Sample paper 2
Class IX
Subject: Mathematics

Time : 3hrs **M.M 80**

General Instructions:

1. All questions are compulsory.
2. The paper consists of 30 questions divided into 4 section A, B , C and D . Section A comprises of 6 questions of 1mark each. Section B comprises of 6 questions of each 2 marks. Section C comprises of 10 questions of 3 marks each. Section D comprises of 8 questions of 4 marks each.
3. There is no over all choice in this question paper. Although internal choices have been provided in the same question.

Section A

1. On dividing $6\sqrt{27}$ by $2\sqrt{3}$, we get
   (a) $3\sqrt{9}$
   (b) 6
   (c) 9
   (d) None of these

2. The zero of the polynomial p(x) = 2x + 5 is
   (a) 2
   (b) 5
   (c) $\frac{2}{5}$
   (d) $-\frac{5}{2}$

3. Given two right angles triangles ABC and PRQ, such that ∠A = 20°, ∠Q = 20° and AC = QP. Write the correspondence if triangles are congruent.
   (a) ΔABC≅ ΔPQR (b) ∠ABC ≅ ΔPRQ
   (c) ∠ABC ≅ ΔRQP (d) ΔABC ≅ ΔQRP

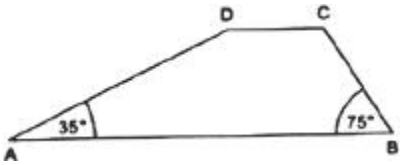
4. Choose which of the following is not true?
   a. Every square is a rectangle
   b. Every rectangle is a quadrilateral
   c. Every parallelogram is a trapezium
   d. None of these

5. On which of the following equations, the point of the form (m, –m) lies?
   (i) x = –m
   (ii) x + y = 0
   (iii) y = x

6. Which point lies to the right of y-axis?
   (a) (3, 2)
   (b) (-3, -2)
   (c) (0, 2)
   (d) (-1,-2)

Section B

7. Find the area of a triangle whose sides are 3 cm, 4 cm and 5 cm.
8. In a triangle ABC, if the sum of angle A and B is 150º and angle B and C is 100º. What is the measure of each angle?
9. Express 32760 as a product of Prime factors
10. Find the value of k for which the cubic polynomial $3y^3 - \frac{3}{2}y^2 + ky + 5$ is exactly divisible by $\left(y - \frac{1}{2}\right)$.
11. ABCD is a parallelogram. If the two diagonals are equal, find the measure of ∠ABC.
12. In the adjoining figure, ABCD is a trapezium in which AB || DC. IF ∠A = 35° and ∠B = 75°, then find ∠C and ∠D.



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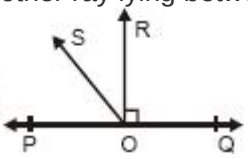
Section C

13. Draw the graph of the equation 2x – 3y = 12. At what points, the graph of the equation cuts the x-axis and the y-axis?
14. Draw the graph of y=-x .
15. The lengths of sides of a triangle are in the ratio 3 : 4 : 5 and its perimeter is 120 cm, find its area.
16. In the given figure, POQ is a line. Ray $\overline{OR} \perp PQ$, $\overline{OS}$ is another ray lying between rays $\overline{OP}$ and $\overline{OR}$. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.



17. Determine rational numbers p and q if

$$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = p - 7\sqrt{5}\,q.$$

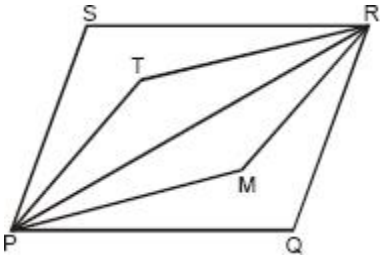
18. If $x^2 + \frac{1}{x^2} = 18$ then find the value of $x - \frac{1}{x}$.

19. Show that a median of a triangle divides it into two triangles of equal areas.
20. In the figure, AX and CY are respectively the bisectors of opposite angles A and C of a parallelogram ABCD. Show that AX || CY
21. Write four solutions of 2x + 3y = 8.
22. Draw the graph of y=4x. From the graph find the value y when x=-2

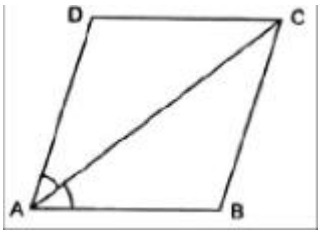
Section D

23. Find the height of a trapezium in which parallel sides are 25 cm 77 cm and non-parallel sides and 26 cm and 60 cm. Given the area of the trapezium as 1644 cm^2.
24. The exterior angles obtained on producing the base of a triangle both ways are 100° and 120°. Find all the angles
25. If $x = \frac{2-\sqrt{5}}{2+\sqrt{5}}$ and $y = \frac{2+\sqrt{5}}{2-\sqrt{5}}$, find the value of $x^2 - y^2$.
26. If $t + \frac{1}{t} = 8,$ then find the value of $t^3 + \frac{1}{t^3}$.

27. In the given figure, T and M are two points inside a parallelogram PQRS such that PT = MR and PT || MR. Then prove that
    (a) ΔPTR ≅ ΔRMP
    (b) RT || PM and RT = RM



28. Diagonal AC of a parallelogram ABCD bisects ∠A (see figure). Show that
    (i) it bisects ∠C also,
    (ii) ABCD is a rhombus.



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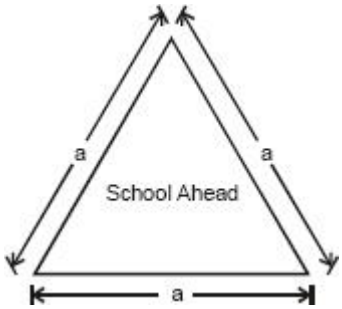
29. Yamini and Fatima two students of Class IX of a school, together contributed 100 towards the Prime Minister s Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. Draw the graph of the same.

30. A traffic signal board, indicating ‘SCHOOL AHEAD’, is an equilateral triangle with side ‘a’. Find the area of the signal board, using Heron’s formula. If its perimeter is 180 cm, what will be the area of the signal board?



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