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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 UP TO 300

LEARNING OBJECTIVES

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

- ◆ build, read and write numbers and number names up to 300
- ◆ understand the place value concept, apply it to compare and order numbers up to 300
- ◆ write numbers in expanded and short form
- ◆ explore even and odd numbers
- ◆ understand ordinal numbers

LESSON PLAN

Suggested number of periods: 17

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, dienes blocks up to 300, some real-life objects, pen, pencils, etc.

Keywords: Number, Digit, Place value, Expanded form, Even numbers, Odd numbers, Ascending order, Descending order, Ordinal numbers, etc.

Pre-requisite knowledge: Students must be familiar with 2-digit numbers, their number names, the smallest and greatest 2-digit numbers, ordinal numbers up to tenth.

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: Building numbers up to 300, Reading numbers up to 300

Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks, ice-cream sticks, rubber bands, etc. Touchpad Mathematics 2, Pages 7–13

ENGAGE

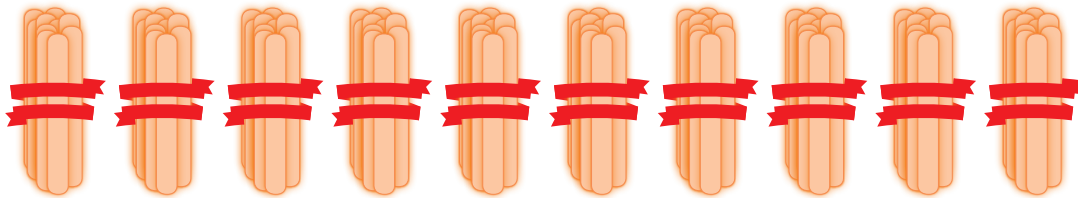
Introduce the topic in the classroom with some interesting activities:

- Divide the class into 10 groups. And ask one group to count 1 to 10, next group to count 11 to 20, ... and so on.
- Write few two-digit numbers on board and ask the students to read the numbers loudly.
- Ask to solve the question given in 'Warm Up' section.



EXPLORE

Divide the class into small groups. Distribute some ice-cream sticks and rubber bands to the groups. Instruct them to make as many bundles of 10 ice-cream sticks as they can and keep 10 such bundles in a row. Then tell to count all ten bundles together. What number does that represent?



Accept the responses. Now, keep adding more rows of 10 such bundles of ice-cream sticks one after another. Ask: If 1 row of 10 bundles of 10 ice-cream sticks each represents one hundred, then what numbers will 2 or 3 rows of 10 such bundles represent? Accept the responses.

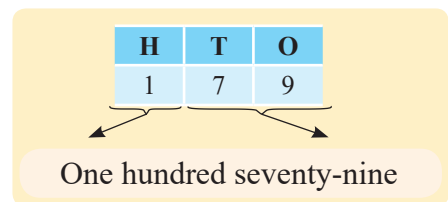
Again ask: If loose ice-cream sticks are added to 1 row of 10 bundles, what numbers will be formed? Accept the responses.

[Experiential Learning]

EXPLAIN

Explain that when we add 1 one to 9 ones we get 10 ones or 1 ten. Similarly, 2 tens make 20, 3 tens make 30, ..., 10 tens make 1 hundred. If we add 1 one to 1 hundred, it makes 101 and so on. Similarly, if we add 1 ten to 1 hundred, it makes 110, and so on.

Further explain that to read a 3-digit number, first read the hundreds digit then read the remaining digits together.



ELABORATE

Demonstrate in the classroom the making of 3-digit numbers up to 300 with help of the dienes blocks by putting the blocks on table or showing it on the smart board. Refer textbook pages 8–10 for more explanation and examples.

[Cross Curricular Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 5, 7, 8 and 9 of Exercise 1A.

Homework: Ask to solve Q.3, 4 and 6 of Exercise 1A.

ENHANCE

- Motivate and help the children to do the ‘Activity’ given on page 10.

[Critical Thinking]

Periods: 5 – 8	Topics: Numbers on the abacus, Place value, Expanded form and Short form	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks up to 300, Abacus, etc. Touchpad Mathematics 2, Pages 13–17
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ENGAGE

Take an abacus and place it on teacher’s table. Ask the students about the 3 spikes. Which spike on the abacus represents the ones place, the tens place, or the hundreds place? Accept the responses. Introduce representation of numbers on the abacus.



EXPLORE

Divide the class into groups and name them based on colour-based animal names, like white tiger, black panther, etc. Call one group and instruct one of them to think of any number of three digits and then give hints to the other group members as follows:

For example, if member A of group white tiger thinks of the number '126', he/she can give hints to the group members with the help of the teacher as,

- The number is more than 125 but less than 130.
- The digit at ones place is 6.

The other group members will identify the number and represent it on abacus with the help of each other and the teacher. The process will continue with other groups. The group that performs the best, *i.e.*, gives clear hints, recognises the number in minimum time and shows the correct representation of the number on the abacus will be the winner.

[Holistic Learning]

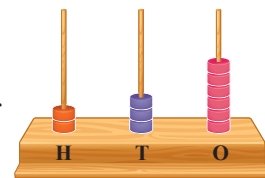
EXPLAIN

Describe that when there is no bead at any place on abacus, it means the digit '0' is at that place. Also, the place value of a digit in the given number depends on its place or position in the number.

The expanded form of a number is the sum of the place values of its digits. And the short form of a number is the numeral that is written using only the digits.

ELABORATE

Demonstrate on board the place values of digits of a number using abacus. As the number represented on the abacus is 236, there are 6 beads on ones spike, so the place value of 6 is 6 ones or 6.



Similarly, place values of 3 and 2 are 3 tens or 30 and 2 hundreds or 200 respectively.

Demonstrate on board the expanded form and the short form of a number using the examples given on page 16 of the textbook.

EVALUATE

Classwork: Ask the students to solve Q1 of Exercise 1B, Q.1 and 3 of Exercise 1C and Q.1 of Exercise 1D.

Homework: Ask the students to solve the remaining questions of Exercise 1B, 1C and 1D.

ENHANCE

- Discuss about the face values of digits in a given number and motivate the children to solve some worksheets based on the topics learned other than those in the text-book. [Logical Critical Thinking]

Periods: 9–11

Topics: Comparison of numbers,
Order of Numbers

Suggested extra teaching aids:
Blackboard or whiteboard, pens,
pencils, chalks/marker, notebook, etc.
Touchpad Mathematics 2, Pages 17–21

ENGAGE

Start the class with an interaction based on the previous concept. Ask: What is the place value of 5 in number 156? Accept the responses. Write few pairs of numbers on the board. Ask: Which number is greater within each pair? Accept the responses. Introduce the comparison of numbers up to 300.

Numbers up to 300



EXPLORE

Divide the class into pairs. Put some well-shuffled number chits having numbers up to 300 in a bowl. Instruct: Pick any 2 chits from the bowl and compare them. Ask: which number is greater? Accept the responses. Again, instruct to pick 2 more chits from the bowl. Ask: Which number is the biggest? Which number is the smallest? Accept the responses.

EXPLAIN

Discuss the meaning of symbols $<$, $>$ and $=$ by using the references and examples given on page 17 of the textbook.

Further, explain the rules of comparing numbers as follows:

- The number with more number of digits is greater than the number with less number of digits.
- When each of the given numbers has the same number of digits, say 3 digits, then compare their hundreds digits first. When the digits in the hundreds place is same, then compare the digits in the tens place, and if the digits in the hundreds and tens places are same, then compare the digits in the ones place.

Explain that arranging numbers from the smallest to the greatest is called ascending order or increasing order. And arranging numbers from the greatest to the smallest is called descending order or decreasing order.

ELABORATE

Demonstrate on board the rules of comparing numbers by taking the examples given on pages 17-19.

Also demonstrate arranging the numbers in increasing as well as in decreasing order by taking the references and examples on pages 20 and 21.

EVALUATE

Classwork: Ask the students to solve Q.1, 2 and 3 of Exercise 1E, Q.1 of exercise 1F.

Homework: Ask the students to solve the remaining questions of Exercise 1E and 1F.

ENHANCE

- Ask the class to solve Q.1 of 'Fun activity' given on page 29 of the text book. [Logical Thinking]

Periods: 12–14	Topics: Even and odd numbers, Ordinal numbers	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/ marker, notebook, flash cards of different numbers up to 300, etc. Touchpad Mathematics 2, Pages 22–26
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ENGAGE

Start the class by using some interesting activities like,

- Name the body parts that are in pair and that which are not in pair.
- Try to put the objects of your bag in pairs. Tell how many objects there are. Could you put them in pairs?

Accept the responses. Start the topic 'Even and odd numbers'.

EXPLORE

Host a game show in your classroom. Write different numbers on flash cards and spread the cards on teacher's table.



Call two students at a time and ask them to select a card and turn it over. Then the first student to raise hand and correctly identify the number as odd or even will win a point. Take turns among the students so that every student gets the opportunity to identify a number. Try using one-, two-, and if possible, three-digit numbers on the cards.

[Collaborative Learning]

EXPLAIN

All the numbers that can be put in pairs, that is, in groups of 2 are called even numbers. All the numbers that cannot be put in pairs, that is, in groups of 2 are called odd numbers.

Explain the ordinal numbers up to 10. Explain that we write ordinal numbers by adding letters to the counting numbers. For 1 we write 1st (first), for 2 we write 2nd (second), and for 3 we write 3rd (third). For the other numbers, we usually add 'th', so we write 4th, 5th, 6th, and so on..

ELABORATE

Demonstrate on board the even and odd numbers by taking the references given on page 22 of the textbook. Focus on the property that an odd number has 1, 3, 5, 7 or 9 at the ones place, and an even number has 0, 2, 4, 6 or 8 at the ones place.

Further, demonstrate the ordinal numbers and cardinal numbers by taking the references given on page 24 of the textbook.

EVALUATE

Classwork: Ask to solve Q.1, 4 and 5 of Exercise 1G and Q.1 and 2 of Exercise 1H.

Homework: Ask to solve the remaining questions of Exercise 1G and 1H.

ENHANCE

- Help children in solving the Q.2 of 'Fun Activity' given on page 29 of the textbook.

Periods: 15–17	Topic: Revision	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, etc. Touchpad Mathematics 2, Pages 26-29
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- Make students comfortable, so they can ask any question on any previously learnt topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Start the revision of the exercise by using 'Learning Logs', 'Mental Maths' and 'HOTS' given on page 28.
- Discuss and help the children to solve the 'Mental Maths' and questions of the 'Learning Logs'. If they have any confusion or do any error then explain and correct it.
- Encourage the students to do Q2 of 'Fun Activity' on page 29 of the book..





ADDITION

LEARNING OBJECTIVES

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

- ◆ understand addition facts
- ◆ learn addition by forward counting
- ◆ add two numbers using a number grid
- ◆ add three 2-digit numbers
- ◆ know how to regroup numbers
- ◆ add two numbers by regrouping ones and tens
- ◆ apply the concept of addition to solve real-life problems

LESSON PLAN

Suggested number of periods: 17

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, dienes blocks up to 300, some real-life objects, pen, pencils, etc.

Keywords: Addition, Addition fact, Property of addition, Addend, Sum, Regroup, Plus, Total, Together.

Pre-requisite knowledge: Students must be familiar with sum of 1-digit and 2-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: 1–3	Topics: Addition facts, Addition by forward counting, Addition on the number grid	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks, ice-cream sticks, rubber bands, number cards up to 20, etc. Touchpad Mathematics 2, Pages 30–33
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ENGAGE

Introduce the topic in the classroom with some interesting activities, like asking questions on previously learned topics and then link to addition.

- What is the smallest 2-digit number?
- What is the greatest 1-digit number?
- When you add both of them, which number do you get?

Accept the responses. Also discuss ‘Warm Up’ section given on pages 30–31.



EXPLORE

Divide the class into pairs. Either draw a number strip up to 40 on the ground using chalk or spread a number mat up to 40 or 50 on the floor. Call any pair randomly. Give them two number cards from 0–20. Instruct the students to read the number. The first child will jump on the number strip or grid mat up to that number. Then the second child will start from that number and jump forward according to the number on his/her card. Ask them to identify the sum of the two given numbers. Repeat with different pairs using different combinations of numbers.

[Experiential Learning]

EXPLAIN

The symbol of addition is '+' (plus). The numbers to be added are called addends and the answer is called the sum. Next, explain the properties of addition as follows:

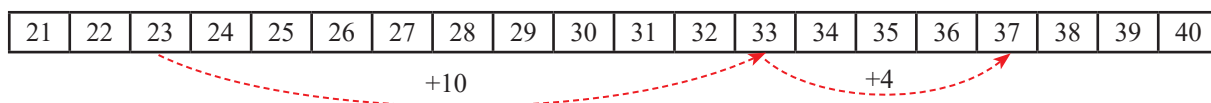
- When we add '0' to a number, we get the same number.
- When we add '1' to a number, we get the next number, *i.e.*, successor of the number.
- When we add two numbers in any order, we get the same sum each time.

Further, explain addition on number strips by forward counting and on the number grid to add 10 we move down by one row and to add 1 we move right by one column.

ELABORATE

Demonstrate on board the addition facts, by taking the references given on page 31 of the textbook.

Further, demonstrate the addition on number strip, as $23 + 14$



Start from 23 and first count forward 10 steps. Then count 4 more, we reach 37.

Thus, $23 + 14 = 37$.

The teacher can also take the references given on page 32 for addition by forward counting.

Further, discuss 'addition on the number grid' by taking the reference and example given on pages 32-33.

[Experiential Learning]

EVALUATE

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

Homework: Ask to solve the question given in Exercise 2B.

ENHANCE

- Motivate and help the children to solve the sum given in 'Fun Activity' section on page 48.

[Critical Thinking]

Periods: 4–10	Topics: Adding three 2-digit numbers, Regrouping of numbers, Addition with regrouping	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/ marker, notebook, number arrow cards, etc. Touchpad Mathematics 2, Pages 34–40
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ENGAGE

Start the class by writing three 1-digit numbers on board, and ask the sum from the class. Motivate the children to do the sum on board. For the correct answer appreciate the child. Introduce the topic 'Adding three 2-digit numbers' by taking the real-life situation given on page 34.



EXPLORE

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

- Divide the class into 2 teams. Distribute 10 arrow cards with a digit written on each card.
- 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 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

Explain addition of three two-digit numbers, using the dienes blocks. When we join 10 ones we get a tens rod. We can add tens with ones by regrouping. Further explain addition with regrouping to make tens, addition with regrouping to make more than tens and adding more than two numbers with regrouping.

ELABORATE

Discuss any real-life example and demonstrate addition of say 25, 22 and 31 using the dienes blocks.

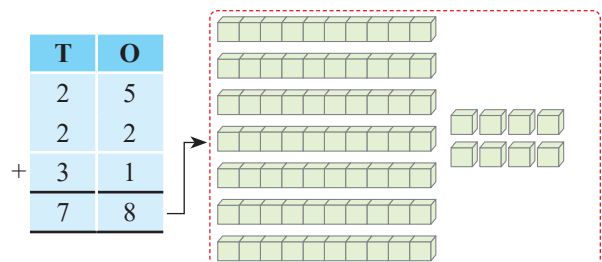
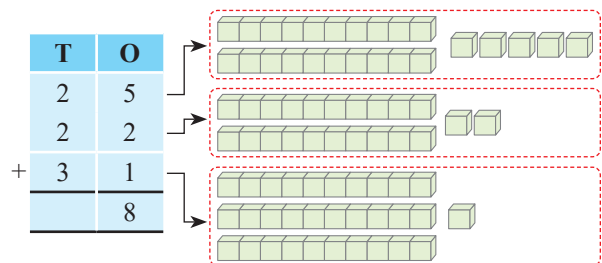
First show the addition of ones by counting the ones blocks (5 ones blocks + 2 ones blocks + 1 ones block = 8 ones blocks).

Next, show the addition of tens (2 tens + 2 tens + 3 tens = 7 tens).

Also, discuss the example given on page 34.

Further, demonstrate that when we join 10 ones blocks, we get one ten. And adding tens with ones by regrouping using the examples given on pages 35 and 36 of the textbook.

Discuss addition with regrouping to make tens and more than tens, by using the references and examples given on pages 37–39 of textbook.



EVALUATE

Classwork: Ask to solve Q.1(a) to (d) of Exercise 2C and Q.1, 2 of Exercise 2D, 2E.

Homework: Ask to solve the remaining questions of Exercise 2C, 2D and 2E.

ENHANCE

- Discuss the method of checking whether the sum is correct or not.
- Take the worksheets/assignments from 'www.orangewebsupport.co.in' and ask to practice them.

[Critical Thinking]



Periods: 11 – 12	Topic: Word Problems	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks up to 300, Abacus, A4 paper sheets, etc. Touchpad Mathematics 2, Pages 41–42
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ENGAGE

Show any picture and ask the class what they observe. Accept their responses and start the class by telling a number story like:

There are 4 children bicycling in the park and 10 children playing with ball in the park.

Ask: How many children are there altogether in the park?

Accept the answers. Introduce the topic ‘World problems’ based on addition.

EXPLORE

Divide the class into groups of 4–5 children.

Distribute A4 sheets among the children in the class.

Write some addition problems on the board, like: $11 + 22$, $10 + 25$, etc.

Instruct each group to write one addition story with the help of each other using these numbers, and show the sum.

The group whose story is proper and sum is correct will be appreciated.

[Creative and Collaborative Learning]

EXPLAIN

Discuss the way to extract the correct information from the given addition story or word problem. Write equations to represent word problems, and identify the method to solve the problem.

ELABORATE

Demonstrate on board the method to understand, write the equations and solve the problems given in ‘word problems’ by using the example and few questions of Exercise 2F given on pages 41 and 42 of the textbook.

EVALUATE

Classwork: Ask to solve Q.1–3 of Exercise 2F.

Homework: Ask to solve Q.4 of Exercise 2F.

ENHANCE

- Ask to solve questions of ‘Mental Maths’ and HOTS section given on pages 47 and 48 of the textbook.
- Instruct to download some Word Problems worksheets from internet and practices them.

Periods: 13–15	Topic: Addition of bigger 2-digit numbers	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, some paper chits/flash cards with addition sums etc. Touchpad Mathematics 2 , Pages 42-45
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ENGAGE

Start the class with the topic ‘Addition of bigger 2-digit numbers’.



EXPLORE

Divide the class into groups of 4 students each. Place four bowls on the teacher's table. In the 1st bowl, keep some 2-digit number cards, and in the 2nd to 4th bowls, put their decomposition into the addition statement.

Example: For the number 52, the decompositions into addition statement are $30 + 10 + 12$, $30 + 20 + 2$, etc.

Ask one student of the group to take out a 2-digit number from the first bowl, and the other students will find the correctly matched addition statement in the other bowls.

They will paste it on the sheet of paper. For any confusion, the teacher will help.

Repeat this activity with other groups with different 2-digit numbers. The team that completes each task quickly and correctly will be commended.

[Experiential and Collaborative Learning]

EXPLAIN

Sometimes when we add two 2-digit numbers, we get the sum as a 3-digit number. Recall the addition of 2-digit numbers and link it to the numbers when the sum is a 3-digit number. Use the references and examples given on pages 42-44.

Further, explain addition of 2-digit numbers with regrouping and discuss when we have more than 9 ones, say 12 ones, we can regroup 12 ones into 1 ten and 2 ones and when we have more than 9 tens, say 11 tens we can regroup it into 1 hundred and 1 ten and so on. We use this method of regrouping in addition. The teacher can use dienes blocks to demonstrate the addition visually.

ELABORATE

- Demonstrate on board the sum of two 2-digits numbers, whose sum is a 3-digit number by taking the reference and examples given on pages 42 and 43 of the textbook.
- Further demonstrate, addition with regrouping tens and ones, given on page 44 of the textbook.

[Conceptual Learning]

EVALUATE

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

Homework: Ask to solve Q3 of Exercise 2G.

ENHANCE

- Motivate and help the children to download “Addition” worksheets from internet and solve them.

Periods: 16–17	Topic: Revision	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook. Touchpad Mathematics 2, Pages 46–48
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- Make students comfortable, so they can ask any question on any previously learnt topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Start the revision of the exercise by using “Learning Logs”.
- Discuss and help the children to solve questions of the “Learning Logs”. If they have any confusion or do any error then explain and correct it.
- Ask students to watch the video of ‘Addition’ for grade 2 on ‘www.orangewebsupport.co.in’.





SUBTRACTION

LEARNING OBJECTIVES

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

- ◆ understand subtraction facts
- ◆ subtract two numbers using a number grid
- ◆ regroup numbers for subtraction
- ◆ subtract numbers without and with regrouping
- ◆ apply the concept of subtraction to solve real-life problems

LESSON PLAN

Suggested number of periods: 12

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, dienes blocks up to 300, some real-life objects, pen, pencils, etc.

Keywords: Take away, Minus, Minuend, Subtrahend, Difference, Addition facts, Subtraction facts.

Pre-requisite knowledge: Students must be familiar with subtraction of two 1-digit numbers, a 1-digit number from a 2-digit number, 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: Subtraction facts, Subtraction on a number grid	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks, ice-cream sticks, rubber bands, number cards up to 50, etc. Touchpad Mathematics 2, Pages 49–52
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ENGAGE

Introduce the topic in the classroom with some interesting activities, like asking questions on previously learned topics and then link to subtraction.

- What is the smallest 2-digit number?
- What is the greatest 1-digit number?



- Can you subtract the smallest 2-digit number from the greatest 1-digit number?
- If you subtract the greatest 1-digit number from the smallest 2-digit number, which number will you get?

Accept the responses. Also discuss the ‘Warm Up’ section given on pages 49 and 50.

EXPLORE

Divide the class into pairs. Either draw a number line up to 40 on the ground using chalk or spread a number mat up to 100 on the floor. Call any pair randomly. Give them two number cards up to 50. Instruct to read the number and the first child will jump on the number line or on the grid of mat up to that number.

Then the second child will start from that number and jump backward as per the number on his/her number card.

Ask to identify the difference of two given numbers. Repeat with different pairs using different combinations of numbers. **[Experiential Learning]**

EXPLAIN

The symbol of subtraction is ‘–’ (minus). Let them recognise a subtraction fact and its terms. The number from which we subtract another number is called **minuend**. The smaller number that is to be subtracted is called the **subtrahend**, and the answer of subtraction is called the **difference**.

Next, explain the properties of subtraction as follows:

- When we subtract ‘0’ from a number, the difference is the number itself.
- When we subtract ‘1’ from a number, the difference is the number that comes just ‘before’ the number, *i.e.*, predecessor of the number.
- When we subtract a number from itself, the difference is ‘0’.

Further, explain subtraction on the number line by backward counting and on the number grid, to subtract 10 we move up by one row and to subtract 1 we move left by one column.

ELABORATE

Demonstrate on board the subtraction facts by taking the references given on pages 50 and 51 of the textbook.

Further, demonstrate the subtraction $26 - 15$ on the number line and on the number grid.

Since, $15 = 10 + 5 = 1 \text{ ten } 5 \text{ ones}$

Put the finger on 26 and move 1 box upward (-10) *i.e.*, at 16. From 16 move 5 boxes left (-5).

Thus, $26 - 15 = 11$.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1 of Exercise 3A.

Homework: Ask to solve Q.2 of Exercise 3A.

ENHANCE

- Discuss about the method of solving subtraction sum on the number line, and ask to solve some on the number line.



Periods: 4–7

Topics: Regrouping numbers for subtraction, Subtraction with regrouping

Suggested extra teaching aids:
Blackboard or whiteboard, pens,
pencils, chalks/marker, notebook,
number arrow cards, etc.
Touchpad Mathematics 2, Pages 52–56

ENGAGE

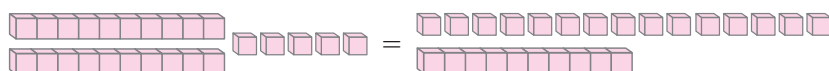
Start the class by recalling the regrouping of ones to tens. And then demonstrate that similarly we can regroup 1 ten to 10 ones. Introduce the topic ‘Subtraction with regrouping’.

EXPLORE

Teacher will use the activity given in ‘Fun Activity’ given on page 61 of the textbook to make the understanding of subtraction of 2-digit numbers with regrouping. **[Experiential Learning]**

EXPLAIN

After revising the subtraction of two-digit numbers by activity, discuss that sometimes, when there are not enough ones to subtract from, we regroup the numbers. For example, 2 tens 5 ones can be regrouped into 1 ten and 15 ones.

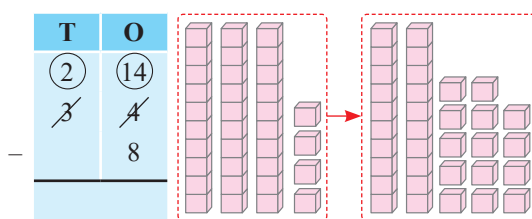


Use the references and examples of regrouping numbers for subtraction explained on pages 52-53.

Next, describe the ‘subtraction with regrouping’ of 2-digit number from a 2-digit number by the method given on pages 54-55 of the book.

ELABORATE

Demonstrate on board the process of regrouping and subtraction of 1-digit number from a 2-digit number $34 - 8$ as follows:



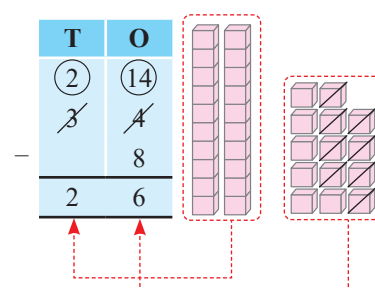
Since, $4 < 8$. So, borrow 1 ten from 3 tens, then 3 tens will become 2 tens and regroup 4 ones into 14 ones.

Subtract the ones.

Since, $14 - 8 = 6$, write 6 in ones column.

Next subtract the tens. $2 - 0 = 2$, write 2 in tens column.

Further, demonstrate subtraction of two 2-digit numbers by taking the references and examples given on page 55 of the textbook.



EVALUATE

Classwork: Ask to solve Q.1 Exercise 3B and 3C.

Homework: Ask to solve the remaining questions of Exercise 3B and 3C.

ENHANCE

- Discuss and ask to solve the ‘Activity’ given on page 55.

[Critical Thinking]

Periods: 8–10	Topic: Problem Solving	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, etc. Touchpad Mathematics 2, Pages 57–58
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ENGAGE

Start the class with an interaction based on children’s real life experience. Then, tell a number story like: Riya has 12 candies with her. If she gives 8 to her friend Siya, how many candies are left with her?

Accept the answers. Introduce the topic ‘Problem Solving’ based on subtraction.

EXPLORE

Divide the class into groups of 4–5.

Distribute A4 sheets among the children in the class.

Write some subtraction problems on the board, like: $22 - 10$, $25 - 10$, etc.

Instruct each group to write one subtraction story with the help of each other using these numbers, and show the difference.

The group whose story is proper and whose difference is correct will be appreciated.

[Creative and Collaborative Learning]

EXPLAIN

Discuss the way to extract the correct information from the given word problems. Write equations to represent word problems, and identify the method to solve the problem.

ELABORATE

Demonstrate on board the method to understand, write the equations and solve the problems given in ‘word problems’ by using the example and few questions of Exercise 3D given on pages 57 and 58 of the textbook.

EVALUATE

Classwork: Ask to solve Q.1–3 of Exercise 3D.

Homework: Ask to solve Q.4 and 5 of Exercise 3D.

ENHANCE

- Ask to solve ‘Mental Maths’ given on page 60 of the textbook.
- Instruct to download some subtraction based word problems worksheets from internet and practices them.
- Motivate to solve the word problem given in ‘HOTS’ section on page 60 of the textbook.



Periods: 11–12

Topic: Revision

Suggested extra teaching aids:
Blackboard or whiteboard, pens, pencils,
chalks/marker, notebook, etc.
Touchpad Mathematics 2, Pages 59–61

- Make students comfortable, so they can ask any question on any previously learnt topics in which they are confused. Clarify their doubts of queries and start the revision of the exercise.
- Start the revision of the exercise by using ‘Learning Logs’.
- Discuss and help the children to solve questions of the ‘Learning Logs’. If they have any confusion or do any error then explain and correct it.
- Ask students to watch the video of ‘Subtraction’ for grade 2 on ‘www.orangewebsupport.co.in’.





NUMBERS UP TO 1000

LEARNING OBJECTIVES

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

- ◆ build, read and write numbers and number names up to 1000
- ◆ recall the place value concept and apply it to compare and order 3-digit numbers
- ◆ write numbers in different ways

LESSON PLAN

Suggested number of periods: 12

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, dienes blocks up to 1000, some real-life objects, pen, pencils, etc.

Keywords: Number, Digit, Place value, Face value, Expanded form, Ascending order, Descending order, etc.

Pre-requisite knowledge: Students must be familiar with 2-digit numbers, their number names, the smallest and greatest 2-digit numbers and numbers up to 300.

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: Counting In Hundreds,
Forming Numbers Up To 1000,
Reading 3-digit numbers

Suggested extra teaching aids: Blackboard
or whiteboard, pens, pencils, chalks/
markers, notebook, dienes blocks, die, etc.
Touchpad Mathematics 2, Pages 62–68

ENGAGE

Start the class by writing a few numbers up to 300 like 98, 140, 161, 282, etc. on the board. Ask: What will come if we subtract 1 from 161? What do we get if we add 1 to 140?, What come between 161 and 163? Accept the responses. Ask, ‘what will come after 300?’

Recall that 10 ones = 1 ten and 10 tens = 1 hundred using the dienes blocks. Also discuss the questions and motivate children to solve them given in ‘Warm Up’ section on pages 62–63.

EXPLORE

Hang the number chart from 300 to 500 near to board or display it on smartboard.

Call the children of the class one by one near the board.

Give a die and ask to roll it and show the number to the class.



Instruct them to move ahead on the chart by the number they get on the die, read the numbers aloud and mark the number. For example, if the number that occurred on the die is 3, then read the numbers 301, 302, and 303 and mark the number 303. Next child will start from 303 onwards. The children who complete all their steps correctly will be appreciated. If 500 is reached, then restart from 301. Continue till time permits.

EXPLAIN

Explain counting of blocks in hundreds, as the number '100' is represented by 1 hundred block, written as 100 and read as one hundred and in the place value system, it is represented as shown alongside. Similarly, show the representation of number 200, 300, ... up to 1000 by taking the references given on pages 63-64 of the textbook.

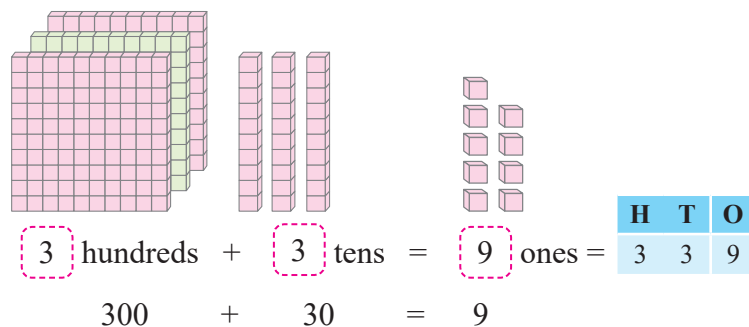
H	T	O
1	0	0

Further, explain building of numbers up to 1000 using dienes blocks. Also explain that 1000 is the smallest 4-digit number.

ELABORATE

Demonstrate in the classroom the making of numbers like 339 using the dienes blocks.

Like, show 3 hundreds blocks in the classroom and ask: what number is this? Accept the responses. If there is any error, then rectify it. Further show 3 tens blocks and ask about the number formed. Then add 9 ones blocks and ask about the number formed using all the blocks together.



Further demonstrate 'Reading 3-digit numbers' by taking the reference and examples given on page 65.

EVALUATE

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

Homework: Ask the students to solve Q.6–9 of Exercise 4A.

ENHANCE

- Discuss the building of number more than '100' up to '999' in the classroom using dienes blocks.

[Critical Thinking]

Periods: 5-6	Topic: Place value	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, dienes blocks up to 999, Abacus, etc. Touchpad Mathematics 2, Pages 68-69
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ENGAGE

Take an abacus and place it on teacher's table. Ask the students, which one is ones place spike, tens place spike or hundreds place spike on abacus. Accept the responses. Introduce representation of numbers larger than 300 on the abacus.

EXPLORE

Divide the class into groups and name them based on a colour-based animal name, like a white tiger, black panther, etc. Call one group and instruct one of them to think of any number of three digits more than 300.



Then they will give hints to the other group members as follows: For example, if member A of group white tiger thinks about the number '326', he/she can give hints to other group members with the help of teacher as,

- The number is more than 325 but less than 330.
- The digits at ones place is 6.

The other group members will identify the number and represent it on abacus with the help of each other and the teacher. The process will continue with other groups. The group that performs the best, *i.e.*, gives clear hints, recognises the number in minimum time and correctly represents the number on the abacus will be the winner.

[Holistic learning]

EXPLAIN

Recall that when there is no bead at any place on abacus, it means the digit, '0' is in that place. And the place value of a digit in the given number is dependent on its place or position in the number. And the face value of any digit in a number is the digit itself.

The expanded form of a number is the sum of the place values of its digits. And the short form of a number is the numeral that is written using face value of the digits.

ELABORATE

Demonstrate on board the place values of digits of a number using abacus. As the number represented on abacus is 736. There are 6 beads on ones spike, so the place value of 6 is 6 ones or 6.

Similarly, place values of 3 and 7 are 3 tens or 30 and 7 hundreds or 700 respectively. Demonstrate how the place value of each digit changes when its position changes in the two numbers 367 and 736.

Demonstrate on board the expanded form of a number using the examples given on page 68 of the textbook.

EVALUATE

Classwork: Ask the students to solve Q.1, 2, 4 of Exercise 4B.

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

ENHANCE

Discuss, motivate and help the children to solve the questions given in 'HOTS' section given on page 75.

[Logical Critical thinking]

Periods: 7-10	Topics: Comparison of numbers, Order of numbers	Suggested extra teaching aids: Blackboard or whiteboard, pens, pencils, chalks/marker, notebook, etc. Touchpad Mathematics 2, Pages 70-73
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ENGAGE

Start the class by asking: What will come just before 900?, What will come just after 999? Accept the responses. Write few pairs of numbers on the board. Ask: Which number is greater within the pair?, Accept the responses. Introduce the comparison of numbers up to 1000.

EXPLORE

Divide the class into pairs. Put some well-shuffled number chits having numbers up to 1000 in a bowl.



Instruct: Pick any 2 chits from the bowl and compare them. Ask: which number is greater? Accept the responses. Again, instruct to pick 2 more chits from the bowl. Ask: Which number is the biggest?, Which number is the smallest? Accept the responses.

EXPLAIN

Explain the rules of comparing numbers as follows:

- The number with more number of digits is greater than the number with less number of digits.
- When each of the given numbers has the same number of digits say 3 digits, then compare their hundreds digits first. If the digits in the hundreds place is same, then compare the digits in the tens place, and if the digits in the hundreds and tens places are same, then compare the digits in the ones place.
- Arranging numbers from the smallest to the greatest is called ascending order or increasing order.
- Arranging numbers from the greatest to the smallest is called descending order or decreasing order.

ELABORATE

Demonstrate on board the rules of comparing numbers by taking the examples given on pages 70 and 71. Also demonstrate arranging the numbers in ascending as well as in descending order by taking the references and examples on pages 72 and 73.

EVALUATE

Classwork: Ask the students to solve Q.1, 2 and 5 of Exercise 4C, Q.1, and 2 of Exercise 4D.

Homework: Ask the students to solve the remaining questions of Exercise 4C and 4D.

ENHANCE

- Discuss that predecessor of a number means a number which is 1 less than the given number. And successor of a number means a number which is 1 more than the given number.
- Discuss and motivate to solve 'Mental Maths' and 'Fun Activity' given on pages 75-76.

Periods: 11-12

Topic: Revision

**Suggested extra teaching aids:
Blackboard or whiteboard, pens,
pencils, chalks/marker, notebook, etc.
Touchpad Mathematics 2, Pages 74-76**

- Make students comfortable, so they can ask any question on any previously learnt topics in which they are confused. Start the revision of the exercises by solving the questions of 'Learning Logs'.
- Start the revision of the exercises by using 'Learning Logs'.
- Discuss and help the children to solve the questions of the 'Learning Logs' if any confusion or error then explain and correct it.
- Ask children to watch the video of 'Numbers up to 1000' on 'www.orangewebsupport.co.in'.





MULTIPLICATION

LEARNING OBJECTIVES

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

- ◆ know more about multiplication
- ◆ read and write multiplication tables up to 10
- ◆ understand skip counting
- ◆ multiply two 1-digit numbers horizontally and vertically
- ◆ multiply 2-digit number by a 1-digit number
- ◆ solve real-life problems using multiplication

LESSON PLAN

Suggested number of periods: 15

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some real-life objects like sketch pens, pens, pencils, number arrow cards, Times table chart, etc.

Keywords: Multiplicand, Multiplier, Product, Multiplication fact, Repeated addition, Times table, Skip counting.

Pre-requisite knowledge: Students must be familiar with the multiplication tables of 1, 2, 5 and 10, and multiplication of 1-digit numbers by 1-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: 1–7	Topics: Multiplication as Repeated Addition, Multiplication tables, How many	Suggested extra teaching aids: Some real-life objects, chart of multiplication tables up to 10, etc. Touchpad Mathematics 2, Pages 77–92
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ENGAGE

Introduce the topic by asking to recite the multiplication tables of 1, 2, 5 and 10 in chorus. Appreciate the children. Again, discuss and instruct to complete the ‘Warm up’ section given on pages 77–78. Introduce “Multiplication as Repeated Addition”.



EXPLORE

Divide the class into groups. Distribute some ice-cream sticks to each of them. Instruct to arrange them in groups by adding two sticks each time start with 2 sticks and make groups by adding 2 sticks. Keep them in sequence as 2 sticks, 4 sticks, 6 sticks, 8 sticks, and so on. Again ask them to count the number of sticks in each group and write the number in their notebook in sequence and observe these numbers.

Ask: How many numbers are skipped between two numbers? Accept the responses.

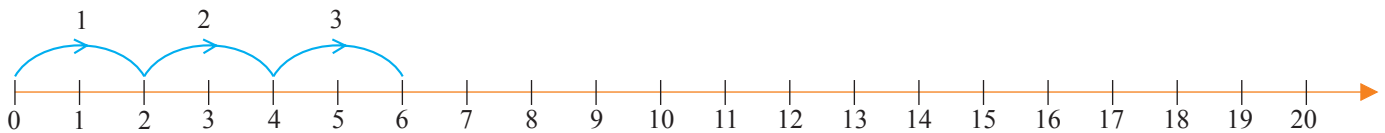
Similarly, it can be extended for 3, 6, 9, ...; 4, 8, 12, ...; and 5, 10, 15, ... **[Experiential Learning]**

EXPLAIN

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

Write the skip counting in 2s, skip one number in between two numbers, as 2, 4, 6, 8, 10, 12, ..., etc.

To show the skip counting in 2s on a number line, jump 2 numbers each time. As,



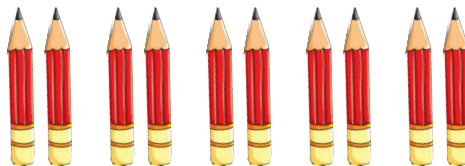
Start from 0. Jump on every second number by skipping the next number as shown in the above figure, and write the numbers you land on.

Similarly, discuss that for the skip counting of 3, 4, 5, 6, 7, 8, 9 and 10, we have jump and write every third, fourth, fifth, sixth, seventh, eighth, ninth and tenth number respectively. Further, link this skip counting to times table correspondingly by taking the references of pages 82 to 87 of the textbook. Motivate the students to learn them by writing in their notebooks.

Also, discuss ‘double’ means two times or twice of a number.

ELABORATE

Place 10 concrete objects like pencils on the table as follows:



Explain that here, we have 5 groups of 2 pencils each *i.e.*, $2 + 2 + 2 + 2 + 2 = 10 = 5 \times 2 = 10$

$5 \times 2 = 10$ 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.

Here, ‘ $\times$ ’ is the sign of multiplication.

Motivate the class to complete and read the times table of 2, 3, 4, 5, and 10 in chorus and remember it.

Further, demonstrate the multiplications on the number line by taking the reference and example given on pages 83 to 87. **[Experimental Learning]**

EVALUATE

Classwork: Instruct the class to do Q.1 of Exercise 5A, Q.1, 2 and 3 of Exercise 5B in the classwork.

Homework: Solve the rest of the questions of Exercise 5A and 5B.

ENHANCE

- Ask to do the activity given in ‘Activity’ section on page 86.
- Motivate children to memorise times tables up to 10.

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 table. As,

$$5 \times 5 = 25; \quad 8 \times 7 = 56; \quad 9 \times 8 = 72; \quad 8 \times 8 = 64 \text{ and so on.}$$

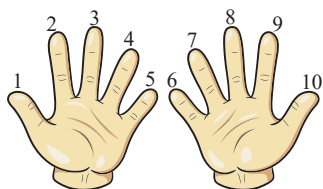
EXPLORE

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

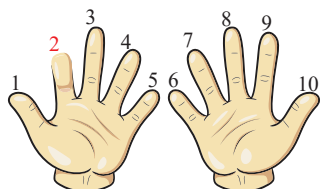
For example, to multiply 9 by 2,

Place your hands side by side, palms facing you. As 9 is multiplied by 2, bend the finger number 2. Next, count the number of fingers to the left of the folded finger (there is 1) and then the number of fingers to the right of the folded finger (there are 8). So, the result of multiplying 9×2 is 18.

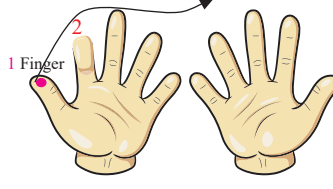
Step 1: $9 \times 2 = ?$



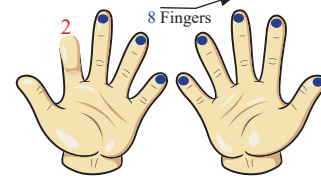
Step 2: $9 \times 2 = ?$



Step 3: $9 \times 2 = 1$



Step 4: $9 \times 2 = 18$



[Experiential Learning]

EXPLAIN

Explain that vertical multiplication is another way to multiply the numbers. In this method, we write a number below another number. The number to be multiplied is called the **multiplicand** and the number by which it is multiplied is called the **multiplier**. The answer is called the **product**.

ELABORATE

First, make the student, revise their knowledge of multiplication by writing the question on the board 'multiply 6 by 2'.

Demonstrate on board that we multiply two numbers vertically as shown. The number to be multiplied is called the **multiplicand** and the number by which it is multiplied is called the **multiplier**. The answer is called the **product**.

T	O	
	6	← Multiplicand
×	2	← Multiplier
	12	← Product

Demonstrate the method of solving the example and few questions given in Exercise 5C.

EVALUATE

Classwork: Ask the students to solve Q.1 (a), (b), Q.2 (a), (b) of Exercise 5C in the classwork. If the students make any error while doing the multiplication, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 5C as homework assignment.

ENHANCE

- Discuss and help children to fill in the boxes to complete each fact given in 'HOTS' section on page 98 of the textbook.



Periods: 10 – 12

**Topics: Word Problems,
Multiplying a 2-digit number
by a 1-digit number**

**Suggested extra teaching aids: Multiplication
tables chart, pair of dice, number grid chart,
etc. Touchpad Mathematics 2, Pages 93–95**

ENGAGE

Start the class by asking a question like: If you have to distribute 2 candies to each of your 8 friends, how many candies would you require? Accept the answers. Introduce the topic ‘Word Problems’ based on multiplication.



EXPLORE

Teacher will guide to perform an activity based on dice game for multiplication, to revise multiplication.

Divide the class into groups and provide a pair of dice and a game board as shown here. Then instruct them as follows:

- Roll a pair of dice.
- Multiply both the numbers.
- Colour the product in the number grid.
- The group that colours 5 numbers in a row first will be the winner.

[Experimental Learning]

30	12	15	10	2
25	18	24	8	16
9	20	5	36	4
24	15	12	9	10
6	8	20	25	36
18	12	9	16	24

EXPLAIN

Discuss the way to extract the correct information from the given word problems. Explain how to identify that which mathematical operation: addition, subtraction or multiplication is required to solve the problem. Write equations to represent word problems, and identify the method to solve the problem.

Then start the explanation of multiplication of 2-digit numbers by 1-digit numbers without regrouping.

ELABORATE

Use real-life situations from pages 93 and 94 of the textbook to explain where multiplication is used to solve problems. Further, demonstrate the

Multiplication of 2-digit number by a 1-digit number as follows:

Write on board: Multiply 23 by 2.

Arrange the numbers in their place value columns on board.

- Multiply the ones by 2 and write the product at the ones place of the product.
- Multiply tens by 2 and write the product at the tens place of the product.

[Conceptual Learning]

T	O	
2	3	← Multiplicand
	2	← Multiplier
4	6	← Product

Demonstrate on board the examples and few questions of Exercise 5D and 5E of the textbook.

[Conceptual Learning]

EVALUATE

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

Homework: Ask the solve the remaining questions of Exercise 5D and 5E as their homework assignment.

ENHANCE

- Download worksheets on multiplication of a 2-digit number by a 1-digit number from the internet with the help of parents and practise them.



Periods: 13–15

Topic: Revision

**Suggested extra teaching aids: Touchpad
Mathematics 2, Pages 96–98**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Guide them to perform the activity as suggested in ‘Fun Activity’ section on page 98 in the classroom.
- Start the revision of the exercise by using, ‘Mental Maths’, and ‘Learning Logs’.
- Ask students to find the 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.
- Ask to watch video on multiplication on ‘www.orangewebsupport.co.in’.





DIVISION

LEARNING OBJECTIVES

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

- ◆ understand the concept of division as equal sharing and grouping
- ◆ understand division by repeated subtraction
- ◆ divide a number on a number line
- ◆ understand the relation between multiplication and division
- ◆ know the terms associated with division

LESSON PLAN

Suggested number of periods: 10

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some real-life objects like sketch pens, pens, pencils, number arrow cards, times tables chart, bowl, etc.

Keywords: Grouping, Sharing, Distribution, Repeated Subtraction, Division fact, Dividend, Divisor, Quotient, Remainder.

Pre-requisite knowledge: Students must be familiar with the multiplication tables from 1 to 10, and sharing things equally among a certain number of groups.

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 sharing, Division by equal grouping, Division by repeated subtraction	Suggested extra teaching aids: Some real-life objects, Touchpad Mathematics 2, Pages 99–106
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ENGAGE

Put up to 10 candies on the teacher’s table. Call any pair of students to divide 10 candies among themselves equally. Repeat the same with different number of candies and different pairs of students. Accept the responses. Introduce the topic ‘Division as equal sharing’.

You can take the situation given in ‘Warm Up’ and discuss its solution.



EXPLORE

Use the explanation by taking reference of situation given on pages 100-101 of textbook.

[Experiential Learning]

EXPLAIN

If 10 candies are shared among 2 friends, then each child will get 5 candies. We can write it as $10 \div 2 = 5$, this is called division statement or division fact.

Explain that division can also be expressed as equal grouping, by taking the reference of real-life example given on page 102 of the textbook.

Further explain that repeated subtraction can also be used for division by taking the reference of example given on page 104.

Similarly, we can use the number line to represent the division as repeated subtraction. Use the examples given on pages 104–105 of the textbook for detailed explanation.

ELABORATE

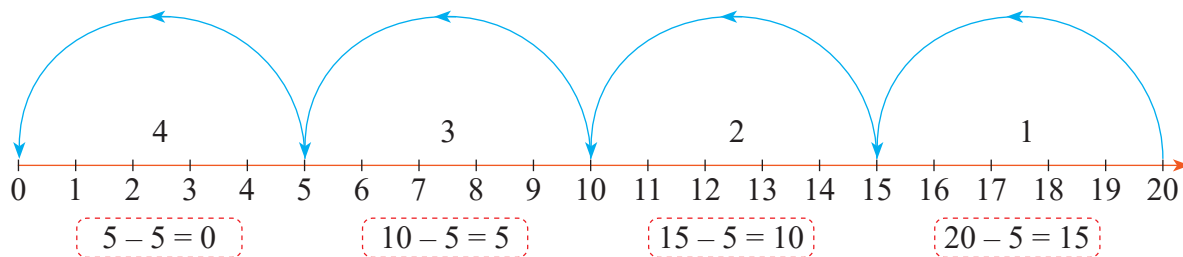
Call one boy/girl and give him/her few pencils. Instruct to share equally among the students of the class including himself/herself. Ask: How many pencils does each student get? Accept the responses. Now, instruct the class to write it as division sentence using division sign.

Next, divide the class into groups. Give a different number of marbles to each group. Instruct to divide within the group equally. Ask: How many marbles does each get? Instruct them to write division sentence for the distribution of marbles.

Further, keep a jar on the teacher's table and fill with even number of candies. Instruct: Pick out 2 candies at a time and empty the jar. Ask: How many times did you pick it out? Accept the responses. Repeat with other numbers. Discuss division by repeated subtraction using examples on blackboard.

To demonstrate the division on number line, take students to playground. Make number line from 0-20 by using chalk or sand. For example, to teach them division of 20 by 5. Instruct: Start from 20 and jump by skipping 5 numbers each time till you reach 0.

Ask: How many times did you jump? Accept the responses. Demonstrate the same concept on the board as:



Thus, $20 \div 5 = 4$.

[Holistic Learning]

EVALUATE

Classwork: Instruct the class to do Q.1 and 2 of Exercise 6A, Q.1 and 2 of Exercise 6B, and Q.1 and 2 of Exercise 6C in the classwork.

Homework: Ask to solve the rest of the questions of Exercise 6A, 6B and 6C in the homework.



ENHANCE

- Discuss and ask to solve ‘HOTS’ given on page 110.

Periods: 6–8

Topics: Relation between division and multiplication, Terms of a division statement

Suggested extra teaching aids: Multiplication tables chart, some real-life objects, some cards showing fact family, etc.
Touchpad Mathematics 2, Pages 106–107

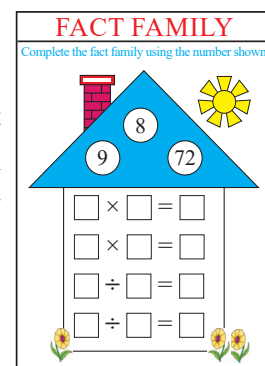
ENGAGE

Start the class by placing three bowls on the teacher’s table. Put 2 erasers in each bowl. Ask: What is the total number of erasers? Accept the responses. Again ask the division statement and multiplication statement for this observation. Introduce the topic ‘Relation between division and multiplication’.

EXPLORE

Divide the class into groups. Distribute fact family cards to each group for different numbers. Instruct them to write two division facts and corresponding two multiplication facts for the given numbers and submit it to teacher. The group that completes it correctly in minimum time will be appreciated.

[Experimental Learning]



EXPLAIN

Explain that for each division fact, there are two multiplication facts and vice versa.

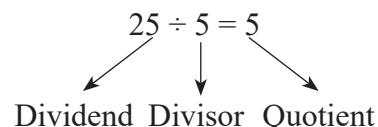
Next, discuss how we can do the division sum using multiplication table. For example, to divide 25 by 5, recall the multiplication table of 5 and observe when 25 occurs in table of 5. As 25 occurs at 5 times 5, so, the division statement is $25 \div 5 = 5$.

Further, explain the terms of a division statement as shown alongside.

Where, dividend is the number we divide, here 25 is the dividend.

The number by which we divide is the divisor, here 5 is the divisor.

The number we get as answer is the quotient. Here, second 5 is the quotient.



ELABORATE

Demonstrate on board by taking the reference and examples given on page 106 that for each multiplication fact, we have two division facts. Like:

Take the references and examples given on pages 106–107.

$$\begin{array}{ccc} & 9 \times 3 = 27 & \\ \swarrow & & \searrow \\ 27 \div 9 = 3 & & 27 \div 3 = 9 \end{array}$$

[Conceptual Learning]

EVALUATE

Classwork: Ask the students to do Q.1 (a), (b), (c) and Q.2 (a), (b), (c) of Exercise 6D. If the students make any error while doing the division, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 6D as homework assignment.

ENHANCE

- Motivate children to do the activity given under section ‘Fun Activity’ on page 110 of the textbook.

[Critical Thinking]



- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Start the revision of the exercise by using ‘Learning Logs’ and ‘Mental Maths’.
- Discuss questions 1 to 3 of the ‘Learning Logs’ and accept students’ answers. If they have any confusion or make any error, then explain and correct them.
- Ask to download worksheets from the internet with the help of friends, teachers and parents and practise them.
- Ask to watch video on division on www.orangewebsupport.co.in.





FRACTIONS

LEARNING OBJECTIVES

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

- ◆ understand the concept of a whole and its parts
- ◆ understand a fraction as a part of a whole when divided into equal parts
- ◆ find half, one-fourth and three-fourths of a whole and differentiate between them

LESSON PLAN

Suggested number of periods: 6

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some real-life objects like sketch pens, pens, pencils, bowl, etc.

Keywords: Equal parts, Unequal parts, Fraction, Half (Plural; halves), One-third, One-fourth, Quarter, Three-fourths, Collection.

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

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

Topic: Whole and fractions

Suggested extra teaching aids: Some real-life objects, transparent bowls, some fraction sticky notes, etc.
Touchpad Mathematics 2, Pages 113–116

ENGAGE

Introduce the topic in the classroom with some interesting activities. For this, talk about the real-life situations where we need to use fraction. For example,

- Aarti’s mother gives her a guava and tells to share it with Swati, her younger sister. Can you tell how will she share it?
- Mohit has brought a loaf of bread in the school. He would like to share it with his friends Divakar and Harsha during break. Can you help him in cutting the loaf of bread into equal pieces? How will you cut it?

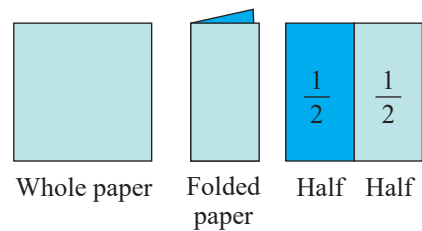
Accept their responses and introduce the term ‘fraction’.

Teacher can discuss the concept given in ‘Warm Up’ section on pages 113–114 of the textbook.

EXPLORE

Introduce: Division of a whole into two halves, 4 one-fourths, and 1 three-fourths and one one-fourth.

Divide the class into pairs. Give them a squared paper sheet. Instruct them to fold the square paper into equal halves, press the crease, and then unfold the sheet. Ask: How many equal divisions are made on the sheet?, What is it called? Accept the responses.



Again, instruct them to fold that square sheet into four equal parts, and unfold the sheet.

Ask: How many equal divisions are made in the sheet?, What do we call it? Accept the responses.

If children get stuck at any point, the teacher will help.

[Experiential Learning]

EXPLAIN

We can divide a whole object into equal and unequal parts. When a whole object is divided into equal parts, each part is called a **fraction**.

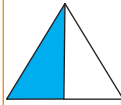
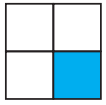
When we divide a whole thing into two equal parts, each part is called half or **one-half** of the whole and write it as $\frac{1}{2}$. Show that two halves make a whole by using a real-life object like apple.

Similarly, when we divide a whole thing into four equal parts, then each part is **one-fourth** of the whole. **One-fourth** is written as $\frac{1}{4}$. Further when we divide an object into four equal parts, then 3 parts together out of 4 equal parts is called **three-fourths** or three quarters. We write **three-fourths** as $\frac{3}{4}$.

ELABORATE

Divide the board in four columns and give the heading of columns as whole, One-half, One-fourth and Three-fourths as shown.

Distribute some fraction sticky (at least 2) notes to each child and ask to paste them in the correct category.

Whole	One-half	One-fourth	Three-fourths
			

Also, demonstrate the references and examples given on pages 114–115.

[Experiential Learning]

EVALUATE

Classwork: Instruct the class to do Q.1, 2 of Exercise 7A in the classwork.

Homework: Ask to solve the rest of the questions of Exercise 7A in the homework.

ENHANCE

- Discuss 'HOTS' given on page 117.



- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision exercise.
- Guide the students to do the activity given in ‘Fun Activity’ section on page 117.

[Experiential and Collaborative Learning]

- Start the revision of exercise by using ‘Mental Maths’ given on page 116.
- Discuss Questions of ‘Mental Maths’ and accept students’ answers. If they have any confusion or they make any error, then explain and correct them.
- Ask to watch video on fractions for grade 2 on www.orangewebsupport.co.in.

[Net Connect]



SHAPES AND PATTERNS

LEARNING OBJECTIVES

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

- ◆ identify solid (3D) shapes like cubes, cuboids, cylinders, and spheres
- ◆ know the features of solid shapes (edges, corners, faces)
- ◆ identify rolling and sliding objects
- ◆ explore and identify plane (2D) shapes like circles, triangles, rectangles, and squares
- ◆ understand how shadows are formed
- ◆ see how the shadow of a solid (3D) shape looks like a plane (2D) shape
- ◆ identify different types of lines – curved, horizontal, and vertical
- ◆ draw straight lines using a ruler
- ◆ recognise and create patterns in shapes and numbers seen around them

LESSON PLAN

Suggested number of periods: 15

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some real-life objects, torch, etc.

Keywords: Solid shapes, Cube, Cuboid, Cylinder, Cone, Sphere, Faces, Roll, Slide, Vertex (Plural; vertices), Side, Edge, Plane shapes, Rectangle, Triangle, Circle, Oval, Square, Shadow, Straight lines, Curved lines, etc.

Pre-requisite knowledge: Students must be familiar with plane shapes like: Rectangle, square, triangle, circle, and solid shapes like: Cube, cuboid, cylinder, cone and sphere.

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: Solid shapes, Rolling and Sliding objects, Plane shapes

Suggested extra teaching aids: Some real-life objects, Touchpad Mathematics 2, Pages 118–125

ENGAGE

Start the class by discussing about *rangoli* given in the ‘Warm Up’ section given on page 118–119. Further, show any object such as a duster or a dice to the class and ask about its shape. Also, the teacher can ask the number of its sides and vertices. Accept the responses. Let them know what the faces, edges and vertices of solid shapes are.



EXPLORE

Use the activity given on page 124 of the textbook to reinforce the concept of different plane shapes.

[Experiential Learning]

EXPLAIN

Recall the shapes of a cube, cuboid, cylinder and cone. Demonstrate that a cube has 6 faces, 12 edges and 8 vertices. Explain that all the edges of a cube are of the same length, and all its faces are of same size i.e., square. Similarly, a cuboid has 6 faces, 8 vertices and 12 edges. But only its opposite faces are equal. Further, demonstrate that a cylinder has 3 faces (1 curved and 2 plane) and 2 edges. Its opposite faces are equal. Next, demonstrate a cone and a sphere and tell that a cone also has two faces (one plane and other curved), 1 vertex and 1 edge while a sphere has only a curved face and does not have any edges or vertices.

Further, discuss 'Rolling and Sliding objects', i.e., flat or curved face. Explain that a solid can roll, slide or both depending upon its shapes.

ELABORATE

Collect some objects having different shapes and sizes. Demonstrate the rolling and sliding of an object and discuss the reason behind it by taking the references given on page 121 of the textbook.

[Conceptual Learning]

EVALUATE

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

Homework: Ask to solve Q.2 of Exercise 8A, 8B and 8C as their homework assignment.

ENHANCE

- Distribute Printout of worksheet like the following image and ask each student to fill it.

3D Solid Shapes	Can it roll?	Can it slide?
Cube	No	Yes
Sphere		
Cylinder		
Cone		

Periods: 6–8

Topic: Shadow Story (Togalu)

Suggested extra teaching aids: Some real-life objects, torch, etc. Touchpad Mathematics 2, Pages 125–128

ENGAGE

After greeting the students, ask few questions like:

- Have you seen your own shadow or the shadow of a tree, a dog, a cow or any other animal?
- Do you know how a shadow is formed?
- When do we see a shadow?
- When does a shadow vanish?

Accept the responses. Introduce the topic 'shadow story'.

EXPLORE

Divide the class into four groups (2–4 students per group).

Make the classroom darker and provide each group a torch and a set of small objects.

Instruct them to create different types of shadows using the torch and small objects. Encourage them to experiment with the distance between the object, the wall and the torch, as well as the size and shape of the object.

Once they have created a variety of shadows, discuss their observations.

[Cross-curricular Learning]

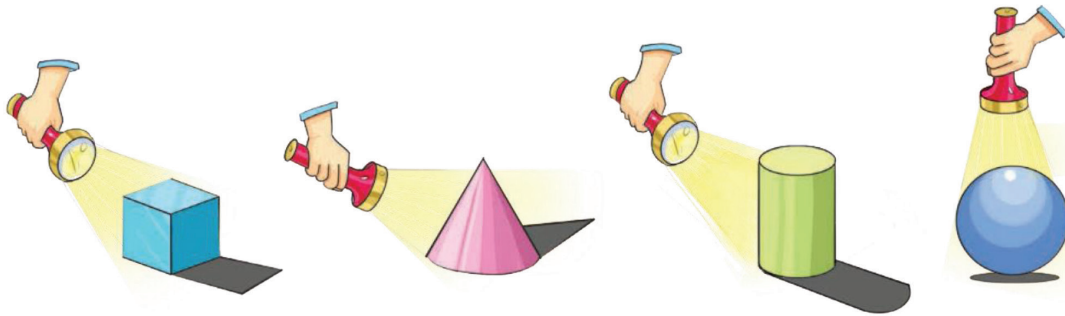
EXPLAIN

Introduce that when an object blocks a source of light, like bulb or torch, sunlight, it creates a shadow.

Say: You can see the image and how the shadow of the man's hands can be seen on the wall because his hands are blocking the source of light.

ELABORATE

Demonstrate the following shadow formation in the classroom: the shadow of a cube forms a square, a pyramid forms a triangle, a cylinder forms a rectangle and a sphere forms a circle.



Also discuss the correct identification of shadow formation of different animals with their names given on page 125 of the textbook.

[Experiential Learning]

EVALUATE

Classwork: Based on the topics covered in the particular period, discuss Q.1, 2 and 3 of Exercise 8D.

Homework: Ask to solve the following questions as homework assignment.

Tick (✓) the shape of the shadow formed by an object when the source of light is kept on its side.

1. The shadow of a Rubik's cube is in the shape of a
(a) circle ☐ (b) square ☐ (c) triangle ☐
2. The shadow of a birthday cap is in the shape of a
(a) circle ☐ (b) rectangle ☐ (c) triangle ☐
3. The shadow formed by a ball is in the shape of a
(a) circle ☐ (b) rectangle ☐ (c) triangle ☐

ENHANCE

- Ask to write 5 lines on 'Togalu Gombeyaata' the puppetry art form practised in Karnataka, using the internet with the help of teacher and parents.



Periods: 9–10

Topic: Straight and curved lines

Suggested extra teaching aids: Some real-life object, Touchpad Mathematics 2, Pages 128–130

ENGAGE

After the greeting, start the class by engaging the children in an activity. Ask the class to trace a *rangoli* pattern in their notebook; ask children to identify the different lines in their *rangoli*. The teacher can also take the reference of ‘Warm Up’ section given on pages 118-119 of the textbook.

EXPLORE

Divide the students into two groups—group A and group B. Ask, group A to create a *rangoli* using only straight lines and group B to create the *rangoli* using only curved lines. The group that create the best *rangoli* will be appreciated.

[Experimental and Collaborative Learning]

EXPLAIN

Explain the lines: Straight and curved, the types of straight lines by taking the reference of pages 128 and 129.

ELABORATE

Demonstrate the straight and curved lines using the thread. Hence, discuss about the three types of straight lines: Horizontal line, vertical line and slanting line. The teacher can use ruler to explain this.

Further demonstrate drawing a straight line by taking the reference from the page 129 of the textbook.

[Conceptual Learning]

EVALUATE

Classwork: Ask the students to do Q.1 and 2 of Exercise 8E.

Homework: Ask to solve Q3 of Exercise 8E in homework assignment.

ENHANCE

- Ask the students to draw different animal shapes using only straight lines.

Periods: 11–12

Topic: Patterns

Suggested extra teaching aids: Some real-life objects, some cut-outs of different shapes, etc. Touchpad Mathematics 2, Pages 130–132

ENGAGE

Start the class by showing some real-life objects like a sunflower, or design of a window and ask what they observe. Accept the responses. Introduce the topic ‘Patterns’.

EXPLORE

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

Instruct them to make their own pattern using those cut-outs.

Ask a student other than the pair to identify and tell the names of the next two cut-outs of the shapes to continue the pattern. Accept the responses.

Continue with other pairs and different cut-outs of shapes, numbers or letters.

EXPLAIN

A sequence of figures, shapes, letters or numbers that repeats itself is called a pattern.

We can find beautiful patterns in saris, carpets, rangolis, tiles, and nature. Explain about pattern in shapes, pattern in numbers and pattern in letters.

ELABORATE

Demonstrate on board when three different shapes, colors, etc. are repeated over and over again, it is known as **ABC pattern**.

When one or more elements in a sequence or arrangement increase, it is known as an **increasing pattern**. Increasing patterns can be both numerical and non- numerical.

Further, demonstrate the analogical and patterns, pattern in numbers and letters by taking references given on pages 130 and 131 of the textbook.

EVALUATE

Classwork: Discuss and ask to do Q.1 and 2 of Exercise 8F.

Homework: Ask to solve Q.3 and 4 of Exercise 8F as homework assignments.

ENHANCE

- Discuss and ask to do the activity given in ‘Fun Activity’ on page 136.

[Creative Thinking and Art Integration]

Periods: 13–15

Topic: Revision

**Suggested extra teaching aids: Some real-life objects, some cut-outs of different shapes, etc.
Touchpad Mathematics 2, Pages 133–136**

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Guide the students to do the activity given in ‘HOTS’ section on page 135 in the classroom.
- Start the revision of the exercise by using ‘Mental Maths’, and ‘Learning Logs’.
- Ask to watch video on shapes and patterns on ‘www.orangewebsupport.co.in’.





MEASUREMENT

LEARNING OBJECTIVES

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

- ◆ explore the length, weight and capacity of objects available in the surrounding
- ◆ understand measuring lengths using non-standard units such a handspan, cubit, etc.
- ◆ understand about the standard units of length, weight and capacity

LESSON PLAN

Suggested number of periods: 11

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some chits on which different measurements are written, bowl, ruler, some weights, some containers of different capacities, etc.

Keywords: Measurement, Length, Width, Height, Weight, Mass, Capacity, Volume, Units (standard and non-standard), Metre, Centimetre, Millimetre, Gram, Kilogram, Litre, Millilitre.

Pre-requisite knowledge: Students must be familiar with standard and non-standard units of measurement.

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: Measurement of length

Suggested extra teaching aids: Some real-life objects, Measuring tools, etc.
Touchpad Mathematics 2, Pages 137–142

ENGAGE

After the greeting, instruct each student to measure the length of their desk using a handspan and a ruler or a thread. Ask for the measurements and accept the responses. Discuss why the measurements differ when using a handspan but are the same when using a ruler or thread. Also discuss the story given in the ‘Warm Up’ and answer the questions.

EXPLORE

Divide the class into pairs. Give a pencil to each pair. Instruct to measure the length of their pencils by using a ruler separately, then compare the lengths and note them.

Ask: What is the length of each pencil? Accept the responses.

Next, give them a paper strip. Instruct to measure its length. Accept the responses.

[Experimental Learning]

EXPLAIN

Length can be measured by using non-standard from units of measurement of length, such as handspan, finger width, cubit, footspan and pace. But these can vary from person to person. So, for accurate measurement, we use standard units of measurement of length, centimetres and metres. We write centimetre as **cm** and metre as **m**. Centimetre (cm) is used to measure the length of smaller objects, like the length of a pencil, width of desk or book. To measure shorter lengths, we use ruler. Further, explain the method of measuring length using a ruler.

Next, discuss that to measure bigger lengths like length/height of wardrobe or a person, we use the unit **metre (m)**.

ELABORATE

Demonstrate measuring the length of an object like a pencil or a book using a ruler, *i.e.*, in centimetres (cm) and the objects like side of a wardrobe or door in metres (m) by taking the reference given on pages 138–140 of the textbook.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 3 and 4 of Exercise 9A. If any student makes any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 9A as their homework assignment.

ENHANCE

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

Periods: 4–6

Topic: Measurement of weight

Suggested extra teaching aids: Some real-life objects, weighing scale and some weights of 50 g, 100 g, 250 g, 500 g, etc. Touchpad Mathematics 2, Pages 142–145

ENGAGE

Put a few things like a duster, pen, pencil, banana, orange, etc. on teacher’s table. Call students one by one and ask to sort out the lightest and the heaviest among them. Arrange all the things in the increasing order of their weight.

Ask: How do you know which is light and which is heavy?, Which objects have their weight in kg and g? Accept the responses.

EXPLORE

Divide the class into groups. Arrange the weighing machine and a few weights (50 g, 100 g, 250 g, ..., etc.) for them and give them some objects (marbles, pebbles, notebooks, pencil box, their lunch box, etc.). Instruct to measure the weights of the given objects. Ask to record which object is lighter and which object is heavier. Accept the responses and discuss standard units of weight.

[Experimental Learning]



EXPLAIN

Weights can be measured by using non-standard units of measurement of weight like cup, tablespoon, teaspoon, pinch, bowl, glass, etc. But the size of these may vary. So, for accurate measurement of weight, we use the standard units of measurement of weight, gram and kilogram.

We write gram as **g** and kilogram as **kg**. Gram (g) is used to measure the weight of lighter objects, like the weight of a pencil, orange, soap, etc. And to measure heavier objects like weight of bags of vegetables and fruits or a person, we use kilogram (kg).

ELABORATE

Demonstrate in the classroom on the weighing scale, that when we put 1000 g (100 g + 200 g + 200 g + 500 g) together, we get 1 kilogram. So, 1000 g = 1 kg.

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 3, 4 and 5 of Exercise 9B. If students make any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 9B as homework assignment.

ENHANCE

- Encourage the students to solve the question asked in ‘HOTS’ section given on page 149 of the textbook.

[Logical Thinking]

Periods: 7–9	Topic: Measurement of capacity	Suggested extra teaching aids: Some containers of different measurements, some liquids for measurement Touchpad Mathematics 2, Pages 145–148
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ENGAGE

Put three bottles of different sizes on the table. Call one student to fill them with water. Ask the class which of the bottles has the maximum water and which has the minimum water. Accept the responses. Further, ask which can store more water, a bottle or a bucket? Accept the responses. Introduce ‘Measurement of Capacity’.

EXPLORE

Arrange some containers of various sizes like four 100 mL bottles, two 250 mL bottles, four 500 mL bowls, two 1000 mL mugs, one 2 L bottle, one 5 L can without markings (for capacity) on teacher’s table. Call students one by one and ask them to

- arrange containers in ascending /descending order by estimating their capacities.
- select container whose capacity is equal to 2 L.
- select container whose capacity is equal to 5 L, and so on.

If students have any confusion, teacher will help them.

[Experiential Learning]

EXPLAIN

The quantity of a liquid that a container or vessel can hold is called its capacity. Cup, glass, spoon, etc. are non-standard units of measurement of capacity. So, for accurate measurement of capacity, we use standard units of measurement of capacity, litres and millilitres.

To measure small quantities of any liquid, we use millilitres (mL), and to measure large quantities of any liquid, we use litres (L).

ELABORATE

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 L = 1000 mL.

Demonstrate with the help of book page 146, 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

EVALUATE

Classwork: Instruct to solve Q1 and 2 of Exercise 9C in the classroom.

Homework: Ask to solve the remaining questions of Exercise 9C as homework assignment.

ENHANCE

- Ask students to perform the 'Activity' given in section 'Fun Activity' on page 151.

[Experiential Learning]

Periods: 10–11	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 2, Pages 148–151
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- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Start the revision of the exercise by using 'Mental Maths', and 'Learning Logs' of the chapter.
- If students have any confusion or they make any error, then explain and correct them.
- Ask to solve worksheets on measurement given on 'www.orangewebsupport.co.in'.

[Tech Connect]





TIME

LEARNING OBJECTIVES

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

- ◆ read time on a clock in complete hours and half past hours
- ◆ understand the order of the days of a week and the months of a year
- ◆ explore the calendar
- ◆ understand the cycle of seasons
- ◆ understand the directions—east, west, north and south

LESSON PLAN

Suggested number of periods: 13

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, wall clock/table clock, calendar, charts on seasons, etc.

Keywords: Clock, Dial, Hour hand, Minute hand, Minutes, Leap year, East, West, North, South, Season, Spring, Winter, Summer, Autumn.

Pre-requisite knowledge: Students must be familiar with time of a day—morning, noon, evening and night; Clock—minute hand, hour hand, reading time when minute hand is at 12; days of a week, months of a year and main seasons of a year, 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

Topic: Clock

Suggested extra teaching aids: Wall clock or table clock.
Touchpad Mathematics 2 Pages 152–155

ENGAGE

Start the class with an interaction by asking about some activities those are done in different times of a day. For example, walking, working, cooking, playing, studying, sleeping, etc. Further, ask some questions 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 concept given in “Warm Up” section on pages 152–153.

EXPLORE

Divide the class into two groups A and B. Give them a cardboard clock with the minute and the hour hands.



Instruct group A to display the time in hours and 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 identifies more correct times will win the game. **[Experimental Learning]**

EXPLAIN

A clock has two hands; one is shorter than the other. The shorter hand is the 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. 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.

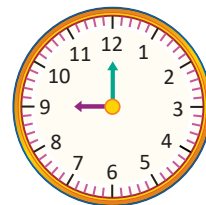
So, 1 day = 24 hours.

The time is in full hours when the minute hand is at twelve. The time is half an hour when it is at 6.

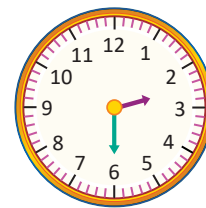
ELABORATE

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

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

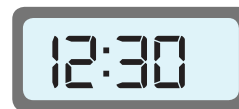


Again, demonstrate half past hour on the clock. As in the given clock, the hour hand is between 2 and 3 and the minute hand is at 6. So, the time is 2:30 or half past 2.



Also, demonstrate the digital clock in the classroom.

Show that a digital clock displays the time directly, like 12:30.



The teacher can also take the references and examples given on pages 153-154 of the textbook.

[Experiential Learning]

EVALUATE

Classwork: Ask to solve Q.1 (a) and (b) and Q.2 of Exercise 10A and Q.1 and 4 of Exercise 10B. If any student makes any error, the teacher will correct it and explain.

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

ENHANCE

- Ask to watch the video on 'Time' on the link "www.orangewebsupport.co.in".

[Tech Connect]



Periods: 5–8

**Topics: Days of a week, Today,
yesterday and tomorrow,
Months of the year**

**Suggested extra teaching aids: Calendar of
current year, etc.
Touchpad Mathematics 2, Pages 156–159**

ENGAGE

Ask from students: What day is today? What day was yesterday? On which day of the week the school is closed? Tell the name of the days of the week. Accept the responses. Teacher can also discuss the story given on page 157.

EXPLORE

Hang a calendar on the board.

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

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

[Experimental Learning]

EXPLAIN

Monday is the 1st day, Tuesday is the 2nd day, and in the same way, Sunday is the 7th day of the week. For present day we use the word ‘today’, ‘yesterday’ for the day before present day and ‘tomorrow’ for the day after the present day.

A calendar is a chart which shows days, dates, weeks and months in a year. One year has twelve months or 365 days. January is the first month and December is the last month. There are 7 months which have 31 days each and 4 months which have 30 days each. February is the shortest month of the year with 28 days. Once in 4 years, February has 29 days. Such a year is known as a leap year.

[Conceptual Learning]

ELABORATE

Demonstrate on board the references and examples given on pages 156 to 159 of textbook in detail.

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve Q.1, 2, 3 and 6 of Exercise 10C, Q.3, 4 of Exercise 10D and Q.1, 3 of Exercise 10E. If any student makes any error, the teacher will correct it and explain.

Homework: Ask to solve the remaining questions of Exercise 10C, 10D and 10E as their homework assignment.

ENHANCE

- Ask to solve Q.1, 3 and 4 of ‘HOTS’ section given on page 164 of the textbook.

[Critical Thinking and Subject Enrichment]



Time

Periods: 9–11

Topics: Seasons, Directions

**Suggested extra teaching aids: A chart having cut-outs/images of some seasons, some seasonal objects, etc.
Touchpad Mathematics 2, Pages 160–162**

ENGAGE

After the greeting, start the class by asking few questions like:

- Which season is going on?
- In which season do we feel cold? What would you like to wear in this season?
- In which season do we feel hot? What would you like to eat or drink in this season?

Accept the responses. Start the topic ‘Seasons’.

EXPLORE

Divide the class into groups. Put a variety of seasonal objects and pictures showing the five different seasons on the teacher’s table.

Write the word ‘summer’ on the board, call one group in front of the class and instruct to write some words describing the season and select the objects and pictures related to the season with the help of each other.

Do the same for ‘winter’, and the other seasons with other groups. The group that writes more words and find more objects and pictures related to the season will be appreciated. **[Holistic Learning]**

EXPLAIN

Tell the class that in our country, there are five seasons in a year, winter, spring, summer, rainy or monsoon and autumn. As winter is cold, spring is pleasant (neither hot nor cold), summer is hot, it rains in the rainy season and we observe leaves fall on the ground in the autumn season.

Further, explain that if you are standing facing the rising sun, which is in the east, the direction to your right is south, to your left is north, and behind you is west.

Take the references and examples given on pages 160 and 161 of the textbook. **[Conceptual Learning]**

ELABORATE

Divide the classroom into four “Season Corners” (Spring, Summer, Autumn, Winter).

Ask students: If you are travelling North in winter. What items go in your suitcase?

If you are travelling South in summer. What items go in your suitcase?

Discuss why we need different items (umbrellas, coats, sunglasses) based on which season is going on.

Also take reference of pages 160-161 of the textbook. **[Experiential Learning]**

EVALUATE

Classwork: Ask to do Q.1 of Exercise 10F and discuss Q.1, 2 and 3 of 10G in the classroom. If any student makes any error, the teacher will correct and explain.

Homework: Ask to solve remaining questions of Exercise 10F and 10G as homework assignment.

ENHANCE

- Ask to write a poem on seasons/directions on a colourful chart paper with the help of friends, parents and teachers. **[Holistic Learning]**



Periods: 12–13

Topic: Revision

Suggested extra teaching aids:
Touchpad Mathematics 2, Pages 162–165

- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Guide the students to do the activity as suggested in ‘Fun Activity’ section on page 165 of the textbook.
[Cross Curricular Learning]
- Start the revision of the exercise by using ‘Mental Maths’, ‘Learning Logs’, and Q.2 of ‘HOTS’ of the chapter.
- Ask to watch the video on ‘Time’ for grade 2 on “www.orangewebsupport.co.in”.





MONEY

LEARNING OBJECTIVES

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

- ◆ understand the use of money
- ◆ count money of different denominations
- ◆ exchange notes or coins for a note or coin of a greater value
- ◆ understand the combination of notes and coins to make a certain amount
- ◆ add and subtract money and apply the concepts to shopping

LESSON PLAN

Suggested number of periods: 12

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, some dummy notes and coins of different denominations.

Keywords: Currency, Notes, Coins, Rupees, Paise, Addition, Subtraction, Total amount, Balance.

Pre-requisite knowledge: Students must be familiar with what currencies are used for, Indian currencies and its symbol, coins and notes in use, counting 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: 1–5

Topics: Money, Counting Money, Change of Money

Suggested extra teaching aids: Some dummy notes and coins of different denominations, Touchpad Mathematics 2, Pages 166–170

ENGAGE

Show currency notes and coins of different denominations in the classroom. Instruct to identify them and tell their values. Accept the responses. Discuss the concept given in ‘Warm Up’ section on pages 166–167. Guide them to solve the questions given in it.

EXPLORE

Divide the class into groups. Give them some dummy currency notes. Arrange a buffet of objects on the table with a price tag on each. Keep price under ₹100. Instruct the groups to act as a buyer and buy things using dummy currency. Repeat with all students. Observe them and help them if any group wants it.

[Experimental Learning]



EXPLAIN

We use money to buy things and pay for services. Indian currencies are available in the form of notes and coins. The symbol ‘₹’ is used for rupees and ‘p’ for paise. 100 paise is equal to ₹1.

Further, explain the topic Counting of Money. To count money, we start from biggest amount.

Further, explain how to change a note or coin of greater value with many notes or coins of smaller value.

ELABORATE

Demonstrate in class the different Indian coins and notes either using dummy currencies or by taking references of images given on pages 167–168 of the textbook.

Demonstrate some notes and coins and ask the total amount one by one.

Also demonstrate the change of money like:



Take the references given on pages 167 to 169 for detailed explanation.

[Conceptual Learning]

EVALUATE

Classwork: Ask to solve few questions of Exercises 11A and 11B in the classwork.

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

ENHANCE

- Discuss and motivate to solve questions given in ‘HOTS’ section on page 175 of textbook.

[Computational Thinking]

Periods: 6–10	Topic: Addition and Subtraction of Money	Suggested extra teaching aids: Some dummy currency notes and some coins Touchpad Mathematics 2, Pages 171–173
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ENGAGE

Show two toys or any two objects in the class with price tag under ₹100. Ask: If you want to buy both of them, how much amount must you have? Accept the responses.

Introduce ‘Addition and subtraction of money’.

EXPLORE

Divide the class into groups. Give dummy currency to them. Take some objects and put price tags on them. Choose any group and instruct to play the game of shopping. Ask to buy more than 1 thing and pay the total amount of money to the shopkeeper (the teacher can play the role of shopkeeper).

Further, ask what amount will be left if you buy items worth ₹ 75 and you give a ₹ 100 note to the shopkeeper? Accept the response.

[Experimental 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 171. Also discuss how to solve the story problems given on page 171. **[Conceptual Learning]**

EVALUATE

Classwork: Ask to solve Q.1 and 3 (a), (d) of Exercise 11C in the classroom. If students make any error, teacher will correct them and explain.

Homework: Ask to solve remaining questions of Exercise 11C as homework assignment.

ENHANCE

- Discuss and motivate to do the activity given in ‘Fun Activity’ on page 176 of the textbook.

[Experiential and Collaborative Learning]

Periods: 11–12	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 2, Pages 173–176
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- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Ask and guide students to solve problems in ‘Mental Maths’ section given on page 175.
- Start the revision of the exercise by using questions of ‘Learning Logs’, and guide students whenever they require it.





DATA HANDLING

LEARNING OBJECTIVES

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

- ◆ sort things using one or two attributes
- ◆ understand how to make a list of the required items
- ◆ represent information in tables and charts
- ◆ read the information from given tables and charts

LESSON PLAN

Suggested number of periods: 9

Suggested Teaching Aids: Book: Touchpad Mathematics 2, blackboard or whiteboard, etc.

Keywords: Data, Information, Collection, Sorting, Listing, Organising.

Pre-requisite knowledge: Students must be familiar with sorting things, data collection and its representation.

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

Topic: Listing Things

Suggested extra teaching aids:
Touchpad Mathematics 2, Pages 177–180

ENGAGE

After the greeting, ask some general questions from the class like:

- When you are arranging your school bag, name the items you put in it.

Accept the responses. Discuss the concept given in “Warm Up” section and instruct to write the answers of the given questions. Introduce the topic ‘Listing Things’.

EXPLORE

Distribute A4 sheets to the class. The teacher will write some options on the board as follows and ask the class to make a list on any of the following:

- Name of friends you want to invite
- Party games

- Party foods
- Gift items, etc.

Instruct the class to prepare a list for the celebration of their birthday party according to their choice.

[Experimental Learning]

EXPLAIN

A list helps us to organise information about important things. For any occasion and activity, we prepare a list in advance.

ELABORATE

Demonstrate examples of ‘Listing Things’ by taking the reference given on page 179.

[Conceptual Learning]

EVALUATE

Classwork: Discuss Q.2 of Exercise 12A in the class. If students make any error, teacher will correct it and explain.

Homework: Ask to solve Q.1 of Exercise 12A as homework assignment.

ENHANCE

- Ask to observe the situation given in ‘Mental Maths’ and answer the given questions

[Critical Thinking]

Periods: 5–7	Topics: Representing Information using charts	Suggested extra teaching aids: Some colour pencils or crayons, etc. Touchpad Mathematics 2, Pages 181–182
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ENGAGE

After the greeting ask the students to choose their favourite fruits from a list of options (apple, banana, orange, etc.).

Conduct a quick class survey and record the answers on the whiteboard.

For example: Apple, Banana, Apple, Orange, Grapes, Orange, Apple, Apple, Banana, Grapes, Orange, Apple, Apple, Banana, Apple, Orange, Grapes, Orange, Apple, Apple, Banana, Grapes, Orange, Apple, ... and so on.

Tell the class that we can organise this information in the form of a chart so that we can retrieve any information quickly. Introduce the topic ‘Representing Information Using Charts’.

EXPLORE

Divide the class into groups. Give them a box having crayons/pencils of mixed colours. Instruct to separate red, yellow, blue, and green coloured crayons/pencils and make a table for this.

Ask: How many blue crayons/pencils are there? How many greens crayons/pencils are there? Which colour of crayons/pencils is in the maximum number? Which colour of crayons/pencils is in the minimum number? How many crayons/pencils are there in total? Accept the responses.

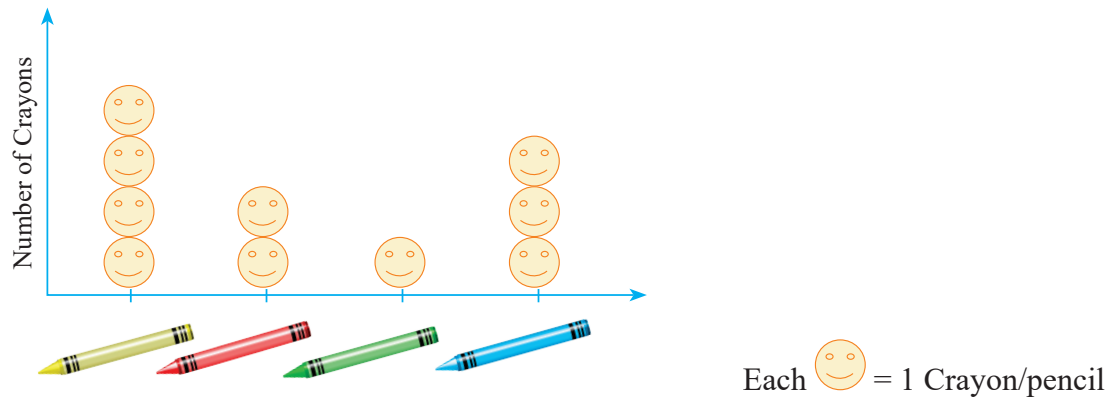
[Experimental Learning]

EXPLAIN

Collection of information in the form of numbers, words, people or things is called data. Data can be displayed through a table or a chart.



Organising the data means presenting it in such a manner so that it becomes meaningful at a glance. For example, we can represent the different colours of crayons/pencils in the chart as shown here.



ELABORATE

Demonstrate the topic ‘Representing Information using charts’ by taking the reference and example given on page 181 of the textbook and ask to complete the chart given on page 182. Discuss and help in writing the answers of given questions by observing the chart. **[Experiential Learning]**

EVALUATE

Classwork: Ask to solve Q.1 of Exercise 12B in their classwork. If any student makes any error, the teacher will correct him/her and explain.

Homework: Ask to revise the concept.

ENHANCE

- Ask to do the given activity given in ‘Fun Activity’ on page 185 of the textbook.

[Experiential Learning]

Periods: 8–9	Topic: Revision	Suggested extra teaching aids: Touchpad Mathematics 2, Pages 183–185
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- Make students comfortable, so they can ask any question on any previously taught topics in which they are confused. Clarify their doubts or queries and start the revision of the exercise.
- Start the revision of the exercise by using ‘Learning Logs’.
- Discuss and help to solve the questions given in ‘Mental Maths’ and ‘HOTS’.
- Ask to watch the video on data handling on “www.orangewebsupport.co.in”.

[Tech Connect]