

Mathematics

Ver. 1.0



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PREFACE

The Teacher's Resource Manual is specially developed for teachers using **TouchPad Mathematics** 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 by the teacher's community will be gratefully acknowledged by us.

—Publisher

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NUMBERS

LEARNING OBJECTIVES

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

- ◆ build, read and write 4-digit numbers
- ◆ understand the place value and face value of a digit in 4-digit numbers
- ◆ write expanded form and short form of numbers
- ◆ compare and order 4-digit numbers
- ◆ understand the concept of successor and predecessor
- ◆ identify even and odd numbers
- ◆ represent 4-digit numbers on an abacus
- ◆ form the greatest and smallest numbers
- ◆ round off the numbers to the nearest tens

LESSON PLAN

Suggested number of periods: 20

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, dienes blocks, some real-life objects like clock, pen, pencils, etc.

Keywords: Smallest and greatest 3-digit numbers, smallest and greatest 4-digit numbers, successor, predecessor, even and odd numbers, rounding up, rounding down, etc.

Pre-requisite knowledge: Students must be familiar with numbers up to 1000, their number names, the smallest and greatest 3-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: 1–2

Topics: Introduction to 4-digit numbers, Counting by thousands

Suggested extra teaching aids: dienes blocks, Touchpad Mathematics 3 pages 9–11

ENGAGE

Introduce the topic in the classroom with some interesting activities, like asking the question:

- Which year is going on?
- How many digits are in the year?

You can also use the “Warm Up” section of the book for this purpose.



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

- Which is the smallest 3-digit number?
- Which is the greatest 3-digit number?

EXPLORE

- The teacher will revise the learners' previous knowledge of 3-digit numbers with the help of the following game.
- Divide the class into 2 teams. Ask 3 children from Team A to step forward in front of the class.
- The 3 children will consult among themselves and decide how to present a number, say, 207.
- The first child from Team A will clap twice, the second child will not clap, and the third child will clap seven times.
- The members of team B will have to guess the number.
- Then the teacher will ask some questions from members of Team B like—the number name of the number formed; the place/face value of each digit.
- For every correct answer they will be awarded a point.
- The teacher can change the role of teams.

[Collaborative Learning]

EXPLAIN

Write on the board $999 \rightarrow$ Greatest 3-digit number.

Explain to the class that as the combination of 9 flats (Plates), 9 rods and 9 small cubes represents the number 999.

When we add 1 more small cube, *i.e.*, number 1 to 999, we get 1000, it is the smallest 4-digit number.

$$\begin{array}{r} 999 \rightarrow \text{greatest 3-digit number} \\ + \quad 1 \\ \hline 1000 \rightarrow \text{smallest 4-digit number} \end{array}$$

Explain that 10 small cubes make 1 rod, 10 rods make a flat (Plate) and 10 flats make a large cube, so we use a large cube to represent 1000.

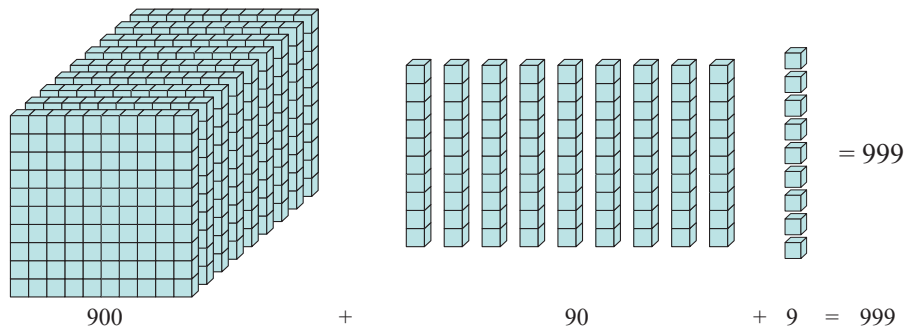
Also, tell them that a 4-digit number starts from the thousands place in the place value chart.

Next, introduce the topic, counting by thousands.

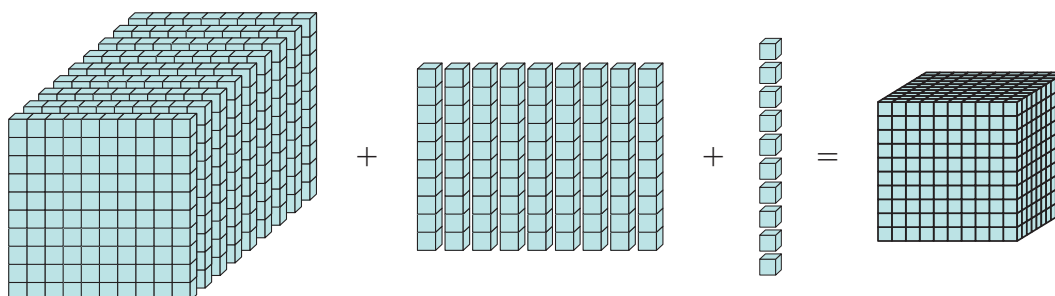
Represent 1000, 2000, 3000, ..., 9000 by dienes blocks. Explain the use of comma to separate the thousands digit from the other digits and the number names of each.

ELABORATE

Represent the number 999 on the table using the dienes blocks.



Now, add one more cube in the combination and let the class try to identify the number shown by the combination.



Tell the class that the number represented by the combination is now 1000.

The number 1000 is represented by a large cube of dienes blocks.

And a new period—the thousands period appears in the place value chart with the introduction of 4th place called thousands place starting from right.

Thousands Period		Ones Period	
Thousands	Hundreds	Tens	Ones
1	0	0	0

Put a thousand cube on the table alongside the previous one and ask the students, about the number of cubes. And explain to them, by writing on the board, that it represents 2000.

Keep adding thousands cubes on the table and writing the corresponding numbers on the board till 9000.

Once this has been introduced to the students using concrete experience, introduce the use of comma for thousands period and then read the number names of each.

[Experiential Learning]

EVALUATE

- Which is the smallest 1-digit number?
- Which is the biggest 1-digit number?
- Which is the smallest 2-digit number?
- Which is the biggest 2-digit number?

ENHANCE

Ask students to watch the video using the links given below:

- www.orangewebsupport.co.in,
- https://www.youtube.com/watch?v=jgtLtk_P_BY

Periods: 3–6	Topics: Forming and Reading 4-digit numbers, 4-digit numbers on the Abacus	Suggested extra teaching aids: abacus set, dienes blocks, number cards, Touchpad Mathematics 3 pages 12–16
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ENGAGE

First, ask some questions based on the previous concepts.

Like: Show 3 or 5 large dienes cubes and ask the students which number it shows, and instruct them to write the number on the board using comma, along with the number name.

- Introduce the topics: formation of 4-digit numbers, reading and writing 4-digit numbers and 4-digit numbers on the abacus.

Show an abacus with four spikes to the class.

EXPLORE

- Three children will be lined up, each holding a number card 9. The teacher will ask the students to state the number name. Next, a student holding the number card 1 will be asked to stand next to 9 in the ones place. The teacher will demonstrate how adding 1 to the greatest 3-digit number results in the smallest 4-digit number. Thus, with the help of digit flash cards and the blackboard work, 4-digit numbers will be introduced.
- Explain the position of the thousands place in the place value chart.

Forming and Reading 4-digit Numbers

- The teacher will write a few 4-digit numbers on the blackboard and encourage the students to read the number name. She will use the 4 spikes on the abacus to show some numbers and encourage the students to tell the numeral formed. Focus on numbers with zeros in them.
- Refer to Pages 12-13 to further clarify the concepts.

EXPLAIN

Explain to the class that groups of ones, tens, hundreds and thousands are used to build a 4-digit number.

Next, explain to the class about building of 4-digit numbers with an example. By taking the blocks of 4 thousands, 3 hundreds, 2 tens and 6 ones *i.e.*, $4000 + 300 + 20 + 6$, we form the number 4326.

Give some examples of 4-digit numbers, and ask the students to practise writing them on the place value chart and also their number names.

Explain to the class that while reading the 4-digit numbers first read the thousands and hundreds digits separately with their place name and then the tens and ones digits together normally.

Use different examples to explain the method of reading 4-digit numbers.

Explain that an abacus with four spikes is used for representing a 4-digit number.

ELABORATE

Draw a place value chart on the board.

- Write a 4-digit number in it, say 4326 and ask a student to identify the ones, tens, hundreds and thousands in it.
- Use 4 thousands–cubes, 3 hundreds–flats, 2 tens–rods and 6 ones–cubes to demonstrate the number 4326.
- Also show the expanded form as: $4000 + 300 + 20 + 6 = 4326$.
- Guide them to write the 4-digit numbers in the place value chart.
- Also, write the number 4326 in words on the board and get the class to read them aloud.
- Repeat for some other 4-digit numbers.

[Conceptual Understanding]

Write some more 4-digit numbers in the place value chart.

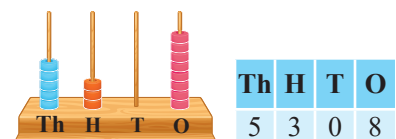
Now, read the numbers one by one in the chart pointing its digits and ask the class to repeat them aloud after you.

Write a 4-digit number, say 5308 on the board.

Take an abacus with four spikes and keep it on the table. Now make the number 5308 by using the beads on the abacus.

Next represent some more 4-digit numbers on the abacus and ask the class to read them aloud.

[Experiential Learning]



EVALUATE

Classwork: Ask to solve Q.1, 2 and 6 of Exercise 1A.

Homework: Ask to solve the remaining Questions of Exercise 1A.

ENHANCE

- Discuss and motivate the students to solve Q.7 of Exercise 1A.
- Ask the students to watch the video on the given subtopics on “www.orangewebsupport.co.in”.

Periods: 7–8

Topic: Face value and Place value

**Suggested extra teaching aids: newspaper,
dienes blocks,
Touchpad Mathematics 3 pages 16–19**

ENGAGE

After asking some questions based on the previous concepts,

Recall the concept of face value and place value of digits in a number.

- Introduce subtopic: expanded form and short form.

EXPLORE

Take some paper slips and write a different 4-digit number on each slip.

Put these number slips in a bowl.

Divide the class into groups of 3-4 students and call a group near the bowl. Ask the students of a group to choose a slip from the bowl and read the number aloud.

Then ask them to split the number into thousands, hundreds, tens and ones.

Let them read out the place value of each digit in the number.

[Experiential Learning]

- Newspaper activity: Students will be asked to bring 2 cut-outs each of 3-digit and 4-digit numbers from old newspapers and magazines and paste them in the notebook. They will be asked to write the number names and expanded forms of those numbers.

EXPLAIN

After recalling the concept of face value and place value of a digit in a number, explain that the face value of a digit does not depend on its position in the number, while the place value of a digit in a number depends on its position. Make them understand the place value of zero in a number is always zero, regardless of its position.

Recall that when a number is written as the sum of the place values of its digits, the number is said to be in its expanded form and when we write a number without showing the place values of its digits, the number is said to be in short form. Like:

$$\begin{array}{ccc} 7584 & = & 7000 + 500 + 80 + 4 \\ \downarrow & & \downarrow \\ \text{Short} & & \text{Expanded} \\ \text{form} & & \text{form} \end{array}$$

ELABORATE

The face value of a digit is the value of the digit itself.

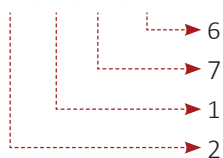
The place value of a digit in a number is the value of the digit multiplied by the value of its place.

It is obtained by finding the product of the face value of the digit and the value of its corresponding place in the number.

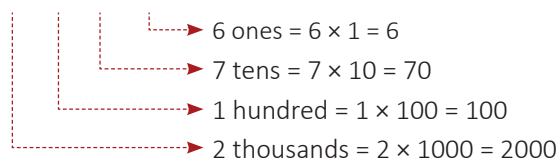


Face Value

Th	H	T	O
2	1	7	6

**Place Value**

Th	H	T	O
2	1	7	6

**[Conceptual Learning]**

Divide the class into groups and provide additional practice of expanded and short forms of numbers using arrow cards.

- Encourage the students to find the expanded form of different numbers.
- Help them to find the place, place value and face value of each digit of the number and then express the number in its expanded form as well as short form.

EVALUATE

Classwork: Ask the students to solve Q.1 and Q 2 of Exercise 1B.

Homework: Ask to solve Q.3, 4 and 5 of Exercise 1B.

ENHANCE

Ask to watch the video on the given sub-topics on “www.orangewebsupport.co.in”.

Periods: 9–10**Topics: Comparing numbers,
Greatest and Smallest numbers****Suggested extra teaching aids:
Touchpad Mathematics 3 pages 19–23****ENGAGE**

Before introducing comparison of numbers. Review comparison of numbers up to 1000.

- Next introduce the topic: greatest and smallest numbers.

EXPLORE

- The teacher will explain that the word ‘compare’ means to note the similarity or dissimilarity between two things. She will use examples from real life and ask the students to compare. For example, whether the Maths or English book is heavier, whether the almanac or their Hindi book is longer, and who is taller—their mother or father, etc.
- Once the students understand the term comparison, using the explanation given on pages 19 to 21, they will be explained how numbers are compared. Revise the rules of comparison.

EXPLAIN

Recall the students how they can compare the numbers with the help of the symbols ($>$, $<$ and $=$). Then explain the rules for comparing larger numbers. Tell them that larger numbers can also be compared in the same way as smaller numbers.

First, explain when the numbers have different number of digits.

Then, explain the comparison of numbers having the same number of digits.

Explain to the class the method of finding the greatest or the smallest number in a group of three or more numbers.



ELABORATE

- Begin with numbers with different number of digits, for example, $6412 > 986$.
- Next, introduce comparison of 4-digit numbers having the same number of digits, for example, 6585 and 7120, telling the class that here, the thousands place digits are different.

Since 6 thousands $<$ 7 thousands, so $6585 < 7120$.

Now, introduce the comparison of 4-digit numbers where thousands digits are the same but the hundreds digits are different, for example, 6855 and 6321.

Since 8 hundreds $>$ 3 hundreds, so $6855 > 6321$.

Next, introduce the comparison of 4-digit numbers where thousands and hundreds digits are the same, for example, $4729 > 4716$.

In the same way, introduce the comparison of 4-digit numbers where digits at thousands, hundreds and tens places are the same only the ones digits are different.

Use different coloured chalks to highlight the different places.

[Experiential Learning]

Play a simple game of guessing the biggest number as follows:

Write three different numbers, for example, 7839, 999 and 5326 in the place value chart on the board.

Ask the class “which one is the smallest number?” and accept the correct answer and cross the number on board.

Next, ask them to find the bigger of two numbers, by comparing them as discussed above.

Accept the correct answer.

Tell the students that the number 7839 is the greatest and 999 is the smallest number in the given group.

Repeat the same for the other group of numbers.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1 and 2 of Exercise 1C.

Homework: Ask to solve Q.3 and Q.4 of Exercise 1C.

ENHANCE

Ask to watch the video on the given subtopics on “www.orangewebsupport.co.in”.

Period: 11	Topic: Ordering Numbers	Suggested extra teaching aids: number chits and bowl Touchpad Mathematics 3 pages 23–24
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ENGAGE

After the introduction, recall the meaning of ascending order and descending order of numbers with some examples.

EXPLORE

Prepare five number chits with a different 4-digit number on each and put them in a bowl. Put the bowl on the table and call a group of five students near the table. Ask each student in the group to choose a number chit. At the start signal, ask the students in the group to arrange themselves in a straight line according to the ascending order of their numbers. Ask them to do the same for arranging numbers in descending order.

Repeat the activity for different groups.

[Collaborative and Experiential Learning]



EXPLAIN

Explain how to write numbers from the smallest to the greatest for arranging numbers in ascending order and from the greatest to the smallest for arranging numbers in descending order.

ELABORATE

Write four numbers on the board: for example, 2,937; 6,543; 1,359 and 5,023.

Looking at the thousands place digits, 2, 6, 1 and 5; we find that $1 < 2 < 5 < 6$.

Thus, the four numbers in ascending order will be arranged as:

$$1,359 < 2,937 < 5,023 < 6,543$$

Th	H	T	O
2	9	3	7
6	5	4	3
1	3	5	9
5	0	2	3

→ Greatest
→ Smallest

All digits are different

EVALUATE

Classwork: Ask to solve Q.1 (a), (b), (c) and (d) of Exercise 1D.

Homework: Ask to solve the remaining Questions of Exercise 1D.

ENHANCE

Ask the students to search the internet and list ODI runs scored by the top 5 Indian batsmen and arrange them in the ascending as well as descending order.

Periods: 12–13

Topic: Building Numbers

Suggested extra teaching aids: pencil of different lengths.

Touchpad Mathematics 3 pages 25–26.

ENGAGE

Brief some previously taught topics and ask some questions based on them like ascending order and descending order, etc. Next, introduce forming the greatest and smallest numbers by using given digits.

EXPLORE

- The students will be asked to work in pairs. The teacher will instruct each pair to take at least 5 pencils/colour pencils of varying sizes. Since the students are already familiar with the concept of ascending/descending order, they will first be instructed to line up the pencils, for example, in ascending order.
- The teacher will then draw their attention to the fact that to line up pencils in ascending order, we need to arrange pencils in increasing order w.r.t. their lengths. Thus, we place the smallest pencil first and then the next longer pencil and so on. The last pencil to be placed is the longest among all the 5 pencils. Using, this analogy, the teacher will explain that to form the smallest number, we begin with the smallest digit among the given set of digits. The opposite of this will be done when explaining formation of the greatest number.

EXPLAIN

- Refer to the explanation given on page 25 for formation of the greatest/smallest numbers using the given set of digits.
- Highlight the fact that to build the greatest number, write the digits in decreasing order. To build the smallest number, write the digits in increasing order.
- Emphasise the fact that they must never begin the smallest number with a '0' from the given digits. The digit '0' occupies the second place from the left.



ELABORATE

Write four digits, say 1, 9, 8 and 2 on the board, and ask the students to arrange them in descending order. After accepting their answers, write on the board: the greatest 4-digit number using digits 1, 9, 8, and 2 is 9821. Similarly, ask the students about the ascending order of the same given digits and write on the board: the smallest 4-digit number using the digits 1, 9, 8, and 2 is 1289. Ask students to copy the digits and their ascending order, descending order and the greatest and smallest number in their notebooks.

Also, explain them while forming numbers, if one of the given digits is zero (0) then, to form the greatest number, we simply arrange the given digits in descending order.

To form the smallest number, we place '0' at the second highest place from the left and arrange the remaining digits in ascending order. Like with digits 7, 9, 0 and 3:

The greatest 4-digit number is 9,730.

The smallest 4-digit number is 3,079.

[Conceptual Understanding]

EVALUATE

Classwork: Ask to solve Q1, and 2 of Exercise 1E.

Homework: Ask to solve Q.3 of Exercise 1E.

ENHANCE

Ask the students to form ten 4-digits numbers using different digits where repetition is allowed.

Period: 14

**Topic: Successor and
Predecessor**

**Suggested extra teaching aids: pens, pencils, etc.
Touchpad Mathematics 3 page 26**

ENGAGE

After the introduction, give some real-life examples of the concept “before and after” and then link this to the successor and predecessor.

EXPLORE

Divide the class into two groups.

- Call two students from each group at a time to perform the activity.
- The first group reads out a number and the other group gives its successor and predecessor.
- Now, it is the turn of the second group. The second group also reads out a number and the first group gives the successor and predecessor of it.
- If a group gives the responses correctly, they will score 2 points for the team in that round.
- Repeat the same for other students also.

[Collaborative Learning]

EXPLAIN

Explain to the class that the successor of a number is 1 more than the number and the predecessor of a number is 1 less than the number.

ELABORATE

The number that comes just after the given number is called its successor. To find the successor of any number, add 1 to that number.

For example, the successor of 709 is $709 + 1 = 710$. Similarly, the predecessor of 709 is $709 - 1 = 708$. Explain, the successor and predecessor of some more three and four-digit numbers by referring page 26.



EVALUATE

Classwork: Ask to solve Q.1 and 2 of Exercise 1F.

Homework: Ask to solve Q.3 and Q.4 of Exercise 1F.

ENHANCE

Ask the students to write 2-3 questions based on predecessor/successor in their notebook. For example,

- (a) Which number has 1111 as its successor?
- (b) Is the predecessor of every 4-digit number always a 4-digit number?
- (c) Tell the predecessor and successor of the smallest/greatest number that can be formed using the digits 3, 0, 4, 1 and so on.

Divide the class in pairs and tell them to ask the questions to each other.

Period: 15	Topic: Even and Odd Numbers	Suggested extra teaching aids: concrete items– pencil, erasers, etc. Touchpad Mathematics 3 pages 27–28
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ENGAGE

After the introduction, put some real-life objects like pencils or erasers and ask the students to count them. Then link this to even and odd numbers.

EXPLORE

Tell the students to write some information like Roll Number, Marks obtained in last exam, number of favourite cartoon channels, house number, etc. in their notebooks. Instruct them to decide whether the numbers listed are odd or even.

EXPLAIN

Explain that the numbers which can be put into pairs are called **even numbers** and which cannot be put into pairs are called **odd numbers**.

ELABORATE

- Begin with some countable objects, for example, 9 pencils. Put these pencils into pairs and explain to the class that since with 9 pencils only four pairs are formed and one pencil is left unpaired, 9 is an odd number.
- Again, take 12 erasers and put them into pairs. Explain the class since with 12 erasers, 6 pairs are formed and no erasers are left unpaired, so, 12 is an even number.

Thus, we can say that all numbers ending with 0, 2, 4, 6 or 8 are even numbers and all numbers ending with 1, 3, 5, 7 or 9 are odd numbers.

[Experiential Learning]

EVALUATE

Classwork: Ask the students to write examples of even and odd numbers on the board for 2-digit, 3-digit and 4-digit numbers.

Homework: Ask students to solve Q. 5, 6, 7, 8 and 9 of Exercise 1F.



ENHANCE

Ask the students to check whether their parents, vehicle numbers are even or odd. If ‘Odd/Even Formula’ is adopted to control traffic in their city, on which dates can their vehicles run on the road?

Periods: 16–17

Topic: Rounding Numbers

Suggested extra teaching aids: newspaper, pens, pencils, etc.

Touchpad Mathematics 3 pages 30–31

ENGAGE

Begin with a discussion about real-life situations where rounded numbers are used. For example, about 1500 people came for the annual day function. Approximately, 250 athletes participated in the marathon. The approximate cost of a toy car is ₹100.

EXPLORE

Rounding-off Numbers

The teacher should draw the attention of the children quoting examples from real life where we use rounded off numbers. For example, the headline in the newspaper says “Around 20,000 people watched the India-Australia cricket match”. Here, 20,000 is not an exact figure but a figure that is close to the exact figure.

Rounding off to the nearest 10

To round off a number to the nearest 10, we use the nearest multiples of 10. We should look at the two tens between which the given number lies.

Refer to pages 30–31 to further clarify the topic.

Newspaper Activity: Children will be asked to bring the cutouts of headlines from the newspaper having rounded off numbers and paste the same in their notebook.

Beyond the classroom: Value of reading newspapers will be emphasized with the help of newspaper activity.

EXPLAIN

Begin with a discussion about real-life situations where rounded numbers are used. For example, there are about 40 students in class III, there are about 60 teachers in a school, etc. Emphasize the word ‘about’ and explain its meaning. Discuss the method of rounding off the numbers to the nearest 10.

Explain the difference between ‘rounding up’ and ‘rounding down’.

ELABORATE

Draw a number line on the board.

Teach the rules of rounding up and rounding down to the nearest 10 by pointing out a number on the number line.

Ask them to identify the two tens between which 33 falls. The two tens are 30 and 40. Draw a number line showing the numbers 30 to 40.

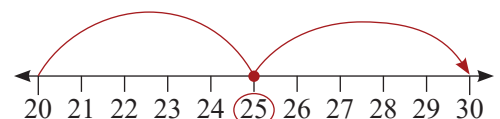
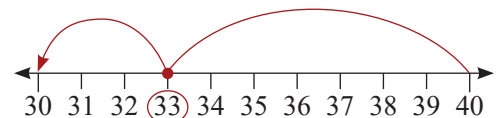
And ask the students, to observe that 33 is closer to 30 than 40.

So, 33 is rounded off to 30. It is called rounding down as 33 is rounded down to 30.

Again give examples of numbers like 36, 38 where we require rounding up.

Next, discuss about the numbers like 25, which falls exactly in the middle between two tens.

Draw a number line showing the numbers from 20 to 30.



Numbers



Looking at the number line, it is clear that 25 is exactly midway between 20 and 30.

So, 25 is rounded up to 30.

Ask the children to observe the digits in the ones place of some more numbers and round off these numbers to the nearest 10. **[Experiential Learning]**

EVALUATE

Classwork: Ask the students to solve Q.1 and 3 of Exercise 1G.

Homework: Ask the students to solve Q.2 and 4 of Exercise 1G.

ENHANCE

Ask students to do the activity by creating the 'Mystery Number Monster' as given on page 29.

Periods: 18–20	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 3 pages 32–36
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- Make students comfortable, so that they can ask any question on any previously taught topics and start the revision of the exercise.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths and HOTS. Also guide them to perform the activity given in 'Fun Activity' in the classroom.
- Discuss questions of 'Learning Logs' and accept students, answer, if there is any confusion or error then explain and correct it.





ADDITION

LEARNING OBJECTIVES

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

- ◆ add 3-digit numbers without and with regrouping
- ◆ add 4-digit numbers without and with regrouping
- ◆ evaluate and estimate the sum
- ◆ solve word problems based on addition

LESSON PLAN

Suggested number of periods: 16

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, dienes blocks up to 9999, some real-life objects like sketch pens, pens, pencils, number arrow cards etc.

Keywords: Smallest and greatest 3-digit numbers, addends, sum, rounded up, rounded down, estimation.

Pre-requisite knowledge: Students must be familiar with addition up to 3-digit numbers without regrouping. Solve word problems based on 1, 2 and 3 digits.

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

Topic: Exploring Addition

Suggested extra teaching aids: arrow cards
Touchpad Mathematics 3 pages 37–39

ENGAGE

Introduce the topic in the classroom with some interesting activities, like asking questions on previously learned topics and then link to addition. Like: What is the sum of the largest 2-digit number and the smallest 3-digit number? Use the “Warm Up” section given on pages 37 and 38 of the book for this purpose. Next, introduce the topic “Exploring Addition”.

EXPLORE

The teacher will revise the learners’ previous knowledge of the addition of 2-digit numbers with the help of the following game.

- Divide the class into 2 teams. Distribute 10 arrow cards on which a digit is written.
- Ask 3 children from team A to step forward in front of the class.
- The teacher will ask one child to form a 2-digit number by using the arrow cards, say 35, and the other child will be asked to make a number by interchanging the digits (53), and the third child will write the numbers on the board.



- Then the teacher will ask team B to find the sum of both numbers.
- Next, the teacher changes the role of teams.

[Collaborative Learning]

EXPLAIN

Revise the addition of 2- and 3-digit numbers by using the vertical method. Let the students recall what the addends are. Next, introduce the method of “addition by expanding numbers”, the way to understand the addition easily. In this method, we expand the addends as per their place values and then add them accordingly.

ELABORATE

Write on the board, two 3-digit numbers in place value columns. Ask the sum of digits at ones, tens and hundreds places one by one and write the sum on the board.

Next, discuss with the students that we can make this addition easy by expanding its addends into hundreds, tens and ones as follows:

$$342 \longrightarrow 300 + 40 + 2$$

$$456 \longrightarrow 400 + 50 + 6$$

Start by adding ones, then tens and at last hundreds.

Add: $700 + 90 + 8 = 798$.

H	T	O
3	4	2
+	4	5
7	9	8

Addends (numbers that are added)
 Sum (answer of addition)

H	T	O
300	40	2
+	400	50
700	90	8

EVALUATE

Classwork: Ask to solve Q.1 of Exercise 2A.

Homework: Ask to solve Q.2 of Exercise 2A.

ENHANCE

Ask students to watch the video on addition on “www.orangewebsupport.co.in”.

Periods: 3–7

Topic: Addition of 3-digit numbers

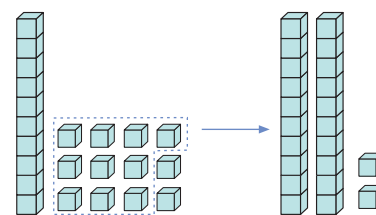
Suggested extra teaching aids:
dienes blocks,
Touchpad Mathematics 3 pages 40–44

ENGAGE

First, ask some questions to recall the previous concepts of addition based on regrouping.

Like: Put 1 ten rod and 12 ones cubes on the table, and ask the students, how many cubes are in a rod?

Next show them that, if we combine 10 cubes then we get 1 more ten rod from the given cubes. Introduce this method to them in addition.



1 ten 12 ones $\longrightarrow$ 2 tens 2 ones

EXPLORE

Divide the class into two groups. Distribute a set of flash cards having numbers 0-9 to each group. Call one group and instruct to make 3-digit numbers as many as they can.

Also, make addition problems of two 3-digit numbers, and find the sum of those problems. Next call other group. The group who will make more addition problems and give the correct answer will win the game. Also, ask whether the problems are based on addition without regrouping or with regrouping? Accept the responses.



EXPLAIN

Explain to the class that when we have more than 9 ones, say 12 ones, we can regroup 12 ones into 1 ten and 2 ones and so on. We use this method of regrouping in addition. Use dienes blocks to demonstrate the addition visually. Similarly, explain addition of 3-digit numbers by regrouping ones, tens and hundreds.

ELABORATE

Solve some questions on the board and demonstrate how to add the two 3-digit numbers by regrouping.

Refer textbook explanation and examples given on pages 40 to 43.

[Conceptual Learning]

EVALUATE

Classwork: Ask the students to solve Q.1, 2 (a), (b), (c) and 3 (d), (e), (f) of Exercise 2B. If the students make any error while solving the addition sum, the teacher will rectify it and explain.

Homework: Ask the students to solve remaining questions of Exercise 2B.

ENHANCE

Download worksheets on addition with regrouping from the internet and practise them.

Periods: 8–10

Topic: Addition of 4-digit numbers

Suggested extra teaching aids:
number wheel/spinner,
Touchpad Mathematics 3 pages 44–47

ENGAGE

Divide the class into pairs. Tell the students to think of a 3-digit number and write it in their notebook. Then instruct them to rearrange the digits and make the smallest/greatest 3-digit number. Ask the students to write it below the number considered and add.

For example,

	H	T	O	
	4	3	0	← Number thought of
+	3	0	4	← Smallest 3-digit number
	7	3	4	

Now, tell them to exchange the notebooks and check the working of each other. Discuss, if any error occurs.

EXPLORE

- Divide the class into 4 groups.
- The teacher will call one group, and ask two students to move the wheel one by one to get the addend 1 and 2.
- Then perform the addition on board with the help of other members of the group. Students of other groups will watch the process, if there is any error occurred, then rectify it.
- The same process will continue with the other groups.
- The group that does all correct addition in the minimum time is the winner.

[Experiential Learning]



Addition



EXPLAIN

First, discuss with the children, if they have any queries regarding 3-digit addition or regrouping. After the discussion, start the topic “addition of 4-digit numbers”.

In this topic first discuss addition without regrouping, then with grouping.

Explain to the students that we add 4-digit numbers in the same way as we add 3-digit numbers.

Further explain that when we add the numbers of any column, whether from the top or from the bottom, the answer will remain the same. [Collaborative learning]

ELABORATE

Start with writing on the board “**Find the sum of 6043 and 2954**”.

Arrange the numbers in vertical columns and start adding as follows:

- **Add the ones:** $3 + 4 = 7$ ones. Write 7 in the ones column.
- **Add the tens:** $4 + 5 = 9$ tens. Write 9 in the tens column.
- **Add the hundreds:** $0 + 9 = 9$ hundreds. Write 9 in the hundreds column.
- **Add the thousands:** $6 + 2 = 8$. Write 8 in the thousands column.

Th	H	T	O
6	0	4	3
+	2	9	5
	8	9	7

Thus, the sum of 6043 and 2954 is 8997.

For checking their understanding, encourage the students to solve some questions given in Exercise 2C.

Next, demonstrate the addition of 4-digit numbers which require regrouping.

Write on board “**Find the sum of 3506 and 1225**”.

After arranging the numbers in place value columns instruct to add as follows:

- **Add the ones:** $6 + 5 = 11$ ones. Regroup 11 ones as 1 ten and 1 one. Write 1 in the ones column and carry over 1 ten in the tens column.
- **Add the tens:** 1 (carried over) $+ 0 + 2 = 3$ tens. Write 3 in the tens column.
- **Add the hundreds:** $5 + 2 = 7$ hundreds. Write 7 in the hundreds column.
- **Add the thousands:** $3 + 1 = 4$ thousands. Write 4 in the thousands column.

Th	H	T	O
		1	
3	5	0	6
+	1	2	2
	4	7	3

Thus, the sum of $3506 + 1225 = 4731$.

Also, explain other examples given on pages 45 and 46 of the textbook. Hence, motivate the students to attempt question 6 given in Exercise 2D on page 47. [Conceptual Learning]

EVALUATE

Classwork: Ask the students to solve Q.1 of Exercise 2C and Q.1, 3, and 4 of Exercise 2D.

Homework: Ask the students to solve the remaining questions of Exercise 2C and 2D, depending on the topic they learned on that particular day.

ENHANCE

Ask the students to work in pairs. Each one will write a 4-digit number one below the other on a sheet. Next, one student will add the numbers from top to bottom and other student will check it by adding from bottom to top.



Periods: 11–14

Topics: Estimating the Sum,
Word problems

Suggested extra teaching aids: transparent jar, number
chits, Touchpad Mathematics 3 pages 48–50

ENGAGE

Neha has 32 pencils, and her friend gives her 39 more. Instead of counting exactly, she quickly says, “32 is about 30 and 29 is about 30, so the total is about 60”.

Ask the students why Neha did not find the exact answer and whether her answer is exact or close. Introduce the topic “Estimating the Sum”.

EXPLORE

Motivate students towards the topic estimation and revise the ‘round off’. Teacher can organise a game in the classroom as follows:

- Put a transparent jar on the teacher’s table.
- Make some number chits (up to 3 digits) and put it in the jar.
- Ask each student to pick numbers from the jar, then round off the numbers to nearest ten, and write their answer on same paper chit with their name and submit to teacher.
- At last, the teacher will match the answers and commend students who give correct answers, and motivate and correct these who give the wrong answers.

[Experiential Learning]

EXPLAIN

Explain to the students, estimation of sum *i.e.*, addition of 2- and 3-digits number by rounding off. Refer textbook page 48 for explanation and examples.

Thereafter, discuss some real-life situations *i.e.*, ‘word problems’ where we use addition.

ELABORATE

Before explaining the methods to solve a word problem, ask them to read, understand, decide the strategy, and then solve the problem. Emphasise on checking the solution so that they solve the problem correctly.

Demonstrate on board, the solution and explanation by taking reference of examples given on page 49 under the section ‘Word Problem’.

[Conceptual Learning]

EVALUATE

Classwork: Ask the students to solve Q.1, 2 and 3 of Exercise 2E, Q.1, 3, 5, 7 and 8 of Exercise 2F. If the students make any error while solving the sum, the teacher will correct it and explain.

Homework: Ask the students to solve the remaining questions of Exercise 2E and 2F.

ENHANCE

- Ask the students to solve ‘HOTS’ given on page 52.
- Ask the students to watch the video on addition on “www.orangewebsupport.co.in”.

Periods: 15–16

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 50–53

- Provide a comfortable learning environment so that students feel free to ask questions about any previously taught topic they are unsure of. Proceed with the revision of the exercise.
- Start the revision of the exercise by using ‘Points to Remember’, ‘Learning Logs’ and ‘Mental Maths’. Also guide them to perform the activity given in ‘Fun Activity’ section on page 53.
- Motivate the students to solve the ‘Puzzle’ given on Page 53.





SUBTRACTION

LEARNING OBJECTIVES

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

- ◆ subtract 3-digit numbers without and with regrouping
- ◆ subtract 4-digit numbers without and with regrouping
- ◆ evaluate and estimate the difference
- ◆ solve word problems involving subtraction
- ◆ perform addition and subtraction together

LESSON PLAN

Suggested number of periods: 15

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, dienes blocks, some real-life objects like sketch pens, pens, pencils, number arrow cards etc.

Keywords: Difference, minuend, subtrahend, rounded up, rounded down, estimation.

Pre-requisite knowledge: Students must be familiar with subtracting up to 3-digit numbers without regrouping. Solve subtraction word problems based on numbers of up to 3 digits.

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: Exploring Subtraction,
Subtraction of 3-digit numbers

Suggested extra teaching aids: dienes blocks
Touchpad Mathematics 3 pages 54–60

ENGAGE

Introduce the topic in the classroom with some interesting activities, like asking the question:

- (a) What is the greatest 2-digit number?
- (b) What is the smallest 3-digit number?
- (c) What is the difference between the greatest 2-digit and 3-digit numbers?

Represent the numbers with dienes blocks.

The teacher can also take the reference of the ‘Warm Up’ section given on pages 54–55 of the textbook.

After accepting the answers of students, if there are queries or wrong answers then solve them on the board.

Use the dienes blocks to show the subtraction.



EXPLORE

The teacher will revise the learners' previous knowledge of subtraction of 2-digit numbers with the help of the following game.

- Divide the class into 2 teams. Distribute 10 arrow cards, each with a digit written on it.
- Ask 3 children from team A to step forward in front of the class.
- The teacher will ask one child to form a 2-digit number by using the arrow cards, say 35, and the other child will be asked to make a number by interchanging the digits (53), and the third child will write the numbers on the board.
- Then the teacher will ask team B to find the difference of both numbers.
- Next, the teacher will change the role of teams.

[Collaborative Learning]

EXPLAIN

After revising the subtraction of 2-digit numbers by using the vertical method, explain subtraction by counting forward on a number line, and next explain subtraction by breaking the smaller number, and further by breaking both the numbers. Next explain subtraction of 3-digit numbers without regrouping and with regrouping. For this, ask 3–4 students randomly to speak any 3-digit numbers. Write these numbers on the board. Then ask the class to choose two numbers which they would want to subtract. Accordingly, show the operation and explain the steps involved.

ELABORATE

Demonstrate subtraction by counting forward on a number line by taking reference given on page 55.

Further, demonstrate subtraction first by breaking the smaller number and then by breaking both the numbers by taking reference of pages 55-56.

Talk about any real life situation where we need to subtract two numbers. For example, a school invited 865 parents/guests for the Annual Day celebration, but 640 parents/guests could attend the function. How many did not come?

H	T	O	
8	6	5	← No. of guests/parents invited
– 6	4	0	← No. of guests/parents attended
2	2	5	

Demonstrate how to solve the problem using subtraction.

Next, demonstrate subtraction with regrouping.

EVALUATE

Classwork: Ask the students to solve (a), (b), (c) and (d) of Q.1, 2, 3 of Exercise 3A and 3B. If the students make any error while solving the subtraction sum, the teacher will correct it and explain.

Homework: Ask the students to do the remaining questions of Exercise 3A and 3B.

ENHANCE

Download worksheets on subtraction with regrouping from the internet and practise them.

Periods: 5–7

Topic: Subtraction of 4-digit numbers

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 61–63

ENGAGE

After the introduction, discuss with the children, if they have any queries regarding 3-digit subtraction or regrouping. After the discussion, start the topic “subtraction of 4-digit numbers”.

In this topic first discuss subtraction without regrouping, then with grouping.



EXPLORE

Before starting 4-digit subtraction, let us explore “Treviso method” of subtraction, which is also known as the European algorithm.

For example: $782 - 297$

- Starting from the right side, since 7 is greater than 2, we make the 7 into 10. The number needed is 3.
- Add number 3 to minuend 2 to get 5. Write down 5 at ones place of the difference.
- Decrease 8 in the tens column by 1.
- Again, as 9 in subtrahend is greater than 7, we need 1 to make 9 into 10.
Add 1 to 7 and write 8 in the tens place of difference.
- Decrease 7 in the hundreds column by 1.
- As $2 < 6$, simply subtract 2 from 6.

H	T	O
7	8	2
– 2	9	7
4	8	5

EXPLAIN

First, explain the subtraction of 4-digit numbers without regrouping, then with regrouping.

Explain to the students, we subtract 4-digit numbers in the same way as we subtract 3-digit numbers.

ELABORATE

Start with writing on the board “subtract 6578 from 9999”.

Arrange the numbers in vertical columns and start subtracting, as follows:

$$\begin{aligned}9 \text{ ones} - 8 \text{ ones} &= 1 \text{ one} \\9 \text{ tens} - 7 \text{ tens} &= 2 \text{ tens} \\9 \text{ hundreds} - 5 \text{ hundreds} &= 4 \text{ hundreds} \\9 \text{ thousands} - 6 \text{ thousands} &= 3 \text{ thousands}\end{aligned}$$

Th	H	T	O
9	9	9	9
– 6	5	7	8
3	4	2	1

Thus, $9999 - 6578 = 3421$.

Next, demonstrate the subtraction of 4-digit numbers which requires regrouping, like “Find the difference of 3952 and 2189”.

After arranging the given number in vertical columns and subtracting the subtrahend by regrouping ones, tens and hundreds, we find the difference of

$$3952 - 2189 = 1763.$$

Th	H	T	O
		14	
	8	~~4~~	12
3	~~9~~	~~5~~	~~2~~
– 2	1	8	9
1	7	6	3

Also, explain other questions given on pages 61 and 62 of Touchpad Mathematics 3.

EVALUATE

Classwork: Ask the students to solve Q.1 (a), (b), (d), (e), Q.3 and Q.4 of Exercise 3D. If the students make any error while solving the subtraction sum, the teacher will correct it and explain.

Homework: Ask the students to solve the remaining questions of Exercise 3D.

ENHANCE

- Discuss some important properties of subtraction like subtracting 0, 1, 10, 100, 1000 from a number.



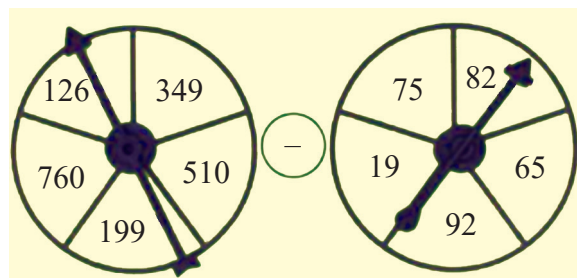
ENGAGE

Interact with the students to recall the previous concept. Like

- When we add 1 to a number, what do we get?
- When we subtract 1 from a number, what do we get?

EXPLORE

- The teacher will revise the subtraction of 2-digit numbers from a 3-digit numbers, by using the spin wheel.
- Divide the class into 4 groups.
- The teacher will call one group, and ask them to move the first wheel to get the minuend and move the second wheel to get the subtrahend.
- Then perform the subtraction on board with the help of other members of groups. Other students will watch the process, and if any error occurs, they will rectify it.
- The same process will continue with other groups.
- The group that does all correct subtraction in the minimum time will be the winner.

**EXPLAIN**

Explain that, like addition we can also estimate the difference by using the concept of rounding off by taking the reference given on pages 63-64 of the textbook. Further explain about the real-life situations, where we use subtraction to solve the problems by taking reference of page 65 of the textbook.

ELABORATE

Consider any real-life situation when we need to estimate the difference. Suppose Vrinda saves ₹88 in her piggy bank. On the Mother's Day, she buys a gift to present her mother. If she spends ₹52, estimate how much money is left with her?

Here, we need to estimate the difference between 88 and 52 by rounding off to the nearest 10.

Arrange the numbers in vertical columns and first round off the numbers to their nearest tens.

In 88, $8 > 5$, so 88 is rounded up to 90.

In 52, $2 < 5$, so, 52 is rounded down to 50.

Then estimated difference is 40, while the actual difference is 36.

Next demonstrate the method of solving the word problems.

Actual difference			Estimated difference	
T	O		T	O
8	8	rounded up	9	0
5	2	rounded down	5	0
3	6		4	0



EVALUATE

Classwork: Ask the students to solve Q.1, and 2 of Exercise 3E and Q.1, 2, 3 and 4 of 3F. If the students make any error while solving the subtraction sum or rounding off, the teacher will correct it and explain.

Homework: Ask the students to solve remaining questions of Exercise 3E and 3F.

ENHANCE

Ask students to play the subtraction game, using the activity given in ‘Activity’ section on page 64 of the book.

Periods: 11–13	Topic: Addition and subtraction together	Suggested extra teaching aids: Touchpad Mathematics 3 page 66
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ENGAGE

Begin the discussion with some real-life examples, where addition and subtraction both are required to get the answer. Discuss a situation like: Somil’s father gave him ₹2000 as pocket money. From the money Somil bought a toy of ₹1500 for his sister. After a few days, Somil’s aunt gave him ₹1000. Now how much money does Somil have? Ask students to raise their hands to answer. Discuss and rectify if any student gives the wrong answer.

EXPLORE

Reverse Method (Indian Algorithm): It is one of the earliest and most popular subtraction algorithms from India. This is called the reverse method and it has some similarities to our traditional algorithm. It involves borrowing. For example: $9824 - 3952$

Begin from left: $9 - 3 = 6$

Second column: $8 - 9$. Since we cannot subtract and obtain a positive number, we cross out the 6 of the difference and change it to 5. Place 1 in front of 8 to make 18. $18 - 9 = 9$. Write down 9 in the difference.

Third column: $2 - 5$. Since we cannot subtract and obtain a positive number, we cross out the 9 of the difference and change it to 8. And change 2 to 12. $12 - 5 = 7$.

Last column: $4 - 2$. Since $4 > 2$, so we can easily subtract 2 from 4. Thus, $9824 - 3952 = 5872$.

	18	12	
9	~~8~~	~~2~~	4
3	9	5	2
~~6~~	~~9~~	7	2
5	8		

EXPLAIN

Explain to the students that sometimes we have to do both addition and subtraction in a single sum. In such cases, we either follow the sequence of operations from left to right or solve the sum by using the following steps:

Step 1: Add the numbers having ‘+’ sign or no sign.

Step 2: Add the numbers having ‘-’ sign.

Step 3: Subtract the sum obtained in step 2 from the sum obtained in step 1.

Discuss some real-life examples, where we use subtraction, or both addition and subtraction. Refer textbook page 66 for more explanation and examples.



ELABORATE

Teacher can consider any example and demonstrate how to solve it on the board. Suppose 8570 people visited the National Museum last Sunday. Out of them, 2565 were men, 3186 were women and the remaining were children. How many children visited the museum that day?

To know the number of children we have to subtract the number of adults, (*i.e.*, total men and women) from total people.

That is, $8570 - (2565 + 3186)$

First Add				
Th	H	T	O	
	1	1		
2	5	6	5	
+	3	1	8	6
	5	7	5	1

Now, subtract				
Th	H	T	O	
7	15	6	10	
~~8~~	~~5~~	~~7~~	~~0~~	
5	7	5	1	
	2	8	1	9

Thus, 2819 children visited the museum.

Then motivate students to solve the questions given in the book.

EVALUATE

Classwork: Ask the students to solve Q.1 (a), (b); Q.2, and Q.3 of Exercise 3G. If the students make any error while solving the subtraction sum or rounding off, the teacher will correct it and explain.

Homework: Complete remaining questions of Exercise 3G.

ENHANCE

Ask students to download the worksheet from “www.orangewebsupport.co.in” and practise them.

Periods: 14–15

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 67–69

- Make students comfortable, so that they can ask any question on any previously taught topics in which they have any confusion.
- Start the revision of the exercise by using Points to remember, Learning Logs, Mental Maths, and HOTS.
- Also guide them to solve the activity given in ‘Fun Activity’ in the classroom.
- Find a process of subtraction other than these discussed in the book, with the use of the internet or with the help of friends, teachers and parents.



MULTIPLICATION

LEARNING OBJECTIVES

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

- ◆ build and remember multiplication tables
- ◆ multiply 2- and 3-digit numbers by a 1-digit number (without and with regrouping)
- ◆ multiply 2- and 3-digit numbers by a 2-digit number (without and with regrouping)
- ◆ explore multiplication ◆ evaluate and estimate the product
- ◆ solve word problems based on multiplication

LESSON PLAN

Suggested number of periods: 14

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some real-life objects like sketch pens, pens, pencils, number arrow cards etc.

Keywords: Multiplicand, multiplier, product, multiplication, estimation.

Pre-requisite knowledge: Students must be familiar with the multiplication of 2-digit numbers by 1-digit number without regrouping. Solve multiplication based 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: 1–3	Topics: Multiplication Terms, Building multiplication tables	Suggested extra teaching aids: Some real-life objects, Chart of multiplication tables up to 10. Chart of multiplication tables up to 10 with missing products, Touchpad Mathematics 3 pages 70–75
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ENGAGE

Introduce the topic in the classroom with some interesting activities like placing some objects on the table and show that the repeated addition of any number is equal to the multiplication of that number by the number of times the addition is done.

Place a chart of multiplication tables up to 10 with some missing numbers (products) on the board. And ask the students to recall the corresponding table of the given number and find the missing numbers (products).



EXPLORE

The teacher will revise the learners' previous knowledge of multiplication with the help of the following game: "Find the same result in a row".

- Hang a 10×10 chart on the display board where some multiplication facts or repeated addition using numbers up to 10 are written like:

3×4	$2 + 2 + 2 + 2 + 2 + 2 + 2$	$5 + 5$	$1 \times 2 \times 5$	$2 \times 3 \times 2$	$3 + 3 + 3 + 3$	1×12	$4 + 4 + 4$	$6 + 6$	$2 + 2 + 2 + 2 + 2$
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- Divide the class into groups and invite them one by one.
- Ask each group to choose the number whose multiplication fact or repeated addition they want to find in the given chart. Then tell them to find the corresponding facts and mark, within a limited time period.
- The group that marks most of the correct facts in the minimum time will be the winner.

Teacher can also use the 'Warm Up' section given on pages 70 and 71.

[Collaborative Learning]

EXPLAIN

Explain to the students that repeated addition can also be represented as multiplication.

Recall the multiplication tables up to 5.

Next, use the chart of multiplication tables from 6 to 10. And motivate the students to learn them by writing in their notebooks.

ELABORATE

Explain that here, we have 5 groups of 2 pencils each, *i.e.*,

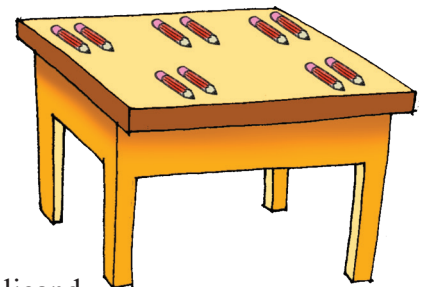
$$2 + 2 + 2 + 2 + 2 = 10 = 5 \times 2$$

$5 \times 2 = 10$ is read as '5 into 2 is 10' or '5 multiplied by 2 is 10' or '5 times 2 is 10'.

$5 \times 2 = 10$ is called the multiplication fact or multiplication statement.

Where 5 is the multiplicand, 2 is the multiplier and 10 is the product.

5	← Multiplicand
×	2 ← Multiplier
10	← Product



Use chart of multiplication tables from 6 to 10, and motivate the students to build and remember it.

The multiplicand 5 and the multiplier 2, both are called factors of the product 10.

[Experiential learning]

EVALUATE

Classwork: Ask the students to solve Q.1 and 2 of Exercise 4A and 4B. If the students make any error, teacher will correct it and explain.

Homework: Ask the students to solve Q.3 of Exercise 4A and 4B as homework assignment.

ENHANCE

- Ask the students to prepare a colourful chart on tables from 11 to 25.
- Motivate the students to perform the 'Activity' given on page 74.

ENGAGE

In the beginning, put the chart of tables in front of students so that they can memorise the tables. Then recall one-digit multiplication by using the multiplication tables. As,

$5 \times 5 = 25;$

$8 \times 7 = 56;$

$9 \times 8 = 72;$

$8 \times 8 = 64$ and so on.

In this topic first discuss multiplication using fingers, then multiplication without regrouping and then with regrouping.

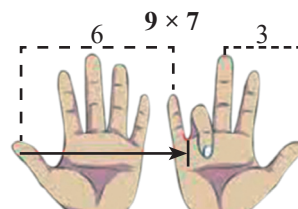
EXPLORE

The teacher can introduce a quick method of multiplication of any number by 9 using fingers as follows:

For example, to multiply 9 by 7,

Fold the seventh finger towards the palm. Count the on the fingers left side and make it tens digit of the product, and the remaining fingers on the right side of folded finger as the ones digit of the product.

For example, $9 \times 7 = 63$.



Also demonstrate multiplication of 7 by 8 and 8 by 8 by taking the reference of pages 75–76 of the textbook.

EXPLAIN

Explain to them multiplication is exactly like extended addition. Refer textbook pages 76–78 for the explanation of multiplication of 2-digit numbers by 1-digit numbers and that of 3-digit numbers by 1-digit numbers. Explain the process of multiplication without regrouping.

First, make the students revise their knowledge of multiplication by writing the question on the board “multiply 31 by 3”. Ask the steps from students and accept the response. If any response is wrong, explain and correct it.

- Multiply the ones by 3.

$1 \text{ one} \times 3 = 3 \text{ ones}$

- Multiply the tens by 3.

$3 \text{ tens} \times 3 = 9 \text{ tens}$

	T	O
	3	1
$\times$	3	
	9	3

Multiplication of 3-digit number by 1-digit number:

Write on board: Multiply 342 by 2.

Arrange the numbers in their place value columns on the board.

- Multiply the ones by 2. $2 \text{ ones} \times 2 = 4 \text{ ones}$, and write 4 at the ones place of the product.
- Multiply the tens by 2. $4 \text{ tens} \times 2 = 8 \text{ tens}$, write 8 at the tens place of the product.
- Multiply the hundreds by 2. $3 \text{ hundreds} \times 2 = 6 \text{ hundreds}$. Write 6 at the hundreds place of the product.

	H	T	O
	3	4	2
$\times$			2
	6	8	4

Encourage the students to practise the questions given in Exercise 4C.



ELABORATE

Consider any real life situation, where we need to multiply a 2- or 3-digit number by a 1-digit number with regrouping. For instance, let Amit want to distribute chocolates among his classmates on his birthday. If there are 36 students in the class and a chocolate costs ₹5, how much money should he arrange. Elaborate to the students that:

The cost of 1 chocolate is ₹5.

So, the cost of 36 chocolates would be ₹(36 × 5).

Now demonstrate how to multiply it.

- Multiply the ones by 5.

$$6 \text{ ones} \times 5 = 30 \text{ ones} = 3 \text{ tens } 0 \text{ ones}$$

Write 0 in the ones column of the product and carry over 3 to the tens column.

- Multiply the tens by 5.

$$3 \text{ tens} \times 5 = 15 \text{ tens}$$

$$15 \text{ tens} + 3 \text{ tens} = 18 \text{ tens} = 1 \text{ hundred } 8 \text{ tens}$$

Write 8 in the tens column of the product and carry over 1 to the hundreds column.

Clearly, Amit should arrange ₹180 for distributing the chocolates among all his classmates.

Refer textbook pages 76–78 for explanation and other examples.

	H	T	O
		3	6
×			5

	H	T	O
		3	6
×			5
			0

	H	T	O
	1	3	
×			5
	1	8	0

[Conceptual Learning]

EVALUATE

Classwork: Ask the students to solve Q.1 and 3 of Exercise 4C. If the students make any error while doing the multiplication, the teacher will correct it and explain.

Homework: Ask the students to solve Q.2 of Exercise 4C.

ENHANCE

Download worksheets on multiplication from “www.orangewebsupport.co.in” and practise multiplication of 2- and 3-digit numbers by 1-digit numbers.

Periods: 7–8

Topic: Multiplication by a 2-digit Number

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 78–80

ENGAGE

First make students comfortable, so they can ask any question from the previous topic if they have any doubts. Introduce multiplication of a 2-digit number by a 2-digit number.

EXPLORE

We can also multiply the numbers by breaking up numbers: BLOCK METHOD. This is one of the most useful mental math strategies. It involves breaking up of the factors, multiplying in groups, and then adding those groups together.

For example: multiply 35 by 44.

Break up the number 35 into 30 and 5, 44 into 40 and 4 and then multiply it in parts.

$$\begin{aligned} \text{So, } 35 \times 44 &= (30 \times 40) + (5 \times 40) + (30 \times 4) + (5 \times 4) \\ &= 1200 + 200 + 120 + 20 = 1540. \end{aligned}$$

×	30	5
40	1200	200
4	120	20

[Conceptual Learning]

EXPLAIN

Explain multiplication of 2-digit and 3-digit numbers by a 2-digit number (without regrouping) and then with regrouping by taking the reference and examples given on pages 78–80.



ELABORATE

When we multiply a 2-digit number by another 2-digit number, we expand the multiplier and multiply the multiplicand by the ones and tens digits of the multiplier. Find 2 partial products and add these partial products to get the final answer. We will follow the same process to multiply a 3-digit number by a 2-digit number. Refer textbook pages 78–80 and solve some questions on the board.

Multiply 232 by 23.

- Expand the multiplier 23 as $20 + 3 = 2 \text{ tens} + 3 \text{ ones}$ and multiply 232 with it by using the following steps:

Step 1: Multiply 232 by 3 ones.

$$232 \times 3 \text{ ones} = 696$$

Step 2: Multiply 232 by 2 tens.

$$232 \times 2 \text{ tens} = 232 \times 20 \text{ ones} = 4640 \text{ ones}$$

Write 4640 as the second line product.

Step 3: Add the products.

$$696 + 4640 = 5336$$

$$\text{Thus, } 232 \times 23 = 5336$$

	Th	H	T	O	
		2	3	2	
$\times$			2	3	
		6	9	6	← 1st product
$+$	4	6	4	0	← 2nd product
	5	3	3	6	← Sum

[Conceptual Learning]

EVALUATE

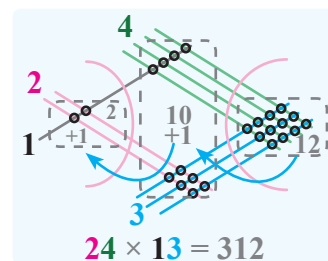
Classwork: Ask to solve Q.1 of Exercise 4D. If the students make any error while solving the problems, the teacher will correct it and explain.

Homework: Ask the students to solve Q.2 of Exercise 4D.

ENHANCE

Present an interesting method to visualise multiplication that reduces it to simple counting.

- Draw sets of parallel lines representing each digit of the first number to be multiplied (the multiplicand).
- Draw another set of parallel lines, perpendicular to the first sets of parallel lines, corresponding to each digit of the second number (the multiplier).
- Put dots where each line crosses another line.
- Count the points in the right corner, middle and left corner.
- If the number on the right is greater than 9, carry and add the number to the number in the middle. If the number in the middle is greater than 9, add the carry-over to the number at the hundreds place.



[Experiential Learning]

Periods: 9–10

Topic: Exploring multiplication

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 81–82

ENGAGE

Begin with a discussion on the previously learned topics. Introduce the method of multiplication by expanding the bigger number and multiplication of numbers when the multiplier contains zeros.



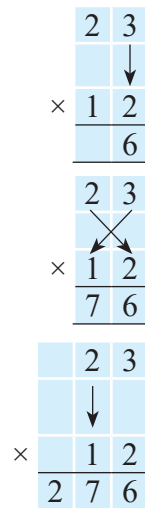
EXPLORE

There is one more method of multiplication called the 'Criss-cross system of multiplication' of 'Vedic mathematics' which helps in doing the calculation faster.

Let us multiply 23 by 12.

- Multiply the digits in the ones place, that is, $3 \times 2 = 6$.
Write 6 in the ones place of the product.
- Next, cross multiply and add the products, that is, $(2 \times 2) + (3 \times 1) = 7$.
Write 7 in the tens place of the product.
- Next, multiply the tens digits, that is, $2 \times 1 = 2$

Thus, $23 \times 12 = 276$.



The three steps involved in multiplying a 2-digit number by a 2-digit number are as follows:

Step 1: *

Step 2: *

Step 3: *

EXPLAIN

Explain to the students that there is another method of multiplication where we expand the bigger number and then multiply each term of the expanded form with the multiplier and add the product thus obtained.

Next, explain how to multiply any number with 10, 20, 30, ..., 90.

First, multiply the number without 0. Then, write '0' to the right of the product obtained.

Similarly, to multiply a number by 100, 200, 300, 400, ..., 900, first multiply the number without 00.

Then, write two zeros (00) to the right of the product obtained.

Refer textbook pages 81–82 for examples and more explanation.

ELABORATE

Solve some questions on the board for demonstrating the process.

Multiplying by Expanding the Bigger Number:

Multiply 134 by 3.

Expand the bigger number 134: $134 = 100 + 30 + 4$

Multiply each term of expanded form by 3: $100 \times 3 + 30 \times 3 + 4 \times 3$

Add the product obtained: $300 + 90 + 12 = 402$.

Thus, $134 \times 3 = 402$.

Next, demonstrate multiplication of numbers by 1, 0, 10, 20, 30, ..., 90, and 100, 200, 300, ..., 900.

- When we multiply a number by 1, the product is the number itself.

For example, $5 \times 1 = 5$.

- When a number is multiplied by ‘0’, the product is always ‘0’.
For example, $5 \times 0 = 0$, $100 \times 0 = 0$
- To multiply a number by 10, write a ‘0’ to the right of the number.
For example, $2 \times 10 = 20$
- To multiply a number by 20, 30, 40, ..., 90, first multiply the number without 0. Then, write a ‘0’ to the right of the product obtained.
For example, $15 \times 40 = \underline{600}$
- To multiply a number by 100, write two zeros (00) to the right of the number.
For example, $5 \times 100 = 500$
- To multiply a number by 200, 300, 400, ..., 900, first multiply the number without 00. Then, write two zeros (00) to the right of the product obtained.
For example, $12 \times 400 = \underline{4800}$

EVALUATE

Classwork: Ask students to solve Q.1, 2, 3, 5 and 7 of Exercise 4E.

Homework: Ask the students to solve remaining questions of Exercise 4E.

ENHANCE

Ask students to download the worksheet from “www.orangewebsupport.co.in” and practise them.

Periods: 11-12

Topics: Estimating the product, Word problems

Suggested extra teaching aids: Some real-life objects, Touchpad Mathematics 3 pages 83–84

ENGAGE

Begins with a discussion on the previously learned topics. Introduce properties of multiplication, estimating product and take a real-life situation based on multiplication sentence having multiplication by 1- or 2-digit number like: If teacher brought 48 dozen pencils for her class, how many pencils did she bring in total?

Discuss how to solve the word problems.

EXPLORE

Divide the class into groups. Distribute a paper to each student and tell them to solve this problem: “There are 58 bags of cookies in a sale. Each bag has 12 cookies. How many cookies are there in total?”

- Tell students to discuss the solution within their groups.
- Point out to students how their explanations can become clearer and more specific as they have more practice using the method for multiplication.
- Appreciate the group who solved the sum accurately in minimum time.



EXPLAIN

Explain in the classroom, that like addition and subtraction, we can also do the multiplication by estimation, *i.e.*, we can find the estimated product by rounding off the numbers. Next explain the method to solve real-life based word problems based on multiplication. Refer textbook pages 83–84 for explanation and examples.

ELABORATE

Consider any real-life situation where we need estimating product. For example, chairs are being arranged for a school event. If there are 72 chairs in each of the 27 rows, about how many people can take a seat? For this, let us estimate the product 72×27 .

Demonstrate estimating the product of 72 and 27 on board as follows:

- 72 rounded down to the nearest 10 is 70
- 27 rounded up to the nearest 10 is 30

Thus, the estimated product = 2100

That is, about 2100 people can take a seat.

Also, discuss some real-life situations where we need to find the actual product. For example, “A bus can carry 52 passengers. How many passengers can be carried by 36 buses?”

Since, the number of passengers a bus can carry = 52

And, the number of buses = 36

So, the number of passengers carried by 36 buses = $52 \times 36 = 1872$

	Th	H	T	O
			7	0
×			3	0
			0	0
+	2	1	0	0
	2	1	0	0

	Th	H	T	O
			5	2
×			3	6
		3	1	2
+	1	5	6	0
	1	8	7	2

EVALUATE

Classwork: Ask students to solve Q.1, Q.2 (a), (b) of Exercise 4F and Q.1 to 8 of Exercise 4G. If the students make any error, the teacher will correct it and explain.

Homework: Do the remaining questions of the Exercise 4F and 4G.

ENHANCE

Ask students to download the worksheet from the “www.orangewebsupport.co.in” and practise them.

Periods: 13–14

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 84–87

- Make students comfortable, so they can ask any question on any previously taught topics in which they are facing problems.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS.
- Motivate students to solve the Puzzle given on page 86 of the book.
- Also guide them to perform the activity given in ‘Fun Activity’ in the classroom.
- Ask students to find two processes of multiplication other than those discussed in the book, with the use of the internet or with the help of friends, teachers and parents.





DIVISION

LEARNING OBJECTIVES

After studying this chapter, students will be able to

- ◆ explore division as equal distribution and repeated subtraction
- ◆ learn division using the number line
- ◆ establish the relation between multiplication and division
- ◆ know terms in division, long division and its checking
- ◆ learn division of 2- and 3-digit numbers by a 1-digit number (with and without regrouping)
- ◆ divide a number by 10
- ◆ solve word problems based on division
- ◆ identify the mathematical operations to be used in real-life situations

LESSON PLAN

Suggested number of periods: 13

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some real-life objects like candies, sketch pens, pens, pencils, etc.

Keywords: Dividend, divisor, remainder, multiplication facts, division facts, etc.

Pre-requisite knowledge: Students must be familiar with the division of 2-digit numbers by 1-digit numbers without regrouping. Solve division word problems of single-digit numbers.

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: 1–5

Topics: Division as equal distribution; Division as repeated subtraction, Division using a number line, Division and multiplication, Long division, Checking division

Suggested extra teaching aids:
Touchpad Mathematics 3,
pages 88–97

ENGAGE

Introduce the topic in the classroom with some interesting activities like placing some objects on the table and asking students to distribute them in equal groups.

Discuss the concept given in “Warm Up” section given on page 88.



EXPLORE

Bring a packet of 40 pencils to the classroom and invite the students in different groups of say 2, 4, 5, and 8 students. Instruct the students to distribute the pencils equally among themselves. Ask how many pencils each student gets. Accept the responses. Write it as a division sentence using the division sign.

[Experiential and Collaborative Learning]

After understanding the division as equal distribution, deal the concept of repeated subtraction by involving a group of students.

EXPLAIN

- Start with the topic ‘division as equal distribution’ by taking the reference of real-life situation and examples given on page 89 of the book.
- Then discuss the topic ‘division as repeated subtraction on board’ by taking the reference given on page 92.
- Explain the topic ‘Division and Multiplication’ by establishing the relation between multiplication and division by using the reference given on page 94.
- Demonstrate that there are two division facts corresponding to each multiplication fact. Like:

Multiplication fact

$$2 \times 6 = 12$$

Division facts

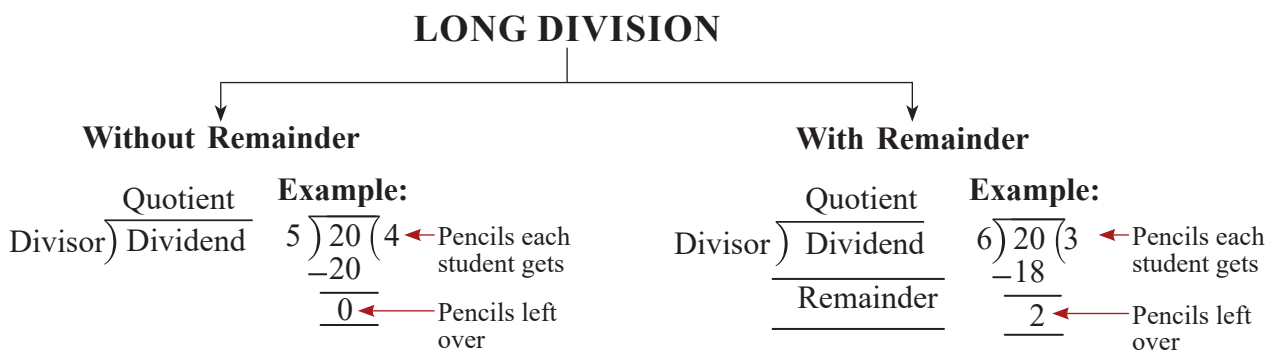
$$12 \div 2 = 6 \text{ and } 12 \div 6 = 2$$

- Demonstrate on board, how the multiplication table helps us in division by using the example of division ‘divide 28 by 4’.

ELABORATE

Start long division, first by revising the division of 1-digit numbers, then checking the division by the relationship “Quotient $\times$ Divisor + Remainder = Dividend”.

- Demonstrate on board that in division sometimes we get remainder 0 and sometimes we get the remainder by taking reference of book. For hands-on learning, call two groups – A with 5 students and B with 6 students. Give 20 pencils to each group and tell them to share it equally. Elaborate what they observe.



Also, discuss the subtopic ‘checking division’, the relation between the dividend, divisor, quotient and remainder. As,

$$\text{Quotient} \times \text{Divisor} + \text{Remainder} = \text{Dividend}$$

Verify the relationship on the board as:

$$\begin{array}{l} 4 \times 5 + 0 = 20 \\ 3 \times 6 + 2 = 20 \end{array} \left. \begin{array}{l} \leftarrow \\ \leftarrow \end{array} \right\} \text{Dividend}$$

[Conceptual Learning]



EVALUATE

Classwork: Ask to solve questions 1, 2 and 3 of Exercise 5A, 5B, 5C and 5D. If students make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 5A, 5B, 5C and 5D.

ENHANCE

Ask students to list 4–5 situations from daily life where they use concept of divisions.

Periods: 6–8	Topics: Division by 1-digit number(without regrouping), Division by 1-digit number (with regrouping), Division by 10.	Suggested extra teaching aids: Touchpad Mathematics 3, pages 97–102
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ENGAGE

Revise the concept of division using the example of pencils distribution activity in previous period.

EXPLORE

Demonstrate that division can also be done using the Vedic method. (Nikhilam Sutra)

In this method divide the dividend into two parts LHS and RHS. The RHS will contain as many digits as the number of zeros in the base.

For example, divide 23 by 9.

- Since 23 is a 2-digit number, so it is of base 10. And base 10 has one zero in it.
- Divide the dividend in such a way that the RHS has one digit.
- Bring down the first digit of the dividend, 2 as shown in the diagram:
- Here, the divisor is 9, the base is 10, find the difference of base and the divisor, the difference is 1.
- Multiply 2 with the difference 1 and add the answer to the next digit of the dividend as shown.
- The product of 2 and 1 (the difference) is 2, write it below 3. The sum of 3 and 2 is 5.

Dividend	
Quotient	Remainder

$$\begin{array}{r} 2 \mid 3 \\ \downarrow \\ 2 \mid \end{array}$$

$$\begin{array}{r} 10 \\ -9 \\ \hline 1 \end{array}$$

LHS	RHS
2	3
	± 2
	5
2	

Thus, when 23 is divided by 9 the quotient is 2 and the remainder is 5.

The final answer obtained on the LHS is the quotient and on RHS is the remainder. **[Vedic maths Learning]**

Note: In case of the number on RHS is greater than divisor, subtract the divisor from that number and increase the quotient by 1. Consider $23 \div 7$.

LHS	RHS
2	3
	± 6
	9
2	
± 1	-7
3	2

Thus, Q = 3, R = 2



EXPLAIN

Demonstrate on board ‘division by 1-digit number, without and with regrouping’ and division by 10.

ELABORATE

- Revise the division of 2-digit number by 1-digit number by starting the topic “division by 1-digit number (without regrouping)”. Use the methods and examples given on pages 97–98 and demonstrate the division on board.

Next, explain division of a 3-digit by 1-digit by using the examples given on pages 98–99.

- Introduce division of 2-digit and 3-digit numbers with regrouping. Use the examples and detailed explanations given on page 100 and 101.
- Division by 10 and 100: Demonstrate on board that, when we divide a number by 10, the digit at the ones place of the number is the remainder and the number formed by the remaining digits is the quotient. For example, $87 \div 10$,
Then, quotient = 8, remainder = 7.

Use the examples given on page 102 of the book.

EVALUATE

Classwork: Ask to solve questions 1, 2, 3 and 4 of Exercise 5E, 5F and 5G. If students make any error, teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 5E, 5F and 5G.

ENHANCE

- Ask to watch the video on division with regrouping on “www.orangewebsupport.co.in”.

[Tech Connect]

Periods: 9–11	Topics: Word problems, Identifying the mathematical operations	Suggested extra teaching aids: Touchpad Mathematics 3, pages 103–105
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ENGAGE

Revise the important points of previously learned topics by asking a few questions in the classroom. Write any number on the board and tell the students to write any fact for that number. For example, consider number 24.

$6 \times 4 = 24$; $20 + 4 = 24$; $4 + 4 + 4 + 4 + 4 + 4 = 24$; $60 - 36 = 24$; $48 \div 2 = 24$

24 is an even number. It has 2 tens and 4 ones.

Accept the answers. Rectify if anyone has any confusion.

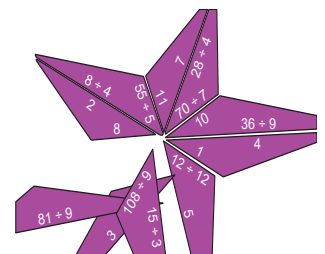
EXPLORE

Divide the class into groups of 5.

Distribute 10 cut-outs (2 for each part) of stars to each group, such that there is a question on one piece of cut-out and its answer on another piece.

Ask the groups, to match the questions with answers to complete the star.

[Experiential Learning]



EXPLAIN

Discuss in the classroom the real-life situations, where we use the division. Lastly, in the topic ‘Identifying the mathematical operations’, demonstrate the process of identifying the mathematical operations involves deciding which mathematical operation (addition, subtraction, multiplication, or division) will be useful in solving a word problem. Refer textbook page 104 for explanation and examples.

ELABORATE

Consider any problem from exercise or take another one, such as: After winning the final match, a Kabaddi Team was rewarded with a prize money of ₹945. How much money would each of the 7 players get?

Total prize money = ₹945

Number of players in the team = 7

So, prize money got by each player = ₹945 ÷ 7 = ₹135

$$\begin{array}{r} 7 \overline{)945} \quad (135 \\ -7 \downarrow \\ \hline 24 \\ -21 \downarrow \\ \hline 35 \\ -35 \downarrow \\ \hline 0 \end{array}$$

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve some questions of Exercise 5H and 5I. If students make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 5H and 5I.

ENHANCE

Ask to solve ‘Mental Maths’ given on page 107.

Periods: 12–13

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 105–108

- Make students comfortable, so they can ask any question on any previously taught topics in which they are facing problems.
- Motivate to solve the activity given in ‘Fun Activity’ section on page 108.
- Start the revision of the exercise by using Points to Remember, Learning Logs, and HOTS.
- Motivate the students to solve the Puzzle given on page 106.
- Ask students to find two processes of division other than those discussed in the book, with the use of the internet or with the help of friends, teachers and parents.





FRACTIONS

LEARNING OBJECTIVES

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

- ◆ understand the concept of fractions
- ◆ know how to represent part of a whole or a collection
- ◆ identify the numerator and denominator in a given fraction
- ◆ find fractions of a whole or a collection
- ◆ explore the use of fractions in real-life situations

LESSON PLAN

Suggested number of periods: 9

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some real-life objects like candies, fruits, cut-outs of different plane shapes showing fractions, sketch pens, pens, pencils, etc.

Keywords: Fraction, halves, one-third, one-fourth, numerator, denominator, etc.

Pre-requisite knowledge: Students must be familiar with fractions, part of a whole or a collection.

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: Understanding fractions, Writing fractions, Numerator and Denominator of a Fraction	Suggested extra teaching aids: Some real-life objects, like pencils, toffees, fruits etc. Touchpad Mathematics 3, Pages 109–115
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ENGAGE

Introduce the topic in the classroom with some interesting activities like, distribute some coloured square, rectangle and circle shaped papers in the class and ask: “How will you divide the shapes into two, three and four equal parts?” Accept the responses.

Introduce: Division of a whole into two halves, three one-thirds and four one-fourths.

Teacher can discuss the concept given in “Warm Up” section given on pages 109 and 110.

EXPLORE

Divide the class into pairs. Distribute squared paper sheets to them. Ask to fold the square paper into equal halves, press the crease and then unfold the sheet.

Ask: How many equal divisions are made in sheet? Accept the responses.

[Experiential Learning]

A fraction is a part of a whole when divided into equal parts. A whole can be a region or a collection. The parts of a whole of the same size are called equal parts. Explain halves, one-third, one-fourth. Show on board how to write fractions using two numbers, *i.e.*, numerator and denominator. Explain what are numerator and denominator. Refer textbook pages 110–113 for explanation and examples.

Interact with the students and encourage them to share their daily life experience when they want to distribute something among friends and family members. For example,

- Taking their responses, describe the concept of fractions on the board..

Given to Navin's sister

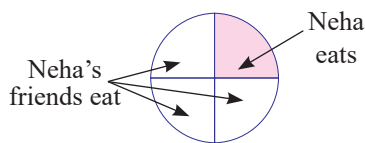
Eaten by Navin

Further, demonstrate on board that fractions are represented as follows:

In the above situation, Fraction = $\frac{1}{2}$

← Numerator
← Denominator

Similarly, elaborate Neha's case as:



Clearly, Neha eats one-quarter $\left(\frac{1}{4}\right)$ and her friends eat three-quarters $\left(\frac{3}{4}\right)$.

[Logical and Critical Thinking]

Classwork: Ask to solve questions 1, 2, 3, 4, 5 and 6 of Exercise 6A. If any student make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 6A.

[Tech connect]



Periods: 4–5

Topic: Fractions of a collection

Suggested extra teaching aids: some real-life objects like balls, pencils, etc.

Touchpad Mathematics 3, pages 116–118

ENGAGE

Write a few fractions on the board. And ask to identify the numerator and denominator of the fractions. Accept the responses.

EXPLORE

Divide the class into pairs. Choose a pair of students randomly. Give a rectangular piece of card sheet having equal divisions to both the students of the pair. Instruct them to shade the parts as many as they want, and write them in fractions. Also identify the numerator and denominator of each fraction. Rectify if any student makes any error.

EXPLAIN

Discuss that a collection can also be taken as a whole and fractions are equal parts of a collection. For instance, instruct the students sitting in the 1st row or the students of roll numbers 1–10 to stand up. Explain what fractions of these students are boys and girls. Suppose there are 6 students in the 1st row and 2 are boys. Then, $\frac{2}{6}$ of the group are boys and $\frac{4}{6}$ of the group are girls.

We can find fraction of a collection using division.

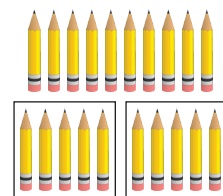
The teacher can take the reference of explanation given on pages 116–117 of the textbook.

ELABORATE

Write on board half $\left(\frac{1}{2}\right)$ of a collection.

Take some real-life objects, like 10 pencils. Distribute it in two equal parts. Ask students to observe that each group has 5 pencils. And each part represents half $\left(\frac{1}{2}\right)$ of the collection.

So, $\frac{1}{2}$ of 10 = 5 or $10 \div 2 = 5$, i.e., half of 10 pencils is 5.



Similarly, demonstrate one-third $\left(\frac{1}{3}\right)$, one-fourth $\left(\frac{1}{4}\right)$ of a collection by using division.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve questions 1, 2 and 3 of Exercise 6B. If students make any error, teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 6B.

ENHANCE

- Watch the video on fractions on “www.orangewebsupport.co.in”.

[Tech connect]



ENGAGE

Revise the important points of previously learned topics by asking a few questions in the classroom. Accept the answers. Rectify if anyone has any confusion.

EXPLORE

Write on board:

Total number of students:

Number of students present:

Number of girls present:

Number of boys present:

Call three students of the class and ask one of them to count the total number of students present. And others to count the number of boys and girls present in the classroom and write the numbers alongside the respective headings. Next, ask the class one by one to represent them in fractions. **[Experiential Learning]**

EXPLAIN

Discuss the real-life situations where we use fractions, using the examples and methods given on pages 118–119.

ELABORATE

Write on board Madhuri made a garland using 16 roses. 5 of them are red. Which fraction does it represent?

(a) red roses out of the total roses

(b) non-red roses out of the total roses”

(a) Given, total number of roses used = 16

And, number of red roses = 5

So, the fraction representing red roses = $\frac{5}{16}$

(b) Number of roses which are not red = $16 - 5 = 11$

So, fraction representing non-red roses = $\frac{11}{16}$

Also discuss other examples given on pages 118–119 on board.



[Conceptual Learning]

EVALUATE

Classwork: Ask to solve questions 1, 2 and 3 of Exercise 6C. If any student makes any error, the teacher will correct and explain.

Homework: Ask to solve the remaining questions of Exercise 6C.

ENHANCE

- Ask to watch the video on fractions on “www.orangewebsupport.co.in”.

[Tech Connect]



Periods: 8–9

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 120–122

- Make students comfortable, so they can ask any question on any previously taught topics in which they have doubts.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS.
- At last guide them to perform the activity given in ‘Fun Activity’ on page 122. **[Art integration]**
- Ask students to prepare colourful charts on fractions with the help of friends, teachers and parents.



GEOMETRY

LEARNING OBJECTIVES

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

- ◆ learn about solid shapes and explore combinations of solid shapes
- ◆ recognise plane and curved surfaces
- ◆ understand plane shapes and recognise square corners in different shapes
- ◆ learn about types of lines and create designs using straight and curved lines

LESSON PLAN

Suggested number of periods: 11

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some real-life objects like: Dice, birthday cap, any cuboidal shape object, cut-outs of plane shapes, circular objects, cylindrical objects, etc.

Keywords: Point, line, ray, horizontal line, vertical line, slanting line, line segment, triangle, rectangle, square, circle, centre, side, vertex, cube, cuboid, cylinder, cone, sphere, hemisphere, diagonal, side view, front view, top view, tangram, plane surface, curved surface, etc.

Pre-requisite knowledge: Students must be familiar with plane shapes rectangle, square, triangle, circle, oval, straight line, curved line, drawing a straight line, solid shapes, 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: 1–3	Topics: Solid shapes, Plane and Curved Surfaces, Combination of solid shapes	Suggested extra teaching aids: Some real-life 3D objects like: Ball, bowl, battery, pencil box, Christmas cap, etc. Touchpad Mathematics 3 pages 124–128
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ENGAGE

Start the class by taking the reference of ‘Warm Up’ on page 123 of the textbook. And discuss and motivate to solve the questions given in this section.

Further, place some real-life objects on teacher’s table and ask about its shapes, difference between 2-dimensional and 3-dimensional shapes. Accept the responses.



EXPLORE

Ask students to bring lunch based on 3-dimensional shapes, like: Sandwiches, parathas, juice tetra packs or cans, laddoos, etc.

The next day, ask each student one by one to open the lunchbox and describe the shape of the food items in it. Allow students to enjoy their lunch by sharing it with each other. **[Collaborative and Holistic Learning]**

EXPLAIN

Demonstrate some solid objects in the classroom and explain that solids are not flat like plane figures. They are 3-dimensional shapes/figures. It has length, breadth (or width) and depth (or height). A solid occupies a fixed amount of space. Solids have two types of surfaces: Plane and curved. Solid shapes have faces, edges and vertices. Further explain the solid shapes cube and cuboid, and difference between them. Further explain cylinder, cone and sphere and combination of these shapes.

ELABORATE

Demonstrate some 3-dimensional objects in the classroom and explain that the part of an object which we see, touch and feel is known as the surface. The surface can be plane (or flat) or curved. Take reference of page 125 to explain it in detail.

Further demonstrate faces, edges and vertices of solid of objects: cube, cuboid, cylinder, cone, sphere and hemisphere by taking reference of pages 125 and 126. Also show real objects to reinforce the concepts.

Demonstrate a cube and cuboid in the classroom and ask the differences between these two. Accept the responses. Also, discuss the differences given between these two on page 125.

Next, demonstrate faces, edges and vertices of cylinder, cone and sphere in the classroom.

Further, ask students to explore some real-life objects, where they observe combination of solid shapes like ice cream cone. **[Experiential Learning]**

EVALUATE

Classwork: Ask to solve Q.1, 2, 5, 6, and 7 of Exercise 7A. If any student makes any error, the teacher will correct and explain.

Homework: Ask to solve remaining questions of Exercise 7A.

ENHANCE

- Ask to focus on the concept given in 'Keep in Mind' on page 126.
- Ask to collect and paste images of different 3-dimensional objects on a chart paper and represent shapes, number of plane faces, curved faces, edges and vertices of each in a tabular form.

[Creative Thinking]

Periods: 4–7	Topics: Tracing Solid Shape, Plane Shapes, Square Corners	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, birthday cap, old battery, ball, notebook, etc. Touchpad Mathematics 3, Pages 128–132
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ENGAGE

Ask students to trace the base of their water bottle in their notebook and observe the shape they drew. Accept the responses. Introduce the topic 'Tracing Solid Shape'.

EXPLORE

Divide the class into four groups. Distribute dot paper to each group. Ask groups to construct with help of each other

- A square joining only 16 dots and colour it yellow.
- A rectangle joining only 20 dots and colour it red.
- A triangle joining only 18 dots and colour it blue.

Now try to identify the sides and vertices of the shapes drawn. Next, draw a rough sketch of a circle on a plane paper and try to find its side and vertex, if any.

[Collaborative Learning]

EXPLAIN

Any closed figure joining three or more points that can be drawn on a flat surface is called a plane figure or shape. Triangles, rectangles, squares, etc., are plane shapes. Demonstrate on board with images that

- A triangle has 3 edges and 3 corners.
- A rectangle has 4 edges and 4 corners.
- A square also has 4 edges and 4 corners.
- A circle has no edges or corners.

Next, explain about ‘Square corners’ and different angles formed relative to the corners.

For detailed explanation use the page 129 of the textbook.

[Conceptual Learning]

ELABORATE

Demonstrate in the classroom that base of every solid shape is a plane shape, by drawing outlines of some solid shapes like:

Pencil box (cuboid) – Rectangle

Lunch box (Cuboid) – Rectangle

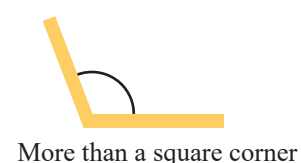
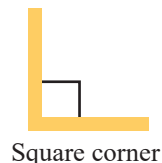
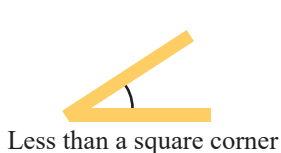
Birthday cap (Cone) – Circle

Ball (Sphere) – Circle

Battery (cylinder) – Circle, and so on.

Further, demonstrate about plane shapes in detail by taking the reference of pages 128-129 of the textbook.

Also, demonstrate about different angles formed corresponding to square corners like:



by taking reference of page 129 of the textbook.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 4, 5, 6, 9 and 11 of Exercise 7B in the classroom. If any student have any confusion, teacher will help him/her.

Homework: Ask to solve the remaining questions of Exercise 7B.

ENHANCE

- Ask to do the ‘Activity’ given on page 130 of the textbook.



ENGAGE

Start the class by discussing about different types of lines they observe in real life. Give every student a piece of colourful wool or thread.

Ask them to pull it tight between their hands. Ask: “What kind of line is this?” Next, ask them to let it go loose on their desk. “What happened to the line?”

Accept the responses.

Next, instruct to look at the sari border given on page 132 of the book. Ask students to point out where the “straight” lines and “curved” lines are?

Accept the responses.

[Experiential Learning]

EXPLORE

Provide students with various objects (books, bangles, lunch boxes, coins).

Ask to draw a table in their notebook with two columns with heading Straight line (objects with straight edges) and Curved line (objects with rounded edges).

EXPLAIN

Explain the three types of straight lines horizontal, vertical and slanting.

Explain that a curved line is any line that “turns” or “bends” without a sharp corner.

[Conceptual Learning]

ELABORATE

Introduce the Tangram as “a square that broke into 7 pieces”.

Instruct students, to follow the textbook instructions to create the 8 cm × 8 cm grid.

Ensure students use a ruler for the 16 small squares to emphasize vertical and horizontal precision.

Instruct to identify the shapes:

5 Triangles (2 large, 1 medium, 2 small), 1 Square, 1 Parallelogram

Ask students to create the different shapes by taking the reference of ‘Activity’ given on page 133 of the textbook.

[Creative and Art integrated Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 4, 5, and 6 of Exercise 7C in the classroom. If any student has any confusion, teacher will help him/her.

Homework: Ask to solve the remaining questions of Exercise 7C.

ENHANCE

- Ask students to draw a sari border using a pattern of two straight lines followed by one curved line.
- Ask them to create a shape that isn't in the book— perhaps a house or a boat.

[Art Integrated Learning]

Periods: 10–11

Topic: Revision

**Suggested extra teaching aids:
Touchpad Mathematics 3 pages 135–137**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Start the revision of the exercise.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, HOTS.
- Help the students to perform the activity given in 'Fun Activity' on page 137. [Art Integration]





SYMMETRY AND PATTERNS

LEARNING OBJECTIVES

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

- ◆ explore symmetry
- ◆ identify and draw tiling patterns
- ◆ draw and read simple street maps
- ◆ understand number patterns and *rangoli*
- ◆ identify different views of solids

LESSON PLAN

Suggested number of periods: 13

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some cut-outs of real-life objects like butterflies, monuments, etc.

Keywords: Identical, symmetrical shapes, asymmetrical shapes, line of symmetry, pattern, *rangoli*, views, maps, etc.

Pre-requisite knowledge: Students must be familiar with symmetry, patterns in shapes, numbers, and letters.

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

Topic: Symmetry

Suggested extra teaching aids: Cut-outs of some monuments, Touchpad Mathematics 3 pages 140–142

ENGAGE

Distribute some cut-outs of monuments, human faces, or other objects. Instruct to fold the cut-outs into two identical halves and open them. Ask: Is the crease formed on the cut-out dividing the shape into two identical halves? Accept the responses. Introduce the concept of symmetry.

EXPLORE

Distribute paper in the classroom. Instruct to make some closed shapes on it. Make a crease line on the shapes to divide the shapes into two identical halves and observe them.

Ask: Which shape is divided into two identical halves by the crease line? Accept the responses. If the crease line divides the shapes into two identical halves, it is called the line of symmetry and the shapes are called symmetrical.

[Experiential Learning]

EXPLAIN

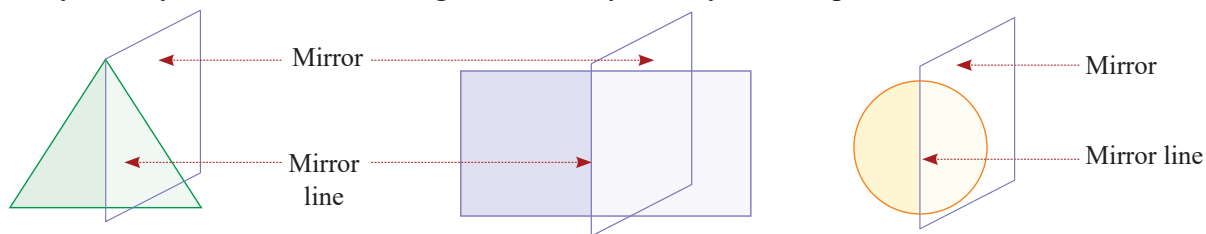
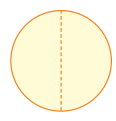
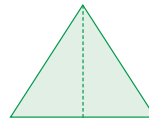
When a figure or shape is divided into two halves by drawing a line, then they are called symmetrical figures or shapes. The line which divides the figure into two halves is called the line of symmetry or axis of symmetry.



Figures that are not symmetrical are called asymmetrical figures. They do not have a line of symmetry.

ELABORATE

Write on the board “Identifying symmetrical figures using a mirror”. Demonstrate by taking a triangular, rectangular and circular piece of paper and fold them into halves. Cut them along the line of symmetry. Place a mirror along the line of symmetry of each piece.



Demonstrate that the shape viewed in the mirror is the same as the shape on the left side and the two together form the complete shape. Take the help of the topic described on page 141 of the textbook. **[Conceptual Learning]**

EVALUATE

Classwork: Ask to solve questions 1 and 2 Exercise 8A. If any student makes any error, the teacher will correct it and explain.

Homework: Ask to solve Q.3 of Exercise 8A.

ENHANCE

- Ask to watch the video on symmetry on the link “www.orangewebsupport.co.in”. **[Tech Connect]**

Periods: 4–8	Topics: Patterns, <i>Rangoli</i> , Tiling Patterns	Suggested extra teaching aids: Chart paper having pictures of some patterns and tiling patterns, etc. Touchpad Mathematics 3 pages 142–147.
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ENGAGE

Instruct the class to pay attention. Draw some object patterns on the board with some blank spaces. Instruct the students to tell the name of the next two shapes or objects to complete/continue the pattern drawn on the board. Accept the responses. Introduce the concept of different kinds of patterns.

EXPLORE

Divide the class into pairs. Give them some cut-outs of different shapes.

Instruct to make their own pattern using these cut-outs of shapes.

Ask a student of the other pair to identify and tell the name of the next two cut-outs of the shapes to continue the pattern. Accept the responses. Discuss some other kinds of patterns.



EXPLAIN

A pattern is a set of shapes, numbers or letters that can be repeated according to a rule so that a sequence is formed. Patterns are found everywhere around us. The pattern is formed when different shapes are drawn repeatedly. We can find beautiful patterns on saris, carpets, *rangoli*, tiles, and in nature. Different colours can be used to create different patterns with the same shapes.

Explain that ‘*Rangoli*’ is also a beautiful example of pattern and symmetry.

[Conceptual Learning]

ELABORATE

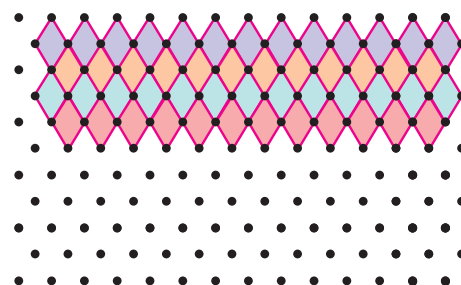
Divide the class into small groups. Provide an isometric/square dot/grid paper to each group. Instruct each student to take a crayon/coloured pencil of any colour but not same. Then shade the square/diamond/triangle shape in order and observe the tiling pattern so formed.

Discuss with other groups.

[Collaborative Learning]

The teacher can also organise a *Rangoli* designing competition in his/her classroom.

Use reference of pages 142–144 for the detailed explanation of topics.



EVALUATE

Classwork: Ask to solve Q.1, 2 and 4 of Exercise 8B and Q.1 and 2 of 8C. If students make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 8B and 8C.

ENHANCE

- Ask students to prepare a colourful chart on information about ‘*Rangoli*’ of different states and present it in the classroom.
- Watch the video on symmetry and patterns on “www.orangewebsupport.co.in”.

[Tech Connect]

Periods: 9-11	Topics: Views, Maps	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, some small objects, etc. Touchpad Mathematics 3, Pages 147–149
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ENGAGE

Show students a toy or an object (like a cube) from different angles (top, side, and front). Ask the students to describe how the object looks from each view. Relate this to buildings, showing how a building looks different from the front, side, and top.

Ask: What did you notice about how it looks from each side?

Accept the responses.

EXPLORE

Divide the class into groups.

Give each group a few pictures of a simple object (like a table) from different angles (front, side, top). Ask them to label each view.

Next, distribute plain paper to each group. Ask to draw route map from the classroom to principal's room. Teacher will help if any group wants it. The group whose route map is the best and proper will be appreciated.

[Experiential Learning]

EXPLAIN

Explain to the class that,

Top View: The view of an object when seen from above.

Side View: The view of an object when seen from one of its sides.

Front View: The view of an object when seen from the front.

A map helps us find different places and shows how to travel from one place to another, like reaching the park or school.

Use the example map in the picture given on page 148 of the book to show different routes from the home to the park, school, and playground.

ELABORATE

Take reference of pages 147 and 148 to explain 'Views' and 'Maps' in detail by demonstrating on board.

EVALUATE

Classwork: Ask to solve Q.1 and 3 of Exercise 8D. If any student makes any error, the teacher will correct and explain.

Homework: Ask to solve Q.2 of Exercise 8D.

Periods: 12-13	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 3 pages 149-151
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- Make students comfortable, so they can ask any question on any previously taught topics in which they have problems.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS of the chapter.
- Ask students to perform the activity given in 'Fun Activity' on page 151.
- Take a chart paper and paste images of five symmetrical monuments on it.

[Art Integration]





MEASUREMENT OF LENGTH

LEARNING OBJECTIVES

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

- ◆ measure length and distance using standard units like centimetre, metre and kilometre
- ◆ understand the conversion of units of length

LESSON PLAN

Suggested number of periods: 5

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some chits on which different measurements are written, bowl, ruler, etc.

Keywords: Metre, centimetre, millimetre, etc.

Pre-requisite knowledge: Students must be familiar with units of measurement, conversion, addition and subtraction of numbers.

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: Units of length,
Conversion

Suggested extra teaching aids:
Touchpad Mathematics 3, pages 152–156

ENGAGE

Divide the class into pairs. Help students in measuring the length of various objects in cm using a ruler. Ask: What is the length of the pencil?, Is cm a standard unit of length?, Is there any other standard unit of length? Accept the responses. Use ‘Warm Up’ section given on pages 152 and 153 to revise the previous concept.

EXPLORE

Divide the class into pairs and give them a measuring tape. Instruct students to measure the length of their desk, the length of their classroom, and the height of their partner using the measuring tape .

Ask: What is the length of the desk?, What is the length of the classroom?, What is the height of your partner in m? How many cm are there in 1 metre? In what unit do you measure the distance between the school and your home? Accept the responses.

[Experiential Learning]

EXPLAIN

Introduce standard units of length and their conversion. There are three standard units of length, centimetre (cm), metre (m), and, kilometre (km). A centimetre is used to measure small lengths, like the length of a pencil, twig, pencil box, etc. A metre is used to measure big objects, like the length of a garden, room, cloth, etc., and the larger lengths like the distance between two cities is measured in kilometres. There are 100 cm in 1 m, *i.e.*, $1\text{ m} = 100\text{ cm}$, and there are 1000 m in 1 km, *i.e.*, $1\text{ km} = 1000\text{ m}$.

ELABORATE

Write some measurements in cm, m, and km on the board, such as: 200 cm, 5 m, 3 km, 5000 m, etc. Take a bowl and put some chits having units metres, centimetres, or kilometres written on them. Choose a pair randomly. Instruct: Read aloud the measurement written on the board, pick out a chit, and convert the measurement into the unit written on the chit. Repeat this activity with more pairs till time permits. Accept the responses. Also, discuss the topic of measuring short lengths given on pages 153–154. Demonstrate the conversion of units on the board with examples. (Take reference of the pages 155 and 156 to explain the conversion of units.)

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1 and 3 of Exercise 9A and Q.1 (a), (b), (c), (d) of 9B, if any student makes any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 9A and 9B.

ENHANCE

- Motivate to do the ‘Activity’ given on page 154. [Computational]
- Ask to watch the video on measurement of length on the link “www.orangewebsupport.co.in”.

Periods: 4–5

Topic: Revision

**Suggested extra teaching aids:
Touchpad Mathematics 3 pages 157–159**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Start the revision of the exercise.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS.
- Help the students to perform the activity given in ‘Fun Activity’ on page 159.





MEASUREMENT OF WEIGHT

LEARNING OBJECTIVES

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

- ◆ measure weight using standard units like milligram, gram and kilogram
- ◆ understand the conversion of units of weight
- ◆ learn to make equal weights
- ◆ understand balancing weights

LESSON PLAN

Suggested number of periods: 8

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some chits on which different measurements are written, bowl, some objects, some weights, etc.

Keywords: Gram, kilogram, Balance, etc.

Pre-requisite knowledge: Students must be familiar with units of measurement, conversion, addition and subtraction of numbers.

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: 1–6	Topics: Measuring mass(weight), Conversion, Balancing the weight	Suggested extra teaching aids: Weighing scale and some weights of 50 g, 100 g, 250 g, 500 g, etc. Touchpad Mathematics 3, pages 160–166
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ENGAGE

Place a weighing machine on the table. Take some objects like a book, school bag, water bottle, eraser, etc. Instruct the class to hold the objects one by one, guess their weights and then, verify their weight by using the weighing machine.

Ask: Which is heavier?, Which objects have their weight in kg and g? Accept the responses.

Also, discuss the ‘Warm Up’ section given on pages 160 and 161 in the classroom.

EXPLORE

Divide the class into groups. Give them a set of all weights including gram and kg weights (up to 2 kg). Instruct: Measure the weight of your school bag, first by using kilogram weights and then by using gram weights only and note down their weights in both units.

Ask: What is the weight of your school bag in kg and g respectively? If the weight of your school bag is 5 kg, then how many grams are there in 5 kg? Accept the responses and discuss the conversion of kg into grams.

EXPLAIN

Introduce standard units of weight and their conversions. Gram is used to measure the weight of small or lighter objects, while ‘kilogram’ is used to measure the weight of big or heavier objects. There are 1000 g in 1 kg, *i.e.*, $1 \text{ kg} = 1000 \text{ g}$.

To convert the kg into grams, multiply by 1000 or simply add three zeros to the right of weight in kg.

To convert grams into kilograms, we divide the number of grams by 1000. Similarly, to convert kilograms and grams into grams, we multiply the number of kilograms by 1000 and add the product to the number of grams and to convert grams into kilograms and grams, we divide the number of grams by 1000. Here, we get the quotient (in kg) and remainder (in g).

ELABORATE

Write some measurements of weights in g on the blackboard.

Instruct: Convert them into kg. Accept the responses and on that basis explain that on converting measurements of weights from g into kg, divide by 1000 or simply remove the last three zeros, if the weight is exactly divisible by 1000. And, when the measure in grams is not exactly divisible by 1000, then the quotient is written in kg, and the remainder is written in g. Or simply write last three digits in grams and the remaining digits in kilograms from the right. Demonstrate conversion of kg into g on the board.

- Convert 6 kg to g.

As, $1 \text{ kg} = 1000 \text{ g}$

So, $6 \text{ kg} = (6 \times 1000) \text{ g} = 6000 \text{ g}$

- Convert 9000 g into kg.

Remove the last three zeros from the right to convert g to kg.

Or, $9000 \text{ g} = (9000 \div 1000) \text{ kg} = 9 \text{ kg}$

- Convert 3 kg 150 g to g.

$3 \text{ kg } 150 \text{ g} = (3 \times 1000) \text{ g} + 150 \text{ g} = 3000 \text{ g} + 150 \text{ g} = 3150 \text{ g}$

- Convert 4640 g into kg and g.

$4640 \div 1000$, $Q = 4$ and $R = 640$

So, $4640 \text{ g} = 4 \text{ kg } 640 \text{ g}$

Also, take reference of the pages 163 to 164 to explain the conversion of units.

Demonstrate ‘Balancing the weight’ by taking the reference given on pages 165–166.

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve Q.1 of Exercise 10A, Q.1 and 3 of Exercise 10B and Q.1, 2, 3 of 10C. If students make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 10A, 10B and 10C as homework assignment.



ENHANCE

- Ask to do the ‘Activity’ given on page 162. [Experiential Learning]
- Watch the video on the measurement of weight on “www.orangewebsupport.co.in”. [Tech Connect]

Periods: 7–8

Topic: Revision

**Suggested extra teaching aids:
Touchpad Mathematics 3 pages 167–169**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Start the revision of the exercise.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS. If students have any confusion or error, then the teacher will explain and correct it.
- Help the students to perform the activity given in ‘Fun Activity’ on page 169.



MEASUREMENT OF CAPACITY

LEARNING OBJECTIVES

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

- ◆ measure capacity using standard units like millilitres and litres
- ◆ understand the conversion of units of capacity

LESSON PLAN

Suggested number of periods: 5

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some chits on which different measurements are written, bowl, some containers of different capacities, etc.

Keywords: Litre, millilitre, etc.

Pre-requisite knowledge: Students must be familiar with units of measurement, conversion, addition and subtraction of numbers.

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: Measuring capacity, Making equal volumes(capacity), Conversion	Suggested extra teaching aids: Some containers of different measurements, some liquids for measurement Touchpad Mathematics 3 pages 170–176
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ENGAGE

Recall the concept of capacity. Put some containers of different measurements on the table. Ask: Which container will contain more liquid?, Which containers have their capacity in litres and in millilitres respectively? Accept the responses. Use the ‘Warm Up’ section to discuss about the topic ‘Capacity’.

EXPLORE

Divide the class into 5 groups. Distribute measuring jars (with 50 mL, 100 mL, 200 mL, 300 mL, 400 mL and 500 mL markings), a small measuring cup (1, 2, 3, 4, 5 mL markings), a 1 L water bottle, and an empty 5 L bucket. Instruct each group to fill the 1 L bottle with liquid using measuring jars/cups of different capacities and write on the board:



$$1 \text{ L} = \underline{\hspace{1cm}} (100 \text{ mL})$$

$$1 \text{ L} = \underline{\hspace{1cm}} (200 \text{ mL}) \dots \text{and so on.}$$

Accept the responses and summarise the conversion of capacities to them.

EXPLAIN

The quantity of a liquid that a container or vessel can hold is called its capacity or volume. Vessels of different sizes are used to measure different quantities of liquid. To measure the capacity of a small quantity of liquid mL is used, while 'litre' is used to measure the capacity of a large amount of liquid. There are 1000 mL in 1 L, i.e., $1 \text{ L} = 1000 \text{ mL}$.

- To convert the L into mL, multiply by 1000 or simply add three zeros to the right of capacity in L.
- To convert litres and millilitres into millilitres, we multiply the number of litres by 1000 and add it to the number of millilitres.
- To convert millilitres into litres, we divide the number of millilitres by 1000.
- To convert millilitres into litres and millilitres, we divide number of millilitres by 1000. We get the quotient (in litres) and the remainder (in millilitres).

ELABORATE

Demonstrate with the help of book pages 172 and 173, that small quantities of liquids are measured in millilitres. It is denoted by 'mL'.

Like:

		
200 mL	5 mL	150 mL

Large quantities of liquids are measured in litres. It is denoted by 'L'.

Like:

		
20 L	150 L	225 L

Write some measurements of capacities in mL on the blackboard.

Demonstrate conversion of L into mL on the board. As,

- Convert the 5 L into mL.
 $5 \text{ L} = (5 \times 1000) \text{ mL} = 5000 \text{ mL}$
- Convert 4 L 328 mL into mL.
 $4 \text{ L } 328 \text{ mL} = (4 \times 1000) \text{ mL} + 328 \text{ mL} = 4000 \text{ mL} + 328 \text{ mL} = 4328 \text{ mL}$
- Convert 6000 mL into L.
 $6000 \text{ mL} = (6000 \div 1000) \text{ L} = 6 \text{ L}$
- Convert 9950 mL into L and mL.
 $9950 \text{ mL} = (9950 \div 1000) \text{ L} = 9 \text{ L } 950 \text{ mL}$

$$\text{Or } 9950 \text{ mL} = 9000 \text{ mL} + 950 \text{ mL} = 9 \text{ L} + 950 \text{ mL} = 9 \text{ L } 950 \text{ mL.}$$

Discuss making equal volumes by using the reference given on page 175.

EVALUATE

Classwork: Ask students to solve Q.1, 2 and 3 of Exercise 11A and Q.1, 2 and 3 of Exercise 11B.

Homework: Ask students to solve the remaining questions of exercise 11A and 11B as homework assignment.

ENHANCE

- Ask students to perform the activity given in ‘project’ on page 174.

Periods: 4–5

Topic: Revision

**Suggested extra teaching aids:
Touchpad Mathematics 3 pages 176-178**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Start the revision of the exercise.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS. If students have any confusion or they make any error, then the teacher will explain and correct it.
- Motivate students to solve the puzzle given on page 178.
- Help the students to perform the activity given in ‘Fun Activity’ on page 178.





TIME

LEARNING OBJECTIVES

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

- ◆ explore and understand the clock
- ◆ read the time in 5-minute intervals
- ◆ understand the use of a.m. and p.m. and estimate time
- ◆ identify a particular day and date on a calendar
- ◆ write dates correctly
- ◆ read time correctly using a clock
- ◆ differentiate between times (before and after)

LESSON PLAN

Suggested number of periods: 11

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, wall clock/table clock, calendar, etc.

Keywords: A.M., P.M., ante meridiem, post meridiem, minutes, seconds, quarter past, quarter to, conversion, leap year, etc.

Pre-requisite knowledge: Students must be familiar with a.m., p.m., reading time when minute hand is at half past the hour, days of the week, 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: Reading the Time, Reading time to quarter past and quarter to an hour, Reading time in 5-minute intervals	Suggested extra teaching aids: Wall clock or table clock Touchpad Mathematics 3 pages 179–184
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ENGAGE

After the introduction, start with a discussion like: At what time do you wake up?, At what time do you come to school?, At what time do you leave the school?, At what time do you sleep? Accept the responses.

Discuss the concepts and questions given in “Warm Up” section on pages 179 and 180.

EXPLORE

Divide the class into two groups A and B. Give a cardboard clock with minute and hour hands to them. Instruct group A to display the time at 5 minutes interval and the group B will read the time.



If group B identifies the time shown on the clock correctly, then group B will get 1 point. In the similar way, there will be five rounds for each group. The group that will identify more correct times will win the game.

[Experiential Learning]

EXPLAIN

A clock has two hands; one is shorter than the other. The shorter hand is hour hand and the longer hand is the minute hand. These hands move in a clockwise direction. The dial of the clock is divided into 12 big divisions, numbered from 1 to 12. The gap between every consecutive number is divided into 5 equal small divisions. There are 60 small divisions on the whole dial. The minute hand (longer hand) moves from one small division to the next small division in 1 minute. It goes once around the dial in 1 hour. So, the minute hand covers 60 small divisions in 1 hour.

So, 1 hour = 60 minutes.

The hour hand moves from one number to the next number in 1 hour. So, it takes 12 hours to complete one round. The hour hand takes 2 complete rounds in a day. So, 1 day = 24 hours.

The time is in full hours when the minute hand is at twelve. The time is half an hour when it is on 6, quarter past the hour when it is on 3, and quarter to the hour when it is on 9.

The minute hand moves from one number to the next number in 5 minutes.

Any time can be read and written using 'past the hour' as well as 'to the next hour'.

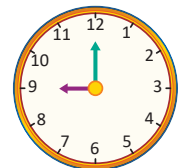
- When the minute hand is in the left half, the time is read as to.
- When the minute hand is in the right half, the time is read as past.

ELABORATE

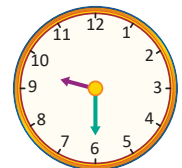
Involve the students in making a clock using a paper plate. Then, demonstrate how to read time by setting the hands for different times.

Demonstrate that the hour hand is on 9 and the minute hand is on 12.

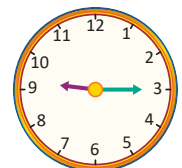
So, the time is 9:00 or 9 o'clock.



Again demonstrate half past time on the clock. As in the given clock, the hour hand is between 9 and 10 and the minute hand is on 6. So, the time is 9:30 or half past 9.



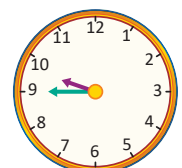
Similarly, demonstrate the time in quarter past and quarter to in the clock. As, the minute hand in the clock is at 3. It shows 15 minutes, as $3 \times 5 = 15$. The hour hand is slightly past 9. The time by the clock is 'quarter past nine' or 9:15.



Again, show a quarter to an hour. As in the given clock

The hour hand is near 10. And the minute hand is on 9.

The time is 9:45 or quarter to 10.



Further, demonstrate the complete dial is divided into $12 \times 5 = 60$ small equal divisions. *i.e.*, 1 small division = 1 minute, 5 small divisions = 5 minutes. And 1 hour = $12 \times 5 = 60$ minutes.

The minute hand moves from one number to the next number in 5 minutes.

When the minute hand is on 1, it means $1 \times 5 = 5$ minutes have passed.

When the minute hand is on 2, it means $2 \times 5 = 10$ minutes have passed.

When the minute hand is on 3, it means $3 \times 5 = 15$ minutes have passed, and so on.

Next, explain reading time when the minute hand is in the left half or in the right half by using references given on page 183. **[Experiential Learning]**

EVALUATE

Classwork: Ask to solve Q.1 and 2 of Exercise 12A, Q.1 and 2 of Exercise 12B, Q.1 and 2 of exercise 12C. If any student makes any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 12A, 12B and 12C.

ENHANCE

- Discuss 'Past and To' by taking reference of pages 183 and 184 of the textbook.

[Experiential Learning]

Periods: 5–7	Topics: AM and PM, Estimating the Time, Time before and after	Suggested extra teaching aids: Wall clock or table clock, cut-outs of images showing daily activities of a child Touchpad Mathematics 3 pages 185–187
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ENGAGE

After the introduction, ask the students: When do they wake up?, What time do they come to school?, At what time they take their dinner? Accept the responses. Suppose they come to school at 8 o'clock and take the dinner at 8 o'clock. Ask: how is it possible? Accept the responses.

Introduce the time in a.m. and p.m.

EXPLORE

Divide the class into two groups. Show some cut-outs of daily activities a kid. Ask students to observe the activities and tell the time in a.m. or in p.m. when the activities are performed. The group who will tell the correct time for more number of activities will win the game.

EXPLAIN

There are 24 hours in a day. We write the time between 12 midnight and 12 noon using a.m. (ante meridiem). The time before noon is a.m. We write the time between 12 noon and 12 midnight using p.m. (post meridiem). The time after noon is p.m. Teacher can also take reference of page 185 to explain the concept.

ELABORATE

Demonstrate the cutouts of child's activities where time is estimated in seconds, minutes and hours.

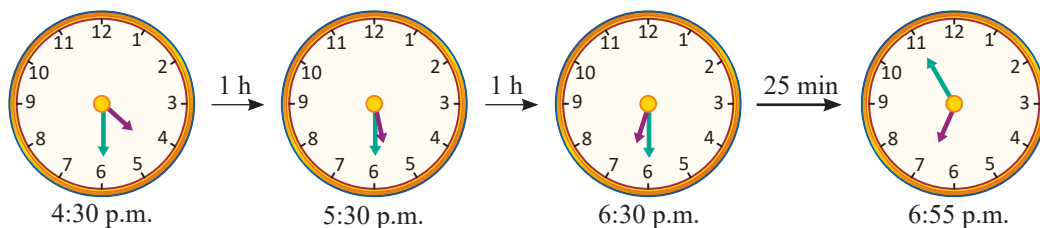
Next move on to page 186, explain the time Before and after *i.e.*, elapsed time between two activities.



Time

Write on board: Shweta started making puzzles at 4:30 p.m. She stopped making at 6:55 p.m. For how long did she make?

Demonstrate with clock as follows:



She made the puzzle for 2 hours 25 minutes.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q. 1 and 3 of Exercise 12D and Q.1, 2, 3, 4 and 5 of Exercise 12E. If students make any error, teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 12D and 12E.

ENHANCE

- Encourage the students to make the 'Project' given on page 185.

[Art Integration]

Periods: 8–9	Topics: Calendar, How To Write Dates	Suggested extra teaching aids: Calendar of current year Touchpad Mathematics 3 pages 188–191
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ENGAGE

Start the class with an interaction with students. Ask some questions, such as: which year is going on?, What day was yesterday?, What day is today?, On which day of a week, the school is closed? Tell the name of the days of the week., How many months are there in a year?, What are the names of the months? Accept the responses.

EXPLORE

Hang a calendar on the board.

Instruct students to come one by one and mark their birthday on calendar.

Ask from the other students of the class to identify month and day of birthday? Accept the responses.

[Experiential Learning]

EXPLAIN

A calendar is a chart, which shows days, dates, weeks and months in a year. One year has twelve months. There are 365 days in a year. Each month has 4 weeks. There are 7 days in a week. After every three years, a leap year comes, that has 366 days. In a leap year February has 29 days.

Further, explain that while writing dates, specify the number of the day of the month (that is, date), the name of the month and then the year.

ELABORATE

Demonstrate calendar of current year in the class, or show it on smartboard and present that

- A year is divided into 12 months; that is, a year has 365 days.
- January is the first month and December is the last month of the year.
- Some months have 30 days and some months have 31 days.



- February is a special month having only 28 or 29 days.
- January, March, May, July, August, October and December have 31 days.
- April, June, September and November have 30 days.
- Each month is divided into weeks and a week has seven days, namely, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday.
- A leap year is the year in which the month of February has 29 days. It comes every four years and has 366 days.

Also explain rules of a leap year.

Further demonstrate on board that we write a date as a group of three numbers separated by two dots (.) or slashes (/). The first number stands for the day, the second number for the month and the third number is the year. For example,

15	.	08	.	1947		15	/	08	/	1947
↓		↓		↓	or	↓		↓		↓
Day		Month		Year		Day		Month		Year

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve Q.1 and 2 of Exercise 12F, and Q1 and 2 of Exercise 12G. If any student makes any error, the teacher will correct and explain.

Homework: Ask to solve the remaining questions of Exercise 12F and 12G.

ENHANCE

- Ask to collect and paste images of calendar of the current year, previous year and following year on a chart paper. Make a table to represent, number of days like Monday, Tuesday, ... in each months of the year.

[Experiential Learning]

Periods: 10–11

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 191–194

- Make students comfortable, so they can ask any question on any previously taught topics in which they have any doubt or query.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths, and HOTS.
- Discuss questions of 'Learning Logs' and accept students, answer, if there is any confusion or error then explain and correct it. Discuss and motivate students to solve 'Mental Maths'. Guide them to solve the 'HOTS'.
- Discuss about the importance of 'Birth Certificate'. Motivate students to fill the information required in this certificate in the 'Fun Activity' section on page 194. .
- Ask students to prepare a chart on 'timeline' on Prime Ministers of India, with the help of friends, teachers and parents.

[Cross Curricular Learning]



MONEY

LEARNING OBJECTIVES

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

- ◆ explore Indian coins and notes
- ◆ write money in words and figures
- ◆ understand conversion of rupees and paise
- ◆ add and subtract money

LESSON PLAN

Suggested number of periods: 8

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, some dummy notes and coins of different denominations.

Keywords: Currency, notes, coins, rupees, paise, addition, subtraction, total amount, balance etc.

Pre-requisite knowledge: Students must be familiar with what currencies are used for, Indian currencies and its symbol, conversion of money, addition and subtraction of 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: 1–3	Topics: Exchange of Goods, Conversion of Rupees and Paise	Suggested extra teaching aids: Some dummy notes and coins of different denominations. Touchpad Mathematics 3 pages 195–200
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ENGAGE

Show currency notes and coins of different denominations in the classroom. Instruct to identify them and write their values. Ask: How to write money in rupees and paise. Accept the responses. Discuss the concepts given in ‘Warm Up’ sections on page 195 and 196.

EXPLORE

Divide the class into pairs. Choose a pair of students randomly. Give few dummy currency notes and coins. Instruct each pair to take a currency note of fixed denomination and collect coins of paise for the same amount. (one student will show the note and the other student will convert the value of currency note into paise by collecting the coins). Accept the responses. Observe them and help them if any pair wants it.

[Experiential learning]



EXPLAIN

Explain that in ancient time people exchanged goods directly, without using money. But today we use money to buy and sell things. The type of money used in a particular country is called 'currency' of that country. In India, the currency is in the form of rupees and paise.

Money can be expressed in figures and words. We use a point (.) for separating rupees and paise. The number on the left side of the point shows rupees and the number on the right side of the point shows paise.

Further explain conversion of rupees and paise. To convert rupees into paise, we multiply the amount in rupees by 100. To convert rupees and paise into paise, we multiply the amount in rupees by 100 and then add paise to it. To convert paise into rupees and paise, we divide the number of paise by 100.

ELABORATE

Demonstrate different denominations of coins and rupees in the classroom on the board. Show how to write amounts in words and figures by taking references given on page 197.

Further explain on board 'conversion of rupees and paise' by taking references given on page 198.

[Conceptual learning]

EVALUATE

Classwork: Ask to solve Q1, 2, 3 and 4 of Exercise 13A.

Homework: Ask to solve the remaining questions of Exercise 13A.

ENHANCE

- Discuss how money has evolved from grains and shells to metal coins, paper notes and now digital UPI transaction.

Periods: 4–6	Topic: Addition and Subtraction of Money	Suggested extra teaching aids: Some Dummy Currency Notes and some Coins Touchpad Mathematics 3 pages 201–202
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ENGAGE

Show some currency notes of fixed denomination in the class, then add some more money to it. Instruct to class to count the total amount of money we have now. Also, remove a few amount from it and ask: How much amount we have now? Accept the responses.

Introduce addition and subtraction of money.

EXPLORE

Divide the class into pairs. Choose a pair of students randomly. Give some dummy currency notes and coins to each student of the pair.

Instruct: Write the amount of money that you have on the board and add them.

Also, ask to find the difference of money they have. Accept the responses. Guide them in doing the sum.

[Collaborative learning]

EXPLAIN

Addition and subtraction of money are carried out as usual addition and subtraction of numbers.



ELABORATE

Demonstrate on board examples based on ‘addition and subtraction of money’ by taking references given on page 201. **[Conceptual Learning]**

EVALUATE

Classwork: Ask to solve Q1 and 3 of Exercise 13B. If students make any error, teacher will correct it and explain.

Homework: Ask to solve remaining questions of Exercise 13B.

ENHANCE

- Ask each students to note the daily household expenses in their notebook, and add them and decide, how much money they can save by reducing the unnecessary expenses. **[Logical Thinking]**

Periods: 7–8

Topic: Revision

**Suggested extra teaching aids:
Touchpad Mathematics 3 pages 203–205**

- Make students comfortable, so they can ask any question on any previously taught topics in which they have confusion.
- Start the revision of the exercise by using Points to Remember, Learning Logs, Mental Maths and HOTS.
- Ask to solve questions of ‘Learning Logs’ and accept students, answer, if there is any confusion or error then explain and correct it.
- Discuss and motivate students to solve Mental Maths. Guide them to solve HOTS.
- Ask and guide students to do activity given in ‘Fun Activity’ section given on page 205.

[Computational Learning]





DATA HANDLING

LEARNING OBJECTIVES

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

- ◆ record data using tally marks
- ◆ read, interpret and draw pictographs

LESSON PLAN

Suggested number of periods: 6

Suggested Teaching Aids: Book: Touchpad Mathematics 3, blackboard or whiteboard, etc.

Keywords: Data, collection, tally marks, pictograph.

Pre-requisite knowledge: Students must be familiar with data and its collection to gather the information, tabular form of data.

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

Topic: More about Data

Suggested extra teaching aids:
Touchpad Mathematics 3 pages 207–208

ENGAGE

Discuss the concept given in “Warm Up” section and introduce the topic by using the Q.1, 2 and 3 given on page 207. Introduce recording data using tally marks.

EXPLORE

Write names of 5 favourite ice-cream flavours on board in a tabular form as follows:

Favourite ice cream flavour	Tally marks	Number of students
Vanilla		
Chocolate		
Raspberry		
Mango		
Black currant		

Ask students one by one to come on board and mark a vertical line (|) in front of their favourite flavour. The teacher will introduce the rules for tally marks. Ask: How many of them like mango ice cream? Which flavour is liked by the most? Which flavour is liked by the least number of students? Accept the responses.

[Experiential Learning]

EXPLAIN

When the data is represented in a tabular form with tally marks, that table is known as a tally chart. The general way of writing tally marks is in groups or sets of five lines. The first four lines are drawn vertically and fifth line runs diagonally over the previous four vertical lines, *i.e.*, from the top of the first line to the bottom of the fourth line, such as ||||.

ELABORATE

Demonstrate the example on board by using the references given on page 207 of the book.

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve question 1 of Exercise 14A. If any student makes any error, the teacher will correct it and explain.

Homework: Ask to create a tally marks chart using the data given in Q.2 of Exercise 14A.

ENHANCE

- Ask to do the Project given on page 212.

Periods: 3–4	Topic: Pictograph	Suggested extra teaching aids: Touchpad Mathematics 3 pages 208–212
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ENGAGE

Introduce that we can also represent data by using pictorial representation. Use the data given under the topic ‘Tally Marks’ and present it as pictograph.

EXPLORE

Divide the class into groups. Instruct them to collect information about the favourite games of their classmates and draw a pictograph under the guidance of the teacher on the board using the collected data.

Ask questions based on pictograph like: How many children like football?, Which game is liked by the least number of children?, Which game is liked by the, most? Accept the responses.

EXPLAIN

When we use pictures or symbols to represent information, we call it pictorial representation or pictograph of the given information.

A pictograph helps us to compare information.

Every pictograph must have the following:

- **Title:** The title tells us what information the pictograph gives.
- **Key:** The key tells us the meaning and the value of the picture or symbol.



ELABORATE

Demonstrate examples of drawing, reading and interpreting pictographs on board using the references given in pages 208–210. **[Conceptual Learning]**

EVALUATE

Classwork: Ask to do Q. 2 and 3 of Exercise 14B. If students make any error, teacher will correct it and explain.

Homework: Ask to solve the Q.1 of Exercise 14B.

ENHANCE

- Discuss and motivate to solve the Question given in ‘HOTS’ section on page 214.

[Critical Thinking]

Periods: 5–6	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 3 pages 212–215
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- Make students comfortable, so they can ask any question on any previously taught topics in which they have any confusion.
- Start the revision of the exercise by using ‘Points to Remember’ and ‘Learning Logs’.
- Discuss and ask to do questions of ‘Learning Logs’ and accept students, answer. If there is any confusion or error then explain and correct it. Guide them to perform the activity given in ‘Fun Activity’ on page 215.
- Ask to watch the video on data handling on “www.orangewebsupport.co.in”. **[Tech Connect]**