SUB: MATHEMATICS   **Marks: 80**

Class: IX Time : 3Hrs

Instructions:

ALL QUESTIONS ARE COMPULSORY.

Section A Carry6 questions of 1mark each, Section B Carry 6 questions of 2 marks each, Section C Carry 10 questions of 3 marks each, Section D Carry 8 questions of 4marks each.
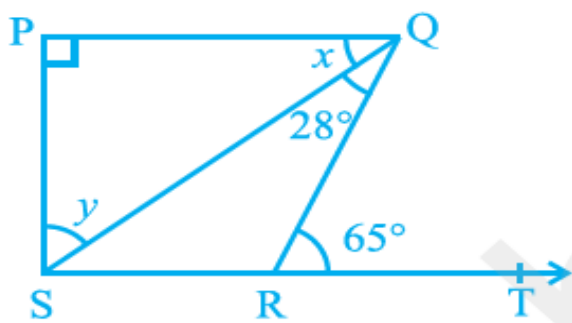

SECTION- A

1) Express $4x = 3$ as a linear equations in two variables.

2) Add $5\sqrt{2}+3\sqrt{3}$ and $2\sqrt{2} - 5\sqrt{3}$.

3) Factorise $x^2 - 25$

4) In which quadrant the points have abscissa and ordinate with same sign.

5) Find the value of k so that the equation $kx - 3y = 5$ have $x=1, y=1$ as a solution .

6) Name the figure obtained by joining the midpoints of the sides of a rhombus.

SECTION - B

7) Write two rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.

8) In $\triangle ABC$, $\angle A$ $\angle B = 63$ and, $\angle B - \angle C = 18$ find the measurement of $\angle B$.

9) If $PQ \perp PS$, $PQ \parallel SR$, $SQR = 28°$ and $QRT = 65°$, then find the values of x and y.

10) Rationalise the denominator $\frac{\sqrt{6}+\sqrt{3}}{\sqrt{6}-\sqrt{3}}$

11) If AC =BD , then prove that AB = CD

12)Expand by using identity $(2x - y+z)^2$

SECTION - C

13)Prove that sum of interior angles of a triangle is 180^0.

14)Write three solutions of the equation $2x+3y=6$.

15) Factorise $64m^3-27n^3$.

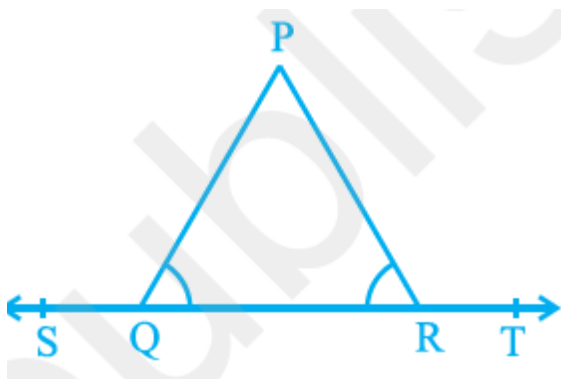16)If $(x+1)$ is a factor of $ax^3+x^2-2x+4a-9$ then find the value of 'a'.

17)Express $0.2\overline{3}\overline{5}$ in the form of $\frac{p}{q}$ where p and q are integers and q not equal to zero.

18)If the diagonals of a parallelogram are equal, then show that it is a rectangle.

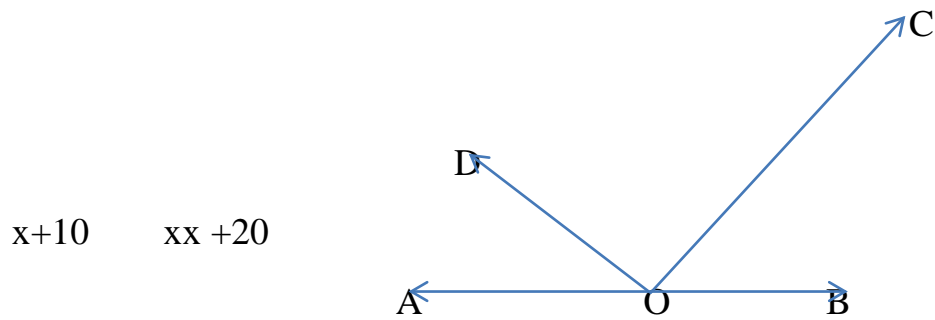19) Where do these points lie on the Cartesian plane $(-3,4)$ $(0,5)$ $(-7,-8)$ $(-10,0)$ $(0,0)$ $(5,-5)$

20)If $x+y+z=12$ and $x^2+y^2+z^2 = 64$ then find the value of $xy+yz+zx$.

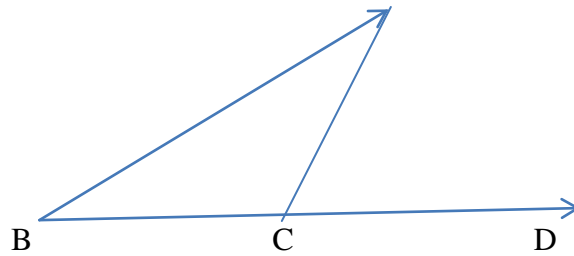21)In the figure $\angle PQR = \angle PRQ$ then prove that $\angle PQS= \angle PRT$.

22) If ∠B< ∠A and ∠C < ∠D. Show that AD < BC.

SECTION - D

23)Three vertices of a rectangle are (3,2) (-4,2) and (-4,5) Plot these points and find the coordinates of the fourth vertex.

24)Draw the graph of the linear equation 3x+4y=6. At what points, the graph cuts the X axis and the Y axis.

25) AD is an altitude of an isosceles triangle ABC in which AB=AC. Show that

(i) AD bisects BC   (ii) AD bisects ∠A

26) Factorise   i) x^3-x^2-9x+9 ii) $2x^2-7x-15$

27)Simplify$\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ + $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ by rationalizing the denominator.

28) Δ ABC is anisosceles trianglein which AB = AC. Side BA is producedto D such thatAD = AB. Show that∠BCD is a right angle.

29) The angles of a quadrilateral ABCD are in the ratio 1:2:3:4. Find the measure of all its angles..

30)i) AOB is a straight line, Find the value of x

x+10   xx +20

ii) Side BC of Δ ABC is produced to D such that $\angle ACD = 70^0$

If $\angle BAC = 10^0$ Find $\angle ABC$ and $\angle ACB$ A

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