ASSIGNMENT BOOKLET

LMT-01

**Certificate Programme in Teaching of
Primary School Mathematics (CTPM)**

LEARNING MATHEMATICS

(Valid from 1ˢᵗ July, 2023 to 30ᵗʰ June, 2024)

It is compulsory to submit the assignment before filling in the exam form.

**School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(For July, 2023-2024 Session)**

Dear Student,

Please read the section on assignments in the Programme Guide that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet.

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Instructions for Formatting Your Assignments

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Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

<div align="right">

ROLL NO.: …………………………………………

NAME: …………………………………………

ADDRESS: …………………………………………

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COURSE CODE: …………………………….

COURSE TITLE: …………………………….

STUDY CENTRE: …………………………..….. **DATE:** …………………….……………...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) While solving problems, clearly indicate which part of which question is being solved.

6) This assignment is valid only upto 30th June, 2024. If you have failed in this assignment or fail to submit it by 30th June, 2024, then you need to get the assignment for the next cycle and submit it as per the instructions given in that assignment.

7) It is compulsory to submit the assignment before filling in the exam form.

We strongly suggest that you retain a copy of your answer sheets.

We wish you good luck!

ASSIGNMENT

1. a) In what way does playing with tangrams help in developing spatial understanding? Explain with an example of children from Class III playing with tangrams. (3)

    b) Write the numbers 0.00099, 0.03, 0.001, 0.6, 14, 1.005, 7 in descending order. What is the algorithm you used for doing this? (3)

    c) Use the principle of Mathematical induction to prove $2^n > 2$ for all $n > 1$. (4)

2. a) What are the four stages of the scaffolding process? Illustrate these stages in the context of development of a number sense in young children. (6)

    b) What is meant by

        i)   Rotation symmetry
        ii) Glide symmetry

        Give an example of each, with justification of where we see them in nature. (4)

3. a) Give three main difference between a map and a picture of a place. Give one situation with justification, in which a picture is a better representation of the situation than a map. (4)

    b) Explain what a schema is. Further, explain the processes involved in elaborating a schema, through an example pertaining to a child of Class IV learning the concept of 'angle'. (4)

    c) Give an example of an axiom. What is the difference between an axiom and a theorem? (2)

4. Give a series of three activities, requiring different ability levels, to generate mathematical thinking in 30 children of Class IV. Explain why the activities are in a series. (10)

5. a) Manju claims, "By the time children reach class IX, most prefer science to mathematics." What data is needed to test Manju's statement? How would you gather it, record it, and analyse it to draw conclusions? (4)

    b) Give an activity, with justification, to help develop the understanding of 'variable' for a Class VI child. This activity must have at least four qualities to be found in a good activity. Your answer must clearly specify how the activity has these qualities. (6)

6. a) What are three key aspects that define a model of learning? Explain these using the programming model. Why is this model considered inappropriate for teaching and learning? (8)

b) What is 'mode' of a set of data? Give an example, with justification, of data gathered in a real-life situation with more than one mode. (2)

7. Which of the following statements are true? Give reasons for yours answers. Marks are only for appropriate reasons. (10)

   a) Errors made while learning are a reflection of lack of practice and concentration on the part of the learners.

   b) There are about one-third learners in any class who are not capable of learning mathematics.

   c) A good classroom must have pin-drop silence.

   d) Knowledge is best acquired by memorisation.

   e) A circle has more lines of symmetry than a square.

8. a) What is divisibility rule for 11 in the decimal system? Explain this with two distinct examples. Further, what is the logic behind the rule? (5)

   b) Write 30 in base 2 and base 5. (2)

   c) Sanjit claims that if you toss a coin continuously, you can't get 5 trails in a row, but you can only get at most 2 tails in a row. How would you help her understand that this not correct? (3)

9. a) Explain the difference in the processes of abstraction and generalisation. Give two detailed examples, one related to gender issues and one related to 'data handling', as a part of your explanation. (5)

   b) Give your schema of 'symmetry'. Also talk to a teenager near you and obtain her schema of 'symmetry'. Are these the same? Give reasons for your answers. (5)

10. a) In the following sum, the letters represent distinct digits from 0 to 9. Find them, giving reasons behind each step you perform.

   Further, is your solution unique? Why or why not? (4)

$$
\begin{array}{r}
A\ B\ C \\
+\ B\ A\ C \\
\hline
D\ D\ A
\end{array}
$$

   b) Explain how a game can have a learning objective, using an example pertaining to estimation of sum of decimal fractions. (3)

   c) If you are a constructivist-oriented teacher, give three distinct ways in which you would assess the understanding of addition of numbers of 15 Class II children. (3)