

Mathematics

Final Exam 2023

Practice Test Paper No. 1

Class 9th

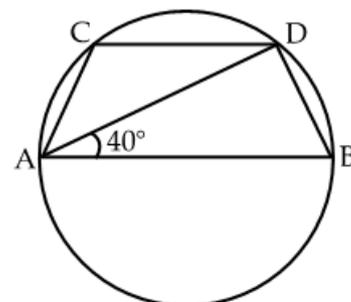
Time: 3 h

Marks: 80

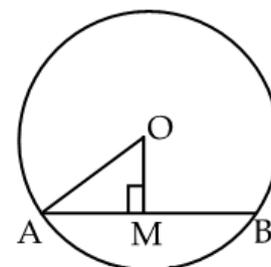
| Section | A | B | C | D | E |
|---------|--------|--------------|--------------|------------|------------------|
| Q. No. | 1 – 20 | 21 – 25 | 26 – 31 | 32 – 35 | 36 – 38 |
| Marks | 1 | 2 | 3 | 5 | 4 |
| Type | MCQ | S. A. Type 1 | S. A. Type 2 | L. A. Type | Case Study Based |

Section A

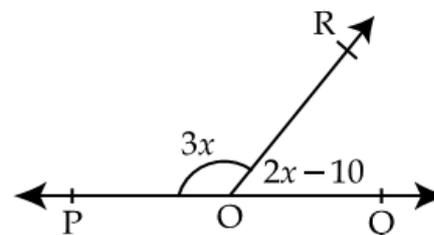
- Between two rational numbers
 - there is no rational number
 - there is exactly one rational number
 - there are infinitely many rational numbers
 - there are only rational numbers and no irrational numbers
- A rational number between $\sqrt{2}$ and $\sqrt{3}$ is:
 - $\frac{\sqrt{2} + \sqrt{3}}{2}$
 - $\frac{\sqrt{2} \cdot \sqrt{3}}{2}$
 - 1.5
 - 1.8
- Value of $\sqrt{(3^{-2})}$ is:
 - $\frac{1}{9}$
 - 9
 - 3
 - $\frac{1}{3}$
- In the given figure, AB is a diameter of the circle. $CD \parallel AB$ and $\angle BAD = 40^\circ$, then $\angle ACD$ is
 - 40°
 - 90°
 - 130°
 - 140°



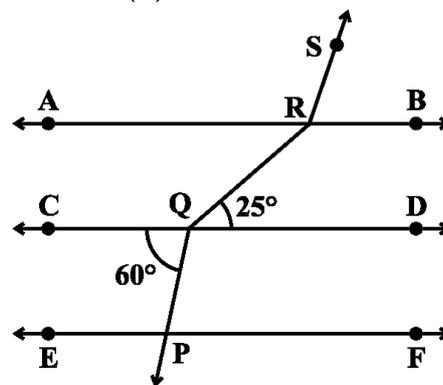
- OM is perpendicular to the chord AB of circle with centre O. If $OA = 13$ cm, $AB = 24$ cm then OM equals:
 - 3 cm
 - 4 cm
 - 5 cm
 - $\sqrt{4.7}$ cm



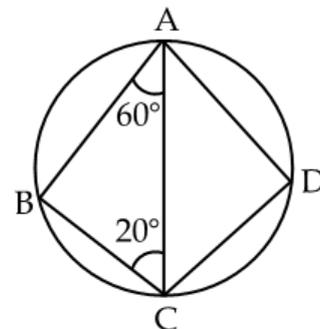
- In figure, $\angle POR = 3x$ and $\angle QOR = 2x - 10$. The value of x for which POQ is a straight line is:
 - 38°
 - 30°
 - 0°
 - 74°



7. The area of a triangle whose sides are 13 cm, 14 cm and 15 cm is:
 (a) 42 cm² (b) 86 cm² (c) 84 cm² (d) 100 cm²
8. The range of the data 25.7, 16.3, 2.8, 21.7, 24.3, 22.7, 24.9 is
 (a) 22 (b) 22.9 (c) 21.7 (d) 20.5
9. If $x^3 + 6x^2 + 4x + k$ is exactly divisible by $x + 2$, then k is equal to
 (a) -6 (b) -7 (c) -8 (d) -10
10. One of the zeroes of the polynomial $2x^2 + 7x - 4$ is
 (a) 2 (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) -2
11. Point (0, -7) lies
 (a) on the x-axis (b) in the second quadrant
 (c) on the y-axis (d) in the fourth quadrant
12. The equation of x-axis is of the form
 (a) $x = 0$ (b) $y = 0$ (c) $x + y = 0$ (d) $x = y$
13. The perimeter of an equilateral triangle is 60 m. The area is
 (a) $10\sqrt{3}$ m² (b) $15\sqrt{3}$ m² (c) $20\sqrt{3}$ m² (d) $100\sqrt{3}$ m²
14. Degree of the zero polynomial is
 (a) 0 (b) 1 (c) Any natural number (d) Not defined
15. In Fig., if $AB \parallel CD \parallel EF$, $PQ \parallel RS$, $\angle RQD = 25^\circ$ and $\angle CQP = 60^\circ$, then $\angle QRS$ is equal to
 (a) 85° (b) 135°
 (c) 145° (d) 110°



16. In fig., if $\angle BAC = 60^\circ$, $\angle ACB = 20^\circ$, then $\angle ADC$ is:
 (a) 90° (b) 80° (c) 100° (d) 60°



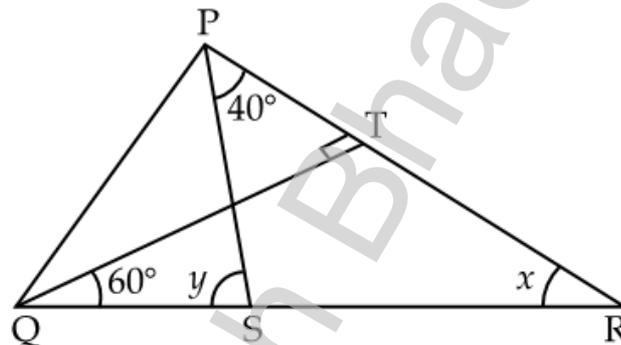
17. If $a + b + c = 0$, then $a^3 + b^3 + c^3$ is equal to
 (a) 0 (b) abc (c) $3abc$ (d) $2abc$
18. The things which are double of the same thing are
 (a) equal (b) unequal (c) halves of the same thing (d) double of the same thing
19. Axioms are assumed
 (a) universal truths in all branches of mathematics
 (b) universal truths specific to geometry
 (c) theorems
 (d) definitions
20. The total surface area of a cone whose radius is $r/2$ and slant height $2l$ is:
 (a) $2\pi r(l + r)$ (b) $\pi r \left(l + \frac{r}{4} \right)$ (c) $\pi r(l + r)$ (d) $2\pi rl$

Section B

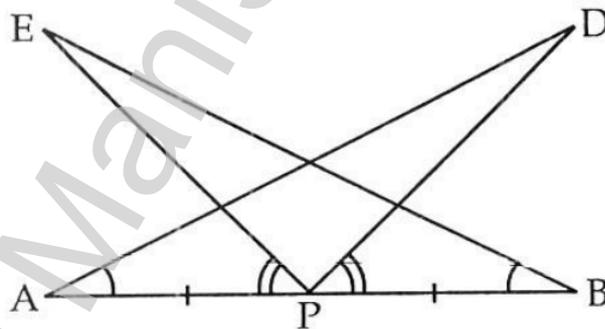
21. Represent $\sqrt{7.3}$ on the number line.
22. Find the remainder when $(x - 3)$ divides the polynomial $x^2 - \sqrt{2}x + 3\sqrt{2}$.
23. Find the value of $x^3 + y^3 + 15xy - 125$ when $x + y = 5$.
24. Find any three solutions for the equations $15x - 2y = 7$.
25. Factorize: $a^3 - \frac{1}{a^3} - 3a + \frac{3}{a}$.

Section C

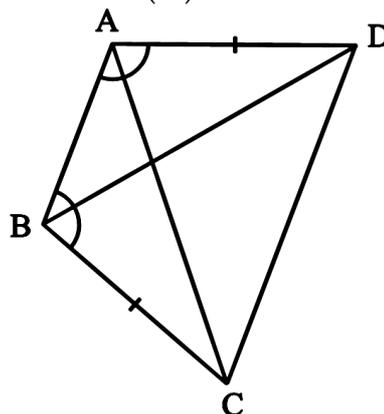
26. If $\frac{3+\sqrt{8}}{3-\sqrt{8}} + \frac{3-\sqrt{8}}{3+\sqrt{8}} = a + b\sqrt{2}$, find a and b .
27. It costs ₹ 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting at the rate of ₹ 20/m², find the radius of the base.
28. In figure given, $QT \perp PR$, $\angle TQR = 60^\circ$ and $\angle SPR = 40^\circ$. Find the value of x and y .



29. AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$. Show that $\triangle DAP \cong \triangle EBP$.



30. ABCD is a quadrilateral in which $AD = BC$ and $\angle DAB = \angle CBA$ (see Fig. given). Prove that:
 (i) $\triangle ABD \cong \triangle BAC$ (ii) $BD = AC$ (iii) $\angle ABD = \angle BAC$.



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

Section D

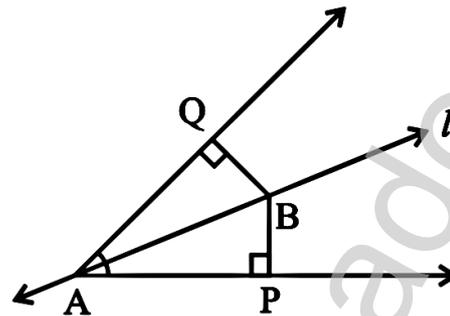
32. (a) Expand $\left(\frac{1}{4}a - \frac{1}{2}b + 1\right)^2$

(b) Evaluate $(102)^3$, using suitable identity.

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 Fig.). Show that:

(i) $\triangle APB \cong \triangle AQB$

(ii) $BP = BQ$ or B is equidistant from the arms of $\angle A$.



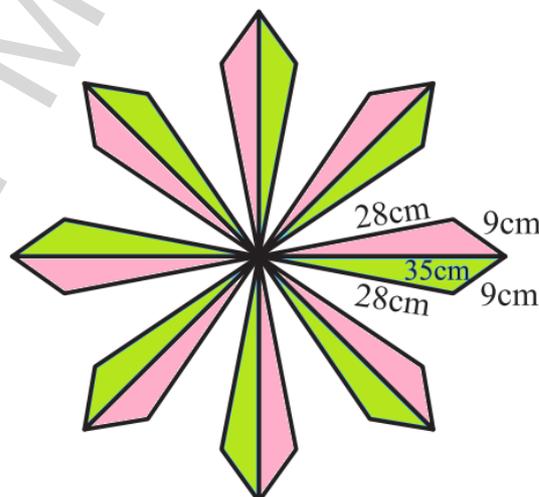
34. A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.

35. The number of patients attending a cardiac clinic in a hospital in a month is given. Draw the occurrence of diseases by plotting a histogram.

| Number of Patients | 0 – 5 | 5 – 10 | 10 – 15 | 15 – 20 | 20 – 25 | 25 – 30 |
|--------------------|-------|--------|---------|---------|---------|---------|
| Diabetic Clinic | 3 | 5 | 10 | 8 | 3 | 1 |

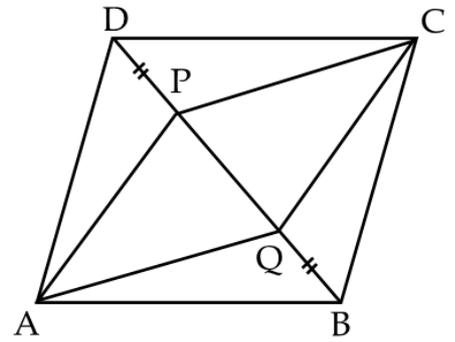
Section E

36. A floral design on a floor is made up of 16 tiles which are triangular, the sides of the triangular tiles are 9 cm, 28 cm and 35 cm. Find the cost of polishing the tiles at the rate of 50 p per cm^2 .



37. Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm. Find the length of the common chord.

38. ABCD is a parallelogram (see figure). On diagonal BD are points P and Q such that $DP = BQ$. Show that APCQ is a parallelogram.



Words of Wisdom

The journey of a thousand miles begins with one step.

- Lao Tzu

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