 and 32 are 1, 2, 4, and 8.

(*g*) The factors of 18 are (1), (2), 3, 6, 9 and 18.

The factors of 24 are (1), (2), 3, 4, 6, 8, 12 and 24.

The factors of 32 are (1), (2), 4, 8, 16, and 32.

So, the common factors of 18, 24 and 32 are 1 and 2.

## Practice Time 5B

**1.** (*a*) $5 \times 1 = 5$, $5 \times 2 = 10$, $5 \times 3 = 15$, $5 \times 4 = 20$, $5 \times 5 = 25$ and $5 \times 6 = 30$.

Thus, the first six multiples of 5 are 5, 10, 15, 20, 25 and 30.

(*b*) $7 \times 1 = 7$, $7 \times 2 = 14$, $7 \times 3 = 21$, $7 \times 4 = 28$, $7 \times 5 = 35$ and $7 \times 6 = 42$.

Thus, the first six multiples of 7 are 7, 14, 21, 28, 35 and 42.

(*c*) $11 \times 1 = 11$, $11 \times 2 = 22$, $11 \times 3 = 33$, $11 \times 4 = 44$, $11 \times 5 = 55$ and $11 \times 6 = 66$.

Thus, the first six multiples of 11 are 11, 22, 33, 44, 55 and 66.

(*d*) $13 \times 1 = 13$, $13 \times 2 = 26$, $13 \times 3 = 39$, $13 \times 4 = 52$, $13 \times 5 = 65$ and $13 \times 6 = 78$.

Thus, the first six multiples of 13 are 13, 26, 39, 52, 65 and 78.

**2.** (*a*) Since, 9 is an odd number and first five even numbers are 2, 4, 6, 8 and 10.

So, the first five even multiples of 9 are $9 \times 2 = 18$, $9 \times 4 = 36$, $9 \times 6 = 54$, $9 \times 8 = 72$ and $9 \times 10 = 90$.

Thus, the first five even multiples of 9 are 18, 36, 54, 72 and 90.

(*b*) Since, 13 is an odd number and first five even numbers are 2, 4, 6, 8 and 10.

So, the first five even multiples of 13 are $13 \times 2 = 26$, $13 \times 4 = 52$, $13 \times 6 = 78$, $13 \times 8 = 104$ and $13 \times 10 = 130$.

Thus, the first five even multiples of 13 are 26, 52, 78, 104 and 130.

(*c*) Since, 15, is an odd number and first five even numbers are 2, 4, 6, 8 and 10.

So, the first five even multiples of 15 are $15 \times 2 = 30$, $15 \times 4 = 60$, $15 \times 6 = 90$, $15 \times 8 = 120$ and $15 \times 10 = 150$.

Thus, the first five even multiples of 15 are 30, 60, 90, 120 and 150.

(*d*) Since, 25 is an odd number and first five even numbers are 2, 4, 6, 8 and 10.

So, the first five even multiples of 25 are $25 \times 2 = 50$, $25 \times 4 = 100$, $25 \times 6 = 150$, $25 \times 8 = 200$ and $25 \times 10 = 250$.

Thus, the first five even multiples of 25 are 50, 100, 150, 200 and 250.

**3.** (*a*) The 5th multiple of $8 = 5 \times 8 = 40$

(*b*) The 8th multiple of $9 = 8 \times 9 = 72$

(*c*) Multiples of 12 less than 144 are 12, 24, 36, 48, 60, 72, 84, 96, 108, 120 and 132.

(*d*) Multiples of 3 between 20 and 50 are 21, 24, 27, 30, 33, 36, 39, 42, 45 and 48.

(*e*) Multiples of 9 between 50 and 100 are 54, 63, 72, 81, 90 and 99.

(*f*) The first multiple of 9 exactly divisible by 8 is 72.

**4.** (*a*) Multiples of 4 = 4, 8, 12, 16, **20**, 24, 28, 32, 36, **40**, 44, 48, 52, 56, **60**, 64, 68, 72, 76, **80**, ...

Multiples of 5 = 5, 10, 15, **20**, 25, 30, 35, **40**, 45, 50, 55, **60**, 65, 70, 75, **80**, ...

Common multiples of 4 and 5 = (20), 40, 60, 80

(*b*) Multiples of 3 = 3, 6, 9, 12, **15**, 18, 21, 24, 27, **30**, 33, 36, 39, 42, **45**, 48, 51, 54, 57, **60**, ...

Multiples of 5 = 5, 10, **15**, 20, 25, **30**, 35, 40, **45**, 50, 55, **60**, 65, 70, 75, ...

Common multiples of 3 and 5 = (15), 30, 45, and 60

(*c*) Multiples of 2 = 2, 4, 6, 8, 10, 12, **14**, 16, 18, 20, 22, 24, 26, **28**, 30, 32, 34, 36, 38, 40, **42**, 44, 46, 48, 50, 52, 54, **56**, ...
Multiples of 7 = 7, **14**, 21, **28**, 35, **42**, 49, **56**, ...
Common multiples of 2 and 7 = (14), 28, 42, and 56

(*d*) Multiples of 6 = 6, 12, 18, **24**, 30, 36, 42, **48**, 54, 60, 66, **72**, 78, 84, 90, **96**, ...
Multiples of 8 = 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, 80, 88, **96** ...
Common multiples of 6 and 8 = (24), 48, 72 and 96

(*e*) Multiples of 10 = 10, **20**, 30, **40**, 50, **60**, 70, **80**, ...
Multiples of 20 = **20**, **40**, **60**, **80**, 100, 120, ...
Common multiples of 10 and 20 = (20), 40, 60 and 80

## Practice Time 5C

**1.** (*a*) True;
Since, 2 + 4 + 3 = 9 divisible by 3 and 9 both

(*b*) False;
For example, 45 is divisible by 5, but not by 10.

(*c*) True;
Since a number is divisible by 6, if it is divisible by 2 and 3 both.

(*d*) True;
Since a number is divisible by 9, then it must be divisible by 3.

**2.**

| | Divisible by | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Numbers** | 2 | 3 | 4 | 5 | 9 | 10 |
| (*a*) | 62 | yes | no | no | no | no | no |
| (*b*) | 96 | yes | yes | yes | no | no | no |
| (*c*) | 284 | yes | no | yes | no | no | no |
| (*d*) | 251 | no | no | no | no | no | no |
| (*e*) | 1024 | yes | no | yes | no | no | no |
| (*f*) | 6318 | yes | yes | no | no | yes | no |

## Think and Answer (Page 99)

**1.** Prime numbers less than 25 = 2, 3, 5, 7, 11, 13, 17, 19 and 23.

**2.** Composite numbers less than 30 = 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27 and 28.

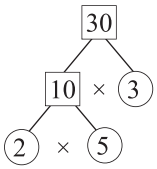
## Practice Time 5D

**1.** (*a*) 15; Composite number ($\because 15 = 3 \times 5$)
(*b*) 21; Composite number ($\because 21 = 3 \times 7$)
(*c*) 23; Prime number ($\because 23 = 1 \times 23$)
(*d*) 33; Composite number ($\because 33 = 3 \times 11$)
(*e*) 46; Composite number ($\because 46 = 2 \times 23$)
(*f*) 49; Composite number ($\because 49 = 7 \times 7$)

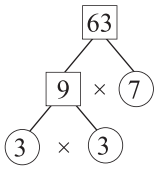
**2.** (*a*) Prime numbers between 10 and 30 = 11, 13, 17, 19, 23 and 29.
(*b*) Prime numbers between 50 and 60 = 53 and 59.
(*c*) Prime numbers between 80 and 90 = 83 and 89.

**3.** (*a*) Composite numbers between 1 and 10 = 4, 6, 8, 9 (4 numbers).
(*b*) Composite numbers between 20 and 30 = 21, 22, 24, 25, 26, 27, 28 (7 numbers).
(*c*) Composite numbers between 70 and 80 = 72, 74, 75, 76, 77, 78 (6 numbers).

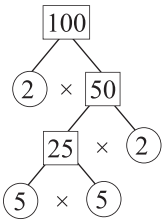
**4.** (*a*)




(*b*)




(*c*)




**5.** (*a*)

| | |
|---|---|
| 3 | 75 |
| 5 | 25 |
| | 5 |

(*b*)

| | |
|---|---|
| 2 | 108 |
| 2 | 54 |
| 3 | 27 |
| 3 | 9 |
| | 3 |

(*c*)

| | |
|---|---|
| 5 | 625 |
| 5 | 125 |
| 5 | 25 |
| | 5 |

**6.** (*a*) $18 = 2 \times 3 \times 3$

| | |
|---|---|
| 2 | 18 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

(*b*) $20 = 2 \times 2 \times 5$

| | |
|---|---|
| 2 | 20 |
| 2 | 10 |
| 5 | 5 |
| | 1 |

(*c*) $32 = 2 \times 2 \times 2 \times 2 \times 2$

| | |
|---|---|
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
| | 1 |

(*d*) $42 = 2 \times 3 \times 7$

| | |
|---|---|
| 2 | 42 |
| 3 | 21 |
| 7 | 7 |
| | 1 |

(*e*) $60 = 2 \times 2 \times 3 \times 5$

| | |
|---|---|
| 2 | 60 |
| 2 | 30 |
| 3 | 15 |
| 5 | 5 |
| | 1 |

(*f*) $81 = 3 \times 3 \times 3 \times 3$

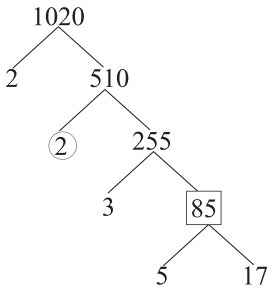
| | |
|---|---|
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
| | 1 |

## Chapter Assessment

**1.** (*a*) (*iii*) Both Riya and Siya are correct.
($\because$ $90 = 15 \times 6$)

(*b*) (*ii*) 8, 16, 24, 32, 40, are all multiples of 8.

(*c*) (*iii*) $a = 2$, $b = 85$




(*d*) (*i*) 3630 is not divisible by 9.

**2.** (*a*) False;
Since, $1 \times 5 = 5$ is a prime number.

(*b*) False;
For example, 15 is an odd number, but not a prime number.

(*c*) False;
Multiples of a number cannot be counted whereas factors of a number can be counted.

(*d*) True;
For example, 10 or 15 both have 5 as their factor and the numbers are also multiple of 5.

(*e*) False;
Every counting number (except 1) are either prime or composite.

(*f*) True;
2 is the only even prime number.

**3.** (*a*) The smallest multiple of 2 greater than 28 is 30.

(*b*) A multiple of 2 but not of 3, lesser than 12 but greater than 8, is 10.

(*c*) A multiple of 5, 6 and 10, greater than 40 but less than 80, is 60.

(*d*) A multiple of 5 and 2 which is 2 more than the third multiple of 6, is 20.

(*e*) A multiple of 3 but not of 6 and 9, greater than 22 but less than 37, is 33.

**4.** (*a*) Thirteenth multiple of $2 = 2 \times 13 = 26$.

(*b*) The greatest 2-digit multiple of 3 = 99.

(*c*) Greatest factor of the greatest 5-digit number = 99999

(*d*) Smallest multiple of the greatest 5-digit number = 99999

**5.** 1, 2, 4, 5, 8, 10, 25, 40, 125

**6.** First 3 multiples of 9 are: 9, 18, 27 and sum = 9 + 18 + 27 = 54. And $54 = 6 \times 9$
Thus, 6th multiple of 9 is equal to the sum of its first 3 multiples.

**7.** 4 pairs (13 and 31, 17 and 71, 37 and 73, 79 and 97)

**8.** 312, 402, 444, 612.
House number 312, 402, 444, and 612 are divisible by 6, so by 3 also.

## Life Skills (Page 104)

**1.** Room numbers that are multiple of 3 and 5, *i.e.*, 15 are: 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 195.

**2.** 6, 12, 18, 24, 30; Since, Vishal work daily, Simran work alternate day, *i.e.*, every 2nd day and Shelly work on every 3rd day, so we have to find the date, which are common multiple of 1, 2 and 3, *i.e.*, 6.

## Mental Maths (Page 105)

**1.** (*a*) Every number is a multiple of 1.

**2.** (*c*) Every number other than 1 has at least 2 factors.

**3.** (*c*) Smallest 2-digit number = 10
$10 - 2 = 8$ is a multiple of 2.

**4.** (*a*) Odd factors of 30 are 1, 3, 5 and 15 (4 factors).

# CHAPTER 6 : FRACTIONS

## Let's Recall

**1.** (*a*)

**2.** (*a*) $\frac{3}{9}$ (*b*) $\frac{4}{9}$ (*c*) $\frac{3}{9}$ (*d*) $\frac{4}{9}$

**3.** (*a*) Numerator = 2, Denominator = 5

(*b*) Numerator = 3, Denominator = 7

(*c*) Numerator = 4, Denominator = 9

(*d*) Numerator = 5, Denominator = 10

**4.** (*a*) $\frac{1}{3}$ of 15 apples = $\frac{1}{3} \times 15 = 5$ apples

(*b*) $\frac{2}{3}$ of 21 pencils = $\frac{2}{3} \times 21 = 14$ pencils

(*c*) $\frac{3}{4}$ of 20 stamps = $\frac{3}{4} \times 20 = 15$ stamps

## Quick Check (Page 108)

**1.** $\frac{2}{9}, \frac{3}{9}, \frac{8}{9}$ are like fractions $\frac{7}{8}$ is unlike fractions.

Hence, odd one out is $\frac{7}{8}$.

**2.** $\frac{1}{12}, \frac{11}{12}$ and $\frac{13}{12}$ are like fractions.

$\frac{5}{11}$ is unlike fraction.

Hence, $\frac{5}{11}$ is odd one out.

## Practice Time 6A

**1.** (*a*), (*b*) and (*e*) are like fractions because denominators are same.

**2.** (*a*), (*c*) and (*e*) are unlike fractions because denominators are different.

**3.** (*a*) $\frac{3}{7} = \frac{\boxed{6}}{14}$ $\left(\because \frac{3}{7} = \frac{3\times2}{7\times2} = \frac{6}{14}\right)$

(*b*) $\frac{2}{5} = \frac{\boxed{6}}{15}$ $\left(\because \frac{2}{5} = \frac{2\times3}{5\times3} = \frac{6}{15}\right)$

(*c*) $\frac{16}{28} = \frac{\boxed{4}}{7}$ $\left(\frac{16}{28} = \frac{16\div4}{28\div4} = \frac{4}{7}\right)$

(*d*) $\frac{7}{35} = \frac{\boxed{1}}{5}$ $\left(\because \frac{7}{35} = \frac{7\div7}{35\div7} = \frac{1}{5}\right)$

**4.** (*a*) $\frac{2}{3} = \frac{6}{\boxed{9}}$ $\left(\because \frac{2}{3} = \frac{2\times3}{3\times3} = \frac{6}{9}\right)$

(*b*) $\frac{7}{9} = \frac{14}{\boxed{18}}$ $\left(\because \frac{7}{9} = \frac{7\times2}{9\times2} = \frac{14}{7}\right)$

(*c*) $\frac{15}{35} = \frac{3}{\boxed{7}}$ $\left(\because \frac{15}{35} = \frac{15\div5}{35\div5} = \frac{3}{7}\right)$

(*d*) $\frac{16}{36} = \frac{4}{\boxed{9}}$ $\left(\because \frac{16}{36} = \frac{16\div4}{36\div4} = \frac{4}{9}\right)$

**5.** (*a*) $\frac{2}{5} = \frac{\boxed{8}}{20}$ $\left(\because \frac{2}{5} = \frac{2\times4}{5\times4} = \frac{8}{20}\right)$

(*b*) $\frac{3}{9} = \frac{18}{\boxed{54}}$ $\left(\because \frac{3}{9} = \frac{3\times6}{9\times6} = \frac{18}{54}\right)$

(*c*) $\frac{5}{9} = \frac{\boxed{45}}{81}$ $\left(\because \frac{5}{9} = \frac{5\times9}{9\times9} = \frac{45}{81}\right)$

(*d*) $\frac{4}{7} = \frac{24}{\boxed{42}}$ $\left(\because \frac{4}{7} = \frac{4\times6}{7\times6} = \frac{24}{42}\right)$

**6.** (*a*) $\frac{5}{7} = \frac{5\times2}{7\times2} = \frac{10}{14}; \frac{5}{7} = \frac{5\times3}{7\times3} = \frac{15}{21};$

$\frac{5}{7} = \frac{5\times4}{7\times4} = \frac{20}{28}; \frac{5}{7} = \frac{5\times5}{7\times5} = \frac{25}{35}$ and

$\frac{5}{7} = \frac{5\times6}{7\times6} = \frac{30}{42}.$

So, the five equivalent fractions of $\frac{5}{7}$ are $\frac{10}{14}, \frac{15}{21}, \frac{20}{28}, \frac{25}{35}$ and $\frac{30}{42}$.

(*b*) $\frac{3}{4} = \frac{3\times2}{4\times2} = \frac{6}{8}; \frac{3}{4} = \frac{3\times3}{4\times3} = \frac{9}{12};$

$\frac{3}{4} = \frac{3\times4}{4\times4} = \frac{12}{16}; \frac{3}{4} = \frac{3\times5}{4\times5} = \frac{15}{20}$ and

$\frac{3}{4} = \frac{3\times6}{4\times6} = \frac{18}{24}.$

So, the five equivalent fractions of $\frac{3}{4}$ are $\frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}$ and $\frac{18}{24}$.

(*c*) $\frac{5}{8} = \frac{5\times2}{8\times2} = \frac{10}{16}; \frac{5}{8} = \frac{5\times3}{8\times3} = \frac{15}{24};$

$\frac{5}{8} = \frac{5\times4}{8\times4} = \frac{20}{32}; \frac{5}{8} = \frac{5\times5}{8\times5} = \frac{25}{40}$ and

$\frac{5}{8} = \frac{5\times6}{8\times6} = \frac{30}{48}.$

So, the five equivalent fractions of $\frac{5}{8}$ are $\frac{10}{16}, \frac{15}{24}, \frac{20}{32}, \frac{25}{40}$ and $\frac{30}{48}$.

(*d*) and (e) same as above parts.

**7.** (*a*) $\frac{5}{11} \times \frac{10}{22}$

Here, $5 \times 22 = 110$ and $11 \times 10 = 110$.

*i.e.*, both the products are equal.

Hence, $\frac{5}{11}$ and $\frac{10}{22}$ are equivalent fractions.

(*b*) $\frac{8}{12} \times \frac{16}{21}$

Here, $8 \times 21 = 168$ and $12 \times 16 = 192$.

*i.e.*, both the products are different.

Hence, $\frac{8}{12}$ and $\frac{16}{21}$ are not equivalent fractions.

(*c*) $\frac{3}{8} \times \frac{18}{48}$

Here, $3 \times 48 = 144$ and $8 \times 18 = 144$.

*i.e.*, both the products are equal.

Hence, $\frac{3}{8}$ and $\frac{18}{48}$ are not equivalent fractions.

(*d*) $\frac{9}{10} \times \frac{27}{40}$

Here, $9 \times 40 = 360$ and $27 \times 10 = 270$.

*i.e.*, both the products are different.

Hence, $\frac{9}{10}$ and $\frac{27}{40}$ are not equivalent fractions.

(*e*) $\frac{4}{5} \times \frac{36}{45}$

Here, $4 \times 45 = 180$ and $5 \times 36 = 180$.

*i.e.*, both the products are equal.

Hence, $\frac{4}{5}$ and $\frac{36}{45}$ are equivalent fractions.

## Practice Time 6B

**1.** (*a*) $\frac{3}{15}$ Factors of numerator 3 are = 1 and 3.

Factors of denominator 15 are 1, 3, 5 and 15.

Here, common factors of 3 and 15 are 1 and 3.

Thus, $\frac{3}{15}$ is not in its simplest form.

(*b*) $\frac{9}{13}$

Factors of numerator 9 are 1, 3 and 9.

Factors of denominator 13 are 1 and 13.

Here, common factors of 9 and 13 is 1.

Thus, $\frac{9}{13}$ is in its simplest form.

(*c*) $\frac{12}{18}$

Factors of numerator 12 = 1, 2, 3, 4, 6 and 12.

Factors of denominator 18 = 1, 2, 3, 6, 9, 18.

Here, common factors of 12 and 18 are 1, 2, 3 and 6.

Thus, $\frac{12}{18}$ is not in its simplest form.

(*d*) $\frac{17}{21}$

Factors of numerator 17 = 1 and 17.

Factors of denominator 21 = 1, 3, 7, 21.

Here, common factors of 17 and 21 is 1.

Thus, $\frac{17}{21}$ is in its simplest form.

(*e*) $\frac{12}{19}$

Factors of numerator 12 = 1, 2, 3, 4, 6 and 12.

Factors of denominator 19 = 1 and 19.

Here, common factors of 12 and 19 is 1.

Thus, $\frac{12}{19}$ is in its simplest form.

(*f*) $\frac{15}{24}$

Factors of numerator 15 = 1, 3, 5 and 15.

Factors of denominator 24 = 1, 2, 3, 4, 6, 8, 12 and 24.

Here, common factors of 15 and 24 are 1 and 3.

Thus, $\frac{15}{24}$ is not in its simplest form.

(*g*) to (*j*) — Same as above.

**2.** (*a*) $\frac{14 \div 7}{21 \div \boxed{7}} = \frac{\boxed{2}}{3}$ (*b*) $\frac{10 \div \boxed{2}}{18 \div 2} = \frac{\boxed{5}}{\boxed{9}}$

(*c*) $\frac{15 \div 5}{35 \div \boxed{5}} = \frac{\boxed{3}}{\boxed{7}}$

**3.** (*a*) $\frac{19}{38} = \frac{19 \div 19}{38 \div 19} = \frac{1}{2}$

Thus, $\frac{1}{2}$ is the simplest form of $\frac{19}{38}$.

(*b*) $\frac{10}{20} = \frac{\cancel{2} \times \cancel{5}}{\cancel{2} \times 2 \times \cancel{5}} = \frac{1}{2}$

Thus, $\frac{1}{2}$ is the simplest form of $\frac{10}{20}$.

(*c*) $\frac{16}{80} = \frac{\cancel{4} \times \cancel{4}}{\cancel{4} \times \cancel{4} \times 5} = \frac{1}{5}$

Thus, $\frac{1}{5}$ is the simplest form of $\frac{16}{80}$.

(*d*) $\frac{30}{90} = \frac{\cancel{3} \times \cancel{10}}{\cancel{3} \times 3 \times \cancel{10}} = \frac{1}{3}$

Thus, $\frac{1}{3}$ is the simplest form of $\frac{30}{90}$.

(*e*) $\frac{64}{96} = \frac{\cancel{4} \times \cancel{4} \times \cancel{2} \times 2}{\cancel{4} \times \cancel{4} \times \cancel{2} \times 3} = \frac{2}{3}$

Thus, $\frac{2}{3}$ is the simplest form of $\frac{64}{96}$.

(*f*) $\frac{9}{12} = \frac{\cancel{3} \times 3}{\cancel{3} \times 4} = \frac{3}{4}$

(*g*) to (*j*)—Same as above.

## Practice Time 6C

**1.** Proper fractions = (*a*), (*b*), (*d*) and (*e*).

**2.** Improper fractions = (*b*) and (*e*)

**3.** Unit fraction = (*b*), (*d*) and (*f*)

**4.** (*a*) Divide numerator 9 by the denominator 5.

$\frac{9}{5} = 9 \div 5$

Denominator

$$\begin{array}{r} 5\overline{)\,9\,(}\,1 \\ -\,5 \\ \hline 4 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{9}{5} = 1\frac{4}{5}$.

(*b*) Divide numerator 12 by the denominator 7.

$\frac{12}{7} = 12 \div 7$

Denominator

$$\begin{array}{r} 7\overline{)\,12\,(}\,1 \\ -\,7 \\ \hline 5 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{12}{7} = 1\frac{5}{7}$.

(*c*) Divide numerator 19 by the denominator 15.

$\frac{19}{15} = 19 \div 15$

Denominator

$$\begin{array}{r} 15\overline{)\,19\,(}\,1 \\ -\,15 \\ \hline 04 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{19}{15} = 1\frac{4}{15}$.

(*d*) Divide numerator 30 by the denominator 12.

$\frac{30}{12} = 30 \div 12$

Denominator

$$\begin{array}{r} 12\overline{)\,30\,(}\,2 \\ -\,24 \\ \hline 06 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{30}{12} = 2\frac{6}{12}$ or $2\frac{1}{2}$

(*e*) Divide numerator 20 by the denominator 13.

$\frac{20}{13} = 20 \div 13$

Denominator

$$\begin{array}{r} 13\overline{)\,20\,(}\,1 \\ -\,13 \\ \hline 07 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{20}{13} = 1\frac{7}{13}$

(*f*) Divide numerator 24 by the denominator 5.

$\frac{24}{5} = 24 \div 5$

Denominator

$$\begin{array}{r} 5\overline{)\,24\,(}\,4 \\ -\,20 \\ \hline 04 \\ \hline \end{array}$$

Whole part

Numerator (new)

Thus, $\frac{24}{5} = 4\frac{4}{5}$.

**5.** (*a*) $8\frac{1}{2} = \frac{8 \times 2 + 1}{2} = \frac{16+1}{2} = \frac{17}{2}$

(*b*) $7\frac{1}{3} = \frac{7 \times 3 + 1}{3} = \frac{21+1}{3} = \frac{22}{3}$

(*c*) $10\frac{2}{3} = \frac{10 \times 3 + 2}{3} = \frac{30+2}{3} = \frac{32}{3}$

(*d*) $4\frac{1}{4} = \frac{4 \times 4 + 1}{4} = \frac{16+1}{7} = \frac{17}{4}$

(*e*) $5\frac{1}{5} = \frac{5 \times 5 + 1}{5} = \frac{25+1}{5} = \frac{26}{5}$

(*f*) $9\frac{1}{7} = \frac{9 \times 7 + 1}{7} = \frac{63+1}{7} = \frac{64}{7}$

**6.** (*a*) $3\frac{3}{5} = \frac{3 \times 5 + 3}{5} = \frac{15+3}{5} = \frac{\boxed{18}}{5}$

(*b*) $4\frac{4}{7} = \frac{4 \times 7 + 4}{7} = \frac{32}{\boxed{7}}$

(*c*) $8\frac{\boxed{2}}{3} = \frac{26}{3}$

(*d*) $4\frac{5}{6} = \frac{4 \times 6 + 5}{6} = \frac{24+5}{6} = \frac{\boxed{29}}{6}$

## Practice Time 6D

**1.** (*a*) Here, the denominators of the given fractions are same. So, comparing numerators 3 and 1, we have 3 > 1.

Thus, $\frac{3}{4} > \frac{1}{4}$.

(*b*) Here, the denominators of the given fractions are same. So, comparing numerators 4 and 8, we have 4 < 8.

Thus, $\frac{4}{9} < \frac{8}{9}$.

(*c*) Here, the denominators of the given fractions are same. So, comparing numerators 10 and 8, we have 10 > 8.

Thus, $\frac{10}{15} > \frac{8}{15}$.

(*d*) Here, the numerators are same and we know that in unlike fractions with same numerators,

the fraction with greater denominator will be smaller.

Thus, $\frac{3}{15} < \frac{3}{8}$.

($e$) Comparing the numerators 3 and 5, we have $5 > 3$.

So, $\frac{3}{8} < \frac{5}{8}$.

($f$) and ($h$) same as part ($e$).

($g$), ($i$) and ($j$) same as part ($d$).

**2.** ($a$) Here, the denominators of the given fractions are same. So, comparing numerators 4 and 1, we have $4 > 1$. Thus, $\frac{4}{5}$ is greater.

($b$) Here, the denominators of the given fractions are same. So, comparing numerators 9 and 7, we have $9 > 7$. Thus, $\frac{9}{13}$ is greater.

($c$) $\frac{3}{9} = \frac{\cancel{3}}{\cancel{3} \times 3} = \frac{1}{3}$ and $\frac{\cancel{8}^{4}}{\cancel{2}} = 4$

Clearly, $\frac{1}{3} < 4$. So, $\frac{8}{2}$ is greater.

($d$) Here, the denominators of the given fractions are same. So, comparing numerators 3 and 2, we have $3 > 2$. Thus, $\frac{3}{4}$ is greater.

($e$) Here the numerators are same.

So, comparing denominators 11 and 13, we have $11 < 13$. Thus, $\frac{8}{11}$ is greater.

**3.** ($a$) Since, the denominators are same. Therefore, comparing numerators: $2 < 4 < 5 < 7$

So, the fractions in ascending order are:

$\frac{2}{8} < \frac{4}{8} < \frac{5}{8} < \frac{7}{8}$.

($b$) Since, $1 < 2 < 5 < 6$

So, the fractions in ascending order are:

$\frac{1}{9} < \frac{2}{9} < \frac{5}{9} < \frac{6}{9}$.

($c$) Since, the numerators of the given fractions are same, so, the fraction with smaller denominator will be the greater fraction. $7 < 8 < 12 < 13$.

Thus, the fractions in ascending order are:

$\frac{6}{13} < \frac{6}{12} < \frac{6}{8} < \frac{6}{7}$.

($d$) Since, the numerators of the given fractions is same, so, the fraction with smaller denominator will be the bigger fraction. $2 < 3 < 7 < 9$.

Thus, the fractions in ascending order are

$\frac{1}{9} < \frac{1}{7} < \frac{1}{3} < \frac{1}{2}$.

**4.** ($a$) Since, the numerators of the given fractions is same, so, the fraction with greater denominator will be the smaller fraction.

Comparing denominators of the given fractions, $13 > 12 > 9 > 8$.

Thus, the fractions in descending order are:

$\frac{7}{8} > \frac{7}{9} > \frac{7}{12} > \frac{7}{13}$.

($b$) Since, the denominators of the given fractions are same.

So, comparing numerators: $4 > 3 > 2 > 1$

Thus, the fractions in descending order are:

$\frac{4}{9} > \frac{3}{9} > \frac{2}{9} > \frac{1}{9}$.

($c$) Same as part ($b$).

($d$) Same as part ($a$).

## Practice Time 6E

**1.** ($a$) $\frac{9}{4} + \frac{8}{4} = \frac{9+8}{4} = \frac{17}{4} = 4\frac{1}{4}$

($b$) $\frac{5}{9} + \frac{8}{9} = \frac{5+8}{9} = \frac{13}{9} = 1\frac{4}{9}$

($c$) $\frac{5}{12} + \frac{7}{12} = \frac{5+7}{12} = \frac{12}{12} = 1$

($d$) $\frac{4}{7} + \frac{5}{7} + \frac{2}{7} = \frac{4+5+2}{7} = \frac{11}{7} = 1\frac{4}{7}$

($e$) $\frac{8}{11} + \frac{24}{11} + \frac{15}{11} = \frac{8+24+15}{11} = \frac{47}{11} = 4\frac{3}{11}$

($f$) $1\frac{1}{6} + \frac{1}{6} = \frac{7}{6} + \frac{1}{6} = \frac{7+1}{6} = \frac{\cancel{8}^{4}}{\cancel{6}_{3}} = \frac{4}{3} = 1\frac{1}{3}$

(g) $2\frac{4}{5}+\frac{2}{5}=\frac{2\times5+4}{5}+\frac{2}{5}=\frac{14}{5}+\frac{2}{5}=\frac{16}{5}=3\frac{1}{5}$

(h) $2\frac{1}{9}+1\frac{1}{9}=\frac{2\times9+1}{9}+\frac{1\times9+1}{9}$

$=\frac{19}{9}+\frac{10}{9}=\frac{19+10}{9}=\frac{29}{9}=3\frac{2}{9}$

**2.** (a) $\frac{10}{11}-\frac{7}{11}=\frac{10-7}{11}=\frac{3}{11}$

(b) $\frac{9}{13}-\frac{9}{13}=\frac{9-9}{13}=\frac{0}{13}=0$

(c) $\frac{5}{16}-\frac{3}{16}=\frac{5-3}{16}=\frac{2}{16}=\frac{1}{8}$

(d) $\frac{9}{17}-\frac{7}{17}=\frac{9-7}{17}=\frac{2}{17}$

(e) $6\frac{3}{4}-2\frac{1}{4}=\frac{27}{4}-\frac{9}{4}=\frac{27-9}{4}=\frac{18}{4}=\frac{9}{2}=4\frac{1}{2}$

(f) $4\frac{1}{12}-3\frac{1}{12}=\frac{49}{12}-\frac{37}{12}=\frac{49-37}{12}=\frac{12}{12}=1$

(g) $5\frac{7}{16}-4\frac{1}{16}=\frac{87}{16}-\frac{65}{16}=\frac{87-65}{16}$

$=\frac{22}{16}=\frac{11}{8}=1\frac{3}{8}$

(h) $13\frac{3}{17}-11\frac{2}{17}=\frac{224}{17}-\frac{189}{17}$

$=\frac{224-189}{17}=\frac{35}{17}=\frac{35}{17}=2\frac{1}{17}$

**3.** (a) Distance covered by Ram by bus = $\frac{5}{6}$ km.

Distance covered by him on foot = $\frac{1}{6}$ km.

Total distance covered by Ram to reach the school = $\frac{5}{6}+\frac{1}{6}=\frac{5+1}{6}=\frac{6}{6}=1$ km.

Thus, Ram covered a distance of 1 km to reach the school.

(b) Cost of a pencil = ₹$4\frac{1}{2}$.

Cost of crayons packet = ₹$32\frac{1}{2}$.

Total cost of both the items = ₹$4\frac{1}{2}$ + ₹$32\frac{1}{2}$

$=\frac{9}{2}+\frac{65}{2}=\frac{9+65}{2}=\frac{74}{2}=$ ₹37

Thus, the total cost of both the items is ₹37.

(c) Time spent in reading a book by Siya = $\frac{3}{5}$ hour.

Time spent for playing by her = $\frac{2}{5}$ hour.

Since, the denominators are same of both fractions.

Then, clearly $3 > 5$. So $\frac{3}{5} > \frac{2}{5}$.

Difference of time spent on reading and playing

$=\frac{3}{5}-\frac{2}{5}=\frac{3-2}{5}=\frac{1}{5}$ hour.

Thus, Siya spent more time on reading by $\frac{1}{5}$ hour.

(d) Distance covered by Vivan = $2\frac{5}{8}=\frac{21}{8}$ km

Distance covered by Ridhima = $3\frac{2}{8}=\frac{26}{8}$ km

Since the denominators are same, so $\frac{26}{8}>\frac{21}{8}$.

Ridhima walked longer than Vivan.

Difference in distance walked by Ridhima and Vivan

$=\frac{26}{8}-\frac{21}{8}=\frac{26-21}{8}=\frac{5}{8}$ km.

Thus, Ridhima walked longer by $\frac{5}{8}$ km.

## Mental Maths (Page 122)

**1.** (c) Total number of caps in a bag = 72.

Number of white caps = 18.

Number of red caps = 72 – 18 = 54 caps.

Fraction of red caps in the bag = $\frac{54}{72}$.

$=\frac{54\div18}{72\div18}=\frac{3}{4}$.

**2.** (b) $\frac{9}{8}$ is an improper fraction.

**3.** (d) $\frac{1}{4}$ is not equivalent to $\frac{4}{24}$.

**4.** (a) $\frac{1}{3}$ is the simplest form of $\frac{6}{18}$.

## Chapter Assessment

**1.** (a) – (iv) $\frac{9}{12}$ is equivalent to $\frac{3}{4}$.

(*b*) – (*iii*) Since, the numerator is same, so the fraction with the greater denominator will be smaller fraction.

Therefore, $\frac{1}{5}$ is the smallest fraction.

(*c*) – (*i*) $\frac{2}{7}$ of $154 = \frac{2}{7} \times 154 = 2 \times 22 = 44$

(*d*) – (*iii*) $5\frac{3}{7} = \frac{38}{7} = 5.42$

Thus, its value lies between 5 and 6

(*e*) – (*iii*) The numerator is same as denominator.

(*f*) – (*ii*) Time spent by the students to attend the class = $5\frac{2}{5}$ hours.

Time spent by the students in playing $= 1\frac{1}{5}$ hours.

Total time spent by the students

$= 5\frac{2}{5} + 1\frac{1}{5}$

$= \frac{27}{5} + \frac{6}{5} = \frac{33}{5}$ hours $= 6\frac{3}{5}$ hours.

**2.** (*a*) – (*v*) $\left(\because \frac{8}{16} = \frac{1}{2}\right)$ (*b*) – (*iv*) $\left(\because \frac{25}{45} = \frac{5}{9}\right)$

(*c*) – (*i*) $\left(\because \frac{18}{20} = \frac{9}{10}\right)$ (*d*) – (*ii*) $\left(\because \frac{160}{170} = \frac{16}{17}\right)$

(*e*) – (*iii*) $\left(\because \frac{2}{50} = \frac{1}{25}\right)$

**3.** (*a*) $\frac{5}{2} \boxed{>} \frac{3}{2}$ (*b*) $\frac{4}{3} \boxed{=} \frac{4}{3}$

(*c*) $\frac{15}{3} \boxed{>} \frac{11}{3}$ (*d*) $\frac{7}{5} \boxed{<} \frac{23}{5}$

**4.** (*a*) $\frac{5}{8} + \frac{1}{8} = \frac{5+1}{8} = \frac{6}{8} = \frac{3}{4}$.

(*b*) $\frac{9}{11} - \frac{5}{11} = \frac{9-5}{11} = \frac{4}{11}$

(*c*) $1\frac{5}{6} - \frac{4}{6} = \frac{11}{6} - \frac{4}{6} = \frac{11-4}{6} = \frac{7}{6} = 1\frac{1}{6}$

(*d*) $2\frac{1}{3} + \frac{2}{3} = \frac{7}{3} + \frac{2}{3} = \frac{7+2}{3} = \frac{9}{3} = 3$

**5.** Quantity of milk drank by Maya = $\frac{3}{2}$ glasses.

Quantity of milk drank by Sonia = $1\frac{1}{2} = \frac{3}{2}$ glasses.

Thus, both of them drank same amount of milk.

**6.** Part of his salary spent by Mrs. Gupta for day to day expenses = $\frac{2}{5}$.

Part of his salary spent for shopping and entertainment = $\frac{1}{5}$.

Total part of salary spent in that particular month

$= \frac{2}{5} + \frac{1}{5} = \frac{3}{5}$

Thus, $\frac{3}{5}$ part of a salary spent in that particular month.

**7.** Part of a chocolate bar Seema had = $\frac{1}{4}$

Part of a chocolate bar gave her friend = $\frac{1}{4}$

Total part of a chocolate bar

$= \frac{1}{4} + \frac{1}{4} = \frac{1+1}{4} = \frac{2}{4} = \frac{1}{2}$

Thus, Seema have $\frac{1}{2}$ of chocolate bar now.

**8.** Part of cake eaten by mother = $\frac{2}{8}$.

Part of cake eaten by father = $\frac{4}{8}$.

Total part eaten by both of them

$= \frac{2}{8} + \frac{4}{8} = \frac{2+4}{8} = \frac{6}{8}$ or $\frac{3}{8}$

Thus, $\frac{3}{8}$ part of cake has been eaten.

**9.** A painter painted $\frac{1}{5}$ part of a wall on 1st day.

and $\frac{3}{5}$ parts on 2nd day.

Fraction of the wall painted in two days

$= \frac{1}{5} + \frac{3}{5} = \frac{1+3}{5} = \frac{4}{5}$

Thus, $\frac{4}{5}$ parts of a wall is painted in two days.

**10.** Distance covered by Anuj after dinner = $1\frac{1}{2}$ km $= \frac{3}{2}$ km.

Distance covered by Shalija

$= 2\frac{4}{8} = \frac{20}{8} = \frac{20 \div 4}{8 \div 4} = \frac{5}{2}$ km.

Difference in distance covered $= \frac{5}{2} - \frac{3}{2} = \frac{2}{2} = 1$ km.

Thus, Shalija walked 1 km more than Anuj. It is advised to walk after dinner because it is good for health.

## Brain Sizzlers (Page 122)

| | | |
|---|---|---|
| $\frac{8}{2}$ | $\frac{1}{2}$ | $\frac{6}{2}$ |
| $1\frac{1}{2}$ | $2\frac{1}{2}$ | $3\frac{1}{2}$ |
| $\frac{4}{2}$ | $4\frac{1}{2}$ | $\frac{2}{2}$ |

$\because$ Row $1 = \frac{8}{2} + \frac{1}{2} + \frac{6}{2} = \frac{8+1+6}{2} = \frac{15}{2}$

Row $2 = 1\frac{1}{2} + 2\frac{1}{2} + 3\frac{1}{2} = \frac{3}{2} + \frac{5}{2} + \frac{7}{2}$

$= \frac{3+5+7}{2} + \frac{5}{2} + \frac{7}{2} = \frac{15}{2}$

Row $3 = \frac{4}{2} + 4\frac{1}{2} + \frac{2}{2} = \frac{4}{2} + \frac{9}{2} + \frac{2}{2} = \frac{4+9+2}{2} = \frac{15}{2}$

Column $1 = \frac{8}{2} + 1\frac{1}{2} + \frac{4}{2} = \frac{8}{2} + \frac{3}{2} + \frac{4}{2}$

$= \frac{8+3+4}{2} = \frac{15}{2}$

Column $2 = \frac{1}{2} + 2\frac{1}{2} + 4\frac{1}{2} = \frac{1}{2} + \frac{5}{2} + \frac{9}{2}$

$= \frac{1+5+9}{2} = \frac{15}{2}$

Column $3 = \frac{6}{2} + 3\frac{1}{2} + \frac{2}{2} = \frac{6}{2} + \frac{7}{2} + \frac{2}{2}$

$= \frac{6+7+2}{2} = \frac{15}{2}$

Diagonal $1 = \frac{8}{2} + 2\frac{1}{2} + \frac{2}{2} = \frac{8}{2} + \frac{5}{2} + \frac{2}{2}$

$= \frac{8+5+2}{2} = \frac{15}{2}$

Diagonal $2 = \frac{4}{2} + 2\frac{1}{2} + \frac{6}{2} = \frac{4}{2} + \frac{5}{2} + \frac{6}{2}$

$= \frac{4+5+6}{2} = \frac{15}{2}$

Thus, the sum of each row, column and each diagonal remains the same.

# CHAPTER 7 : INTRODUCTION TO DECIMALS

## Practice Time 7A

**1.** (*a*) Fraction form $= \frac{5}{10}$

Decimal form = 0·5

(*b*) Fraction form $= \frac{16}{100}$

Decimal form = 0·16

(*c*) Fraction from $= 1\frac{2}{10}$

Decimal form = 1·2

(*d*) Fraction form $= 1\frac{5}{100}$

Decimal form = 1·05

(*e*) Fraction form $= 2\frac{8}{100}$

Decimal form = 2·08

**3.**

| | Fractions | Decimals | | Fractions | Decimals |
|---|---|---|---|---|---|
| (*a*) | $\frac{1}{10}$ | **0.1** | (*f*) | $\frac{18}{100}$ | **0.18** |
| (*b*) | $\mathbf{\frac{2}{10}}$ | 0.2 | (*g*) | $\mathbf{\frac{25}{100}}$ | 0.25 |
| (*c*) | $1\frac{3}{10}$ | **1.3** | (*h*) | $1\frac{51}{100}$ | **1.51** |
| (*d*) | $\mathbf{\frac{24}{10}}$ | 2.4 | (*i*) | $\mathbf{\frac{243}{100}}$ | 2.43 |
| (*e*) | $3\frac{5}{10}$ | **3.5** | (*j*) | $5\frac{3}{100}$ | **5.03** |

## Practice Time 7B

**1.**

| | Hundreds (100) | Tens (10) | Ones (1) | • | Tenths $\frac{1}{10}$ | Hundredths $\frac{1}{100}$ |
|---|---|---|---|---|---|---|
| (*a*) | | | 0 | • | 1 | 3 |
| (*b*) | | | 0 | • | 0 | 9 |
| (*c*) | | | 2 | • | 3 | 7 |
| (*d*) | | 1 | 2 | • | 4 | 8 |
| (*e*) | 1 | 0 | 1 | • | 7 | 2 |

**2.** (*a*) 0.09 = Zero point zero nine.

(*b*) 7.08 = Seven point zero eight.

(*c*) 13.37 = Thirteen point three seven.

(*d*) 128.72 = One hundred twenty-eight point seven two.

**3.** (*a*) 7 tenths $= \frac{7}{10} = 0.7$.

(*b*) 35 hundredths $= \frac{35}{100} = 0.35$

(*c*) 5 and 4 tenths $= 5\frac{4}{10} = \frac{54}{10} = 5.4$

(*d*) 2 and 3 hundredths $= 2\frac{3}{100} = \frac{203}{100} = 2.03$

(*e*) 32 and 8 hundredths $= 32\frac{8}{100} = \frac{3208}{100} = 32.08$

(*f*) 3 and 11 hundredths $= 3\frac{11}{100} = \frac{311}{100} = 3.11$

**4.** (*a*)

| Ones | • | Tenths |
|---|---|---|
| 1 | • | 7 |

Place Value
7 tenths = 7 × 0.1 = 0.7
1 one = 1 × 1 = 1

Expanded form = 1 + 0.7

(*b*)

| Ones | • | Tenths | Hundredths |
|---|---|---|---|
| 2 | • | 4 | 3 |

Place Value
3 hundredths = 3 × 0.01 = 0.03
4 tenths = 4 × 0.1 = 0.4
2 ones = 2 × 1 = 2

Expanded form = 2 + 0.4 + 0.03

(*c*)

| Tens | Ones | • | Tenths | Hundredths |
|---|---|---|---|---|
| 1 | 7 | • | 0 | 3 |

Place Value
3 hundredths = 3 × 0.01 = 0.03
0 tenths = 0
7 ones = 7 × 1 = 7
1 ten = 1 × 10 = 10

Expanded form = 10 + 7 + 0 + 0.03

(*d*)

| Hundreds | Tens | Ones | • | Tenths | Hundredths |
|---|---|---|---|---|---|
| 3 | 8 | 3 | • | 4 | 3 |

Place Value
3 hundredths = 3 × 0.01 = 0.03
4 tenths = 4 × 0.1 = 0.4
3 ones = 3 × 1 = 3
8 tens = 8 × 10 = 80
3 hundreds = 3 × 100 = 300

Expanded form = 300 + 80 + 3 + 0.4 + 0.03

(*e*)

| Hundreds | Tens | Ones | • | Tenths | Hundredths |
|---|---|---|---|---|---|
| 5 | 4 | 7 | • | 7 | 7 |

Place Value
7 hundredths = 7 × 0.01 = 0.07
7 tenths = 7 × 0.1 = 0.7
7 ones = 7 × 1 = 7
4 tens = 4 × 10 = 40
5 hundreds = 5 × 100 = 500

Expanded form = 500 + 40 + 7 + 0.7 + 0.07

**5.** (*a*) 4 × 1 + 2 × 0.1 = 4 + 0.2 = 4.2

(*b*) 3 ones + 5 hundredths

$= 3 + \frac{5}{100} = 3 + 0.05 = 3.05$

(*c*) 4 tens + 6 ones + 5 tenths + 2 hundredths

$= 4 \times 10 + 6 \times 1 + \frac{5}{10} + \frac{2}{100}$

$= 40 + 6 + 0.5 + 0.02 = 46.52$

(*d*) 200 + 0.4 = 200.4

## Practice Time 7C

**1.** (*a*) $\frac{4}{10} = 0.4$ (*b*) $\frac{37}{10} = 3.7$

(*c*) $\frac{9}{100} = 0.09$ (*d*) $\frac{48}{100} = 0.48$

(*e*) $\frac{98}{100} = 0.98$ (*f*) $\frac{196}{100} = 1.96$

(*g*) $\frac{213}{100} = 2.13$ (*h*) $1\frac{4}{10} = \frac{14}{10} = 1.4$

(*i*) $23\frac{5}{10} = \frac{235}{10} = 23.5$ (*j*) $8\frac{7}{10} = \frac{807}{100} = 8.07$

**2.** (*a*) $0.6 = \frac{6}{10}$ (*b*) $0.35 = \frac{35}{100}$

(*c*) $1.2 = \frac{12}{10} = 1\frac{2}{10}$ (*d*) $5.1 = \frac{51}{10} = 5\frac{1}{10}$

(*e*) $3.9 = \frac{39}{10} = 3\frac{9}{10}$ (*f*) $3.45 = \frac{345}{100} = 3\frac{45}{100}$

(*g*) $9.03 = \frac{903}{100} = 9\frac{3}{100}$ (*h*) $27.2 = \frac{272}{10} = 27\frac{2}{10}$

(*i*) $26.63 = \frac{2663}{100} = 26\frac{63}{100}$

(*j*) $28.04 = \frac{2804}{100} = 28\frac{4}{100}$

## Chapter Assessment

**1.** (*a*) (*iii*) Two hundredths + six tenths

$= \frac{2}{100} + \frac{6}{10} = 0.02 + 0.6 = 0.62$

(*b*) (*iv*) Place value of 7 in 18.27 = 7 hundredths

$= \frac{7}{100}$

(*c*) (*ii*) $\frac{18764}{100} = 187.64$

(*d*) (*ii*) 10 rupees and 5 paise = 10.05.

(*e*) (*ii*) $6\frac{9}{10} = \frac{69}{10} = 6.9$

**2.** (*a*) (*iv*) Five tenths + six-hundredths

$$\frac{5}{10} + \frac{6}{100} = 0.5 + 0.06 = 0.56$$

(*b*) (*iii*) One hundred + six-tenths

$$= 100 + \frac{6}{10} = 100 + 0.6 = 100.6$$

(*c*) (*ii*) Nineteen point seven eight = 19.78

(*d*) (*i*) Thirteen + four hundredths

$$= 13 + \frac{4}{100} = 13 + 0.04 = 13.04$$

**3.** (*a*) 4.73 = Three hundredths = $\frac{3}{100} = 0.03$

(*b*) 19.69 = 6 tenths = $\frac{6}{10} = 0.6$

(*c*) 72.37 = 3 tenths = $\frac{3}{10} = 0.3$

(*d*) 932.5 = 9 hundreds = 9 × 100 = 900

**4.** (*a*) Tens place = 6, ones place = 5,
tenths place = 2, hundredths place = 8.
Decimal number = 65.28

(*b*) Tenths place = 7, tens place = 8,
hundredths place = 9, ones place = 4.
Decimal number = 84.79.

(*c*) Ones place = 9, hundreds place = 3,
hundredths place = 5.
Decimal number = 309.05

**5.** A's score = 9.8 seconds;

B's score = $9\frac{76}{100} = \frac{976}{100} = 9.76$ seconds;

C's score = $9\frac{8}{10} = \frac{98}{10} = 9.8$ seconds;

D's score = $9\frac{7}{10}$ seconds = $\frac{97}{10} = 9.7$ seconds;

E's score = $9\frac{6}{100} = \frac{906}{100} = 9.06$ seconds.

Thus, swimmer (E) is the winner of the competition.

**6.** 5 tenths = $\frac{5}{10} = 0.5$

Decimal = 0.5 and Fraction = $\frac{5}{10}$

**7.** Smallest decimal numbers = 12.42
Largest decimal numbers = 42.12

**8.** On dividing 1 m into 10 equal parts,

i.e., $\frac{1}{10} = 0.1$ m or 10 cm

Thus, each equal part is 0.1 m, *i.e.*, 1 tenths.

## Mental Maths (Page 137)

**1.** (*a*) 10 coloured strips are here.

(*b*) (*i*) Fraction of yellow strips = $\frac{5}{10}$

Decimal number of yellow strips = 0.5

(*ii*) Fraction of blue strips = $\frac{2}{10}$

Decimal number of blue strips = 0.2

(*iii*) Fraction of peach strips = $\frac{3}{10}$

Decimal number of peach strips = 0.3

**2.**

| | | Ones | • | Tenths | Hundredths | Decimal |
|---|---|---|---|---|---|---|
| (*a*) | 9 tenths | 0 | • | 9 | | 0.9 |
| (*b*) | 5 and 7 tenths 6 hundredths | 5 | • | 7 | 6 | 5.76 |
| (*c*) | 1 and 4 hundredths | 1 | • | 0 | 4 | 1.04 |
| (*d*) | 5 and 47 hundredths | 5 | • | 4 | 7 | 5.47 |

## Brain Sizzlers (Page 138)

**1.** Hundredths digit = largest one-digit prime number = 7
Ones digit = largest one-digit composite number = 9
Tens digit = smallest prime number = 2
Tenths digit = double of tens digit = 2 × 2 = 4
Hence, the decimal number is 29.47.

## MODEL TEST PAPER - 1

**A.**

**1.** (*a*) 6 thousands less than
23,485 = 29,485 – 6000 = 23.485.

**2.** (*c*) Product of 3000 × 140 = 4,20,000.

**3.** (*a*) Annual salary of Rehana = ₹1,20,000

Monthly salary of Rehana = ₹$\frac{120000}{12}$ = ₹10,000

Hence, monthly salary of Rehana is ₹10,000.

**4.** (*c*) When two or more numbers are multiplied together the result is called product.

**5.** (*b*) All the factors of 12 are 1, 2, 3, 4, 6, 12.

**6.** (*c*) If the digit at its ones place is 0 or 5, then the number is divisible by 5.

**7.** (*c*) 18001 + 1999 = 20,000

Successor of 20,000 = 20,000 + 1 20,001

**8.** (*a*) Painter painted of a wall on Ist day = $\frac{2}{5}$

Painter painted of a wall on end day = $\frac{1}{5}$.

Painter painted of a wall in both days

$= \frac{2}{5}+\frac{1}{5}=\frac{2+1}{5}=\frac{3}{5}$

**9.** (*d*) Place value of 8 in 37.18 is $\frac{8}{100}$.

**B.**

**1.** 4, 13, 632 = 4,00,000 + 10,000 + 3,000 + 600 + 30 + 2.

**2.** The number 3000 more than 97,000 = 97,000 + 3,000 = 1,00,000.

**3.** (15 × 14) × 13 = 15 × (14 × 13).

**4.** Dividend is exactly divisible by the division if the remainder is zero.

**5.** 6 is the smallest multiple of 1, 2, 3 and 6.

**6.** $\frac{4}{7}+\frac{3}{7}=\frac{4+3}{7}=\frac{7}{7}=1$

**7.** 215.75 = 200 + 10 + 5 + 0.7 + 0.05

**C.**

**1.** Number of sea shells collected by Ranjana = 224

Number of sea shells required to make a necklace = 32

Number of necklace can she make = 224 ÷ 32 = 7

$$\begin{array}{r} 32\overline{)224}\,(7 \\ -224 \\ \hline 0 \end{array}$$

Thus, 7 necklaces can she make.

**2.** Amit gave one-tenth of chocolate to each of his 5 friends portion of the chocolate is left with him = $\frac{1}{10}$ of 5.

$= \frac{1}{10}\times 5=\frac{5}{10}=\frac{1}{2}$

**3.** Number of men = 4,65,234

Number of women = 4,60,556

Number of children = 2,78,954

Total population of the city

= 4,65,234 + 4,60,556 + 2,78,954 = 12,04,744

$$\begin{array}{cccccccc} & \textcircled{2} & \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} & \\ & 4 & 6 & 5 & 2 & 3 & 4 \\ & 4 & 6 & 0 & 5 & 5 & 6 \\ + & 2 & 7 & 8 & 9 & 5 & 4 \\ \hline 1 & 2 & 0 & 4 & 7 & 4 & 4 \end{array}$$

Population of the city to the nearest hundred is 12,04,700

**4.** Number of chairs arranged equally in 80 rows = 3657

Number of chairs in each row = 3657 ÷ 80

$$\begin{array}{r} 80\overline{)3657}\,(45 \\ -320\downarrow \\ \hline 457 \\ -\ 400 \\ \hline 057 \end{array}$$

Thus, 45 chairs arranged in 80 rows and 57 chairs are left.

**5.** Distance travelled in the first part = 2,450 km

Distance travelled in the second part = 3,500 km

Distance travelled in the third part = 2,700 km

Total distance travelled in 1st to 3rd part

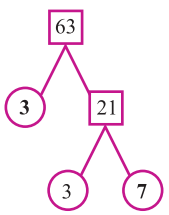
= 2450 + 3500 + 2700 = 3650 km

Total distance between the two major cities = 12,600 km

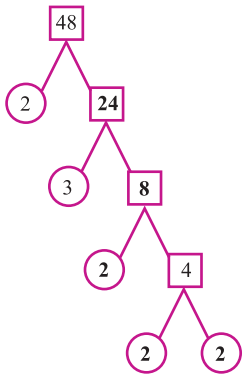
The distance need to be covered in the fourth part = 12,600 km – 8650 km = 3950 km

Thus, 3950 km distance to be covered in fourth part to complete the journey.

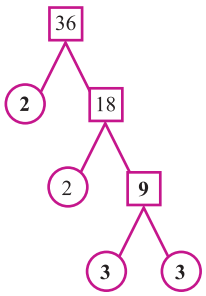
**6.** (*a*)




(*b*)




(*c*)




**7.** $\frac{1}{3}=\frac{2}{\boxed{6}}=\frac{\boxed{3}}{9}=\frac{4}{\boxed{12}}=\frac{\boxed{5}}{\boxed{15}}=\frac{\boxed{6}}{\boxed{18}}=\frac{\boxed{7}}{21}$

# CHAPTER 8 : GEOMETRY

## Let's Recall

**1.** (*a*) A solid with one curved face, 1 circular face and 1 corner is a cone.

(*b*) A solid with 12 edges and 6 rectangular faces is a cuboid.

(*c*) A 2-dimensional shape without any edge is a circle.

## Practice Time 8A

**1.** (*a*) A point has no length, breadth or height.

(*b*) A line segment has definite length.

(*c*) A ray can extend in one direction.

(*d*) A line has no end point(s).

**2.** (*a*) Point P (*b*) Line $\overleftrightarrow{ST}$

(*c*) Ray $\overrightarrow{DC}$ (*d*) Line segment $\overline{UV}$

**3.** (*a*) Rays $\overrightarrow{OA}$, $\overrightarrow{OB}$, $\overrightarrow{OC}$, $\overrightarrow{OD}$

(*b*) Rays $\overrightarrow{OA}$, $\overrightarrow{OB}$, $\overrightarrow{OC}$, $\overrightarrow{OF}$, $\overrightarrow{OE}$, $\overrightarrow{OF}$, $\overrightarrow{OG}$, $\overrightarrow{OH}$

(*c*) Rays $\overrightarrow{PA}$, $\overrightarrow{PB}$, $\overrightarrow{PH}$, $\overrightarrow{PG}$, $\overrightarrow{DF}$, $\overrightarrow{CE}$, $\overrightarrow{CH}$, $\overrightarrow{DG}$

**4.** (*a*) Three points = P, Q, R (Answer may vary)

(*b*) Two line segments = $\overline{PQ}$, $\overline{PR}$ (Answer may vary)

(*c*) Three rays = $\overrightarrow{QX}$, $\overrightarrow{QY}$, $\overrightarrow{PX}$ (Answer may vary)

(*d*) A line = $\overleftrightarrow{PR}$

## Think and Answer (Page 145)

Railway tracks, Edges of a ruler, Zebra crossing, Ruled paper, *etc*.

## Think and Answer (Page 146)

Partially open doors, A pair of scissors, Hands of a clock, Cycle spokes, *etc*.

## Practice Time 8B

**1.** (*a*) Intersecting lines (*b*) Parallel lines

(*c*) Perpendicular lines (*d*) Intersecting lines

(*e*) Intersecting lines (*f*) Perpendicular lines

**2.** (*a*) Arms = $\overrightarrow{OA}$, $\overrightarrow{OB}$; Vertex = O; Angle = $\angle AOB$

(*b*) Arms = $\overrightarrow{BA}$, $\overrightarrow{BC}$; Vertex = B; Angle = $\angle ABC$

(*c*) Arms = $\overrightarrow{QP}$, $\overrightarrow{QR}$; Vertex = Q; Angle = $\angle PQR$

## Practice Time 8C

**2.** Simple closed figure = (*b*), (*c*), (*e*), (*f*) and (*h*)

**3.** We know that, simple closed figures which are made with only line segments are called polygons. Therefore, (*a*), (*b*), (*c*) and (*e*) are polygons.

**4.** (*a*) Sides of polygons = $\overline{AB}$, $\overline{BC}$, $\overline{CD}$ and $\overline{DA}$

(*b*) Sides of polygons = $\overline{XY}$, $\overline{YZ}$ and $\overline{ZX}$

(*c*) Sides of polygons = $\overline{MN}$, $\overline{NO}$, $\overline{OP}$ and $\overline{PM}$

(*d*) Sides of polygons = $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DE}$ and $\overline{EA}$

**5.** (*a*) All squares are rectangles. True

(*b*) All rectangles are squares. False

(*c*) A polygon has two sides. False

(*d*) There are four vertices in any squares. True

(*e*) All quadrilaterals are rectangles. False

## Practice Time 8D

**1.** (*a*) A circle is a polygon. False

(*b*) All radii (Plural of radius) of a circle are of equal length. True

(*c*) All diameters of a circle are of equal length. True

(*d*) A circle has only one diameter. False

(*e*) A circle has only one centre. True

(*f*) The radius is half of the diameter of a circle. True

**2.** (*a*) Centre = O; radius = OA, OB and OC; diameter = BC

(*b*) Centre = O; radius = OA, OB; diameter = AB

**3.** (*a*) Radius = OA (*b*) Diameter = AB

**5.** (*a*) Radius = 10 cm (given)

We know that,

Diameter = 2 × radius

$\therefore$ Diameter = 2 × 10 cm = 20 cm

(*b*) Radius = 13 cm (given)

We know that,

Diameter = 2 × radius

$\therefore$ Diameter = 2 × 13 cm = 26 cm

(*c*) Radius = 9 cm (given)
We know that,
Diameter = 2 × radius
∴ Diameter = 2 × 9 cm = 18 cm
(*d*) Radius = 5 cm (given)
We know that
Diameter = 2 × radius
∴ Diameter = 2 × 5 cm = 10 cm
(*e*) Radius = 7 cm (given)
We know that,
Diameter = 2 × radius
∴ Diameter = 2 × 7 cm = 14 cm

**6.** (*a*) Diameter = 12 cm (given)
We know that,

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$\text{Radius} = \frac{12}{2}\ \text{cm} = 6\ \text{cm}$$

(*b*) Diameter = 40 cm (given)
We know that,

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$\text{Radius} = \frac{40}{2}\ \text{cm} = 20\ \text{cm}$$

(*c*) Diameter = 26 cm (given)
We know that,

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$\text{Radius} = \frac{26}{2}\ \text{cm} = 13\ \text{cm}$$

(*d*) Diameter = 64 cm (given)
We know that,

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$\text{Radius} = \frac{64}{2}\ \text{cm} = 32\ \text{cm}$$

(*e*) Diameter = 80 cm
We know that,

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$\text{Radius} = \frac{80}{2}\ \text{cm} = 40\ \text{cm}$$

## Practice Time 8E

**1.**

| | Name of shape | No. of face(s) | No. of plane face(s) | No. of curved face(s) | No. of edge(s) | No. of vertices |
|---|---|---|---|---|---|---|
| (*a*) | Cube | 6 | 6 | 0 | 12 | 8 |
| (*b*) | Cuboid | 6 | 6 | 0 | 12 | 8 |
| (*c*) | Cylinder | 3 | 2 | 1 | 2 | 0 |
| (*d*) | Cone | 2 | 1 | 1 | 1 | 1 |
| (*e*) | Sphere | 1 | 0 | 1 | 0 | 0 |
| (*f*) | Hemisphere | 2 | 1 | 1 | 1 | 0 |

**2.** (*a*) Only curved face = Football, Globe (Answer may vary)
(*b*) Only flat face = Rubik cube, Dice (Answer may vary)

**3.** (*b*),(*c*) can be used to form a cube.

## Chapter Assessment

**1.** (*a*) – (*iv*) 8 line segments
(*b*) – (*iv*) 6 rectangles
(*c*) – (*iv*) The greatest distance between two points of a circle is diameter
(*d*) – (*iii*) A solid with no vertex is hemisphere.
(*e*) – (*ii*) Two cubes of the same size put together form a cuboid.
(*f*) – (*ii*) Point.

**2.** (*a*) Five points = A, B, O, D, E (Answer may vary)
(*b*) A line = $\overline{BF}$ (Answer may vary)
(*c*) Four rays = $\overrightarrow{OA}$, $\overrightarrow{OB}$, $\overrightarrow{OD}$, $\overrightarrow{OF}$
(*d*) A line segment = $\overline{OE}$

**3.** (*a*) Line segment BE is parallel to $\overline{AD}$.
(*b*) Line segment BC is perpendicular to $\overline{AB}$ and $\overline{CD}$.
(*c*) Line segment AC is parallel to line segment DE.
(*d*) $\overline{AC}$ and $\overline{BD}$ intersect at point O.

**4.** Capital letters of the English alphabet using 4 line segments are E, M, W.

**5.** (*a*) O = centre (*b*) $\overline{OB}$ = radius
(*c*) $\overline{OC}$ = radius (*d*) $\overline{CD}$ = diameter

**6.** (*a*) There are three circles in the image.
(*b*) Centre of the largest circle = O

Diameter of the largest circle = AB
Radii of the largest circle = OA, OB

(*c*) OA = 7 cm
AB = 2 × OA
AB = 2 × 7 cm = 14 cm

**7.**

| **Radius** | 8 cm | **9 cm** | **2 cm** | 5 cm | **4 cm** |
|---|---|---|---|---|---|
| **Diameter** | **16 cm** | 18 cm | 4 cm | **10 cm** | 8 cm |

**8.** (*c*)

## Brain Sizzlers (Page 156)

**1.** We know that radius = $\frac{\text{diameter}}{2}$

$\therefore \quad r = \frac{16}{2} = 8$ cm

The radius of the given circle is 8 cm.

**2.** The diameter of the given circle is 16 cm.

## Mental Maths (Page 156)

**1.** Circle have no vertices.
**2.** Yes, semicircles have a line segment.
**3.** No, circle is not a quadrilateral.
**4.** Minimum sides of a polygon is 3.
**5.** No, diameter is not shorter than the radius of the circle because diameter = 2 × radius.

# CHAPTER 9 : SYMMETRY AND PATTERNS

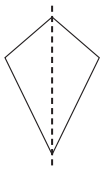
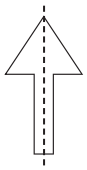
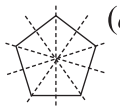
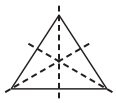
## Let's Recall

**1.** (*a*) and (*b*)
**2.** (*a*)  (*b*) 100000

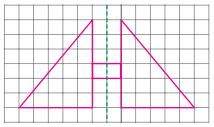
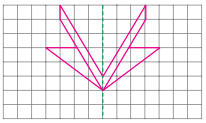
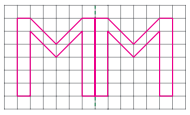
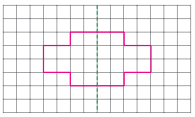
## Think and Answer (Page 160)

Yes, line of symmetry = 0, 3 and 8.

## Practice Time 9A

**1.** Symmetrical figures are (*a*), (*e*) and (*f*).
**2.** (*a*)  (*b*)  (*c*)  (*d*) 
**3.** (*a*) and (*c*)
**4.** (*a*)  (*b*)  (*c*)  (*d*) 

## Practice Time 9B

**1.** (*b*), (*d*), (*e*) and (*f*)
**2.** (*a*)  (*b*) 
(*c*)  (*d*) 

## Think and Answer (Page 165)

Given number pattern is 26, 28, 28, 30, 30, 28, 32, 30, 34.

## Practice Time 9C

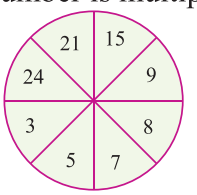
**1.** (*a*) 1, 4, 7, 10, 13, 16, 19, 22, 25
(*b*) 3, 12, 21, 30, 39, 48, 57, 66
(*c*) 7, 11, 15, 19, 23, 27, 31, 35, 39
(*d*) 512, 256, 128, 64, 32, 16, 8

**2.** (*a*) 1234 × 9 + 5 = 11111
12345 × 9 + 6 = 111111
(*b*) 9876 × 9 + 4 = 88888
98765 × 9 + 3 = 888888
(*c*) 12345 × 8 + 5 = 98765
123456 × 8 + 6 = 987654
(*d*) 20000 ÷ 2000 = 10
20000 ÷ 20000 = 1

**3.** (*a*) 555 × 5 = 2775
5555 × 5 = 27775
55555 × 5 = 277775

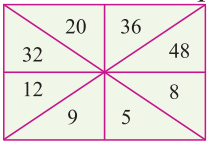
(b) 37 × 3 × 3 = 333
37 × 3 × 5 = 555

**4.** (*a*) Rule: 3 × 3 = 9, 5 × 3 = 15, 7 × 3 = 21,
(*i.e.*, each number is multiplied by 3)



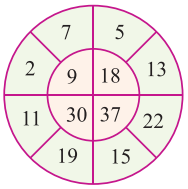

Hence, the missing number = 8 × 3 = 24.

(*b*) Rule: 9 × 4 = 36, 8 × 4 = 32, 12 × 4 = 48
(*i.e.*, each number is multiplied by 4).




Hence, the missing number = 5 × 4 = 20.

(*c*) Rule: 2 + 7 = 9, 5 + 13 = 18, 22 + 15 = 37
(*i.e.*, addition of two numbers is equal to the number inside the circle)




Hence, the missing number = 19 + 11 = 30.

## Practice Time 9D

**1.** (*a*), (*b*), (*e*), (*f*)

## Think and Answer (Page 169)

9 12 15 22 5 9 14 4 9 1
I L O V E I N D I A

## Practice Time 9E

**1.** (*a*) 2 5 8 5 18 5 14 15 23
(*b*) 2 5 12 9 5 22 5 9 14 25 15 21 18 19 5 12 6
(*c*) 4 15 9 20 14 15 23
(*d*) 4 15 25 15 21 18 2 5 19 20
(*e*) 4 18 5 1 13 19 3 15 13 5 20 18 21 5

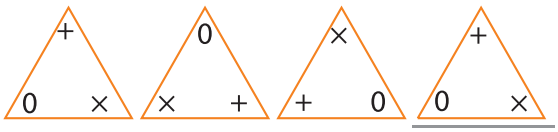
**2.** (*a*) FOCUS AND WIN
(*b*) IT IS POSSIBLE
(*c*) YES YOU CAN
(*d*) NEVER GIVE UP

## Mental Maths (Page 169)

**1.** (*a*) A triangle whose two sides are equal has 1 line of symmetry.

**2.** (*d*) 2, 4, 8, 16

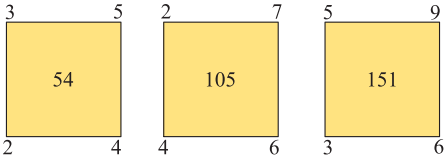
**3.** (*c*)




## Chapter Assessment

**1.** (*a*) (*i*) Circle has infinite lines of symmetry.
(*b*) (*iii*) 918
(∵ 123 × 7 = 861, 51 × 7 = 357,
51 × 9 = 459, ∴ 102 × 9 = 918)
Hence, the missing number is 918.

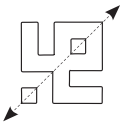
(*c*)




From Fig. 1 = Sum of square of vertices
= $(3)^2 + (5)^2 + (2)^2 + (4)^2$
= 9 + 25 + 4 + 16 = 54
From Fig. 2 = Sum of square of vertices
$(2)^2 + (7)^2 + (4)^2 + (6)^2$
= 4 + 49 + 16 + 36 = 105
From Fig 3 = Sum of squares of vertices
= $(5)^2 + (9)^2 + (3)^2 + (6)^2$
= 25 + 81 + 9 +36 = 151
Hence, the missing number is 151.

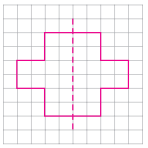
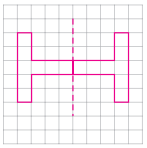
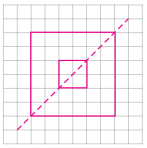
(*d*) (*iv*) There are 15 circles in pattern 8.

**2.**



**3.** (*a*)  (*b*)  (*c*)  (*d*)  (*e*) 

**4.** (*a*)  (*b*)  (*c*) 

**5.** (*a*)  (*b*)  (*c*) 

**6.** (*a*), (*d*).

**7.** ABC, ZYX, DEF, WVU, GHI, TSR

**8.** 4 (∵ 6 × 7 = 42, 7 × 9 = 63, 4 × 9 = 36)

**9.** (*a*) 8000 + 1000 = 9000, 80000 + 10000 = 90000
(*b*) 1234 × 9 + 5 = 11111
12345 × 9 + 6 = 111111
(*c*) 3333 × 3 = 9999, 33333 × 3 = 99999
(*d*) 24000 ÷ 8 = 3000, 240000 ÷ 8 = 30000

**10.** (*a*) 5 14 10 15 25 12 9 6 5
(*b*) 20 18 25 1 7 1 9 14
(*c*) 19 20 1 25 16 15 19 9 20 9 22 5

**11.** (*a*) HOW ARE YOU
(*b*) CHANGE IS GOOD
(*c*) PLANT MORE TREES

# CHAPTER 10 : MEASUREMENTS

## Let's Recall

**1.** (*a*) We know that, 1 m = 100 cm

∴ 40 m and 15 cm = (40 × 100) cm + 15 cm
= 4000 cm + 15 cm = 4015 cm

(*b*) We know that, 1 kg = 1000 g

∴ 4 kg 200 g = (4 × 1000) g + 200 g
= 4000 g + 200 g = 4200 g

(*c*) We know that, 1 L = 1000 mL

∴ 18 L 180 mL = (18 × 1000) mL + 180 mL
= 18000 mL + 180 mL = 18180 mL

**2.** (*a*)

| | cm | mm |
|---|---|---|
| | (1) | |
| | 1 1 | 9 |
| + | 2 7 | 5 |
| | 3 9 | 4 |

Thus, 11 cm 9 mm + 27 cm 5 mm = 39 cm 4 mm

(*b*)

| | kg | g |
|---|---|---|
| | | (13) |
| | (6)(16) | (4)(3)(10) |
| | 7 6 | 5 4 0 |
| − | 3 9 | 1 9 5 |
| | 3 7 | 3 4 5 |

Thus, 76 kg 540 g – 39 kg 195 g = 37 kg 345 g

(*c*)

| | L | mL |
|---|---|---|
| | | (4)(10) |
| | 8 7 | 5 0 0 |
| − | 4 3 | 2 5 0 |
| | 4 4 | 2 5 0 |

Thus, 87 L 500 mL – 43 L 250 mL
= 44 L 250 mL

## Practice Time 10A

**1.** (*a*) We have, 1 m = 100 cm
So, 63 m = 63 × 100 cm = 6300 cm

(*b*) We have, 1 m = 100 cm
So, 150 m = (150 × 100) cm = 15000 cm

(*c*) We have, 1 m = 100 cm
So, 16 m 40 cm = (16 × 100) cm + 40 cm
= 1600 cm + 40 cm = 1640 cm

(*d*) We have, 1 m = 100 cm
So, 30 m 5 cm = (30 × 100) cm + 5 cm
= 3000 cm + 5 cm = 3005 cm

**2.** (*a*) We have, 1 cm = 10 mm
So, 29 cm = (29 × 10) mm = 290 mm

(*b*) We have, 1 cm = 10 mm
So, 180 cm = (180 × 10) mm = 1800 mm

(*c*) We have, 1 cm = 10 mm
So, 16 cm 3 mm = (16 × 10) mm + 3 mm
= 160 mm + 3 mm = 163 mm

(*d*) We have, 1 cm = 10 mm
So, 25 cm 8 mm = (25 × 10) mm + 8 mm
= 250 mm + 8 mm = 258 mm

**3.** (*a*) We have, 1 km = 1000 m
So, 24 km = (24 × 1000) m = 24000 m

(*b*) We have, 1 km = 1000 m
So, 96 km = (96 × 1000) m = 96000 m

(*c*) We have, 1 km = 1000 m
So, 8 km 417 m = (8 × 1000) m + 417 m
= 8000 m + 417 m = 8417 m

(*d*) 26 km 42 m = (26 × 1000) m + 42 m
(∵ 1 km = 1000 m)
= 26000 m + 42 m = 26042 m

**4.** (*a*) We have, 1 m = 10 dm
So, 39 m = (39 × 10) dm = 390 dm

(*b*) We have, 1 m = 10 dm
So, 118 m = (118 × 10) dm = 1180 dm

(*c*) We have, 1 m = 10 dm
So, 19 m 9 dm = (19 × 10) dm + 9 dm
= 190 dm + 9 dm = 199 dm

(*d*) We have, 1 m = 10 dm
So, 109 m 2 dm = (109 × 10) dm + 2 dm
= 1090 dm + 2 dm = 1092 dm

**5.** (*a*) We have, 1 km = 100 dam
So, 13 km = (13 × 100) dam = 1300 dam

(*b*) We have, 1 hm = 10 dam
So, 18 hm = (18 × 10) dam = 180 dam

(*c*) We have, 1 km = 100 dam and 1 hm = 10 dam
So, 5 km 10 hm = (5 × 100) dam + (10 × 10) dam
= 500 dam + 100 dam = 600 dam

**6.** (*a*) We know that,
1 km = 1000 m, 1 hm = 100 m, 1 dam = 10 m
2 km 1 hm 6 dam 8 m = (2 × 1000) m
+ (1 × 100) m + (6 × 10) m + 8 m
= 2000 m + 100 m + 60 m + 8 m = 2168 m

(*b*) We know that,
1 km = 1000 m, 1 hm = 100 m, 1 dam = 10 m.
12 km 6 hm 9 dam 4 m = (12 × 1000) m
+ (6 × 100) m + (9 × 10) m + 4 m
= 12000 m + 600 m + 90 m + 4 m = 12694 m

**7.** (*a*) We have, 10 mm = 1 cm
So, 105 mm = 100 mm + 5 mm
= (100 ÷ 10) cm + 5 mm = 10 cm 5 mm

(*b*) We have, 100 cm = 1 m

So, 685 cm = 600 cm + 85 cm

= (600 ÷ 100) m + 85 cm = 6 m 85 cm

(*c*) We have, 1000 m = 1 km

So, 8000 m = (8000 ÷ 1000) km = 8 km

(*d*) We have, 1000 m = 1 km

So, 16300 m = 16000 m + 300 m

= (16000 ÷ 1000) km + 300 m = 16 km 300 m

**8.** (*a*) We have, 1 foot = 12 inches

Therefore, 18 ft = 18 × 12 in = 216 in

(*b*) We have, 1 foot = 12 inches

Therefore, 5 ft 24 in = (5 × 12) in + 24 in

= 60 in + 24 in = 84 in

(*c*) We have, 12 inches = 1 foot

To convert inches to ft, we will divide by 12.

Therefore,

$$\begin{array}{r} 12\overline{)108}\,(9 \\ -108 \\ \hline 0 \end{array}$$ Quotient; Remainder

108 in = (108 ÷ 12) ft = 9 ft.

(*d*) We have, 12 in = 1 ft

To convert inches to ft, we will divide by 12.

Therefore,

$$\begin{array}{r} 12\overline{)141}\,(11 \\ -12\downarrow \\ \hline 021 \\ -\ 12 \\ \hline 09 \end{array}$$ Quotient; Remainder

Here, the quotient becomes feet (ft) and the remainder becomes inch (in).

So, 141 in = 11 ft 9 in.

## Practice Time 10B

**1.** (*a*)

| | km | | m | | | cm | |
|---|---|---|---|---|---|---|---|
| | (1) | | (1) | (1) | (1) | (1) | |
| | 2 | 4 | 1 | 7 | 5 | 4 | 2 |
| | 1 | 3 | 1 | 0 | 4 | 5 | 3 |
| + | 0 | 5 | 0 | 8 | 1 | 0 | 9 |
| | 4 | 2 | 3 | 6 | 1 | 0 | 4 |

Thus, 24 km 175 m 42 cm + 13 km 104 m 53 cm + 05 km 81 m 9 cm = 42 km 361 m 4 cm.

(*b*)

| | m | | | cm | | mm |
|---|---|---|---|---|---|---|
| | | | (1) | (1) | (1) | |
| | 2 | 1 | 3 | 3 | 8 | 6 |
| | 1 | 4 | 1 | 4 | 3 | 5 |
| + | 1 | 2 | 0 | 9 | 1 | 7 |
| | 4 | 7 | 5 | 7 | 3 | 8 |

Thus, 213 m 38 cm 6 mm + 141 m 43 cm 5 mm + 120 m 91 cm 7 mm = 475 m 73 cm 8 mm.

(*c*)

| | km | | m | | | cm | | mm |
|---|---|---|---|---|---|---|---|---|
| | (1) | | (1) | (2) | (1) | (1) | | |
| | 1 | 8 | 2 | 1 | 8 | 4 | 3 | 2 |
| | 2 | 4 | 1 | 4 | 8 | 3 | 7 | 5 |
| + | 3 | 4 | 2 | 3 | 3 | 7 | 2 | 2 |
| | 7 | 6 | 6 | 0 | 0 | 5 | 2 | 9 |

Thus, 18 km 218 m 43 cm 2 m + 24 km 148 m 37 cm 5 mm + 34 km 233 m 72 cm 2 mm = 76 km 600 m 52 cm 9 mm.

**2.** (*a*)

| | km | | m | | |
|---|---|---|---|---|---|
| | | (11) | | | |
| | (6) | ~~(1)~~ | (11) | (8) | (11) |
| | ~~7~~ | ~~2~~ | ~~1~~ | ~~9~~ | ~~1~~ |
| − | 1 | 8 | 3 | 5 | 7 |
| | 5 | 3 | 8 | 3 | 4 |

Thus, 72 km 191 m – 18 km 357 m = 53 km 834 m

(*b*)

| | m | | cm | | mm |
|---|---|---|---|---|---|
| | | | (9) | (12) | |
| | | (3) | ~~(10)~~ | ~~(2)~~ | (18) |
| | 5 | ~~4~~ | ~~0~~ | ~~3~~ | ~~8~~ |
| − | 1 | 0 | 9 | 8 | 9 |
| | 4 | 3 | 0 | 4 | 9 |

Thus, 54 m 3 cm 8 mm – 10 m 98 cm 9 mm = 43 m 4 cm 9 mm.

(*c*)

| | km | | | m | | | cm | |
|---|---|---|---|---|---|---|---|---|
| | | | | | (15) | | | |
| | | (4) | (14) | (3) | ~~(5)~~ | (13) | (2) | (11) |
| | 1 | ~~5~~ | ~~4~~ | ~~4~~ | ~~6~~ | ~~3~~ | ~~3~~ | ~~1~~ |
| − | | 4 | 6 | 1 | 8 | 7 | 2 | 6 |
| | 1 | 0 | 8 | 2 | 7 | 6 | 0 | 5 |

Thus, 154 km 463 m 31 cm – 46 km 187 m 26 cm = 108 km 276 m 5 cm.

**3.** (*a*)

| | m | | cm | |
|---|---|---|---|---|
| | (1) | (1) | (1) | |
| | 2 | 8 | 6 | 5 |
| + | | 7 | 5 | 6 |
| | 3 | 6 | 2 | 1 |

Thus, 28 m 65 cm + 7 m 56 cm = 36 m 21 cm.

(*b*)

| | m | | cm | |
|---|---|---|---|---|
| | | (12) | (15) | |
| | (4) | ~~(2)~~ | ~~(5)~~ | (14) |
| | ~~5~~ | ~~3~~ | ~~6~~ | ~~4~~ |
| − | 2 | 5 | 6 | 9 |
| | 2 | 7 | 9 | 5 |

Thus, 53 m 64 cm – 25 m 69 cm = 27 m 95 cm.

(*c*)

| | km | | m | | | cm | |
|---|---|---|---|---|---|---|---|
| | | (14) | (9) | | | | |
| | (5) | ~~4~~ | ~~0~~ | (14) | | (3) | (10) |
| | ~~0~~ | ~~5~~ | ~~0~~ | ~~4~~ | 5 | ~~4~~ | ~~0~~ |
| − | 1 | 6 | 2 | 7 | 5 | 1 | 8 |
| | 4 | 8 | 7 | 7 | 0 | 2 | 2 |

Thus, 65 km 45 m 40 cm – 16 km 275 m 18 cm = 48 km 770 m 22 cm.

(*d*)

| | km | | m | | | cm | |
|---|---|---|---|---|---|---|---|
| | (1) | | (1) | (1) | | (1) | |
| | 2 | 9 | 1 | 2 | 6 | 0 | 8 |
| + | 2 | 9 | | 7 | 7 | 3 | 6 |
| | 5 | 8 | 2 | 0 | 3 | 4 | 4 |

Thus, 29 km 126 m 08 cm – 29 km 77 m 36 cm = 58 km 203 m 44 cm.

**4.**

| | m | | cm | |
|---|---|---|---|---|
| Total length of wool roll = | 1 | 7 | 1 | 6 |
| Length of cutting piece of wool = − | | 8 | 4 | 2 |
| Length of wool left in the roll = | | 8 | 7 | 4 |

Thus, 8 m 7 cm length of wool left in the roll.

**5.**

| | km | | | m | | |
|---|---|---|---|---|---|---|
| Distance travelled by train = | 2 | 1 | 8 | 3 | 2 | 5 |
| Distance travelled by bus = | | 5 | 8 | 2 | 1 | 8 |
| Distance travelled by car = + | | 0 | 4 | 7 | 0 | 5 |
| Total distance travelled = | 2 | 8 | 1 | 2 | 4 | 8 |

Thus, Rohan travelled 281 km 248 m in all.

**6.**

| | km | | | | m | | |
|---|---|---|---|---|---|---|---|
| Length of actual wall = | 6 | 2 | 5 | 9 | 6 | 0 | 0 |
| Length of trenches = − | | 3 | 5 | 9 | 7 | 0 | 0 |
| Total length of actual and trenches = | 6 | 6 | 1 | 9 | 3 | 0 | 0 |

| | km | | | | m | | |
|---|---|---|---|---|---|---|---|
| Length of great wall of China = | 8 | 8 | 5 | 1 | 8 | 0 | 0 |
| Total length of actual and trenches = − | 6 | 6 | 1 | 9 | 3 | 0 | 0 |
| Length of natural barriers = | 2 | 2 | 3 | 2 | 5 | 0 | 0 |

Thus, 2232 km 500 m length of natural barriers make the great wall of China.

## Think and Answer (Page 184)

Both are of equal quantity.

## Practice Time 10C

**1.** (*a*) We have, 1 kg = 1000 g
So, 26 kg = (26 × 1000) g = 26000 g

(*b*) We have, 1 kg = 1000 g
So, 320 kg 45 g = 320 kg + 45 g
= (320 × 1000) g + 45 g
= 320000 g + 45 g = 320045 g

(*c*) We have, 1 g = 1000 mg
So, 45 g = (45 × 1000) mg = 45000 mg

(*d*) We have, 1 g = 1000 mg
So, 140 g 203 mg = 140 g + 203 mg
= (140 × 1000) mg + 203 mg
= 140000 mg + 203 mg
= 140203 mg.

**2.** (*a*) 9 kg 1 hg 4 dg 5 g = (9 × 1000) g + (1 × 100) g + (4 × 10) g + 5 g
= 9000 g + 100 g + 40 g + 5 g = 9145 g

(*b*) 20 kg 4 hg 9 dag 8 g = (20 × 1000) g + (4 × 100) g + (9 × 10) g + 8 g
= 20000 g + 400 g + 90 g + 8 g = 20498 g

**3.** (*a*) We have, 1000g = 1 kg
So, 9000 g = (9000 ÷ 1000) kg = 9 kg

(*b*) We have, 1000 g = 1 kg
So, 4323 g = 4000 g + 323 g
= (4000 ÷ 1000) kg + 323 g
= 4 kg 323 g

(*c*) We have, 1000 g = 1 kg
3065 g = 3000 g + 65 g
= (3000 ÷ 1000) kg + 65 g = 3 kg 65 g

(*d*) We have, 1000 mg = 1 g
So, 25605 mg = 25000 mg + 605 mg
= (25000 ÷ 1000) g + 605 mg
= 25 g 605 mg

**4.** (*a*) We have, 1 ton = 10 quintals
Therefore, 14 tons = 14 × 10 = 140 quintals.

(*b*) We have, 1 quintal = 100 kg
So, 125 quintals = 125 × 100 kg = 12500 kg

(*c*) We have, 10 quintals = 1 ton
So, 1200 quintals = 1200 ÷ 10 = 120 ton

(*d*) We have, 1 ton = 1000 kg and 1 quintal = 100 kg
So 13 tons 8 quintals
= (13 × 1000) kg + (8 × 100) kg
= 13000 kg + 800 kg = 13800 kg

## Practice Time 10D

**1.** (*a*)

| | kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (1) | | | | (1) | (1) | (1) | |
| | 3 | 4 | 3 | 5 | 5 | 0 | 3 | 5 | 6 |
| + | 2 | 7 | 8 | 0 | 0 | 4 | 9 | 8 | 7 |
| | 6 | 2 | 1 | 5 | 5 | 5 | 3 | 4 | 3 |

Thus, 343 kg 550 g 356 mg + 278 kg 4 g 987 mg = 621 kg 555 g 343 mg.

(*b*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | | | (1) | | | (1) | | |
| 6 | 0 | 0 | 5 | 4 | 0 | 0 | 8 | 3 |
| + 3 | 3 | 9 | 2 | 6 | 1 | 6 | 5 | 0 |
| 9 | 3 | 9 | 8 | 0 | 1 | 7 | 3 | 3 |

Thus, 600 kg 540 g 83 mg + 339 kg 261 g 650 mg = 939 kg 801 g and 733 mg.

(*c*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | | | (12)(10) | | | (9) | | |
| (3)(10)(7) | | | ~~2~~ ~~0~~ (10) | | | (4) ~~(10)~~ (10) | | |
| ~~4~~ ~~0~~ ~~8~~ | | | ~~3~~ ~~1~~ ~~0~~ | | | ~~5~~ ~~0~~ ~~0~~ | | |
| – 1 | 4 | 5 | 6 | 7 | 5 | 3 | 9 | 5 |
| 2 | 6 | 2 | 6 | 3 | 5 | 1 | 0 | 5 |

Thus, 408 kg 310 g 500 mg – 145 kg 675 g 395 mg = 262 kg 635 g 105 mg.

(*d*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | (9) | | | (13) | | | | |
| (6) ~~(10)~~ (10) | | | (7) ~~(3)~~ (11) | | | (2)(10) | | |
| ~~7~~ ~~0~~ ~~0~~ | | | ~~8~~ ~~4~~ ~~1~~ | | | ~~3~~ ~~0~~ 0 | | |
| – 3 | 2 | 4 | 5 | 4 | 9 | 2 | 9 | 0 |
| 3 | 7 | 6 | 2 | 9 | 2 | 0 | 1 | 0 |

Thus, 700 kg 841 g 300 mg – 324 kg 549 g 290 mg = 376 kg 292 g 10 mg.

**2.** (*a*)

| kg | | g | | |
|---|---|---|---|---|
| (1) | (1) | (1) | (1) | |
| 3 | 8 | 9 | 4 | 6 |
| + 2 | 2 | 6 | 6 | 5 |
| 6 | 1 | 6 | 1 | 1 |

Thus, 38 kg 946 g + 22 kg 665 g = 61 kg 611 g.

(*b*)

| kg | | g | | | mg | | |
|---|---|---|---|---|---|---|---|
| (1) | (1) | (1) | | (1) | | | |
| 2 | 6 | 4 | 3 | 0 | 4 | 0 | 0 |
| + 2 | 7 | 5 | 7 | 0 | 6 | 0 | 0 |
| 5 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |

Thus, 26 kg 430 g 400 mg + 27 kg 570 g 600 mg = 54 kg 1 g.

(*c*)

| kg | | g | | | mg | |
|---|---|---|---|---|---|---|
| (1) | (1) | (1) | | | (1) | |
| 3 | 5 | 5 | 8 | 5 | 1 | 7 |
| + 2 | 8 | 8 | 9 | 4 | 0 | 8 |
| 6 | 4 | 4 | 7 | 9 | 2 | 5 |

Thus, 35 kg 585 g 17 mg + 28 kg 894 g 08 mg = 64 kg 479 g 25 mg.

(*d*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | (1) | (1) | | |
| 3 | 6 | 0 | 0 | 0 | 0 | 8 | 7 | 0 |
| + 0 | 0 | 0 | 1 | 4 | 0 | 5 | 5 | 0 |
| 3 | 6 | 0 | 1 | 4 | 1 | 4 | 2 | 0 |

Thus, 360 kg 870 mg + 140 g 550 mg = 360 kg 141 g 420 mg.

**3.** (*a*)

| kg | | g | | |
|---|---|---|---|---|
| 5 | 6 | 0 | 3 | 6 |
| – 5 | 4 | 0 | 2 | 0 |
| 0 | 2 | 0 | 1 | 6 |

Thus, 56 kg 36 g – 54 kg 20 g = 2 kg 16 g.

(*b*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| (5)(12) | | | (6)(15)(5) | | | (10) | | |
| ~~6~~ ~~2~~ 0 | | | ~~7~~ ~~5~~ ~~6~~ | | | ~~0~~ 8 | 0 | |
| – 5 | 8 | 0 | 0 | 9 | 0 | 4 | 5 | 0 |
| 0 | 4 | 0 | 6 | 6 | 5 | 6 | 3 | 0 |

Thus, 620 kg 756 g 80 mg – 580 kg 90 g 450 mg = 40 kg 665 g 630 mg.

(*c*)

| kg | | g | | | mg | | |
|---|---|---|---|---|---|---|---|
| | | | (9) | | | | |
| (1)(15) | | | (3) ~~(10)~~ | | (10)(8)(10) | | |
| ~~2~~ ~~5~~ | | 0 | ~~4~~ ~~0~~ | | ~~0~~ ~~0~~ ~~0~~ | | |
| – 1 | 8 | 0 | 2 | 8 | 3 | 8 | 9 |
| 0 | 7 | 0 | 1 | 1 | 7 | 0 | 1 |

Thus, 25 kg 40g 90 mg – 18 kg 28 g 389 mg = 7 kg 11 g 701 mg.

(*d*)

| kg | | | g | | | mg | | |
|---|---|---|---|---|---|---|---|---|
| | | (9) | (9) | (13) | (13) | | | |
| | (4) ~~(10)~~ | | ~~(10)~~ | ~~(3)~~ | ~~(3)~~ | (12) | | |
| 3 | ~~5~~ | ~~0~~ | 0 | ~~4~~ | ~~4~~ | ~~2~~ | 7 | 5 |
| – 1 | 1 | 0 | 0 | 6 | 7 | 8 | 6 | 0 |
| 2 | 3 | 9 | 9 | 7 | 6 | 4 | 1 | 5 |

Thus, 350 kg 44 g 275 mg – 110 kg 67 g 860 mg = 239 kg 976 g 415 mg.

## Quick Check (Page 187)

4 litres of liquid is there in the container.

We know that, 1 L = 1000 mL

$\therefore$ 4 L = 4 × 1000 = 4000 mL

Thus, the container has 4000 mL liquid.

## Practice Time 10E

**1.** (*a*) We have, 1 L = 1000 mL
So, 16 L = (16 × 1000) mL = 16000 mL

(*b*) We have, 1 dL = 100 mL
So, 11 dL = (11 × 100) mL = 1100 mL

(*c*) We have, 1 L = 1000 mL
So, 15 L 350 mL = (15 × 1000) mL + 350 mL
= 15000 mL + 350 mL
= 15350 mL

(*d*) We have, 1 dL = 100 mL
So, 16 dL 80 mL = (16 × 100) mL + 80 mL
= 1600 mL + 80 mL = 1680 mL

**2.** (*a*) We have, 1000 mL = 1 L
So, 3500 mL = 3000 mL + 500 mL
= (3000 ÷ 1000) L + 500 mL
= 3 L 500 mL

(*b*) We have, 1000 mL = 1 L
So, 8756 mL = 8000 mL + 756 mL
= (8000 ÷ 1000) L + 756 mL
= 8 L 756 mL

(*c*) We have, 1000 mL = 1 L
So, 9767 mL = 9000 mL + 767 mL
= (9000 ÷ 1000) L + 767 mL
= 9 L 767 mL

(*d*) We have, 1000 mL = 1 L
So, 1808 mL = 1000 mL + 808 mL
= (1000 ÷ 1000) L + 808 mL
= 1 L 808 mL

**3.** (*a*) We have 1 kL = 1000 L
So, 26 kL = (26 × 1000) L = 26000 L

(*b*) We have, 1 hL = 100 L
So, 30 hL = (30 × 100) L = 3000 L

(*c*) We have, 1 daL = 10 L
So, 156 daL = (156 × 10) L = 1560 L

(*d*) We have, 1 kL = 1000 L
So, 12 kL 470 L = (12 × 1000) L + 470 L
= 12000 L + 470 L = 12470 L

(*e*) We have, 1 hL = 100 L
So, 63 hL 65 L = (63 × 100) L + 65 L
= 6300 L + 65 L = 6365 L

(*f*) We have, 1 kL = 1000 L
So, 315 kL 8 L = (315 × 1000) L + 8 L
= 315000 L + 8 L = 315008 L

(*g*) We have, 1 kL = 1000 L, 1 hL = 100 L
and 1 daL = 10 L
So, 6 kL 9 hL 5 daL 4 L
= (6 × 1000) L + (9 × 100) L + (5 × 10) L + 4 L
= 6000 L + 900 L + 50 L + 4 L = 6954 L

(*h*) We have, 1 kL = 1000 L, 1 hL = 100 L
and 1 daL = 10L
So, 18 kL 7 hL 5 daL 3 L
= (18 × 1000) L + (7 × 100) L + (5 × 10) L + 3L
= 18000 L + 700 L + 50 L + 3 L = 18753 L

**4.** (*a*) We have, 1000 L = 1 kL
So, 13000 L = (13000 ÷ 1000) kL = 13 kL

(*b*) We have, 1000 L = 1 kL
So, 12000 L = (12000 ÷ 1000) kL = 12 kL

(*c*) We have, 1000 L = 1 kL
So, 6352 L = 6000 L + 352 L
= (6000 ÷ 1000) kL + 352 L
= 6 kL 352 L

(*d*) We have, 1000 L = 1 kL
So, 2008 L = 2000 L + 8 L
= (2000 ÷ 1000) kL + 8 L
= 2 kL 8 L

## Practice Time 10F

**1.** (*a*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | (1) | |
| | | 8 | 1 | 3 | 5 | 2 | 4 | 5 |
| + | | 7 | 0 | 6 | 3 | 1 | 0 | 7 |
| | 1 | 5 | 1 | 9 | 8 | 3 | 5 | 2 |

Thus, 8 kL 135 L 245 mL + 7 kL 63 L 107 mL = 15 kL 198 L 352 mL.

(*b*)

| | L | | | mL | | |
|---|---|---|---|---|---|---|
| | | (9) | | (11) | | |
| | (7) | ~~(10)~~ | | ~~(1)~~ | (16) | |
| | 1 | ~~8~~ | ~~0~~ | ~~2~~ | ~~6~~ | 5 |
| – | | 5 | 9 | 4 | 7 | 0 |
| | 1 | 2 | 0 | 7 | 9 | 5 |

Thus, 180 L 265 mL – 59 L 470 mL
= 120 L 795 mL.

(*c*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | (3) | (15) | | | | | (2) | (14) |
| | ~~4~~ | ~~5~~ | 3 | 9 | 5 | 0 | ~~3~~ | ~~4~~ |
| – | 2 | 8 | 0 | 6 | 5 | 0 | 2 | 8 |
| | 1 | 7 | 3 | 3 | 0 | 0 | 0 | 6 |

Thus, 45 kL 395 L 34 mL – 28 kL 65 L 28 mL
= 17 kL 330 L 6 mL.

**2.** (*a*)

| | L | | mL | | |
|---|---|---|---|---|---|
| | | 1 | 1 | 1 | |
| | 5 | 0 | 7 | 2 | 5 |
| | 1 | 8 | | 8 | 0 |
| + | 1 | 0 | 2 | 2 | 5 |
| | 7 | 9 | 0 | 3 | 0 |

Thus, 50 L 725 mL + 18 L 80 mL + 10 L 225 mL = 79 L 30 mL.

(*b*)

| | kL | | L | | |
|---|---|---|---|---|---|
| | 1 | 1 | | | |
| | 3 | 2 | 8 | 6 | 4 |
| + | 1 | 8 | 4 | 3 | 5 |
| | 5 | 1 | 2 | 9 | 9 |

Thus, 32 kL 864 L + 18 kL 435 L = 51 kL 299 L.

(*c*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1 | | |
| | | 9 | 0 | 7 | 2 | 0 | 7 | 0 |
| + | | 8 | 0 | 2 | 5 | 7 | 5 | 0 |
| | 1 | 7 | 0 | 9 | 7 | 8 | 2 | 0 |

Thus, 9 kL 72 L 70 mL + 8 kL 25 L 750 mL = 17 kL 97 L 820 mL.

(*d*)

| | kL | | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | | | 1 | 1 | |
| | 2 | 5 | 0 | 0 | 7 | 0 | 6 | 5 |
| + | 0 | 0 | 0 | 1 | 8 | 4 | 5 | 6 |
| | 2 | 5 | 0 | 2 | 5 | 5 | 2 | 1 |

Thus, 25 kL 7 L 65 mL + 18 L 456 mL = 25 kL 25 L 521 mL.

**3.** (*a*)

| | L | | mL | | |
|---|---|---|---|---|---|
| | 8 | 10 | | | |
| | ~~9~~ | ~~0~~ | 7 | 7 | 0 |
| – | 1 | 9 | 7 | 5 | 0 |
| | 7 | 1 | 0 | 2 | 0 |

Thus, 90 L 770 mL – 19 L 750 mL = 71 L 20 mL.

(*b*)

| | kL | | | L | | |
|---|---|---|---|---|---|---|
| | 2 | 10 | | 3 | 10 | |
| | ~~3~~ | ~~0~~ | 0 | ~~4~~ | ~~0~~ | |
| – | 2 | 6 | 0 | 2 | 8 | |
| | 0 | 4 | 0 | 1 | 2 | |

Thus, 30 kL 40 L – 26 kL 28 L = 4 kL 12 L.

(*c*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | | 14 | 9 | | | | | |
| | 2 | ~~4~~ | ~~10~~ | 12 | | | | |
| | ~~3~~ | ~~5~~ | ~~0~~ | ~~2~~ | 6 | 4 | 7 | 0 |
| – | 1 | 7 | 4 | 5 | 0 | 1 | 4 | 0 |
| | 1 | 7 | 5 | 7 | 6 | 3 | 3 | 0 |

Thus, 35 kL 26 L 470 mL – 17 kL 450 L 140 mL = 17 kL 576 L 330 mL.

(*d*)

| | kL | | L | | | mL | | |
|---|---|---|---|---|---|---|---|---|
| | | | 9 | 9 | | | | |
| | | 6 | ~~10~~ | ~~10~~ | 10 | | | |
| | 1 | ~~7~~ | ~~0~~ | ~~0~~ | 0 | 3 | 7 | 8 |
| – | 0 | 0 | 0 | 1 | 9 | 3 | 0 | 0 |
| | 1 | 6 | 9 | 8 | 1 | 0 | 7 | 8 |

Thus, 17 kL 378 mL – 19 L 300 mL = 16 kL 981 L 78 mL.

**4.**

| | L | | | mL | | |
|---|---|---|---|---|---|---|
| | | 2 | 1 | 2 | | |
| Sale of milk in Ist day = | | 6 | 8 | 8 | 5 | 0 |
| Sale of milk in 2nd day = | | 9 | 8 | 7 | 6 | 0 |
| Sale of milk in 3rd day = + | | 8 | 4 | 0 | 9 | 0 |
| Total sale of milk in 3 days = | 2 | 5 | 1 | 7 | 0 | 0 |

Thus, total sale of milk in 3 days is 251 L 700 mL.

**5.**

| | kL | | | L | | |
|---|---|---|---|---|---|---|
| | | 11 | | 9 | | |
| | 0 | ~~1~~ | | ~~10~~ | 10 | |
| Water carried by the tanker = | ~~1~~ | ~~2~~ | | ~~9~~ | ~~0~~ | 0 |
| Water distributed in colony A = – | 0 | 4 | | 9 | 5 | 0 |
| Water received in colony B = | 0 | 7 | | 0 | 5 | 0 |

Thus, 7 kL 50 L water is received in colony B.

## Mental Maths (Page 191)

**1.** 2 m = 2000 mm
(∵ 2 m = 200 cm = (200 × 10) mm = 2000 mm)

**2.** 2000 mL = 2 L (∵ (2000 ÷ 1000) L = 2 L)

**3.** 1 gram = 100 centigram.

**4.**

| | km | | m | | |
|---|---|---|---|---|---|
| | | 9 | | | |
| | 0 | ~~10~~ | 10 | | |
| | ~~1~~ | ~~0~~ | ~~0~~ | 0 | 0 |
| – | 0 | 3 | 5 | 0 | 0 |
| | 0 | 6 | 5 | 0 | 0 |

On subtracting 3 km 500 m from 10 km, we get 6 km 500 m.

**5.**

| | L | | mL | | |
|---|---|---|---|---|---|
| | ⓪ | ⑩ | | | |
| | ✗ | ✗ | 5 | 0 | 0 |
| – | 0 | 8 | 0 | 0 | 0 |
| | 0 | 2 | 5 | 0 | 0 |

So, when 8 L of juice is distributed out of 10 L 500 mL of juice, the quantity of juice left is 2 L 500 mL.

We have 1 L = 1000 mL ∴ 2 L = 2000 mL

∴ 2 L 500 mL = 2000 mL + 500 mL = 2500 mL

## Chapter Assessment

**1.** (*a*) – (*iii*) 3 L 50 mL = 3050 mL ≠ 3500 mL

Hence, statement is wrong.

(*b*) – (*i*) 12 km 55 m = (12 × 1000) m + 55 m

= 12000 m + 55 m = 12055 m

(*c*) – (*iii*) 5 kg – (500 g + 200 g + 50 g)

= 5000 g – 750 g = 4250 g = 4 kg 250 g

(*d*) – (*ii*)

| | kg | g | | |
|---|---|---|---|---|
| | ① | ① | | |
| Weight of vegetables = | 2 | 2 | 5 | 0 |
| Weight of pulses = | 1 | 0 | 0 | 0 |
| Weight of sugar = + | 3 | 7 | 5 | 0 |
| Total weight of the items = | 7 | 0 | 0 | 0 |

(*e*) (*iv*) A bottle contains 1 L of water

1 L = 1000 mL

She drank $\frac{3}{4}$ L of water

*i.e.*, $\frac{3}{4} \times 1000 = 750$ mL

Her friend drank 150 mL of water

∴ Water left in the bottle

= 1000 mL – 750 mL – 150 mL

= 250 mL – 150 mL = 100 mL

**2.** (*a*) 5 tons = 50 quintals = 5000 kg

(∵ 1 ton = 10 quintals and 1 quintal = 100 kg)

∴ 5 tons = 5 × 10 quintals

= 50 quintals and 50 quintals

= 50 × 100 kg = 5000 kg

(*b*) 41 quintals = 4100 kg = 4100000 g

(∵ 1 quintal = 100 kg and 1 kg = 1000 g)

∴ 41 quintals = 41 × 100 kg = 4100 kg

and 4100 × 1000 g = 4100000 g

(*c*) 11 tons = 11000 kg = 11000000 g

(∵ 1 ton = 1000 kg and 1 kg = 1000 g)

∴ 11 tons = 11 × 1000 kg = 11000 kg

and 11000 × 1000 g = 11000000 g

(*d*) 13 ft 9 in = 165 in

(∵ 1 ft = 12 in ∴ 13 ft = 13 × 12

= 156 in + 9 in = 165 in)

(*e*) 18 in = 1 ft 6 in (∵ 12 in = 1 ft)

∴ 18 in ÷ 12 = 1 ft 6 in

$$12\overline{)\,18\,(1}$$
$$\underline{-12}$$
$$6$$

**3.** (*a*) Metre is the greatest unit of measurement. — False

(*b*) 500 g + 500 g = 1 kg. — True

(*c*) Half of a kilometre is 50 m. — False

(*d*) 10500 mL = 10 L 500 mL. — True

(*e*) 10 decametres = 1 metre. — False

**4.** 50 mL of milk is used to make a cup of tea.

Milk required to make 24 cups of tea = 50 × 24

= 1200 mL or 1 L 200 mL

**5.**

| | m | | cm | |
|---|---|---|---|---|
| Cloth bought = | 1 | 5 | 9 | 5 |
| Used cloth = – | 1 | 1 | 7 | 5 |
| Length of cloth left with Maya = | 0 | 4 | 2 | 0 |

Thus, 4 m 20 cm cloth is left with her.

**6.**

| | L | | mL | | |
|---|---|---|---|---|---|
| Juice sold = | 3 | 6 | 7 | 5 | 6 |
| Less juice sold by neighboring shop = – | | 5 | 3 | 6 | 4 |
| Juice sold by neighboring shop everyday = | 3 | 1 | 3 | 9 | 2 |

Thus, the neighboring juice shop sells 31 L 392 mL juice everyday.

**7.**

| | kg | | | g | | |
|---|---|---|---|---|---|---|
| Weight of wheat = | 3 | 4 | 5 | 2 | 3 | 4 |
| Weight of wheat distributed = – | 1 | 9 | 9 | 5 | 6 | 4 |
| Weight of wheat left = | 1 | 4 | 5 | 6 | 7 | 0 |

Thus, 145 kg 670 g wheat is left.

**8.** Weight of Anaya = 64 kg 430 g

Weight of Rohan = 12 kg 65 g + 64 kg 430 g

∴ Weight of Rohan =

| | kg | | g | | |
|---|---|---|---|---|---|
| | 6 | 4 | 4 | 3 | 0 |
| + | 1 | 2 | | 6 | 5 |
| | 7 | 6 | 4 | 9 | 5 |

Thus, Rohan's weight is 76 kg 496 g.

**9.** Weight of box with apples = 270 kg 500 g
Weight of box with oranges = 192 kg 500 g
Weight of box with guavas = 245 kg
Total weight of the fruits together = 690 kg
∴ Weight of the box alone = (Weight of box with apples + weight of the box with oranges + weight of the box with guavas – Total weight of fruits together) ÷ 3 (∵ The weight of the box is included in the weight of the fruits)
∴ Weight of the box alone = (270 kg 500 g + 192 kg 500 g + 245 kg – 690 kg) ÷ 3
= (708 – 690 kg) ÷ 3 = 18 kg ÷ 3 = 6 kg
Thus, the weight of box alone is 6 kg.

**10.** (*a*) 8586 m = 8000 m + 586 m = 8 km 586 m
(*b*) 7816 m = 7000 m + 816 m = 7 km 816 m
(*c*) 7716 m = 7000 m + 716 m = 7 km 716 m
(*d*) 7242 m = 7000 m + 242 m = 7 km 242 m
(*e*) 6992 m = 6000 m + 992 m = 6 km 992 m

## Brain Sizzlers (Page 193)

Anaya's height = 1720 mm = 1720 ÷ 10 cm
= 172 cm
Siya's height = 3 m 40 cm – 172 cm
= 340 cm – 172 cm = 168 cm
Rehan's height = 168 cm + 2 cm 4 mm
= 170 cm 4 mm
Maya's height = 170 cm 4 mm + 4 cm 2 mm
= 174 cm 6 mm
Ascending order: 168 cm < 170 cm 4 mm < 172 cm < 174 cm 6 mm

# CHAPTER 11: PERIMETER AND AREA

## Practice Time 11A

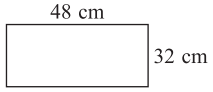
**1.** (*a*) Perimeter of figure (*a*)
= 6 units + 7 units + 6 units + 7 units = 26 units.
(*b*) Perimeter of figure (*b*)
= 2 units + 2 units + 4 units + 6 units + 6 units + 8 units = 28 units.
(*c*) Perimeter of figure (*c*)
= 4 units + 1 unit + 1 unit + 6 units + 1 unit + 1 unit + 4 units + 1 unit + 1 unit + 6 units + 1 unit + 1 unit = 28 units.
(*d*) Perimeter of figure (*d*)
= 6 units + 3 units + 2 units + 4 units + 2 units + 4 units + 2 units + 3 units = 26 units.
(*e*) Perimeter of figure (*e*)
= 1 unit + 1 unit + 1 unit + 1 unit + 1 unit + 1 unit + 1 unit + 1 unit + 2 units + 3 units + 6 units + 3 units + 2 units + 4 units = 28 units.
(*f*) Perimeter of figure (*f*)
= 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units + 2 units = 24 units.

**2.** (*a*) Perimeter of the given figure
= Sum of the lengths of its sides
= 5 cm + 6 cm + 8 cm = 19 cm.
(*b*) Perimeter of the given figure
= Sum of the lengths of its sides
= 8 cm + 5 cm + 8 cm + 5 cm = 26 cm.
(*c*) Perimeter of the given figure
= Sum of the lengths of its sides
= 4 cm + 4 cm + 4 cm + 4 cm = 16 cm.
(*d*) Perimeter of the given figure
= Sum of the lengths of its sides
= 9 cm + 7 cm + 10 cm + 5 cm = 31 cm.
(*e*) Perimeter of the given figure
= Sum of the lengths of its sides
= 5 cm + 3 cm + 3 cm + 5 cm + 4 cm
= 20 cm.
(*f*) Perimeter of the given figure
= Sum of the lengths of its sides.
= 6 cm + 3 cm + 5 cm + 4 cm + 3 cm + 4 cm.
= 25 cm.

**3.** Length of each side = 4 cm
Number of equal sides = 6
Perimeter = 4 × 6 = 24 cm.

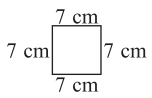
**4.** Length of two equal sides of a triangle = 15 cm.
Length of 3rd side = 18 cm.
Perimeter of triangle = Sum of lengths of its sides.
15 cm + 15 cm + 18 cm = 48 cm.

**5.** Length of a rectangle (*l*) = 48 cm.
Breadth of a rectangle (*b*) = 32 cm.




We know that, perimeter of a rectangle = 2(*l* + *b*)
= 2(48 + 32) cm = 2 × 80 cm = 160 cm.
Thus, the perimeter of the rectangle is 160 cm.

**6.** Length of each side of the square = 7 cm.
We know that, perimeter of the square
= 4 × side = 4 × 7 cm = 28 cm.




Thus, the perimeter of the square is 28 cm.

## Practice Time 11B

**1.** Number of unit squares in the figure (A) = 12
Therefore, area of the figure (A) = 12 sq. cm
Number of unit squares in the figure (B) = 4
Therefore, area of the figure (B) = 4 sq. cm
Number of unit squares in the figure (C) = 6
Therefore, area of the figure (C) = 6 sq. cm
Number of unit squares in the figure (D) = 16
Therefore, area of the figure (D) = 16 sq. cm
Number of unit squares in the figure (E) = 16
Therefore, area of the figure (E) = 16 sq. cm
Number of unit squares in the figure (F) = 15
Therefore, area of the figure (F) = 15 sq. cm
Number of unit squares in the figure (G) = 10
Therefore, area of the figure (G) = 10 sq. cm

**2.** (*a*) Number of squares = 5
So, the area of square is 5 sq. units.

(*b*) Here, number of complete squares = 4
Number of half squares = 8
Since, 2 half squares make 1 complete square.
Thus, the area of the figure = 4 + 4 = 8 sq. units.

(*c*) Here, number of complete squares = 2
Number of half squares = 4
Since, 2 half squares make 1 complete square.
Thus, the area of the figure = 2 + 2 = 4 sq. units.

(*d*) Here, number of complete squares = 3
Number of half squares = 6
Since, 2 half squares make 1 complete square.
Thus, the area of the figure = 3 + 3 = 6 sq. units.

(*e*) Here, number of complete squares = 9
Number of half squares = 8
Since, 2 half square make 1 complete square.
Thus, the area of the figure = 9 + 4 = 13 sq. units.

(*f*) Here, number of complete squares = 5
Number of half squares = 4
Since, 2 half square make 1 complete square.
Thus, the area of the figure = 5 + 2 = 7 sq. units.

## Chapter Assessment

**1.** (*a*) (*iii*) Length of rectangle ($l$) = 13 cm
Breadth of rectangle ($b$) = 5 cm
Perimeter of rectangle = 2 ($l$ + $b$)
= 2 (13 + 5) cm
Perimeter of rectangle = 2 × 18 cm
= 36 cm

(*b*) (*iii*) Length of rectangular garden ($l$) = 135 m
Breadth of rectangular garden ($b$) = 87 m
Perimeter of rectangular garden
= 2($l$ + $b$)
= 2(135 + 87) cm
= 2 × 222 cm = 444 cm

(*c*) (*i*) Side of a square = 7 cm
Perimeter of square = 4 × side
= 4 × 7 cm
= 28 cm

(*d*) (*ii*) Length of 1st side = 15 m
Length of 2nd side = 16 m
Perimeter of triangle = 47 m
Perimeter of triangle = Sum of its three sides
47 m = 15 m + 16 m + third side
47 m = 31 m + third side
Third side = 47 m – 31 m = 16 m

(*e*) (*i*) Number of complete squares = 12 m
So, the area of square = 12 sq. units

**2.** (*a*) Perimeter of the given figure
= Sum of lengths of its sides.
5 cm + 7 cm + 8 cm = 20 cm

(*b*) Perimeter of the given figure
= Sum of lengths of its sides.
6 cm + 6 cm + 6 cm = 18 cm

(*c*) Perimeter of the given figure
= Sum of lengths of its sides.
9 cm + 9 cm + 7 cm = 25 cm

(*d*) Perimeter of the rectangle
= 2 × ($l$ + $b$) = 2 × (10 + 2) = 2 × 12 = 24 cm

(*e*) Perimeter of the square
= 4 × side = 4 × 4 = 16 cm

(*f*) Perimeter of the given figure
= Sum of lengths of its sides.
5 cm + 5 cm + 5 cm + 5 cm = 20 cm

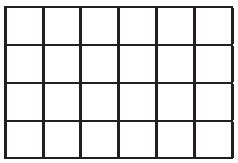
**3.** (*a*) Perimeter of given figure
= 2 cm + 4 cm + 2 cm + 4 cm = 12 cm.
Number of squares = 8.
So, the area of squares is 8 sq. cm.
∴ P = 12 cm and A = 8 sq. cm.

(*b*) Perimeter of given figure
= 4 cm + 4 cm + 4 cm + 4 cm
= 16 cm.
Number of squares = 16.
So, the area of squares is 16 sq. cm.
∴ P = 16 cm, A = 16 sq. cm.

(*c*) Perimeter of the given figure
= 3 cm + 3 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm = 12 cm
Number of squares = 6
So, the area of square is 6 sq. cm
∴ P = 12 cm, A = 6 sq. cm.

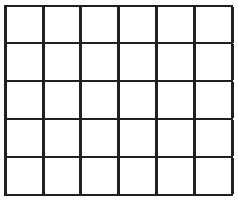
(*d*) Perimeter of the given figure
= 2 cm + 1 cm + 1 cm + 1 cm + 1 cm + 2 cm + 2 cm + 4 cm = 14 cm
Number of squares = 9
So, the area of square is 9 sq. cm
∴ P = 14 cm, A = 9 sq. cm.

**4.** (*a*)



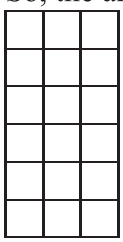
Number of squares = 24
So, the area of square is 24 sq. cm

(*b*)



Number of squares = 30
So, the area of square is 30 sq. cm

(*c*)



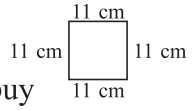
Number of squares = 18
So, the area of square is 18 sq. cm

**5.** (*a*) Here, number of complete squares = 8
Number of half squares = 20
Since, 2 half squares make 1 complete square.
Thus, the area of the figure = 8 + 10 = 18 sq. cm

(*b*) Here, number of complete squares = 5
Number of half squares = 20
Since, 2 half squares make 1 complete square.
Thus, the area of the figure = 5 + 10 = 15 sq. cm

**6.** Length of each road is 250 m.
Perimeter of the given figure
= 250 m + 250 m + 250 m = 750 m.
Thus, the required length of the fence is 750 m

**7.** Side of squared shape handkerchief = 11 cm
Length of the lace Riya needs to buy
= 11 cm + 11 cm + 11 cm + 11 cm = 44 cm.




**8.** Length of rectangular plot = 12 m
Breadth of rectangular plot = 10 m
Perimeter of rectangular plot = 2(12 + 10) m
= 2 × 22 m = 44 m
Required length of the fence
= 44 × 2 = 88 m.

**9.** Perimeter of given square = 32 cm
or Perimeter of a square = 4 × side

$\therefore \quad 32 \text{ cm} = 4 \times \text{side} \quad \text{or} \quad \text{side} = \frac{32}{4} = 8 \text{ cm}$

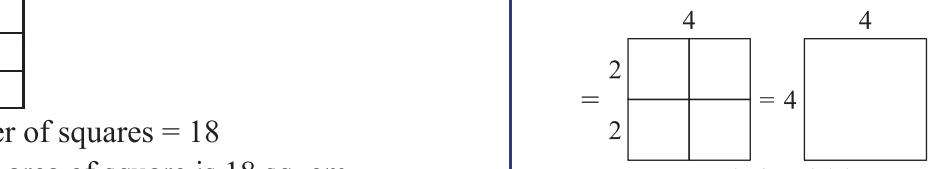
On cutting a square into two halves, i.e., $= \frac{8}{2} = 4$ cm, we get, breadth = 4 cm and length = 8 cm
Therefore, perimeter of one rectangle = sum of its four sides = 4 cm + 4 cm + 8 cm + 8 cm = 24 cm.

## Brain Sizzlers (Page 206)

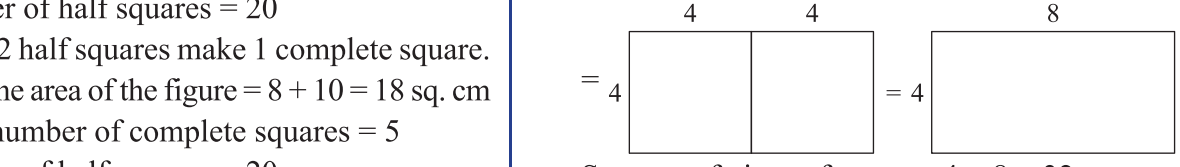
Solve this in reverse order.
Given, final square is of one side = 2 cm
**Step 1.** On unfolding, the next rectangle




**Step 2.** On unfolding, the length and width of square




**Step 3.** At left width on unfold, the length and width of rectangle




So, area of piece of paper = 4 × 8 = 32 sq. cm

# CHAPTER 12 : TIME

## Let's Recall

**1.** (*a*) 2 hours = 120 minutes
(*b*) 1 day = 24 hours
(*c*) 20 weeks = 140 days
(*d*) 3 years = 1095 days

**2.** (*a*) - (*iii*) (*b*) - (*ii*)
(*c*) - (*iv*) (*d*) - (*i*)

## Practice Time 12A

**1.** (*b*) 12:13, 13 minutes past 12, 47 minutes to 1
(*c*) 5:30, 30 minutes past 5, 30 minutes to 6
(*d*) 2:40, 40 minutes past 2, 20 minutes to 3
(*e*) 7:16, 16 minutes past 7, 44 minutes to 8
(*f*) 9:15, 15 minutes past 9, 45 minutes to 10
(*g*) 6:45, 45 minutes past 6, 15 minutes to 7
(*h*) 11:10, 10 minutes past 11, 50 minutes to 12

**2.** Do it yourself.

## Practice Time 12B

**1.** 50 seconds → 10 seconds → 25 seconds

## Practice Time 12C

**1.** (*a*) 03:34 hours (*b*) 16:50 hours
(*c*) 19:30 hours (*d*) 10:00 hours
(*e*) 00:00 hours or 24:00 hours
(*f*) 18:34 hours

**2.** (*a*) 4:20 p.m. (*b*) 6:57 p.m.
(*c*) 8:20 p.m. (*d*) 4:30 a.m.
(*e*) 10:00 p.m. (*f*) 8:08 a.m.

**3.** (*a*) Renu wakes up at 06:45 a.m.
(*b*) A bus leaves ISBT at 2:45 p.m.
(*c*) A hawker starts distributing newspapers at 05:35 a.m.
(*d*) A match starts at 5:30 p.m
(*e*) Golu reached Agra at 8:10 p.m.

**4.** To write the 12-hour clock format, that is, p.m. time into 24-hour clock format, we just remove ':' sign and write the time add to 12 without p.m. So, we read and write 4:30 p.m. in the 12-hour clock format and 16:30 hours or 1630 hours in the 24-hour clock format.

## Practice Time 12D

**1.** (*a*) Since, 1 hour = 60 minutes
So, 6 hours = 6 × 60 minutes
= 360 minutes

(*b*) Since, 1 hour = 60 minutes
So, 8 hours = 8 × 60 minutes
= 480 minutes
So, 8 hours 30 minutes
= 480 minutes + 30 minutes
= 510 minutes.

(*c*) Since, 1 hour = 60 minutes
and 1 minute = 60 seconds
So, 1 hours = 60 × 60 seconds
= 3600 seconds
So, 5 hours = 5 × 3600 seconds
= 18000 seconds.

(*d*) Since, 1 minute = 60 seconds
So, 18 minutes = 18 × 60 seconds
= 1080 seconds

(*e*) Since, 1 minute = 60 seconds
So, 28 minutes = 28 × 60 seconds
= 1680 seconds
So, 28 minutes 15 seconds
= 1680 seconds + 15 seconds
= 1695 seconds

(*f*) Since, 1 hour = 60 minutes,
1 minute = 60 seconds
So, 1 hour = 60 × 60 seconds
= 3600 seconds
So, 14 hours = 14 × 3600 seconds
= 50400 seconds
and 1 minute = 60 seconds
So, 48 minutes = 48 × 60 seconds
= 2880 seconds
Therefore, 14 hours 48 minutes
= 50400 seconds + 2880 seconds
= 53280 seconds

**2.** (*a*) Since, 60 seconds = 1 minute
So, 216 seconds
= (216 ÷ 60) minutes
Thus, 216 seconds = 3 minutes 36 seconds.

```
60) 216 (30 → minutes
  − 180
    036 → seconds
```

(*b*) Since, 60 seconds = 1 minute

So, 2448 seconds

= (2448 ÷ 60) minutes

Thus, 2448 seconds

= 40 minutes 48 seconds.

```
60) 2448 (40 → minutes
  − 240↓
    0048 → seconds
```

(*c*) Since, 3860 seconds

= (3860 ÷ 60) minutes

= 64 minutes 20 seconds

Further, 64 minutes

= (64 ÷ 60) hours

= 1 hour 4 minutes.

Thus, 3860 seconds

= 1 hour 4 minutes 20 seconds

```
60) 3860 (64 → minutes
  − 360↓
     260
     240
      20 → seconds
```

```
60) 64 (1 → hour
  − 60
    04 → minutes
```

(*d*) Since, 60 minutes = 1 hour

So, 120 minutes

= (120 ÷ 60) hours

= 2 hours

```
60) 120 (2 → minutes
  − 120
      0
```

## Practice Time 12E

**1.** (*a*) Write the time in the columns and then add by following the given steps.

**Step 1.** Add the seconds.

38 seconds + 17 seconds

= 55 seconds

**Step 2.** Add the minutes.

1 minute + 35 minutes + 18 minutes = 53 minutes

Thus, the sum is 53 minutes 55 seconds

| | min | | s | |
|---|---|---|---|---|
| | 1 | | 1 | |
| | 3 | 5 | 3 | 8 |
| + | 1 | 8 | 1 | 7 |
| | 5 | 3 | 5 | 5 |

(*b*)

| | min | | s | |
|---|---|---|---|---|
| | 2 | 4 | 1 | 8 |
| + | 0 | 5 | 2 | 0 |
| | 2 | 9 | 3 | 8 |

Thus, 24 minutes 18 seconds + 5 minutes 20 seconds = 29 minutes 38 seconds.

(*c*)

| | min | | s | |
|---|---|---|---|---|
| | 1 | | | |
| | 2 | 8 | 3 | 8 |
| + | 2 | 9 | 4 | 0 |
| | 5 | 7 | 7 | 8 |

Thus, 27 minutes 38 seconds + 29 minutes 40 seconds = 57 minutes 78 seconds, i.e., 58 minutes 18 seconds.

(*d*)

| | min | | s | |
|---|---|---|---|---|
| | 1 | 5 | 3 | 0 |
| + | 3 | 0 | 3 | 5 |
| | 4 | 5 | 6 | 5 |

Thus, 15 minutes 30 seconds + 30 minutes 35 seconds = 45 minutes 65 seconds, i.e., 46 minutes 5 seconds.

(*e*) Write the time in the columns and then add by following the given steps.

**Step 1.** Add the seconds.

10 seconds + 20 seconds = 30 seconds

**Step 2.** Add the minutes.

35 minutes + 16 minutes = 51 minutes

**Step 3.** Add the hours.

16 hours + 25 hours = 41 hours

| | h | | min | | s | |
|---|---|---|---|---|---|---|
| | 1 | | 1 | | | |
| | 1 | 6 | 3 | 5 | 1 | 0 |
| + | 2 | 5 | 1 | 6 | 2 | 0 |
| | 4 | 1 | 5 | 1 | 3 | 0 |

Thus, the sum is 41 hours 51 minutes 30 seconds or 1 day 17 hours 51 minutes 30 seconds.

(*f*)

| | h | | | min | | s | |
|---|---|---|---|---|---|---|---|
| | | | | 1 | | | |
| | 1 | 0 | 0 | 4 | 5 | 5 | 6 |
| + | 0 | 0 | 5 | 1 | 9 | 1 | 2 |
| | 1 | 0 | 5 | 6 | 4 | 6 | 8 |

Thus, 100 hours 45 minutes 56 seconds + 5 hours 19 minutes 12 seconds

= 105 hours 64 minutes 68 seconds

= 106 hours 5 minutes 8 seconds

or 4 days 10 hours 5 minutes 8 seconds

**2.** (*a*)

| | h | | min | |
|---|---|---|---|---|
| | 2 | 5 | 2 | 4 |
| − | 1 | 0 | 0 | 9 |
| | 1 | 5 | 1 | 5 |

Thus, 25 hours 24 minutes – 10 hours 9 minutes = 15 hours 15 minutes.

(b) Write the time in the vertical columns and then subtract by following the given steps.

**Step 1.** Subtract the minutes.

Since, 38 minutes < 40 minutes.

So, regroup minutes and hours.

That is, borrow 1 hour = 60 minutes to minutes

So, 24 hours 38 minutes

= 23 hours 60 minutes + 38 minutes

= 23 hours 98 minutes.

Now, 98 minutes – 40 minutes = 58 minutes.

**Step 2.** Subtract the hours.

23 hours – 9 hours = 14 hours

| | h | min |
|---|---|---|
| | (23) | (98) |
| | ~~24~~ | ~~38~~ |
| – | 09 | 40 |
| | **14** | **58** |

Thus, the difference is equal to 14 hours 58 minutes.

(*c*)

| | min | s |
|---|---|---|
| | (9) | (66) |
| | ~~10~~ | ~~06~~ |
| – | 05 | 26 |
| | **4** | **40** |

Thus, 10 minutes 40 seconds – 5 minutes 26 seconds = 4 minutes 40 seconds.

(*d*)

| | h | min | s |
|---|---|---|---|
| | | (99) | |
| | (23) | ~~(39)~~ | (70) |
| | ~~24~~ | ~~40~~ | ~~10~~ |
| – | 04 | 56 | 16 |
| | **19** | **43** | **54** |

Thus, 24 minutes 40 minutes 10 seconds – 4 hours 56 minutes 16 seconds = 19 hours 43 minutes 54 seconds.

**3.** Time taken by Ram to travel by one bus = 15 hours 20 minutes

Time taken by him in travelling by another bus = 13 hours 54 minutes

Time taken by him in travelling by both the buses = 15 hours 20 minutes + 13 hours 54 minutes

= 28 hours 74 minutes

= 29 hours 14 minutes or 1 day 5 hours 14 minutes

| | h | | min | |
|---|---|---|---|---|
| | 1 | 5 | 2 | 0 |
| + | 1 | 3 | 5 | 4 |
| | 2 | 8 | 7 | 4 |

**4.**

| | min | s |
|---|---|---|
| | | (1) |
| Time taken in making lunch = | 42 | 12 |
| Time taken in making dinner = + | 53 | 28 |
| Total time spent on cooking = | **95** | **40** |

Thus, 95 minutes 40 seconds or 1 hour 35 minutes 40 seconds is spent on cooking.

**5.** Time taken by Ajay in completing his homework = 1 hour 10 minutes 20 seconds

Time taken by Putul in completing her homework = 55 minutes 20 seconds

Difference between time taken in completing the homework

| | h | min | s |
|---|---|---|---|
| | (0) | (70) | |
| | ~~1~~ | ~~10~~ | 20 |
| – | 0 | 55 | 20 |
| | **0** | **15** | **0** |

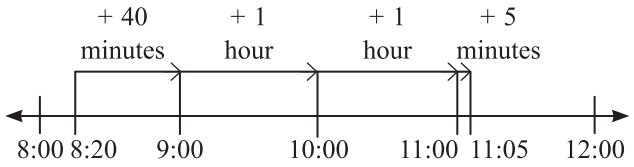
Thus, Ajay takes 15 more minutes to complete his homework.

## Practice Time 12F

**1.**

| | Starting time | Finishing time | Duration |
|---|---|---|---|
| (*a*) | 7:25 a.m. | 9:15 a.m. | 1 hour 50 minutes |
| (*b*) | 11:10 p.m. | 12:20 a.m. | 1 hour 10 minutes |
| (*c*) | 5:45 a.m. | 6:35 a.m. | 50 minutes |
| (*d*) | 8:10 p.m. | 11:35 p.m. | 3 hours 25 minutes |
| (*e*) | 10:55 a.m. | 12:16 p.m. | 1 hour 21 minutes |

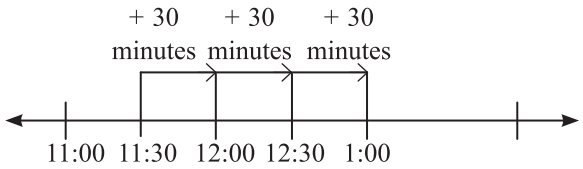
**2.**




| Starting time | Reaching time | Duration |
|---|---|---|
| 8:20 a.m. | 11:05 a.m. | 2 hours 45 minutes |

Thus, the aeroplane took 2 hours 45 minutes to reach Delhi from Chennai.

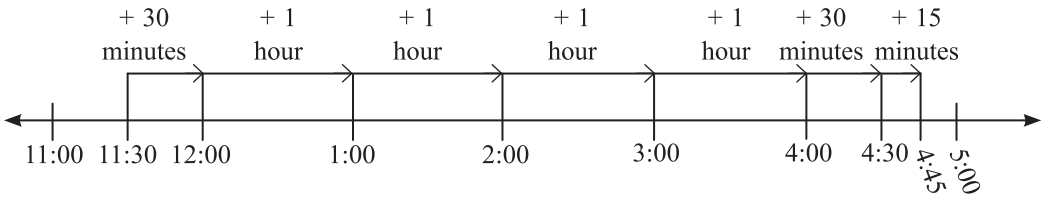
**3.**




| Starting time | Finishing time | Duration |
|---|---|---|
| 11:30 a.m. | 1:00 p.m. | 1 hours 30 minutes |

Thus, the match was played 1 hour 30 minutes.

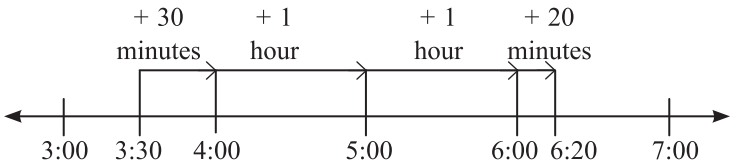
**4.**




| Starting time | Finishing time | Duration |
|---|---|---|
| 11:30 a.m. | 4:45 p.m. | 5 hours 15 minutes |

Thus, 5 hours 15 minutes was the duration of the event.

**5.**




| Starting time | Duration | Finishing time |
|---|---|---|
| 3:30 a.m. | 2 h 50 min | 6:20 a.m. |

Thus, 6:20 p.m. she finishes her project.

## Quick Check (Page 222)

1. April is the 4th month of the year.
2. A leap year has 366 days.
3. September has 30 days.
4. January, March, May, July, August, October and December months have 31 days.

## Practice Time 12G

**1.** (*a*) 4 May is the first Sunday of May.
(*b*) 17 February is the 3rd Monday in February.
(*c*) 30 July is last Wednesday in July.
(*d*) Saturday is the last day of the third week after May 3.
(*e*) Saturday is the day after 5 days of December 7.
(*f*) Monday is the day before one week of June 16.

**2.** (*a*) Since, 7 days = 1 week
So, 42 days
= (42 ÷ 7) weeks
= 6 weeks.
Thus, 42 days = 6 weeks.

$$7\overline{)42}\,(6 \rightarrow \text{Weeks}$$
$$-\,42$$
$$0 \rightarrow \text{day}$$

(*b*) Since, 7 days = 1 week
So, 105 days
= (105 ÷ 7) weeks.
= 15 weeks.

$$7\overline{)105}\,(15 \rightarrow \text{Weeks}$$
$$-\,7\downarrow$$
$$35$$
$$-\,35$$
$$0 \rightarrow \text{day}$$

(*c*) Since, 12 months = 1 year.
So, 144 months = (144 ÷ 12) years.
= 12 years.
Thus, 144 months = 12 years.

(*d*) Since, 12 months = 1 year.
So, 72 months = (72 ÷ 12) years.
= 6 years.
Thus, 72 months = 6 years.

(*e*) Since, 4 weeks = 1 month
So, 12 weeks = (12 ÷ 4) months.
= 3 months.
Thus, 12 weeks = 3 months.

(*f*) Since, 365 days = 1 year
So, 730 days = (730 ÷ 365) years.
= 2 years.
Thus, 730 days = 2 years.

**3.** (*a*) Since, 1 month = 30 days.
So, 3 months 7 days = 3 × 30 + 7 days
= 90 × 7 days = 97 days.
Thus, 3 months 7 days = 97 days

(*b*) 4 months 23 days = 4 × 30 + 23 days.
= 120 + 23 days = 143 days.

(*c*) Since, 1 week = 7 days.
So, 7 weeks 5 days = 7 × 7 + 5 days.
= 49 + 5 days = 54 days.

(*d*) 9 weeks 4 days = 9 × 7 + 4 days.
= 63 + 4 days = 67 days.

(*e*) 2 weeks 1 days = 2 × 7 + 1 days.
= 14 + 1 days = 15 days.

(*f*) 7 months 20 days = 7 × 30 + 20 days.
= 210 + 20 days = 230 days.

**4.** (*a*) Since, 1 year = 12 months.
So, 3 years 7 months = 3 × 12 + 7 months
= 36 months + 7 months = 43 months
(*b*) 4 years 11 months = 4 × 12 + 11 months
= 48 + 11 months
= 59 months
(*c*) 6 years 10 months = 6 × 12 + 10 months
= 82 months
(*d*) 7 years 4 months = 7 × 12 + 4 months
= 88 months
(*e*) 1 years 8 months = 12 + 8 months = 20 months
(*f*) 5 years 1 months = 5 × 12 + 1 months
= 61 months

**5.** March has 31 days
So, number of days after 6th in March
= 31 – 6 = 25 days
Number of days in April = 30 days
Number of days in May = 31 days
Number of days in June before 10th
= 10 – 1 = 9 days
Total number of days = 25 + 30 + 31 + 9 = 95 days
Thus, the total number of days between 6th March to 10th June is 95 days.

**6.** December has 31 days.
So, 18 December to 31 December = 31 – 18 = 13 days.
His vacation will last for 18 days.
i.e., the school will close in January for
18 – 13 = 5 days.
Thus, Sanket's school will reopen on 6th January.

**7.** January has 31 days.
So, 26th January to 31 January = 31 – 26 = 5 days.
1st February to 28th February = 28 days.
1st march to 31th March = 31 days.
1st April to 30th April = 30 days.
1st May to 31st May = 31 days.
1st June to 28th June = 28 – 1 = 27 days.
So, the total number of days between 26th January to 28th June
= 5 + 28 + 31 + 30 + 31 + 27 = 152 days.

**8.**

| | | years | | months | | days |
|---|---|---|---|---|---|---|
| Swastik birthday = 11 July 2007 | | 2007 | - | 7 | - | 11 |
| His present age = 14 years 1 month 5 days | + | 14 | - | 1 | - | 5 |
| | | **2021** | | **8** | | **16** |

∴ Current date is 16-8-2021 or 16 August 2021.

## Chapter Assessment

**1.** (*a*) (*iii*) 8 hours 50 minutes = 8 × 60 + 50 minutes
= 480 + 50 minutes = 530 minutes
(*b*) (*iv*) 1 hour = 60 minutes
1 minute = 60 seconds
1 hour = 60 × 60 seconds
1 hour = 3600 seconds.
(*c*) (*ii*) Since, 1 day = 24 hours, 1 hour = 60 minutes
So, the number of minutes in a day = 24 × 60
(*d*) (*i*) 8 days 8 hours = 8 × 24 + 8 hours
= 200 hours
(*e*) (*i*) 3 hours 30 minutes before 12 noon
= 8:30 a.m.

| | h | min |
|---|---|---|
| | (11) | (60) |
| | ~~12~~ | ~~:00~~ |
| – | 3:30 | |
| | 8:30 | |

**2.** Time taken by an athlete to complete a race
= 11 minutes 38 seconds.
He breaks the world record by 48 seconds.

| | min | s |
|---|---|---|
| | (1) | (1) |
| | 11 | 38 |
| + | 0 | 48 |
| | **11** | **86** |

World record time = 11 minutes 38 second + 48 seconds = 12 minutes 26 seconds.
Thus, the world record to complete a 5000 m race is 12 minutes 26 seconds.

**3.** 2 hours 25 minutes before 6:10 p.m. = 6 hours 10 minutes – 2 hours 25 minutes = 3 hours 45 minutes, i.e., 3:45 p.m.

| | h | min |
|---|---|---|
| | (5) | (70) |
| | ~~6~~ | ~~10~~ |
| – | 2 | 25 |
| | **3** | **45** |

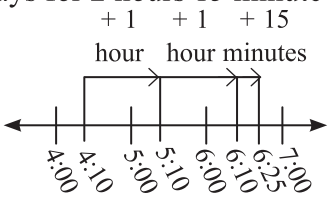
**4.** Isha's sleeping hours = 8 hours 45 minutes
Isha's waking time = 6:30 am
Isha go to bed 8 hours 45 minutes before 6:30 am
Time from 12 midnight to 6:30 am = 6 hours 30 minutes
∴ Remaining time = 8 hours 45 minutes – 6 hours 30 minutes = 2 hours 15 minutes
∴ Isha go to bed = 2 hours 15 minutes before 12 midnight
= 12 hours – 2 hours 15 minutes
= 9:45 pm

**5.** Gyan went to a movie at 7:15 p.m.
He returned after 3 hours 15 minutes
∴ Time when he returned
= 7:15 + 3 hours 15 minutes
Thus, Gyan returned from movie at 10:30 p.m.

| | h | min |
|---|---|---|
| | 7 | 15 |
| + | 3 | 15 |
| | **10** | **30** |

**6.** Time taken by Jasmin for breakfast = 25 minutes.
Time taken by her for lunch = 30 minutes.
Time taken by her for dinner = 24 minutes.
Total time she spent in eating
= (25 + 30 + 24) minutes = 79 minutes
i.e., 1 hour 19 minutes.
Thus, she spent 1 hour 19 minutes in eating.

**7.** Anaya went to play at 4:10 p.m.
Anaya plays for 2 hours 15 minute daily.




| Starting time | Duration | Finishing time |
|---|---|---|
| 4:10 p.m. | 2 hours 15 minutes | 6:25 p.m. |

Thus, Anaya should return at 6:25 p.m.

**8.** Number of days = 17th May to 12th July
= 31 – 16 = 15 days [∵ May has 31 days]
June has 30 days.
So, number of days from 1st June to 30th June
= 30 days.
1st July to 12 July = 12 days.
Total days spent on the trip = (15 + 30 + 12) days.
= 57 days.
Thus, Rohan's family spent 57 days on the trip.

## Mental Maths (Page 227)

| Team | A | B | C | D |
|---|---|---|---|---|
| **Round-1** | 1 h 45 min 10 s | 1 h 55 min 19 s | 2 h 39 min 10 s | 1 h 49 min 36 s |
| **Round-2** | 2 h 14 min 53 s | 2 h 15 min 10 s | 2 h 55 min 19 s | 2 h 10 min 26 s |
| **Total Time** | 4 h 3 s | 4 h 10 min 29 s | 5 h 34 min 29 s | 4 h 2 s |
| **Rank** | 2nd | 3rd | 4th | 1st |

# CHAPTER 13 : MONEY

## Let's Recall

**1.** Siya saved in the first week
= ₹20 + ₹10 + ₹2 = ₹32
Rohan saved in the first week
= ₹20 + ₹5 + ₹2 + ₹1 + ₹0.50 = ₹28.50
Thus, Rohan saved ₹28.50 in the first week.

**2.** Siya saved in the second week
= ₹20 + ₹20 + ₹2 + ₹0.50 = ₹42.50 = 4250 p
[∵ ₹1 = 100 p]
Thus, Siya saved 4250 p in week 2.

**3.** Total saving of Siya in one month
= ₹20 + ₹10 + ₹2 + ₹20 + ₹20 + ₹2 + ₹0.50 + ₹50 + ₹5 + ₹2 + ₹1 + ₹0.50 + ₹100 = ₹233
₹233 = Rupees two hundred thirty-three.
Total saving of Rohan in one Month
= ₹20 + ₹5 + ₹2 + ₹1 + ₹0.50 + ₹20 + ₹20 + ₹1 + ₹50 + ₹20 + ₹2 + ₹0.50 + ₹200 = ₹342
₹342 = Rupees three hundred forty-two.

**4.** Siya saved = ₹233
Rohan saved = ₹342
Thus, Rohan saved more money.

## Think and Answer (Page 231)

₹500 × 100 = ₹50000

## Practice Time 13A

**1.** (*a*) 11 notes of ₹10 = ₹10 × 11 = ₹110
7 notes of ₹5 = ₹5 × 7 = ₹35
3 coins of ₹10 = ₹10 × 3 = ₹30
5 coins of ₹5 = ₹5 × 5 = ₹25
4 coins of ₹2 = ₹2 × 4 = ₹8
10 coins of ₹1 = ₹1 × 10 = ₹10
Total amount of money
= ₹110 + ₹35 + ₹30 + ₹25 + ₹8 + ₹10 = ₹218

(*b*) 5 notes of ₹200 = ₹200 × 5 = ₹1000
6 notes of ₹100 = ₹100 × 6 = ₹600
3 notes of ₹50 = ₹50 × 3 = ₹150
11 notes of ₹10 = ₹10 × 11 = ₹110
8 coins of ₹2 = ₹2 × 8 = ₹16
Total amount of money
= ₹1000 + ₹600 + ₹150 + ₹110 + ₹16 = ₹1876

(*c*) 2 notes of ₹200 = ₹200 × 2 = ₹400
5 notes of ₹20 = ₹20 × 5 = ₹100
19 notes of ₹10 = ₹10 × 19 = ₹190
7 notes of ₹5 = ₹5 × 7 = ₹35
Total amount of money
= ₹400 + ₹100 + ₹190 + ₹35 = ₹725

(*d*) 5 notes of ₹500 = ₹500 × 5 = ₹2500
2 notes of ₹200 = ₹200 × 2 = ₹400
10 notes of ₹10 = ₹10 × 10 = ₹100
5 coins of ₹1 = ₹1 × 5 = ₹5
Total amount of money
= ₹2500 + ₹400 + ₹100 + ₹5 = ₹3005

(*e*) 3 notes of ₹500 = ₹500 × 3 = ₹1500
7 notes of ₹200 = ₹200 × 7 = ₹1400
4 notes of ₹100 = ₹100 × 4 = ₹400
2 notes of ₹20 = ₹20 × 2 = ₹40
7 coins of ₹1 = ₹1 × 7 = ₹7
Total amount of money
= ₹1500 + ₹1400 + ₹400 + ₹40 + ₹7
= ₹3347.

**2.** Maya's mother had,
1 note of ₹200 = ₹200 × 1 = ₹200
2 note of ₹50 = ₹50 × 2 = ₹100
7 notes of ₹10 = ₹10 × 7 = ₹70
3 coins of ₹5 = ₹5 × 3 = ₹15
4 coins of ₹1 = ₹1 × 4 = ₹4
Total amount of money her mother has
= ₹200 + ₹100 + ₹70 + ₹15 + ₹4
= ₹389
Thus, Maya's mother has ₹389.

**3.** Gyan has,
3 notes of ₹200 = ₹200 × 3 = ₹600
1 note of ₹20 = ₹20 × 1 = ₹20
Total amount of money Gyan has
= ₹600 + ₹20 = ₹620
Vivan has,
2 notes of ₹100 = ₹100 × 2 = ₹200
3 notes of ₹ 50 = ₹50 × 3 = ₹150
13 coins of ₹2 = ₹2 × 13 = ₹26
Total amount of money Vivan has
= ₹200 + ₹150 + ₹26 = ₹376
Thus, Gyan has more money.

**4.** Siya pays,
2 notes of ₹500 = ₹500 × 2 = ₹1000
1 note of ₹100 = ₹100 × 1 = ₹100
3 notes of ₹20 = ₹20 × 3 = ₹60
5 coins of ₹5 = ₹5 × 5 = ₹25
Total amount of money Siya pays
= ₹1000 + ₹100 + ₹60 + ₹25
= ₹1185
Thus, cost of her dress is ₹1185.

## Think and Answer (Page 232)

The price of new bicycle = ₹8400.00
The price of old bicycle = ₹2,356.00
Amount of money Madhav need to pay for new bicycle = ₹8400 – ₹2359

| | | | | | |
|---|---|---|---|---|---|
| | | | (9) | | |
| | | (3) | (~~0~~) | (10) | |
| | ₹ | 8 | ~~4~~ | ~~0~~ | ~~0~~ |
| – | ₹ | 2 | 3 | 5 | 9 |
| | ₹ | 6 | 0 | 4 | 1 |

Thus, he needs ₹6041 to pay for new bicycle.

## Practice Time 13B

**1.** (*a*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | (1) | (1) | (2) | | |
| | ₹ | | 7 | 5 | 6 | . | 5 0 |
| | ₹ | | 2 | 2 | 9 | . | 6 5 |
| + | ₹ | | 2 | 3 | 1 | . | 9 0 |
| | ₹ | 1 | 2 | 1 | 8 | . | 0 5 |

(*b*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | (1) | (1) | (1) | (1) | |
| | ₹ | | 5 | 3 | 3 | . | 5 0 |
| | ₹ | | 3 | 5 | 4 | . | 5 6 |
| + | ₹ | | 2 | 3 | 3 | . | 4 4 |
| | ₹ | 1 | 1 | 2 | 1 | . | 5 0 |

(*c*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | (1) | (1) | (1) | |
| | ₹ | 3 | 0 | 3 | 4 | . | 7 5 |
| | ₹ | 5 | 0 | 3 | 2 | . | 2 5 |
| + | ₹ | 1 | 3 | 2 | 3 | . | 0 0 |
| | ₹ | 9 | 3 | 9 | 0 | . | 0 0 |

**2.** (*a*) Arrange the given amounts in columns and then add as shown alongside.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | (2) | (2) | (1) | (2) | | (2) |
| | ₹ | 3 | 9 | 7 | 3 | . | 6 5 |
| | ₹ | 1 | 5 | 2 | 3 | . | 4 5 |
| | ₹ | 0 | 2 | 5 | 6 | . | 5 4 |
| + | ₹ | 1 | 3 | 6 | 0 | . | 5 6 |
| | ₹ | 7 | 1 | 1 | 4 | . | 2 0 |

Hence, the required sum = ₹7114.20

(*b*) Arrange the given amounts in columns and then add as shown alongside.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (1) | (1) | | (1) | (1) | |
| | ₹ | | 4 | 5 | 4 | 2 | . | 9 0 |
| | ₹ | | 4 | 0 | 5 | 3 | . | 8 3 |
| | ₹ | | 4 | 4 | 6 | 2 | . | 0 6 |
| + | ₹ | | 0 | 4 | 0 | 0 | . | 0 9 |
| | ₹ | 1 | 3 | 4 | 5 | 8 | . | 8 8 |

Hence, the required sum = ₹13458.88.

**3.** (*a*)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 13 | 14 | 11 | | |
| | 6 | 8 | 4 | 1 | 10 | |
| ₹ | 7 | 4 | 5 | . | 2 | 0 |
| – ₹ | 3 | 4 | 6 | . | 5 | 6 |
| ₹ | 3 | 9 | 8 | . | 6 | 4 |

(*b*)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 13 | | |
| | | | 5 | 8 | 10 | |
| ₹ | 8 | 5 | 6 | . | 4 | 0 |
| – ₹ | 3 | 5 | 2 | . | 7 | 5 |
| ₹ | 5 | 0 | 3 | . | 6 | 5 |

(*c*)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 11 | 9 | | |
| | | 4 | 1 | 10 | 10 | |
| ₹ | 4 | 5 | 2 | . | 0 | 0 |
| – ₹ | 3 | 1 | 2 | . | 1 | 6 |
| ₹ | 1 | 3 | 9 | . | 8 | 4 |

**4.** (*a*) Arrange the given amounts in columns and then subtract as shown alongside.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 9 | 9 | | |
| | | 1 | 10 | 10 | 10 | |
| ₹ | 2 | 0 | 0 | 0 | . | 0 | 0 |
| – ₹ | 0 | 4 | 8 | 6 | . | 0 | 0 |
| ₹ | 1 | 5 | 1 | 4 | . | 0 | 0 |

Hence, the required difference = ₹1514.

(*b*) Arrange the given amounts in columns and then subtract as shown alongside.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 9 | 9 | | |
| | | | 4 | 10 | 10 | 12 | |
| ₹ | 7 | 5 | 0 | 0 | . | 2 | 5 |
| – ₹ | 3 | 2 | 6 | 7 | . | 7 | 5 |
| ₹ | 4 | 2 | 3 | 2 | . | 5 | 0 |

Hence, the required difference is = ₹4232.50.

(*c*) Arrange the given amounts in columns and then subtract as shown alongside.

| | | | | | |
|---|---|---|---|---|---|
| | | 9 | 9 | | |
| | 5 | 10 | 10 | 10 | |
| ₹ | 0 | 0 | 0 | 0 | |
| – ₹ | 2 | 7 | 4 | 5 | |
| ₹ | 3 | 2 | 5 | 5 | |

Hence, the required difference = ₹3255.

(*d*) Arrange the given amounts in columns and then subtract as shown alongside.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 4 | 14 | | |
| ₹ | 4 | 0 | 5 | 4 | . | 9 | 9 |
| – ₹ | 2 | 0 | 4 | 5 | . | 6 | 8 |
| ₹ | 2 | 0 | 0 | 9 | . | 3 | 1 |

Hence, the required difference = ₹2009.31.

**5.**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 1 | 1 | | |
| Cost of a pencil = | ₹ | 0 | 5 | . | 4 | 0 |
| Cost of an eraser = | ₹ | 0 | 4 | . | 6 | 5 |
| Cost of a geometry box = + | ₹ | 5 | 8 | . | 6 | 0 |
| Money paid to the shopkeeper = | ₹ | 6 | 8 | . | 6 | 5 |

Thus, she paid ₹68.65 to the shopkeeper.

**6.** Amount of money saved by Rupesh = ₹7554.75

Amount of money saved by his sister = ₹7079.70

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 14 | | | |
| | | | 4 | 4 | 14 | | |
| ₹ | 7 | 5 | 5 | 4 | . | 7 | 5 |
| – ₹ | 7 | 0 | 7 | 9 | . | 7 | 0 |
| ₹ | 0 | 4 | 7 | 5 | . | 0 | 5 |

Difference in money = ₹475.05

Thus, Rupesh saved ₹475.05 more than his sister.

**7.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 1 | 1 | 1 | |
| Cost price of biscuits = | ₹ | 3 | 6 | 5 | . | 6 | 5 |
| Cost price of bread = | ₹ | 0 | 3 | 7 | . | 4 | 5 |
| Cost price of toffees = + | ₹ | 0 | 1 | 5 | . | 8 | 5 |
| Total price of these items = | ₹ | 4 | 1 | 8 | . | 9 | 5 |

Total amount paid to the shopkeeper = ₹500

Amount get back from shopkeeper = ₹500 – ₹418.95

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 9 | 9 | | 9 | |
| | | 4 | 10 | 10 | | 10 | 10 |
| ₹ | 5 | 0 | 0 | 0 | . | 0 | 0 |
| – ₹ | 4 | 1 | 8 | 9 | . | 5 | |
| ₹ | 0 | 8 | 1 | 0 | . | 0 | 5 |

Thus, the shopkeeper returned ₹81.05 to Anaya.

**8.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 1 | 1 | |
| Cost of a shirt = | ₹ | 2 | 6 | 6 | 3 | . | 7 | 5 |
| Cost of a trousers = | ₹ | 2 | 4 | 6 | 2 | . | 4 | 5 |
| Cost of a pair of socks = + | ₹ | 0 | 1 | 7 | 5 | . | 0 | 5 |
| Total cost of these items = | ₹ | 5 | 3 | 0 | 1 | . | 2 | 5 |

Total amount in her account = ₹6000

Balance left in Riya's account = ₹6000 – ₹5301.25

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 9 | 9 | 9 | | 9 | |
| | | 5 | 10 | 10 | 10 | | 10 | 10 |
| ₹ | 6 | 0 | 0 | 0 | · | 0 | 0 | |
| – ₹ | 5 | 3 | 0 | 1 | · | 2 | 5 | |
| ₹ | 0 | 6 | 9 | 8 | · | 7 | 5 | |

Thus, Riya has ₹698.75 left in her account after making the payment.

## Practice Time 13C

**1.** (*a*)

| | | | | |
|---|---|---|---|---|
| | | (1) | (3) | |
| | ₹ | 1 | 4 | 8 |
| × | | | | 4 |
| | ₹ | 5 | 9 | 2 |

Hence, ₹148 × 4 = ₹592

(*b*)

| | | | | | |
|---|---|---|---|---|---|
| | | | (5) | (6) | (4) |
| | ₹ | | 7 | 6 . | 7 6 |
| × | | | | | 8 |
| | ₹ | 6 | 1 | 4 . | 0 8 |

Hence, ₹76.76 × 8 = ₹614.08.

(*c*)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (5) | (6) | (4) | |
| | ₹ | 2 | 1 | 4 . | 6 | 8 |
| × | | | | | 1 | 0 |
| | ₹ | 0 | 0 | 0 . | 0 | 0 |
| + | ₹ | 2 | 1 | 4 6 . | 8 | 0 |
| | ₹ | 2 | 1 | 4 6 . | 8 | 0 |

Hence, ₹214.68 × 10 = ₹2146.80.

(*d*)

| | | | | | | |
|---|---|---|---|---|---|---|
| | | (1) | | | (1) | (1) |
| | | (2) | (1) | | (2) | (2) |
| | ₹ | 3 | 5 | 4 0 . | 6 | 5 |
| × | | | | | 2 | 4 |
| | ₹ | 1 | 4 | 1 6 2 . | 6 | 0 |
| + | ₹ | 7 | 0 | 8 1 3 . | 0 | 0 |
| | ₹ | 8 | 4 | 9 7 5 . | 6 | 0 |

Hence, ₹3540.65 × 24 = ₹84975.6.

**2.** (*a*)

$$6\overline{)64.50}\,(10.75$$
$$-\,6\downarrow$$
$$045$$
$$-\,42\downarrow$$
$$030$$
$$-\,30$$
$$0$$

Hence, ₹64.50 ÷ 6 = ₹10.75

(*b*)

$$9\overline{)315.54}\,(35.06$$
$$-\,27\downarrow$$
$$045$$
$$-\,45\downarrow$$
$$054$$
$$-\,54$$
$$0$$

Hence, ₹315.54 ÷ 9 = ₹35.06

(*c*)

$$12\overline{)502.80}\,(41.90$$
$$-\,48\downarrow$$
$$022$$
$$-\,12\downarrow$$
$$108$$
$$-\,108$$
$$0$$

Hence, ₹502.80 ÷ 12 = ₹41.90

(*d*)

$$15\overline{)3056.10}\,(203.74$$
$$-\,30\downarrow\downarrow$$
$$056$$
$$-\,45\downarrow$$
$$111$$
$$-\,105\downarrow$$
$$0060$$
$$-\,60$$
$$0$$

Hence, ₹3056.10 ÷ 15 = ₹203.74

**3.** The cost of 1 kg wheat = ₹22.50

So, the cost of 15 kg wheat = ₹22.50 × 15

= ₹337.50

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (1) | (2) | | |
| | ₹ | | 2 | 2 . | 5 | 0 |
| × | ₹ | | | | 1 | 5 |
| | | 1 | 1 | 2 . | 5 | 0 |
| + | | 2 | 2 | 5 . | 0 | 0 |
| | ₹ | 3 | 3 | 7 . | 5 | 0 |

**4.** Cost of one pen drive = ₹1050.65

So, the cost of 15 pen drives = ₹1050.65 × 15

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | (2) | (3) | (2) | |
| | ₹ | | 1 | 0 | 5 0 . | 6 | 5 |
| × | | | | | | 1 | 5 |
| | | | 5 | 2 | 5 3 . | 2 | 5 |
| + | | 1 | 0 | 5 | 0 6 . | 5 | 0 |
| | ₹ | 1 | 5 | 7 | 5 9 . | 7 | 5 |

Thus, the cost of 15 pen drives is ₹15759.75.

**5.** Cost of one bicycle = ₹5875.00 or ₹5875

So, the cost of 5 bicycles = ₹5875 × 5

| | | | | | |
|---|---|---|---|---|---|
| | | | (4) | (3) | (2) |
| | ₹ | 5 | 8 | 7 | 5 |
| × | | | | | 5 |
| | ₹ | 2 | 9 | 3 | 7 5 |

Thus, the cost of 5 bicycles is ₹29375.

**6.** Radhika's monthly salary = ₹48550.75

So, Radhika's annualy salary = ₹48550.75 × 12

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (1) | (1) | (1) | | (1) | (1) |
| | ₹ | | 4 | 8 | 5 | 5 | 0 . 7 | 5 |
| × | | | | | | | | 1 2 |
| | | | 9 | 7 | 1 | 0 | 1 . 5 | 0 |
| + | | 4 | 8 | 5 | 5 | 0 | 7 . 5 | 0 |
| | ₹ | 5 | 8 | 2 | 6 | 0 | 9 . 0 | 0 |

Thus, Radhika's annual salary is ₹582609.

**7.** Cost of 10 kg rice = ₹650.00 or ₹650

So, the cost of 1 kg rice = ₹650 ÷ 10

$$10\overline{)650}\,(65$$
$$-\,60\downarrow$$
$$050$$
$$-\,50$$
$$0$$

Thus, the cost of 1 kg rice = ₹65

**8.** Total expenditure for five children = ₹2416

Share of each child when they contribute equally = ₹2416 ÷ 5

$$5\overline{)2416}\,(483.2$$
$$-\,20\downarrow$$
$$41$$
$$-\,40\downarrow$$
$$016$$
$$-\,15$$
$$10$$
$$-\,10$$
$$0$$

Thus, each child contribute ₹483.20.

**9.** Mona gets pocket money per week = ₹40.60

So, Mona gets pocket money daily = ₹40.60 ÷ 7

$$7\overline{)40.60}\,(5.80$$
$$-\,35\downarrow$$
$$56$$
$$-\,56$$
$$0$$

Thus, Mona gets ₹5.80 as daily pocket money.

**10.** Total amount with Iqra = ₹76

She has 4 times money as Prachi.

So, amount with Prachi

= ₹76 ÷ 4 = ₹19

Therefore, Iqra has more money than Prachi by

= ₹76 – ₹19 = ₹57

Thus, Iqra has ₹57 more than Prachi.

```
4)76(19
 -4
  36
 -36
   0
```

## Practice Time 13D

**APNA STATIONERY**

Name: _____ Date: _____

Address: _____ Bill No. 125

| S.No. | Items | Quantity | Rate (₹) | Amount (₹) |
|---|---|---|---|---|
| 1. | Notebooks | 6 | 55.40 | 332.40 |
| 2. | Files | 8 | 25.00 | 200.00 |
| 3. | Pens | 2 | 60.50 | 121.00 |
| 4. | Pencils | 12 | 5.75 | 69.00 |
| | | | **Total =** | 722.40 |

**2.** (*a*) Cost of 1 kg potatoes = ₹16.50

Cost of 1 kg beetroot = ₹60.00 or ₹60

Cost of 2 kg tomatoes = ₹85 × 2 = ₹170

Total cost of these items

= ₹16.50 + ₹60.00 + ₹170 = ₹246.5

Total amount with Gyan = ₹500

Therefore, amount left with Gyan

= ₹500 – ₹246.5 = ₹253.5

(*b*) Cost of 1 kg carrots = ₹40.30

Cost of 2 kg tomatoes = ₹85.00 × 2 = ₹170

Cost of 1 kg brinjals = ₹25.25

Total cost of these items

= ₹40.30 + ₹170.00 + ₹25.25 = ₹235.55

Total amount with Siya = ₹350

Therefore, amount left with Siya.

= ₹350 – ₹235.55 = ₹144.45

(*c*) Cost of 1 kg cucumber = ₹25.90

Cost of 2 kg beetroots = ₹60 × 2 = ₹120

Cost of 1 kg cauliflower = ₹35.10

Total cost of these items

= ₹25.90 + ₹120.000 + ₹35.10 = ₹181

Total amount with Meera = ₹200

Therefore, amount left with Meera

= ₹200 – ₹181.00 = ₹19

## Chapter Assessment

**1.** (*a*) (*ii*) Total amount

= ₹500 + ₹500 + ₹200 + ₹20 + ₹20 + ₹5 + ₹5 + ₹5 + ₹5 = ₹12060.

(*b*) (*iii*) ₹1 + ₹2 + ₹5 + ₹10 + ₹20 + ₹50 + ₹100 = ₹188

(*c*) (*iii*) Cost of a chocolate box = ₹220

So, the cost of biscuits box

= (₹220 – ₹30) = ₹190

Total cost of chocolate box and biscuits box

= ₹220 + ₹190 = ₹410

(*d*) (*i*) Cost of one pencil = ₹4.50

Cost of 18 pencils = ₹4.50 × 18 = ₹81

**2.** Donation for flood disaster relief fund of each student = ₹500

Anaya took 2 notes of ₹200 = 2 × ₹200 = ₹400

5 notes of ₹10 = ₹5 × ₹10 = ₹50

9 coins of ₹5 = 9 × ₹5 = ₹45

Total amount with Anaya

= ₹400 + ₹50 + ₹45 = ₹495

No, she carried ₹495 which is ₹5 less than ₹500.

**3.** Radhika withdrew:

Two 200-rupee notes = 2 × ₹200 = ₹400

Fifty-one 100-rupee notes = 51 × ₹100 = ₹5100

Five 500-rupee notes = 5 × ₹500 = ₹2500

Total amount withdrawn from the ATM by Radhika = ₹400 + ₹5100 + ₹2500 = ₹8000

**4.** Aarush borrowed from his friend = ₹3000

The very next day, he returned,

Three notes of ₹500 = 3 × ₹500 = ₹1500

and seven notes of ₹100 = 7 × ₹100 = ₹700

Total amount = ₹1500 + ₹700 = ₹2200

Amount of money Aarush owes his friend

= ₹3000 – ₹2200 = ₹800

**5.** During a visit to Agra,

Money spent on hotel charges = ₹4820

Money spent on transport = ₹3000

Money spent on food = ₹1850

Total money spent on trip

= ₹4820 + ₹3000 + ₹1850 = ₹9670

Money spent after discount = ₹9670 – ₹500

= ₹9170

Thus, ₹9170 total amount paid by Mr. Mahesh.

**6.** (*a*)

**COLD-COLD ICE-CREAM PARLOUR**

Name: Deepti Date: _____

Address: _____ Bill No. ____

| S.No. | Items | Quantity | Rate (₹) | Amount (₹) |
|---|---|---|---|---|
| 1. | Pineapple | 2 | 60.00 | 120.00 |
| 2. | Almond paraline | 1 | 70.00 | 70.00 |
| 3. | Strawberry | 3 | 80.00 | 240.00 |
| 4. | Butter-scotch ice-cream | 1 | 100.00 | 100.00 |
| | | | **Total =** | 530.00 |

(*b*)

**COLD-COLD ICE-CREAM PARLOUR**

Name: Chaya Date: _____

Address: _____ Bill No. ____

| S.No. | Items | Quantity | Rate (₹) | Amount (₹) |
|---|---|---|---|---|
| 1. | Chocolate | 1 | 55.00 | 55.00 |
| 2. | Tooti Frooti | 3 | 75.00 | 225.00 |
| 3. | Vanila Sugarfree | 2 | 90.00 | 180.00 |
| 4. | Pineapple | 1 | 60.00 | 60.00 |
| 5. | Butter-scotch Ice-cream | 2 | 100.00 | 200.00 |
| | | | **Total =** | 720.00 |

**7.** Cost of a pair of headphones = ₹1550.00
Cost of a power bank = ₹1030.00
Discount on second item = ₹225.00
Cost of power bank after discount
= ₹1030.00 – ₹225.00 = ₹805
Total cost of both the items after discount
= ₹1550.00 + ₹805.00 = ₹2355.
Thus, ₹2355 amount of money need to pay for the two items.

**8.** Rekha has only one 100-rupee note = ₹100
One 50-rupee note = ₹50
and three 5-rupee coins = 3 × ₹5 = ₹15
Total amount with Rekha
= ₹100 + ₹50 + ₹15 = ₹165
Rekha picks up vegetables worth ₹200
∴ More money she needs to buy the vegetables
= ₹200 – ₹165 = ₹35
Thus, she needs ₹35 more to buy those vegetables.

**9.** Earning of Rajesh in an hour = ₹71
His working hours = 6 hours
His earning in 6 hours = ₹71 × 6 = ₹426
His earning in a week = 6 × ₹426 = ₹2556
(∵ Sunday is a holiday)
Thus, Rajesh earns ₹2556 in a week.

**10.** Cost of 8 sketch pens = ₹72.00
So, cost of 1 sketch pen = ₹72.00 ÷ 8 = ₹9
Amount of money with Neha = ₹45
Number of sketch pens that can be bought with the amount she has = ₹45 ÷ 9 = 5
Thus, 5 sketch pens can be bought with ₹45.

## Mental Maths (Page 239)

**1.** (*c*) ₹1 = 100 paise
Number of 10-paise coins = 100 ÷ 10 = 10
Thus, ten 10-paise coins make ₹1.

**2.** Number of 20-rupee notes to make ₹1000
= ₹1000 ÷ ₹20 = 50
Thus, 50 twenty-rupee notes make ₹1000.

**3.** (*a*) ₹2.50 + ₹7.50 = ₹10 (∵ ₹10 – ₹2.50 = ₹7.50)
(*b*) ₹20 – ₹10.25 = ₹9.75

**4.** Cost of 1 geometry box = ₹80
Amount of money with Raman = ₹55
Amount of money he short off = ₹80 – ₹55 = ₹25
Thus, he needs ₹25 more to buy the geometry box.

**5.** Cost of 12 crayons packet = ₹36
So, cost of 1 crayon = ₹36 ÷ 12 = ₹3
Thus, the cost of 1 crayon is ₹3.

## Brain Sizzlers (Page 239)

Total number of coins in the donation box = 1000
Half of them are of ₹10 coins
So, number of ₹10 coins = $\frac{1000}{2}$ = 500 coins
So, value of these coins = 500 × ₹10 = ₹5000
One-fourth of remaining amount are of ₹5 coins,
So, number of ₹5 coins = $\frac{1}{4}$ of 500 = 125 coins
So, value of these coins = 125 × ₹5 = ₹625
Rest coins are of ₹2. So, number of 2-rupee coins
= 1000 – 500 – 125 = 375 coins
So, value of these coins = 375 × ₹2 = ₹750
Total amount in a donation box = ₹5000 + ₹625 + ₹750 = ₹6375
Thus, ₹6375 was collected in a donation box.

# CHAPTER 14 : DATA HANDLING

## Get Ready

| Stationary | Tally Marks | Number of Items |
|---|---|---|
| Pencil | \|\|\|\| | 4 |
| Notebook | \|\|\| | 3 |
| Pen | \|\| | 2 |
| Sharpener | \|\| | 2 |
| Eraser | \|\|\| | 3 |
| Colour Box | \|\| | 2 |

## Practice Time 14A

**1.**

| Colours | Tally marks | Number of students |
|---|---|---|
| Red | 𝍸 \| | 7 |
| Pink | 𝍸 | 5 |
| Blue | 𝍸 \|\| | 6 |
| Green | \|\| | 2 |
| Black | 𝍸 | 5 |
| Purple | \|\|\|\| | 4 |
| Yellow | \|\|\| | 3 |
| White | \| | 1 |
| Brown | \|\| | 2 |

(*a*) 7 students like red colour.

(*b*) 3 students like yellow colour.

(*c*) White is the least favourite colour of the students.

(*d*) Red is the most favourite colour of the students.

**2.**

| Name of Games | Number of Students |
|---|---|
| Football | 6 |
| Cricket | 7 |
| Badminton | 10 |
| Volleyball | 2 |
| Basketball | 5 |

**Key:** = 6 students.

**3.**

| Mode of Transports | Number of Children |
|---|---|
| School bus | 9 |
| Car | 3 |
| Walking | 4 |
| Auto-rickshaw | 6 |
| Bicycle | 4 |

**Key:** = 5 students.

**4.** (*a*) GK books is read by the maximum number of students.

(*b*) Number of students who read comics = 90
Number of students who read storybooks = 60
Difference = 90 – 60 = 30

(*c*) Total number of students
= 60 + 90 + 100 + 40 + 40 = 330

**5.** (*a*) 120 orange-trees are there in the orchard.

(*b*) Total number of fruit-trees in the orchard
= 15 × 4 + 15 × 6 + 15 × 10 + 15 × 8 + 15 × 5
= 60 + 90 + 150 + 120 + 75 = 495

(*c*) Number of Apple trees = 15 × 6 = 90
Number of Mango trees = 15 × 4 = 60
∴ 90 – 60 = 30 more Apple trees are there than Mango trees.

(*d*) Mango and Apple trees together is equal to the number of Guava trees in the orchard.

## Practice Time 14B

**1.** (*a*) Taj mahal was the most popular among the students.

(*b*) 14 students visited the Taj mahal.

(*c*) Number of students visited the Red Fort = 12
Number of students visited the Zoo = 8
12 – 8 = 4 students visited the zoo than the red fort.

(*d*) Qutub Minar was the least favourite among the students.

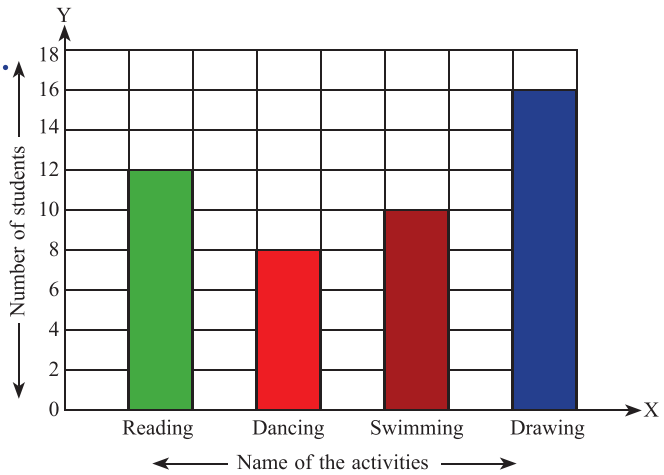
**2.** (*a*) Siya saved ₹300 in the month of June.

(*b*) She saved least amount of money in the month of March

(*c*) She saved most amount of money in the month of June.

(*d*) Her total savings in six months = 200 + 150 + 100 + 250 + 150 + 300 = 1150.

**3.**



## Brain Sizzlers (Page 250)

1. Maximum number of students enrolled in Art activity.
2. Minimum number of students enrolled in embroidery activity.
3. 10 + 11 = 21 students participated in dance and music.
4.

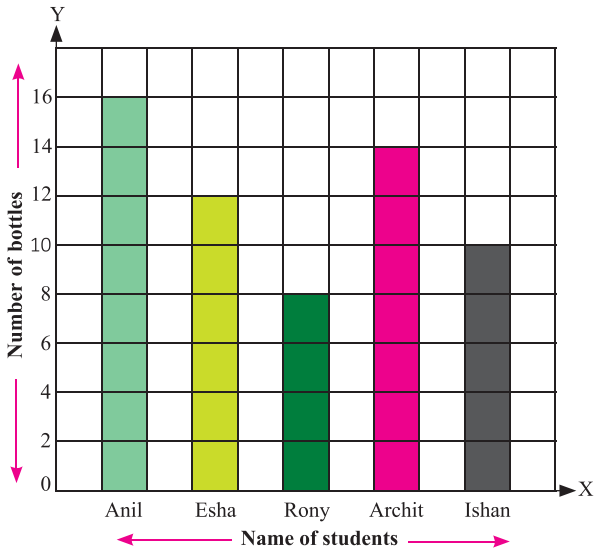
| Activities | Tally marks | Number of Students |
|---|---|---|
| Art | 𝍸 𝍸 \|\|\|\| | 14 |
| Drawing | 𝍸 𝍸 \|\|\| | 13 |
| Dance | 𝍸 𝍸 | 10 |
| Embroidery | \|\|\|\| | 4 |
| Music | 𝍸 𝍸 \| | 11 |
| Yoga | 𝍸 𝍸 \|\| | 12 |

## Chapter Assessment

1. (*a*) (*iii*) The information collected in numeric form is called data.
   (*b*) (*i*) The representation of data in which pictures are used is called pictograph.
   (*c*) (*ii*) Each bar in a bar graph has equal width.
2. (*a*) There are (2 × 4) = 8 pink kites are sold.
   (*b*) Red colour kite was sold most by the shopkeeper.
   (*c*) Pink colour kite was sold least by the shopkeeper.
   (*d*) Total number of kites sold by the shopkeeper on Independence day
   = 4 × 7 + 4 × 4 + 4 × 6 + 4 × 2 + 4 × 4 + 4 × 3 = 28 + 16 + 24 + 8 + 16 + 12 = 104
3.

| Classes | Number of Saplings |
|---|---|
| I | 🌱 🌱 🌱 🌱 🌱 |
| II | 🌱 🌱 🌱 🌱 🌱 🌱 |
| III | 🌱 🌱 🌱 🌱 🌱 🌱 🌱 |
| IV | 🌱 🌱 🌱 🌱 🌱 🌱 🌱 🌱 🌱 🌱 |
| V | 🌱 🌱 🌱 🌱 🌱 🌱 🌱 🌱 |
| VI | 🌱 🌱 🌱 🌱 🌱 🌱 🌱 🌱 |
| Key: 🌱 = 10 Saplings | |

   (*a*) Students of class II planted 60 saplings.
   (*b*) Students of class IV planted 100 saplings.
   (*c*) Class IV planted the highest number of saplings.
   (*d*) Class I planted the minimum number of saplings.
   (*e*) Total number of saplings planted by all the classes = 50 + 60 + 70 + 100 + 80 + 80 = 440
4. (*a*) 120 students went to the zoo.
   (*b*) Class IV has 40 students that went to the zoo.
   (*c*) 3 classes, i.e., class I, class II and class V students have less than 30 students that visited the zoo.
   (*d*) 25 students of class V went to the zoo.
   (*e*) Total students = 120
   No. of students who can accommodate in a bus = 30
   ∴ 120 ÷ 30 = 4
   Thus, 4 buses are required for all to go to the zoo.
5.




## MODEL TEST PAPER - 2

**A.** 1. (*a*) The flag post is always perpendicular to the ground.
2. (*d*) The square has 4 line(s) of symmetry.
3. (*b*) The letter H has 2 lines of symmetry.
4. (*b*) 20 days = 20 ÷ 7 weeks = 2 weeks 6 days.

$$\begin{array}{r} 7\overline{)\,20\,(\,2} \rightarrow \text{weeks} \\ -\,14 \\ \hline 06 \rightarrow \text{Days} \end{array}$$

5. (*b*) There are 100 years in 1 century.
6. (*a*) Diameter of a circle is two times of the radius of the circle.
7. (*c*) Perimeter of a rectangle = 2 × (length + breadth)

**8.** (*c*) 2 kL 3 hL = (2 × 100) daL + (3 × 10) daL
= 200 daL + 30 daL = 230 daL.

**9.** (*d*) Tally mark 𝍸 represents 5 observations.

**10.** (*b*) Since, 1 ton = 1000 kg and 1 quintal = 100 kg
So, 3 tons 5 quintals
= (3 × 1000) kg + (5 × 100) kg
= 3000 kg + 500 kg = 3500 kg

**B. 1.** A brick has 12 edges.

**2.** A triangle has 3 sides and 3 corners.

**3.** A cuboidal box has 6 faces and 8 corners.

**4.** Diameter divides the circle into two equal halves.

**5.** 2, 4, 8, 14, 22, 32. [∵ 2 + 2 = 4, 4 + 4 = 8, 8 + 6 = 14, 14 + 8 = 22, 22 + 10 = 32]

**6.** Representation of data using rectangles is called a bar graph.

**7.** 11:55 p.m. can be written in 24-hour clock as 2355 hours.

**8.** 48 km 10 hm 7 dam = (480000 + 10000 + 100) dm = 490700 dm.

**9.** Radii of circle are of equal length.

**10.** Circumference is the distance around the circle, it is the length of the circle.

**C. 1.** Water carried by a water tanker = 16 kL
Water distributed in colony A = 6 kL 950 L
Water distributed in colony B
= 16 kL – 6 kL 950 L = 9 kL 50 L

| | KL | | | L | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | . | 0 | 0 | 0 |
| – | | 6 | . | 9 | 5 | 0 |
| | | 9 | . | 0 | 5 | 0 |

**2.** (*a*) Rohan spend for the meal = fried rice + soup = ₹75.50 + ₹110.50 = ₹186

(*b*) Zoya spend for the meal = Salad + lemon tea = ₹250.25 + ₹55.00 = ₹305.25

**3.** (*a*) 12 August to 23 September
August has 31 days
So, 31 – 12 = 19 days.
Ist September to 23 September = 22 days
= 41 days.

(*b*) 29 March to April 5
March has 31 days
So, 31 – 29 = 2 days.
Between 1st April to 5 April = 4 days.
Total number of days = 2 days + 4 days
= 6 days

**4.** Cost of one potato bun = ₹15.00
Cost of 5 buns = ₹15.00 × 5 = ₹75.00
She gave to the shopkeeper = ₹100
Money she will get back = ₹100 – ₹75 = ₹25
Thus, she will get back ₹25 from the shopkeeper.

**5.** Total weights of onions = 42 kg
Weight of onions sold = 22 kg 250 g
Onions left with him = 42 kg – 22 kg 250 g

| | kg | | | g | | |
|---|---|---|---|---|---|---|
| | 4 | 2 | . | 0 | 0 | 0 |
| – | 2 | 2 | . | 2 | 5 | 0 |
| | 1 | 9 | . | 7 | 5 | 0 |

Thus, 19 kg 750 g onions are left with him.

**6.** Length of rectangular field = 112 m
Breadth of rectangular field = 85 m
Perimeter of rectangular field
= 2 (*l* + *b*) = 2 (112 + 85) = 2 × 197 m = 394 m
Length of barbed wire to go 5 rounds
= 5 × 394 m = 1970 m

**7.** (*a*) Name of this polygon = Quadrilateral ABCD

(*b*) Name of four vertices = A, B, C, D

(*c*) Name of four line segments
= $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{DA}$

(*d*) Name of all four angles = ∠ABC, ∠BCD, ∠CDA, ∠DAB.

**8.**

**Mark Obtained by four Friends in Maths Test**

