Yearly Lesson Plan - 2079

Class: 9   **Subject: Compulsory Mathematics**
School's name …………………………………………………   **Subject teacher's name: ………………….....……………......**

FIRST TERM

Total allocated Teaching hours (periods): 62   **Examination: 7 days**

S.N.	AREA	CONTENT	OBJECTIVE	MATERIALS	METHODS	PERIODS
1.	Set	▪ Set	❖ To find set operations (union, intersection, difference and complement) up to 3 sets ❖ To write the cardinality of sets	• Colourful chart-paper • Scissors, cello tape • Colourful markers, highlighter, • Models of Venn-diagrams • ICT tools	• Group discussion • Inquiry methods • Problem solving • Project work	7
2.	Arithmetic	▪ Taxation	❖ To find the income tax ❖ To solve the problems based on discount and VAT	• Income tax rates • VAT bills • ICT tools	• Group discussion • Model drawing method • Problem solving • Project work	10
3.	Mensuration	▪ Area	❖ To find the area of triangle ❖ To convert the area of fields into Bigha-Kattha-Dhur or Ropani-Aana-Paisa units ❖ To find the area of four walls, ceiling, floor of room	• Formula chart • Local units conversion chart • ICT tools	• Group discussion • Inductive method • Problem solving • Project work	13
4.	Algebra	▪ Indices	❖ To simplify using laws of indices	• List of laws of indices in chart • ICT tools	• Problem solving • Project work	5
5.	Geometry	▪ Triangle	❖ To solve the problems based on Properties of triangles ❖ To solve the problems on Similar triangles	• Geo board, rubber-bands, mechano strip, sticks • Models of triangles • ICT tools	• Inductive method • Group discussion • Problem solving • Project work	15
6.	Statistics	▪ Measure of central tendencies	❖ To find mean, median, quartiles, mode	• Formulae chart • ICT tools	• Group discussion • Problem solving • Project work	5

SECOND TERM

Total allocated Teaching hours: 57   **Examination: 7 days**

S.N.	AREA	CONTENT	OBJECTIVE	MATERIALS	METHODS	PERIODS
1.	Arithmetic	▪ Bonus and Commission	❖ To find the bonus amount ❖ To solve the problems based on commission and dividend	• Definition/formulae charts • ICT tools	• Group discussion • Problem solving • Project work	9
2.	Mensuration	▪ Prism	❖ To find the cross sectional area, volume, LSA and TSA of prism	• Models of prisms • Formula chart • ICT tools	• Inductive method • Discovery method • Problem solving • Project work	10
3.	Algebra	▪ Factorization ▪ HCF and LCM	❖ To factorize the expressions ❖ To find the HCF and LCM of expressions	• Formulae chart • Models of $(a \pm b)^2$, $a^3 \pm b^3$ • ICT tools	• Inductive method • Deductive method • Group discussion • Problem solving • Project work	15
4.	Geometry	▪ Parallelogram	❖ To prove some properties of parallelogram ❖ To solve problems on parallelogram	• Geo board, rubber-bands, mechano strip, sticks • ICT tools	• Group discussion • Problem solving • Project work	6
5.	Statistics	▪ Graphical representation of data	❖ To represent the data in histogram, frequency polygon and ogives	• Models of histogram and frequency polygons • ICT tools	• Group discussion • Q/A mothod • Project work	10

THIRD TERM

Total allocated Teaching hours: 71   **Examination: 7 days**

S.N.	AREA	CONTENT	OBJECTIVE	MATERIALS	METHODS	PERIODS
1.	Arithmetic	▪ Home arithmetic	❖ To find the electricity charge ❖ To find the telephone bill, water bill ❖ To find the taxi fare	• Electricity bill • Telephone bill • ICT tools	• Group discussion • Problem solving • Project work	9
2.	Mensuration	▪ Cylinder and sphere	❖ To find the volume and surface area of cylinder and sphere/hemisphere	• Models of cylinder, sphere • Formula chart • ICT tools	• Inductive method • Discovery method • Problem solving • Project work	10
3.	Algebra	▪ Sequence and Series ▪ Simultaneous equations	❖ To find the general term of AP and GP ❖ To solve the problems related to simultaneous equations	• Different patterns of numbers • ICT tools	• Inductive method • Deductive method • Group discussion • Problem solving • Project work	15
4.	Geometry	▪ Construction ▪ Circle	❖ To construct rhombus, quadrilateral and trapezium ❖ To verify certain relations among chords and distance from the centre of the circle to the chord	• Ruler, Compass • ICT tools	• Group discussion • Problem solving • Project work	15
5.	Statistics	▪ Probability	❖ To find the probability an event	• Dice, coin, playing cards • ICT tools	• Group discussion • Q/A method • Project work	5
6.	Trigonometry	▪ Trigonometric ratios ▪ Trigonometric ratios of some standard angles	❖ To find the trigonometric ratios of a reference angle ❖ To find the trigonometric ratios of standard angles and its application	• Unit circle • Clinometers • Hypsometer • ICT tools	• Inductive method • Deductive method • Group discussion • Problem solving • Project work	10

Proposed Grid for 1ˢᵗ Term-2079

This Grid and Model Questions Set is prepared as designed by CDC for class 6 and class 7.

Cognitive Level	No. of items	Marks
Knowledge	12	$12 \times 1 = 12$
Understanding	9	$9 \times 2 = 18$
Application	$2 + 6 + 2 = 10$	$2 \times 2 + 6 \times 3 + 2 \times 4 = 30$
Higher Ability	$6 + 1 = 7$	$6 \times 2 + 1 \times 3 = 15$
Total	**38**	**75**

Proposed Sample Question Set for 1ˢᵗ Terminal Examination

Compulsory Mathematics

F.M.: 75   **Time: 3 hours**

Attempt all the questions.

1. Three students Abhilasha, Bikash and Chhiring were asked to write down their own sets of numbers under the universal set U = {1, 2, 3, … ,10} in a day in the board. They wrote down the following sets.

A= {1, 2, 3, 4, 5}, B = {1, 3, 5, 7, 9} and C = {2, 3, 5, 7}

(a) Find $A \cap B \cap C$.   1

(b) Show $A \cap B \cap C$ in a Venn-diagram by shading.   1

(c) Verify that $\overline{A} \cap (B \cup C) = (C - A) \cup (B - A)$ 3

2. Let, U = {a, b, c, d, e, f, g, h, i, j} is a universal set and P = {a, b, c, d, e} and Q = {c, h, i, e, f} are the subsets of U.

(a) Find n_o (P).   1

(b) How many elements are there in $P \Delta Q$?   2

3. The present rate of income tax fixed by Inland Revenue Department (IRD) for the fiscal year 2079/80 is given below.

| For individual	For couple	Tax rate
Up to Rs 5,00,000	Up to Rs 6,00,000	1%
Rs 5,00,001 to Rs 6,00,000	Rs 6,00,001 to Rs 7,00,000	10%
Rs 6,00,001 to Rs 8,00,000	Rs 7,00,001 to Rs 9,00,000	20%

The monthly salary of Suresh, an unmarried servant in a bank, is Rs 40,000 and his annual income is equivalent to his salary of 15 months. Similarly, the monthly salary of Bina, a married civil servant is Rs 48,025 and her annual income is equivalent to her salary of 13 months including festival expense.

(a) What is the rate of social security tax?   1

(b) How much tax should be paid by Suresh?   2

(c) How much tax should be paid by Bina? **2**

(d) Who pays more income tax and by how much percent? **1**

4. Mr. Lama deposited Rs. 5,00,000 for 4 years in his fixed account at a commercial bank.

(a) If the bank pays him the simple interest at the rate of 10% p.a., find the interest. **2**

(b) If 5% of interest is charged as income tax, find the net income tax. **1**

(c) Find the net interest after paying tax. **1**

5. A shopkeeper purchases a cycle for Rs 4,000 and fixes its marked price 20% above the cost price.

(a) What is the marked price of the bicycle? **1**

(b) If he allows 20% discount on it, how much discount does a customer get? **1**

(c) If he sells it with 13% VAT, how much does a customer pay for it? **2**

(d) If he allows only 10% discount on it, by how much more amount should a customer pay for it than allowing 20% discount with 13% VAT? **2**

6. An umbrella is made by stitching 8 triangular pieces of cloth of two different colors as shown in the figure. Each piece measures 50 cm, 50 cm and 28 cm.

(a) Write down the formula used to find the area of a triangular piece of cloth. **1**

(b) How is the area of a piece of cloth? **2**

(c) How much cloth is required to make the umbrella **1**

7. Mr. Sherpa has an apple farm in Mustang which is in the shape of a rhombus. The diagonals of the field are 240 m and 320 m respectively.

(a) Find the area of his farm. **2**

(b) How many Aanas are there in 1 Ropani? **1**

(c) If 508.72 m^2 = 1 Ropani , find the area of his farm in Ropani and Anna. **2**

8. The guest room in Sandhya's house is 10 m long, 8 m wide and 4.5 m high. It contains two windows of size 2 m $\times$ 1.5 m each and a door of size 1 m $\times$ 4 m.

(a) What is the formula for finding the area of four walls of a rectangular room? **1**

(b) Find the area of the four walls including the door and window. **2**

(c) If her parents wish to paste the walls with 3D paper, find the area of the walls covered with paper. **2**

(d) If the size of each piece of paper is 8 sq. m, how many pieces of wallpaper are required for the room? **1**

9. Solve the following problems.

(a) What is the value of $(5x)^o$, $x \neq 0$? **1**

(b) Simplify: $(a^{x+y})^{x-y} \times (a^{y+z})^{y-z} \times (a^{z-x})^{z+x}$ **2**

(c) Prove that: $\dfrac{3^{x+1} + 3^x}{4 \times 3^x} = 1$ **2**

10. **(a)** Simplify: $\dfrac{1}{1 + x^{a-b}} + \dfrac{1}{1 + x^{b-a}}$ **2**

(b) Evaluate: $\sqrt[3]{\sqrt{64^{-1}}}$ **2**

11. Simplify: **4**

$$\frac{1}{1 + x^{a-b} + x^{c-b}} + \frac{1}{1 + x^{b-c} + x^{a-c}} + \frac{1}{1 + x^{c-a} + x^{b-a}}$$

12. If a = $x^{q+r}.y^p$, b = $x^{r+p}.y^q$ and c = $x^{p+q}.y^r$, prove that: $a^{q-r} \times b^{r-p} \times c^{p-q} = 1$ **4**

13. Udip joined three sticks AB, AC and BD and formed the figure as shown alongside.

Then, he mesured $\angle BAC$, $\angle ABC$ and $\angle ACD$,

(a) What relationship would he get among $\angle BAC$, $\angle ABC$ and $\angle ACD$? **1**
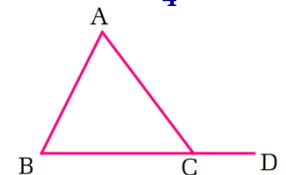
(b) If ∠BAC = (2x – 5º), ∠ABC = 70º and ∠ACD = (7x – 35º), find the value of x. **2**

14. (a) Verify experimentally that the sum of any two sides of a triangle is greater than the third side. (Two triangles of different shape and size are necessary) **3**

(b) Can you construct a triangle with sides 3.5 cm, 9 cm and 4 cm? Why? **1**

15. In the figure, an electric pole PT of height 32 ft. is supported by two equal wires PQ and PR of length 40 ft. each fixing tops to the ground so that the foot of the pole and the places at which another ends of wires are fixed, are on a same straight line.
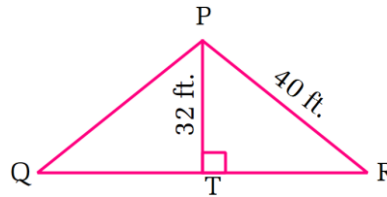
(a) What is the relationship between QT and RT? **1**
(b) Find the length of RT. **2**
(c) What is the distance between the places Q and R? **1**

16. A boy is standing in front of a tree. The boy 1.8 m tall casts the shadow of length 3 m at 2:30 p.m.
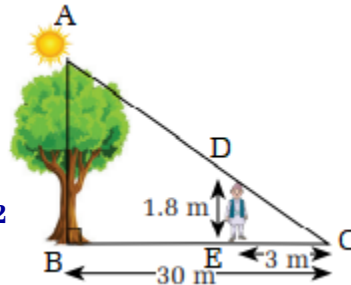
(a) Show that the triangles ABC and DEC similar to each other. **2**
(b) Write down the relation between the corresponding sides of the triangle. **1**
(c) What is the height of the tree which casts the shadow of length 30 m at the same time? **1**

17. Last week, the mathematics teacher of Sitala Secondary School administered a class test for class-IX students. He recorded the marks obtained by students in the following table.

Marks obtained	5	10	15	20	25
No. of students	2	7	16	9	5

(a) What is the modal mark? **1**
(b) Construct a cumulative frequency table? **1**
(c) Write down the formula of finding position of median. **1**
(d) Find the median mark. **1**

… The End …

This Grid and Model Questions Set is prepared as designed for class 6 and class 7.