

# Practice Paper

# 1

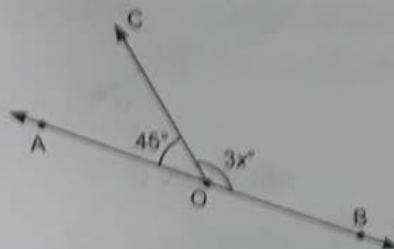
Time Allowed : 3 hours]

[Max. Marks : 80]

General Instructions — Questions 1-6 (1 Mark), 7-12 (2 Marks), 13-22 (3 Marks), 23-30 (4 Marks)

## SECTION A

- Write a rational number which does not lie between the rational numbers  $-\frac{2}{3}$  and  $-\frac{1}{5}$ .
- Factorise the polynomial:  $ax^2 + bx^2 + ay^2 + by^2$ .
- The point  $P(a, b)$  lies in the IVth quadrant. Which is smaller:  $a$  or  $b$ ?
- In the following figure, AOB is a line. Find  $x$ .



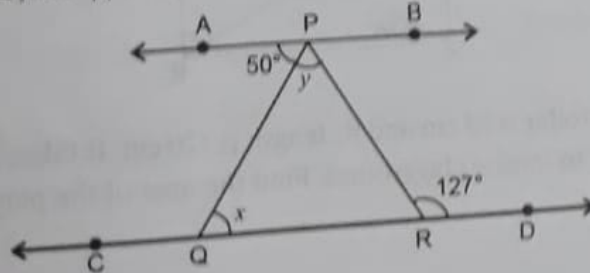
- In the given figure, O is the centre of the circle and AB is a chord of the circle. If  $\angle AOB = 70^\circ$ , find  $\angle ACB$ .



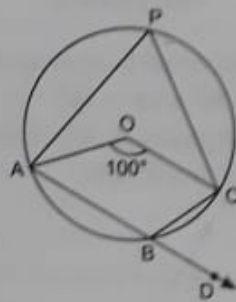
- Find the range of the following data: 70, 68, 49, 12, 15, 20, 50.

## SECTION B

- Factorise:  $x^2 + 2ax - b^2 - 2ab$ .
- In the given figure,  $AB \parallel CD$ ,  $\angle APQ = 50^\circ$  and  $\angle PRD = 127^\circ$ . Find angles  $x$  and  $y$ .

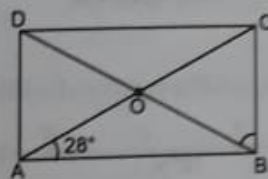


9. Rim and Sim have the same weights. If each of them gain weight by 3 kg, then how will their new weights be compared?
10. What is the probability that a number selected from the numbers 1, 2, 3, ..., 15 is a multiple of 4?
1. A match box measures 6 cm  $\times$  4 cm  $\times$  2.5 cm. What will be the volume of a packet containing 24 such boxes?
2. In the given figure, O is the centre of the circle. Find  $\angle CBD$ .



### SECTION C

1. Determine  $a$  and  $b$ , if  $\frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} - \frac{\sqrt{7} - \sqrt{5}}{\sqrt{7} + \sqrt{5}} = a + \sqrt{35}b$ .
2. Draw the graph of the equation  $x + 3y = 15$ . Find the coordinates of the point where the graph intersects the x-axis.
3. The polynomials  $ax^3 + 3x^2 - 13$  and  $2x^3 - 5x + a$ , when divided by  $(x - 2)$  leave same remainder. Find the value of  $a$ .
4. Plot the points in the plane, if its coordinates are given as A(5, 0), B(0, 3), C(7, 2), D(-4, 3), E(-3, -2) and F(3, -2).
5. Show that the bisectors of the angles of a parallelogram enclose a rectangle.
6. In the given figure, ABCD is a rectangle whose diagonals AC and BD intersect each other at O. If  $\angle OAB = 28^\circ$ , find  $\angle OBC$ .



The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in  $m^2$ .

20. In the given figure,  $AB = BC$ ,  $M$  is mid-point of  $AB$  and  $N$  is mid-point of  $BC$ . Using Euclid's axioms, prove that  $AM = NC$ .



21. Two coins are tossed 729 times and the outcomes are recorded below:

Outcomes	No tail	One tail	Two tails
Frequency	189	297	243

Find the probability of occurrence of each event.

22. In the given figure,  $ABCD$  is a quadrilateral. Prove that  $\text{ar}(\text{quadrilateral } ABCD) = \frac{1}{2} \times BD \times (AM + CN)$ , where  $AM$  and  $CN$  are perpendiculars on diagonal  $BD$ .



#### SECTION D

- \*23. A man hired an Auto for 5 km. The fare was ₹ 10 for the first km and ₹ 3 for every subsequent km. He paid ₹ 50, for which the Auto driver said that it is not the correct amount.

- Calculate the correct amount.
- Which value is being promoted by the Auto driver?

24. Prove that the line segment joining the mid-points of any two sides of a triangle is parallel to the third side and is equal to half of it.

In the given figure,  $DE = \frac{3}{4} BC$ ,  $DE \parallel BC$  and the distance between  $DE$  and  $BC$  is 3 units. If  $BC = 6$  units, what is the area of  $\triangle BCE$ ?



25. A sector of a circle of radius 6 cm has an angle of  $120^\circ$ . It is rolled up so that the two bounding radii are joined together to form a cone.

Find (i) the total surface area of the cone (ii) the volume of the cone.

26. If  $x = \frac{\sqrt{5}-2}{\sqrt{5}+2}$  and  $y = \frac{\sqrt{5}+2}{\sqrt{5}-2}$ , find the value of  $x^2 + y^2 - xy$ .

24. The linear equation that converts Fahrenheit ( $^{\circ}\text{F}$ ) to Celsius ( $^{\circ}\text{C}$ ) is given by the relation:

$$^{\circ}\text{C} = \frac{5^{\circ}\text{F} - 160}{9}$$

- (i) If the temperature is  $95^{\circ}\text{F}$ , what is the temperature in Celsius?  
(ii) If the temperature is  $30^{\circ}\text{C}$ , what is the temperature in Fahrenheit?  
(iii) What is the numerical value of the temperature which is same in both the scale?  
(iv) Find  $^{\circ}\text{F}$ , if  $^{\circ}\text{C} = 0$ .
25. Construct a triangle ABC in which  $\angle B = 45^{\circ}$ ,  $BC = 4.5$  cm and sum of other two sides is 8.2 cm.
26. A tent is in the form of a right circular cylinder surmounted by a cone. The diameter of cylinder is 24 m. The height of the cylindrical portion is 11 m, while the vertex of the cone is 16 m above the ground. Find the area of the canvas required for the tent.
27. Prove that  $(x - 2)$ ,  $(x + 3)$  and  $(x - 4)$  are factors of the polynomial:  $p(x) = x^3 - 3x^2 - 10x + 24$ .
28. If D, E, F are the mid-points of the sides BC, CA and AB respectively of  $\triangle ABC$ , prove that BDEF is a parallelogram whose area is half to that of  $\triangle ABC$ . Show that  $\text{ar}(\triangle DEF) = \frac{1}{4} \text{ar}(\triangle ABC)$ .
- \*29. A farmer has a triangular field with sides 200 m, 300 m and 400 m in which he grew wheat and in another triangular field with sides 200 m, 320 m and 360 m, he grew vegetables. Calculate the area of the land in which wheat and vegetables are produced? How can you motivate the students and make them aware about the uses of both the food products mentioned above?
30. The table given below shows the frequency distribution of the scores obtained by 200 candidates in a BCA entrance examination:

Scores	Number of Candidates
200 - 250	30
250 - 300	15
300 - 350	45
350 - 400	20
400 - 450	25
450 - 500	40
500 - 550	10
550 - 600	15

- (i) Determine the class limit of third class interval.  
(ii) Determine the class size.  
(iii) Determine the class marks of sixth class interval.  
(iv) How many candidates are in the range of score 350 to 600?

\*Value-based Question