



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° (b) 50° (c) 80° (d) 100°
- 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

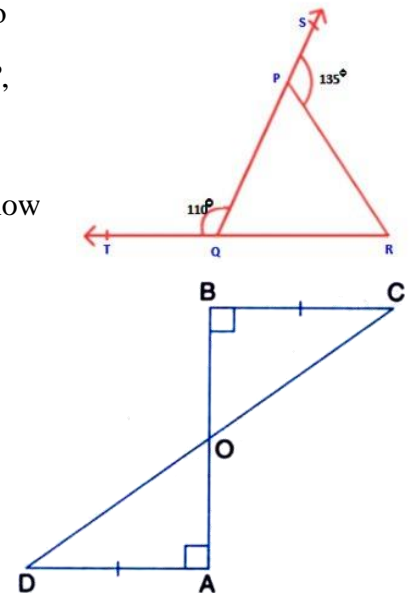
**II. SOLVE THE FOLLOWING:****(10 X 1 = 10)**

- 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)**

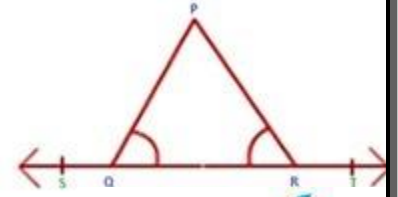
21. Express $0.\overline{6}$ in the form p/q , where p and q are integers and $q \neq 0$.
22. Find $p(0)$, $p(1)$ and $p(2)$ for the following polynomial: $p(y) = y^2 - y + 1$
23. Express the following linear equations in the form $ax + by + c = 0$ and indicate the values of a, b, c in each case: (i) $2x+3y=9.35$ (ii) $x - \frac{y}{5} - 10 = 0$
24. In the given figure, sides QP and RQ of ΔPQR 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)**

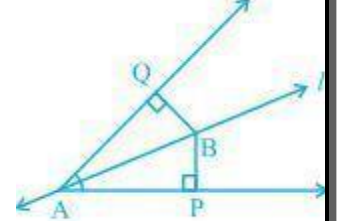
28. Show how $\sqrt{5}$ can be represented on the number line.
29. Check whether $7+3x$ is a factor of $3x^3+7x$
30. In which quadrant or on which axis do each of the points $(-2,4)$, $(3,-1)$, $(-1,0)$, $(1,2)$ and $(-3,-5)$ lie? Verify your answer by locating them on the Cartesian plane.

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

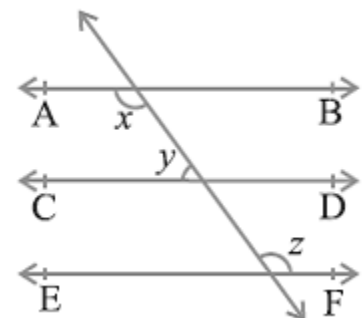
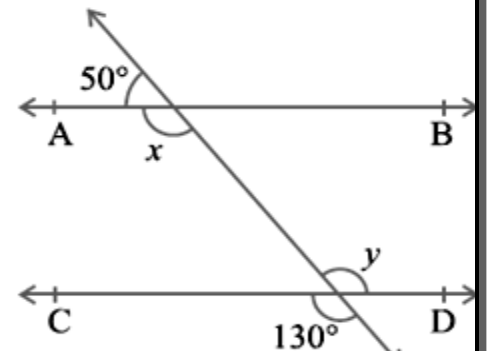
(iv) $(3-2x)(3+2x)$

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 $\angle A$

