



## MID TERM EXAMINATION

CLASS: IX  
SUBJECT: MATHEMATICS

MARKS: 80  
TIME: 3 HOURS

**I. MULTIPLE CHOICE QUESTIONS:****(10 X 1 = 10)**

- Which graph is parallel to x-axis?  
(a)  $y=x+1$  (b)  $y=2$  (c)  $x=3$  (d)  $x=2y$
- A solid has how many dimensions?  
(a) One (b) Two (c) Three (d) Four
- On which of the following equations, the point of the form  $(m, -m)$  lies?  
(a)  $x = -m$  (b)  $x + y = 0$  (c)  $y = x$
- If the supplement of an angle is 4 times of its complement, find the angle.  
(a)  $60^\circ$  (b)  $50^\circ$  (c)  $80^\circ$  (d)  $100^\circ$
- A rational number equivalent to  $\frac{5}{7}$  is  
(a)  $\frac{15}{17}$  (b)  $\frac{25}{27}$  (c)  $\frac{10}{14}$  (d)  $\frac{10}{27}$
- A rational number between  $\frac{1}{7}$  and  $\frac{2}{7}$  is  
(a)  $\frac{1}{14}$  (b)  $\frac{2}{21}$  (c)  $\frac{5}{14}$  (d)  $\frac{5}{21}$
- For rationalising the denominator of the expression  $\frac{1}{\sqrt{12}}$  we multiply and divide by  
(a)  $\frac{1}{\sqrt{12}}$  (b) 12 (c)  $\sqrt{2}$  (d)  $\sqrt{3}$
- Identify the polynomial  
(a)  $x^{-2} + x^{-1} + 5$  (b)  $x^2 + 5\sqrt{x} + 7$  (c)  $\frac{1}{x^3} + 7$  (d)  $3x^2 + 7$
- The number of zeros of  $x^2 + 4x + 2$   
(a) 1 (b) 2 (c) 3 (d) none of these
- If  $3 + 5 - 8 = 0$ , then the value of  $(3)^3 + (5)^3 - (8)^3$  is  
(a) 260 (b) -360 (c) -160 (d) 160

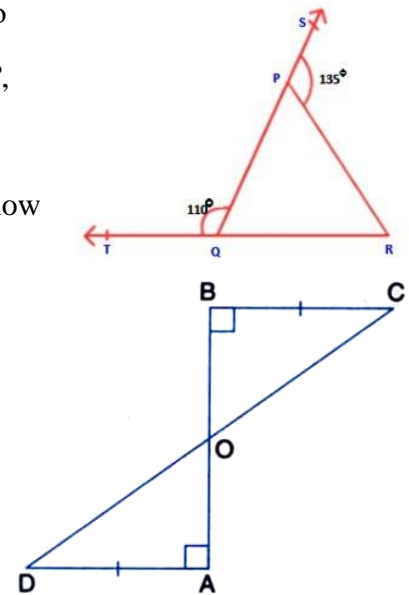
**II. SOLVE THE FOLLOWING:****(10 X 1 = 10)**

- Find three different irrational number between  $\frac{5}{7}$  and  $\frac{9}{11}$
- Find the remainder when  $x^3 + 3x^2 + 3x + 1$  is divided by  $x + \pi$ .
- Write four solutions of  $2x + 3y = 8$ .
- If  $x = -1$  and  $y = 2$  is a solution of  $kx + 3y = 7$ , find the value k.
- Express  $2x = 5$  in the form  $ax + by + c = 0$  and find the value of a, b and c.

16. Write two numbers whose decimal expansions are non terminating, non recurring.
17. Write the degree of the following polynomials  $5x^3+4x^2+7x$
18. Find the value of k, if  $x=2, y=1$  is a solution of the equation  $2x+3y=k$
19. What is the abscissa of origin?
20. What is Euclid's fifth postulate?

**III. SOLVE THE FOLLOWING:****(7 X 2 = 14)**

21. Express  $0.\overline{6}$  in the form  $p/q$ , where p and q are integers and  $q \neq 0$ .
22. Find  $p(0)$ ,  $p(1)$  and  $p(2)$  for the following polynomial:  $p(y) = y^2 - y + 1$
23. Express the following linear equations in the form  $ax + by + c = 0$  and indicate the values of a, b, c in each case: (i)  $2x+3y=9.35$  (ii)  $x - \frac{y}{5} - 10 = 0$
24. In the given figure, sides QP and RQ of  $\Delta PQR$  are produced to points S and T respectively. If  $\angle SPR = 135^\circ$  and  $\angle PQT = 110^\circ$ , find  $\angle PRQ$ .
25. AD and BC are equal perpendiculars to a line segment AB. Show CD bisects AB.
26. Draw the graph of equation  $3x+6y=12$ . Find the coordinates of the point where the graph cuts the y-axis.
27. If B lies between A and C,  $AC = 12\text{cm}$  and  $BC = 9\text{cm}$ . what is  $AB^2$ ?

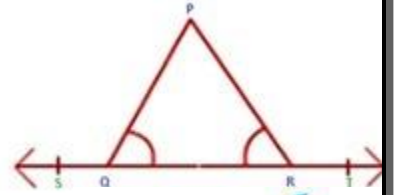
**IV. SOLVE THE FOLLOWING:****X 3 = 18)**

28. Show how  $\sqrt{5}$  can be represented on the number line.
29. Check whether  $7+3x$  is a factor of  $3x^3+7x$
30. In which quadrant or on which axis do each of the points  $(-2,4)$ ,  $(3,-1)$ ,  $(-1,0)$ ,  $(1,2)$  and  $(-3,-5)$  lie? Verify your answer by locating them on the Cartesian plane.

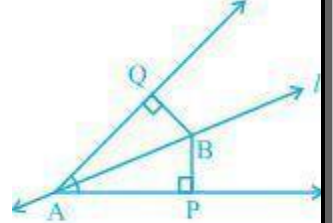


31. If a point C lies between two points A and B such that  $AC=BC$ , then prove that  $AC=\frac{1}{2}AB$ . Explain by drawing the figure.

32. In the given figure,  $\angle PQR = \angle PRQ$ , then prove that  $\angle PQS = \angle PRT$ .



33. Line  $l$  is the bisector of an angle  $\angle A$  and B is any point on  $l$ . BP and BQ are perpendiculars from B to the arms of  $\angle A$  (see the given figure). Show that: (i)  $\triangle APB \cong \triangle AQB$  (ii)  $BP = BQ$  or B is equidistant from the arms of  $\angle A$ .



### V. SOLVE THE FOLLOWING:

(7 X 4 = 28)

34. Visualize 3.765 on the number line, using successive magnification

35. Use suitable identities to find the following products:

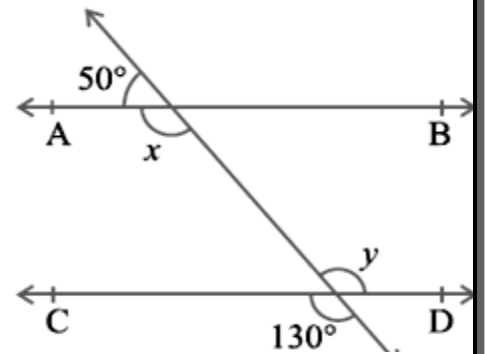
(i)  $(x+4)(x+10)$

(ii)  $(x+8)(x-10)$

(iii)  $(3x+4)(3x-5)$

(iv)  $(3-2x)(3+2x)$

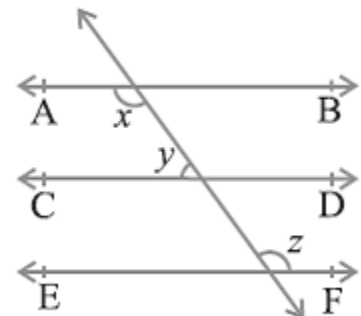
36. The taxi fare in a city is as follows: For the first kilometre, the fares is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as  $x$  km and total fare as Rs  $y$ , write a linear equation for this information, and draw its graph.



37. Determine the graph of the equation  $y=2x-3$

38. Point c is a midpoint of the line segment AB. prove that every line segment has one and only one midpoint

39. If  $AB \parallel CD$ ,  $CD \parallel EF$  and  $y:z = 3:7$ , find  $x$ .



40. In an isosceles triangle  $ABC$ , with  $AB = AC$ , the bisectors of  $\angle B$  and  $\angle C$  intersect each other at  $O$ .

Join  $A$  to  $O$ . Show that: (i)  $OB = OC$  (ii)  $AO$  bisects  $\angle A$

