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# MATH GENIUS

Think Smart, Solve Fast



## Lesson Plan

Experience the Joy of Learning Mathematical Skills



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# PREFACE

The Teacher's Resource Manual is specially developed for teachers using **Math Genius** Coursebooks. The manual has been designed to provide the teacher with additional materials and support that they may require to effectively teach the coursebook. Each **Teacher's Resource Manual** is completely mapped with its coursebook. The method of teaching/learning suggested in the book is completely based on the Gamified Learning 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** 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.

- ❖ It enhances students' curiosity, interest, and engagement and help them access prior knowledge.
- ❖ It provides students with opportunities to construct learning experience through activities.
- ❖ It enables both teachers and students to recognise the impact of learning, reflect on what has been learned, and evaluate how it was learned.

**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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# PART-1

## Large Numbers Around Us

### Learning Objectives

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

- ◆ recognise and appreciate the presence and relevance of large numbers in everyday life, such as population figures, distances, and money, etc.
- ◆ read and write large numbers accurately using both the Indian and American Place Value Systems
- ◆ compare large numbers effectively by understanding the concept of place values
- ◆ practise rounding off large numbers and apply estimation techniques to perform calculations
- ◆ solve real-life problems involving large numbers, including applications of arithmetic operations

## LESSON PLAN

**Suggested number of periods:** 11

**Suggested Teaching Aids:** Textbook Math Genius 7, blackboard or whiteboard, pens, pencils, chalk/ marker, notebook, paper chit/number cards/flash cards, etc.

**Keywords:** Large Numbers, Approximate Values, Exact Values, Rounding off, Estimation, Place Value, Number Comparison, Indian and American Numeral Systems, Powers of 10, Multiplication Patterns, etc.

**Prerequisite knowledge:** Students should be familiar with basic number reading, place value, rounding numbers, and comparing numbers using “greater than,” “less than,” and “equal to”, etc.

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

**Periods:** 1–3

**Topics:** Playing with Numbers, Introduction of a Bigger Number

**NEP Skills:** Discussion-Based Learning, Holistic Learning, Critical Thinking

### TEACHER-PUPIL ACTIVITY

The teacher will start the topic interactively by asking questions related to the students’ real-life experiences. For example,

- Can you think of any situations in your daily life where you come across large numbers?
- Do you think a 5-digit number is much larger than a 3-digit number? Why or why not?
- If I told you to compare two numbers like 1,000,000 and 10,000, how would you know which one is larger?

By asking these questions, the teacher can introduce the concept of large numbers.

The teacher will revise the students' previous knowledge of numbers using the 'Get Ready' and 'Let's Recall' sections in the book.

The Number Relay is an engaging activity designed to help students practise forming numbers. To begin, the teacher will provide some number cards having digits 0 to 9 written on them. The class will then be divided into two teams, and each team will take turns for forming numbers using those number cards as per the instructions given to them by the teacher, such that to form 4-, 5- or 6-digit numbers with or without repetition of digits. The team who forms the numbers correctly will earn a point. To make the activity more challenging, students can also write in both the Indian and American numeral systems. This relay race format not only adds excitement but also encourages quick thinking and teamwork. After each formation of numbers, the students pass the number cards to the next teammate, keeping the activity fast-paced and engaging while reinforcing their understanding of forming numbers.

Next, the teacher will explain the concept of building large numbers, revising the concepts of place value using a place value chart in both number systems of numerations (Indian as well as American system of numeration) and expanding numbers, etc.

Show the smallest 2-digit number, the smallest 3-digit number, and the smallest 5-digit number on board as follows:

- Smallest 2-digit number: 10
- Smallest 3-digit number: 100
- Smallest 4-digit number: 1000
- Smallest 5-digit number: 10,000

Discuss about any patterns noticed.

Further, to help students to understand how the large numbers are read, it is important to explain the concept of place value. Start by drawing a place value chart on the board or displaying it on a projector. This will help students visually grasp the importance of each digit's position in a number.

The teacher can explain the place value system to students by telling them how much each digit in a number is worth based on its position. For example, in the number 100, the 1 is worth one hundred, and in the number 10,000, the 1 is worth ten thousand.

The teacher also discusses the differences between the Indian system and the American system, as follows:

- Indian System: In the Indian system, we use terms like "thousand", "lakh", and "crore" to group numbers together.

Example: 1,000 is read as "one thousand"

10,000 is read as "ten thousand"

1,00,000 is "one lakh"

10,00,000 is "ten lakh"

- American System: In the American system, terms like "thousand", "million", "billion", etc., are used to group numbers.

Example: 1,000 is read as "one thousand"

10,000 is read as "ten thousand"

100,000 is "one hundred thousand"

1,000,000 is "one million"

This system continues with billion, trillion, and so on.

## EXPLANATION

By taking reference of pages 10–13 of the Math Genius 7 textbook, the teacher can discuss about large numbers in both system, Indian as well as American in detail.

For example, 4,500,000 as “forty-five lakh” in the Indian system and “four million five hundred thousand” in the American system.

Ask students to read numbers aloud, using both systems. This allows them to practice and gain familiarity with both formats, ensuring that they are comfortable with each. Provide examples with larger numbers (e.g., 45,000,000 or 1,000,000,000) and encourage students to identify them in both formats.

## ASSIGNMENTS

**Classwork:** Discuss ‘Think Tank’ given on pages 10 and 12 and ‘Knowledge Desk’ given on page 12. Ask the students to practise Q.1, 2, 3 and 4 of Practice Time 1A.

**Homework:** Ask the students to practise Q.5-7 of Practice Time 1A.

**Periods:** 4–6

**Topics:** Large Numbers through real-life examples, Comparing Numbers, Lands of Tens

**NEP Skills:** Discussion-based Learning, Experiential Learning, Holistic Learning

## TEACHER-PUPIL ACTIVITY

Divide the class into small groups and assign each group a real-world scenario where large numbers need to be compared or calculated (e.g., calculating the total population of several countries, comparing the heights of famous buildings, or comparing the revenue of companies).

For example: The population of India is 1.4 billion, while the population of China is 1.3 billion. By how much is India’s population greater than China’s?

Ask each group to present their findings and explain how they did their calculations. This will reinforce the concept of comparing numbers.

Next, help students to understand the concept of multiplying numbers using multiples of 10, 100, 1000, and 10,000 through practical experience teacher will use special calculators. The teacher will ask the students to work in pairs and use the calculators to generate the following numbers:

- 2000
- 20,000
- 1,00,000

Students should work together to figure out how many times they need to press each button to generate these numbers. For example:

- How many times do you need to press the + 10 button to get 2000?
- How many times do you need to press the + 100 button to get 20,000?
- How many times will you press the +1000 button to get 10,000?

Introduce the second calculator with +1, –1, +100, –100, +1000, –1000, +10000, and –10000 buttons. Challenge the students to generate a number such as 1983 using the +1, +100, +1000, and –1 buttons. Encourage the use of different combinations.

Further, the teacher will progress to ‘Patterns in products’ involving numbers like 5, 25, 125, 625. Show how these numbers can be manipulated to create quick calculations. For instance, multiplying by 25 can be seen

as multiplying by 100 and then dividing by 4, while multiplying by 125 can be broken down as multiplying by 1000 and then dividing by 8, similarly to multiply a number by 625, first multiply the number by 10000, then divide the product by 16. These patterns help students multiply large numbers more efficiently. Not only do these multiplication patterns simplify calculations, but they also provide a practical way to handle large numbers in everyday scenarios, such as calculating costs, quantities, or measurements.

## EXPLANATION

Further, explain about pattern in multiplication by 11, 51, multiplication of numbers whose units digits add up to 10 and whose tens digit is the same by taking the reference of pages 19-20 of the textbook.

Teacher will take the reference of pages 14-16 of Math Genius 7, to explain in detail about ‘Large numbers’, ‘Comparing numbers’ and ‘Lands of tens’ and ‘Patterns in products’ in detail.

## ASSIGNMENTS

**Classwork:** Discuss and encourage the students to understand “Be Aware” given on pages 16 and 19. Ask the students to practise Q.1, 2, 3, 4, 7, 9 and 11 of Practice Time 1B and Q.1 of Practice Time 1C.

**Homework:** Ask the students to practise the remaining questions of Practice Time 1B and 1C

<b>Periods:</b> 7–9	<b>Topics:</b> Exact and Approximate Values, Some thought-provoking questions	<b>NEP Skills:</b> Critical Thinking, Logical Thinking
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## TEACHER-PUPIL ACTIVITY

The teacher will spark curiosity about the importance of approximate values in real-life situations.

Begin by presenting real-world scenarios where estimation plays a key role. For example, ask the students: “How would you estimate the number of people in a crowded area, like at a sports stadium or concert?” Follow this by another example: “During a natural disaster, we often hear about the number of casualties. But can we ever get the exact number?” These examples will encourage students to think critically about the need for estimation.

Further, encourage the students to observe and identify the patterns in the rounding process.

For instance, the teacher will present the scenario:

- “Let’s estimate the total number of students in two classes. Class VI has 275 students, and Class VII has 238 students. What’s the estimated total number of students?” The teacher will guide the students to round each number to the nearest 100.
- “275 rounds to 300, and 238 rounds to 200.”

Thus, the estimated total number of students is  $300 + 200 = 500$ .

## EXPLANATION

After that take the reference of examples given on page 23 of the text book for some thought-provoking questions. Accept the response from the class. Teacher will take the reference and examples given on pages 20–23 for the detail explanation. These examples will deepen their understanding of estimating and rounding in real-life contexts. Based on their responses encourage them to answer question given in ‘Fast check’.

## ASSIGNMENTS

**Classwork:** Ask students to keep focus on ‘Be Aware’ and solve ‘Fast Check’ and ‘Think Tank’ given on page 22 and 23 respectively. Ask the students to practise Q.1, 2,3,4 and 5 of Practice Time 1D.

**Homework:** Ask the students to practice the remaining question of Practise Time 1D.

**TEACHER-PUPIL ACTIVITY**

- Make students comfortable, so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.
- Divide the students into small groups and guide them to do the activity given in the ‘Gamified Learning’ section on page 28 of the textbook.
- Start the revision of the exercise by using ‘Mind Map’, ‘Mental Maths’ and ‘Chapter Assessment’.
- Discuss questions A, B and C of the ‘Chapter Assessment’ and accept students’ answers. If they have any confusion or make any errors, then explain and correct them. Motivate students to solve ‘Mental Maths’.

**ASSIGNMENTS**

**Classwork:** Discuss the questions A, B and C of the ‘Chapter Assessment’ in the classroom.

**Homework:** Ask to solve the remaining questions of ‘Chapter Assessment’ given on pages 26.



Marks Obtained: \_\_\_\_\_

Student's Name: \_\_\_\_\_ Section: \_\_\_\_\_

Roll Number: \_\_\_\_\_ Date: \_\_\_\_\_

## A. Multiple Choice Type Questions

Identify the correct answer.

- The smallest 6-digit number is  
(a) 9,99,999                      (b) 1,00,000                      (c) 1,11,111                      (d) 110,000
- Which of the following digits cannot be placed in the thousands place of a 4-digit number?  
(a) 1                      (b) 5                      (c) 0                      (d) 9
- 1 million is equivalent to how many lakhs in the Indian system?  
(a) 1 lakh                      (b) 10 lakhs                      (c) 100 lakhs                      (d) 10,000 lakhs
- How is the number 8,54,19,723 read in the Indian system?  
(a) Eighty-five million four hundred nineteen thousand seven hundred twenty-three  
(b) Eight crore fifty-four lakh nineteen thousand seven hundred twenty-three  
(c) Eighty-five crore four lakh nineteen thousand seven hundred twenty-three  
(d) Eight billion fifty-four million nineteen thousand seven hundred twenty-three
- Which of these is an example of an approximate value?  
(a) Exact number of students in a class.                      (b) Approximately 1,00,000 people watching a match.  
(c) Results of a census.                      (d) Number of pages in a specific book.
- The expanded form of "Three million four thousand fifty-six" is:  
(a)  $3000000 + 4000 + 500 + 6$                       (b)  $300000 + 400 + 50 + 6$   
(c)  $3000000 + 4000 + 50 + 6$                       (d)  $3000000 + 400 + 5 + 6$
- If you have digits 5, 6, and 7, how many 3-digit numbers can you make without repetition?  
(a) 3                      (b) 4                      (c) 6                      (d) 9
- How many times must you press a "+1000" button to reach 10 million?  
(a) 10 times                      (b) 100 times                      (c) 10000 times                      (d) 1 time

## B. Assertion and Reason Type Questions

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).  
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).  
(c) Assertion (A) is true but Reason (R) is false.  
(d) Assertion (A) is false but Reason (R) is true.
- 9. Assertion (A):** The greatest 5-digit number formed using 2, 4, 5, 7, and 8 is 87542.  
**Reason (R):** The greatest number is formed by arranging the digits in descending order.
- 10. Assertion (A):**  $12 \times 63 = 21 \times 36$ .  
**Reason(R):** The product remains the same even if the digits of the factors are interchanged in specific cases because their combined prime factors are the same.



Marks Obtained: \_\_\_\_\_

Student's Name: \_\_\_\_\_ Section: \_\_\_\_\_

Roll Number: \_\_\_\_\_ Date: \_\_\_\_\_

**A. Fill in the blanks.**

1. In the Indian numeral system, the digit 1 followed by seven zeros is called one .....
2. According to the Indian place value system, 100 million is equal to .....
3. To multiply a number by 125, we can multiply the number by 1000 and then divide the result by .....
4. In the number 65,419,723, the digit 6 is in the ..... place.
5. If the sum of the unit digits of two numbers is 10 and their tens digits are the same, the last two digits of their product will be the product of their ..... digits.

**B. Label True or False.**

1. The smallest 4-digit number is 1001. ....
2. The greatest 5-digit number using the digits 3, 5, 6, 7 and 9 is 35,679. ....
3. The estimated product of  $944 \times 88$  is 83072. ....
4. 85712 rounded to the nearest 100 is 85700. ....
5. The place value of 0 is always 0, regardless of its position in a number. ....

**C. Match the following.**

Column I	Column II
1. One million	(a) 1 Lakh
2. One hundred thousand	(b) Ten lakh
3. 3 Billion	(c) 30 crore
4. 3 Hundred thousand	(d) 3 Lakh
5. 300 Million	(e) 300 crore

**D. Do as directed.**

1. Some traveller moves from a country using the International System to one using the Indian System. They have 14.5 million units of currency. How would they write this amount in words and figures using the Indian System?
2. A warehouse manager is tracking inventory. He has 5,40,000 units of Product A and 2,35,000 units of Product B. If the manager packs both products into boxes of 1000 units each, how many boxes will he need?



# Arithmetic Expressions

## Learning Objectives

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

- ◆ understand and create simple arithmetic expressions
- ◆ compare arithmetic expressions
- ◆ read and evaluate complex arithmetic expressions
- ◆ understand how to use brackets correctly in expressions
- ◆ identify the terms of expressions
- ◆ explain the associative and commutative properties of addition and multiplication by swapping and grouping terms
- ◆ understand how to remove brackets in the expressions
- ◆ explain the distributive property of multiplication over addition and subtraction

## LESSON PLAN

**Suggested number of periods:** 10

**Suggested Teaching Aids:** Textbook Math Genius 7, blackboard or whiteboard, pens, pencils, chalk/marker, notebook, paper chit/number cards/flash cards, etc.

**Keywords:** Arithmetic expression, Term, Operator, Constant, Bracket, Order of operations, BODMAS rule, swapping of terms, Grouping of terms, Commutative property, Associative property, Distributive property, Simplification, etc.

**Prerequisite knowledge:** Students should already know the four basic operations (addition, subtraction, multiplication and division) and how to solve simple numerical expressions.

**NEP feature:** This method of teaching provides experiential learning opportunities for students and allows them to work with each other, which helps in their holistic development.

**Periods:** 1–3

**Topic:** Simple Expressions,  
Comparing Expressions

**NEP Skills:** Discussion-Based Learning, Holistic Learning, Critical Thinking

## TEACHER-PUPIL ACTIVITY

The teacher will start the period by using ‘Get ready’ and ‘Let’s Recall’ to explain ‘arithmetic expression’: a combination of numbers and operators (addition, subtraction, multiplication, division).

The teacher will introduce the concept of operands and operators by providing real-world examples, like the total number of bananas Reena bought, when she bought 18 dozens, each containing 12 bananas, which can be written as an expression:  $18 \times 12$ .

Students will identify expressions in their everyday lives (e.g., number of books bought in packs, fares for taxis).

Teacher will demonstrate how to write arithmetic expressions for any given problems:

Example 1: Sum of 8 and 9 is written as  $8 + 9$ .

Example 2: Product of 7 and 6 is written as  $7 \times 6$ .

Ask students to write expressions for various given scenarios, like calculating total expenses for daily transport or monthly grocery shopping.

Further teacher will demonstrate use of application of arithmetic expressions in real-life by introducing word problems, like:

- Nitya spent ₹5 on pencils and ₹4 on erasers while Satyam spent ₹6 on pencils. Who spent more?
- Rajeev walks 5 km every day. On Sunday, he walked 7 km instead. By how much did he exceed his usual distance?

Students will work in pairs to create real-world expressions based on scenarios given by the teacher (e.g., calculating how much a student spends on lunch every day for a month).

Further, discuss how to translate statements into expressions using both operations and real numbers.

Further, the teacher will teach students how to compare expressions using the symbols '=', '<', and '>'.

For example:  $12 + 8 > 9 + 7$  (since  $12 + 8 = 20$  and  $9 + 7 = 16$ ).

Next, provide different expressions and ask students to compare their values.

For example:  $1000 + 20$  and  $1001 + 22$  by representing pictorially.

## EXPLANATION

By taking the reference of pages 29-33 of Math Genius 7, teacher will explain 'Simple expressions' and 'Comparing expressions' in detail.

## ASSIGNMENTS

**Classwork:** Discuss 'Math Insight', 'Fast Check', 'Think Tank', given on pages 30, 31 and 32. Ask the students to practise Q. 1, 2, 3, 4 and 5 of Practice Time 2A.

**Homework:** Ask the students to practise Q.5-8 of Practice Time 2A.

Periods: 4–6	Topic: Reading and Evaluating Complex Expressions	NEP Skills: Cross-Curricular Learning
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## TEACHER-PUPIL ACTIVITY

The teacher may begin the class with a simple discussion to recall students' understanding of basic operations and expressions. The teacher can write a few simple expressions on the board, such as:  $5 + 3$ ;  $6 \times 4$ ;  $10 - 2$ . Then the teacher may ask students to read these expressions aloud.

After that, the teacher gradually introduces expressions with more than one operation.

An example written on the board:  $20 + 5 \times 3$

The teacher asks students how they would solve it. Different answers may appear. This helps the teacher introduce the need for rules to evaluate expressions correctly.

For this, the teacher divides the class into pairs or small groups, and distributes each group a worksheet with expressions such as:

1.  $20 + 5 \times 3$
2.  $(12 + 6) \times 3$
3.  $30 - 6 \times 2$
4.  $(15 - 5) \times 4$ , and ask to solve these.

Students share their answers with the class.

The teacher observes students' methods and encourages discussion about why different answers may appear. Further, the teacher explains that an arithmetic expression is a combination of numbers and operations. Students should understand that when an expression contains more than one operation, it cannot be solved randomly. A standard rule must be followed so that everyone obtains the same answer. The teacher should introduce the concept of the order of operations and explain the BODMAS rule.

BODMAS stands for:

B – Bracket or

O – Order or of

D – Division

M – Multiplication

A – Addition

S – Subtraction

This rule tells us the order in which operations should be performed. The teacher should also explain the importance of brackets in expressions. Brackets help group numbers and operations and indicate which part of the expression should be solved first.

After explaining the concept, the teacher guide students to practice evaluating expressions that contain more than one operation and brackets. Students should be encouraged to follow the correct order of operations step by step while simplifying expressions. The teacher should emphasise writing each step clearly so that students understand the sequence of operations being performed.

Next, teacher will discuss about 'Terms in an expression' and 'More expressions and their terms' and 'Removing brackets with sign rule'

## **EXPLANATION**

Take reference of page 33–38 of Math Genius 7 for detail explanation of 'Terms in an expression' on board.

## **ASSIGNMENTS**

**Classwork:** Discuss 'Math Insight' 'Fast Check' given on pages 35 and 36. Ask the students to practise Q.1, 2, 3 and 4 of Practice Time 2B.

**Homework:** Ask the students to practise Q.5-8 of Practice Time 2B.

## TEACHER-PUPIL ACTIVITY

The teacher begin the lesson with a short real-life situation.

The teacher asks students a question such as:

“If you add 3 apples and 5 apples, how many apples do you get?”

Students answer: 8 apples.

The teacher then asks: “What if we add 5 apples and 3 apples?”

Students realise the answer is still the same.

The teacher writes on the board:  $3 + 5 = 5 + 3$

The teacher asks students: “Does changing the order change the answer?”

This leads to the idea that some numbers can be swapped without changing the result.

The teacher explains that today’s lesson will help students understand swapping, grouping and distributive property of expressions.

Further, the teacher divides the class into small groups, and distributes each group number cards such as 2, 4 and 6. And instruct students to create different expressions using the same numbers.

For example: Students may form:

$$2 + 4 + 6;$$

$$4 + 2 + 6;$$

$$6 + 2 + 4$$

Students calculate the results and observe that the answer remains the same.

Next, the teacher asks students to group the numbers differently as follow:

$$(2 + 4) + 6$$

$$2 + (4 + 6)$$

Students will again compare the results, and discuss the following questions:

- Does changing the order affect the result?
- Does grouping numbers differently affect the result?

Groups will share their observations with the class.

The teacher will explain that when numbers in an expression are swapped or grouped in addition and multiplication, the result remains the same.

In addition and multiplication, the order of numbers can be changed without changing the answer.

For example,  $a + b$  is the same as  $b + a$ .

Similarly,  $a \times b$  is the same as  $b \times a$ .

This is known as the **commutative property**.

Next, the teacher explains the grouping of terms. Numbers can be grouped in different ways, and the answer remains the same.

For example:  $(a + b) + c = a + (b + c)$

Similarly, multiplication also follows the same rule.

This is called the **associative property**.

Further, the teacher explains the distributive property.

The distributive property shows how multiplication works with addition inside brackets.

Multiplying a number by a bracket means the number must be multiplied by each term inside the bracket.

After explaining the properties, the teacher guides students to practice simplifying expressions using swapping, grouping and the distributive property.

Students are encouraged to look for patterns that make calculations easier. For example, they may rearrange numbers in an expression to combine convenient pairs or group numbers that are easier to add or multiply.

## EXPLANATION

The teacher take reference of pages 39–41 of Math Genius 7 for detail explanations and examples to demonstrate the mentioned topics on board.

## ASSIGNMENTS

**Classwork:** Ask the students to solve ‘Fast Check’ given on page 40 and to practise Q.1, 2, 3 and 4 of Practice Time 2C.

**Homework:** Ask the students to practise Q.5-7 of Practice Time 2C.

Periods: 9–10

Topic: Revision

NEP Skills: Creative Thinking, Logical Thinking, Experiential Learning

## TEACHER-PUPIL ACTIVITY

- Make students comfortable so that they can ask any question on any previously taught topics. Clarify their doubts or queries and start the revision of the exercise.
- Divide the students into small groups and guide them to do the activity given in the ‘Gamified Learning’ section on page 45.
- Start the revision of the exercise by using ‘Mind Map’, ‘Mental Maths’ and ‘Chapter Assessment’.
- Discuss questions A, B and C of the ‘Chapter Assessment’ and accept students’ answers. If they have any confusion or make any errors, the teacher should explain and the correct method. Motivate students to solve ‘Mental Maths’. Motivate the class to solve ‘Mental Connect’ given on page 38 and ‘Maths Fun’ given on page 42.

## ASSIGNMENTS

**Classwork:** Discuss the questions A, B and C of the ‘Chapter Assessment’ and ‘Challenge Question’ in the classroom.

**Homework:** Ask to solve the remaining questions of ‘Chapter Assessment’ given on pages 43-44.



Marks Obtained: \_\_\_\_\_

Student's Name: \_\_\_\_\_ Section: \_\_\_\_\_

Roll Number: \_\_\_\_\_ Date: \_\_\_\_\_

## A. Multiple Choice Type Questions

Identify the correct answer.

- An arithmetic expression is a mathematical statement that includes at least:  
(a) One number and one operator (b) Two numbers and one or more operations  
(c) An equality sign (d) Only brackets
- Which of the following is NOT an arithmetic expression?  
(a)  $12 + 8$  (b)  $18 - 12 = 6$  (c)  $6 \times 5$  (d)  $24 \div 6$
- The value of  $3 \times 20 - 15$  is  
(a) 34 (b) 44 (c) 45 (d) 50
- Which expression represents "5 more than 15"?  
(a)  $15 - 5$  (b)  $15 \times 5$  (c)  $15 + 5$  (d)  $15 \div 5$
- The missing value of  $28 + \dots = 7 \times 6$  is  
(a) 12 (b) 14 (c) 42 (d) 6
- The correct order of operations is:  
(a) Addition, Subtraction, Multiplication, Division  
(b) Division, Multiplication, Addition, Subtraction  
(c) Multiplication, Addition, Division, Subtraction  
(d) Brackets are always last
- $12 + (-7) = (-7) + 12$  illustrates the  
(a) Associative property (b) Distributive property  
(c) Commutative property (d) Identity property
- In  $47 - \{12 - (-8)\}$ , what is solved first?  
(a)  $47 - 12$  (b) The innermost bracket  $(-8)$   
(c)  $12 - (-8)$  (d) The subtraction  $47 - \{ \}$

## B. Assertion and Reason Type Questions

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

- Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).
- Assertion (A) is true but Reason (R) is false.
- Assertion (A) is false but Reason (R) is true.

9. **Assertion (A):** The expression  $12 + 8$  has a value of 20. .

**Reason (R):** An expression does not contain the equality sign (=).

10. **Assertion (A):**  $98 \times 25 = 2450$

**Reason(R):** It can be solved as  $(100 - 2) \times 25$  using the distributive property.



Marks Obtained: \_\_\_\_\_

Student's Name: \_\_\_\_\_ Section: \_\_\_\_\_

Roll Number: \_\_\_\_\_ Date: \_\_\_\_\_

### A. Fill in the blanks.

- The numbers in an expression like  $12 + 8$  are called .....
- When removing a bracket preceded by a ..... sign, the signs of the terms inside remain unchanged.
- To simplify  $98 \times 25$  easily, we can express 98 as .....
- The value of  $100 - 2 \times (5 + 3)$  is.....
- ( ..... + ..... )  $\times 767 = 234 \times 767 + 266 \times$  .....

### B. Label True or False.

- In the expression  $5 + 6 \times 3$ , we should add 5 and 6 first. ....
- $100 - 2 \times (5 + 3) = 84$ . ....
- $49 \times 2$  can be calculated as  $(50 - 1) \times 2$  ....
- The signs of terms inside a bracket change if the bracket is preceded by a '+' sign. ....
- $117 - 12$  is greater than  $116 - 15$ . ....

### C. Match the following.

Column I	Column II
1. Terms of $12 - 8 + 11$	(a) 30
2. Operands	(b) 28
3. $(4 + 2) \times 5$	(c) $12 + 8$
4. $4 \times (2 + 5)$	(d) 12, (-8), 11
5. $12 - (-8)$	(e) Numbers in an expression

### D. Do as directed.

- Rohan is planning a small classroom party. He has a total budget of ₹1,000. He needs to buy:
  - 5 packs of juice at ₹45 each.
  - 10 packets of chips at ₹20 each.
  - A cake for ₹450.
  - Write a single arithmetic expression using brackets to show how much money Rohan will have left.
  - If the shopkeeper gives a discount of ₹5 on every packet of juice, how will the expression change? Calculate the new remaining amount.
- In the expression " $25 \times (48 + 52) \times (15 - 15) + 10$ ", without calculating the entire expression, determine the final value. Explain which arithmetic property or rule helped you find the answer so quickly.