Sample Paper – 2010
Class – IX
Subject – Maths

General Instructions:

i) *All the questions are compulsory.*
ii) *This question paper consists of four Sections viz. sec-A, sec-B, sec-C and sec-D.*
iii) *Section-A contains 10 questions each carrying 1 mark, section-B contains 5 questions each carrying 2 marks, section-C contains 10 questions each carrying 3 marks and section-D contains 5 questions each carrying 6 marks.*
iv) *In question no:30, drawing should be as per the measurements given in the question.*
v) *Drawing should be neat & clean.*

SECTION – A (1×10=10)

1 Express $0.\overline{6}$ *in* $\frac{p}{q}$ form.

2 Verify whether the following is a zero of the polynomial, indicated against it.

$$P(x) = 3x^2 - 1, \qquad x = \frac{-1}{\sqrt{3}}.$$

3 Write: a) the abscissa of y – axis.
b) the ordinate of x – axis.

4 Give the geometric representation of y = 3 as an equation in one variable.

5 Give Euclid's definitions of a) Surface b) Straight line.

6 Find the values of ∠ x and ∠ y in fig – I when AB II CD.

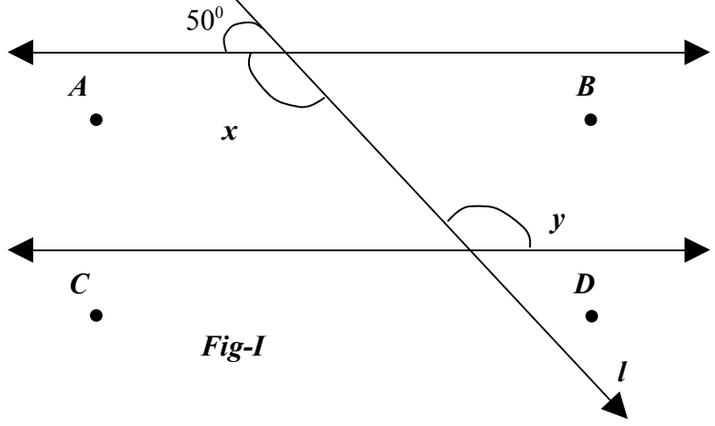

Fig-I

7 In a right triangle, ∠ B = 90^0 and AB = BC. Find ∠ A and ∠ C.

8 The angles of a quadrilateral are respectively 100^0, 98^0, 92^0. Find the fourth angle

9 In parallelogram ABCD, AB = 10cm. The attitudes corresponding to the sides AB and AD are respectively 7cm and 8cm. Find AD (fig-II)

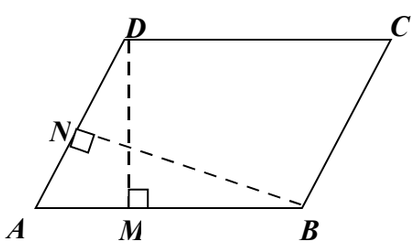

Fig-II

10 Find the area of an equilateral triangle of side 2.1cm.

SECTION – B (2×5=10)

11 Represent $\sqrt{3}$ on the number of line.

12 Check whether $x^3 - x^2 - (2+\sqrt{2})x + \sqrt{2}$ is a multiple of x+1.

13 In the fig-III, if PQ ⊥ PS, PQ II SR, ∠ SQR = 28^0 and ∠ QRT = 65^0, find the values of ∠ x and ∠ y.

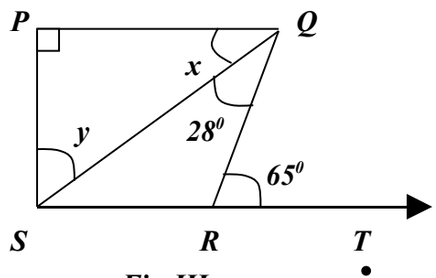

Fig-III

14 In the fig-IV, if QT ⊥ PR, ∠ TQR = 40^0, ∠ SPR = 30^0, find the values of ∠ x and ∠ y.

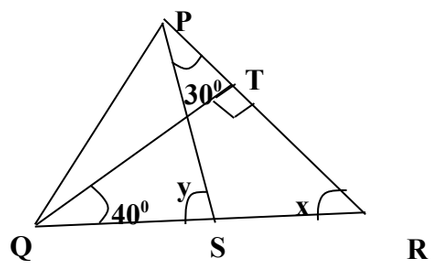

Fig-IV

Or

Sides BC, CA and BA of a triangle ABC are produced to D, Q, P respectively as shown in fig-V. If ∠ ACD = 100^0, ∠ QAP = 35^0, find all the angles of the triangle ABC.

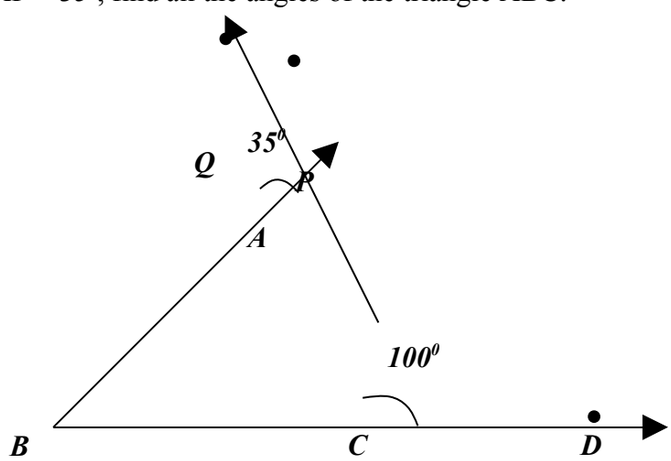

Fig-V

15 Find the area of a triangle, two sides of which are 18cm and 10cm and the perimeter is 42cm.

SECTION – C (3×10=30)

16 Rationalise the denominator

$$\frac{3+2\sqrt{2}}{4-7\sqrt{3}}$$

Or

Simplify: $\left(\frac{3}{4}\right)^7 \times \left(\frac{5}{3}\right)^{11} \times \left(\frac{5}{4}\right)^9$

17 Plot the following points on a graph paper.

a) (-3, 0) b) (-5, -7) c) (-4, 2)

d) (2, -4) e) (6, 4) f) (0, -7)

18 Draw the graph of $3x - 2y = 0$

19 Which of the following statements are true and which are false? Justify your answer with the help of Euclid's axioms and postulates

a) If AB = PQ and PQ = XY then AB = XY.

b) If two circles are equal then their radii are equal.

c) If x = y then x – a = y – a

20 In fig-VI, the side QR of ΔPQR is produced to a point S. If the bisectors of ∠ PQR and ∠ PRS meet at T, then prove that.

$\angle QTR = \frac{1}{2} \angle QPR$

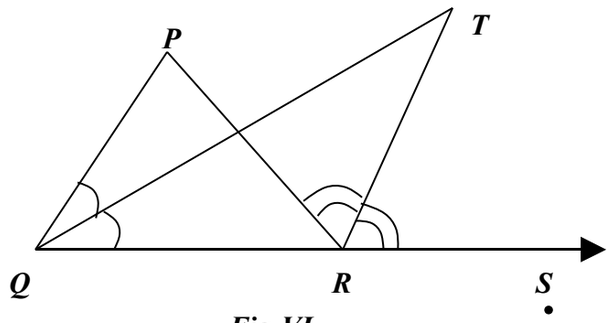

Fig-VI

21 In fig-VII, if x + y = w + z then prove that AOB is a line.

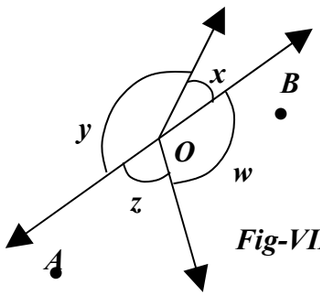

Fig-VII

22 O is any point in the interior of ΔABC, prove that $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$.

OR

In fig-VIII, AB ⊥ AC and AC ⊥ CD then prove that $AD^2 = BC^2 + CD^2 - AB^2$.

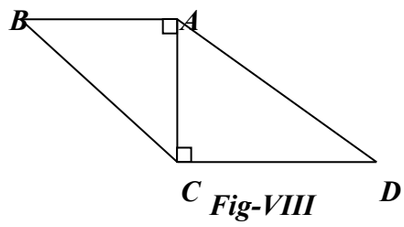

Fig-VIII

23 Show that the line segments joining the mid. points of the opposite sides of a quadrilateral bisect each other.

24 Find the area of a quadrilateral ABCD in which AB = 3cm, BC = 4cm, CD = 4cm, DA = 5cm and AC = 5cm.

25 The perimeter of a triangular field is 540cm and its sides are in the ratio of 25:17:12. Find the area of the field.

SECTION – D (6×5=30)

26 a) A taxi fare in a city is as follows: for the first km, the fare is Rs.10 and for the subsequent distance it is Rs.7 per km. Taking the total distance as x km and total fare as Rs.y, construct a linear equation for this information and draw its graph.

b) If the point (3,4) lies on the graph of the equation $3y = ax + 7$, find the value of a.

27 a) Factorise: $2y^3 + y^2 - 2y - 1$

b) If $x + y + z = 0$, show that $x^3 + y^3 + z^3 = 3xyz$

Or

a) Factorise: $64a^3 - 27b^3 - 144a^2b + 108ab^2$

b) Prove that: $x^3 + y^3 + z^3 - 3xyz$

$$= \frac{1}{2}(x + y + z)\{(x - y)^2 + (y - z)^2 + (z - x)^2\}$$

28 ABC is a triangle right angled at C. A line through the mid. point M of the hypotenuse AB and parallel to BC intersects AC at D. Show that.

a) D is the mid. point of AC.

b) MD ⊥ AC

c) $CM = MA = \frac{1}{2}AB$.

29 In fig-IX, diagonals AC and BD of a quadrilateral ABCD intersect at O such that OB = OD. If AB = CD then show that

a) ar (DOC) = ar (AOB) b) ar (DCB) = ar (ACB)

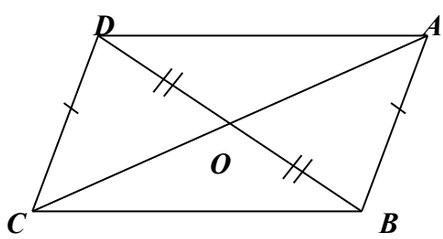

Fig-IX

Or

In fig-X, E is the mid. point of the median AD of ΔABC. EF is a median of ΔBED.

Prove that : ar (ΔBEF) = $\frac{1}{8}$ ar (ΔABC).

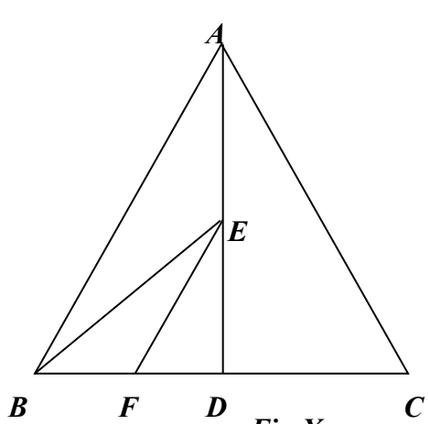

Fig-X

30 Construct a triangle XYZ in which $\angle Y = 30^0$, $\angle Z = 90^0$, xy + yz + zx = 11cm. Write the steps of construction.