Sample Question Paper 5

Section 'A'

Question 1 to 10 carry 1 mark each. Each question has four alternative answers of which only one is correct. Choose the correct answer.

AI **1.** A rational number between $\sqrt{2}$ and $\sqrt{3}$ is

(a) $\frac{\sqrt{2}+\sqrt{3}}{2}$ **(b)** $\frac{\sqrt{2}-\sqrt{3}}{2}$

(c) 1.5 **(d)** 1.8

OR

$\pi - 2$ is

(a) a rational number **(b)** an irrational number

(c) a prime number **(d)** none of these

AI **2.** The coefficient of x^2 in $(3x^2 - 5)(4 + 4x^2)$

(a) 12 **(b)** 5

(c) –8 **(d)** 9

OR

If $a + b + c = 0$, then factor of the expression $[(a + b)^3 + (b + c)^3 + (c + a)^3]$ is :

(a) abc **(b)** $a + b + c$

(c) $ab + bc + ca$ **(d)** $(a + b)$

3. Point (–10, 0) lies

(a) on the negative direction of the x-axis. **(b)** on the negative direction of the y-axis.

(c) in the third quadrant. **(d)** in the fourth quadrant.

4. If (2, 0) is a solution of the linear equation $2x + 3y = k$, then the value of k is

(a) 4. **(b)** 6.

(c) 5. **(d)** 2.

OR

If the point $(3, a)$ lies on the line represented by the linear equation, $2x - 3y = 5$, then the value of a is :

(a) $\frac{1}{3}$ **(b)** $\frac{1}{2}$

(c) $\frac{1}{4}$ **(c)** **1**

5. It is given that $\Delta ABC \cong \Delta FDE$ and AB = 5 cm, $\angle B = 40°$ and $\angle A = 80°$. Then which of the following is true?

(a) DF = 5 cm, $\angle F = 60°$ **(b)** DF = 5 cm, $\angle E = 60°$

(c) DE = 5 cm, $\angle E = 60°$ **(d)** DE = 5 cm, $\angle D = 40°$

6. The radius of a sphere is $4r$, and then its volume will be

(a) $\frac{4\pi r^3}{3}$ **(b)** $4\pi r^3$

(c) $\frac{8\pi r^3}{3}$ **(d)** $\frac{256}{3}\pi r^3$

7. In a sample study of 642 people, it was found that 514 people have a high school certificate. If a person is selected at random, the probability that the person has a high school certificate is

(a) 0.5. **(b)** 0.6.

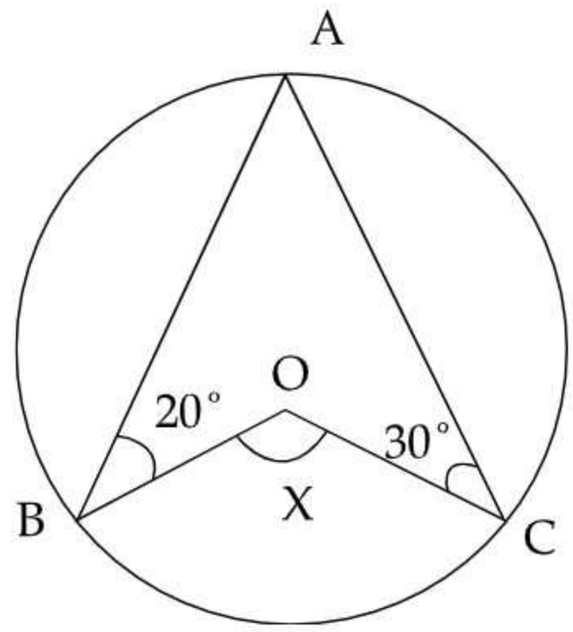
(c) 0.7. **(d)** 0.8.

OR

In Fig given if O is the centre of a circle, $\angle ABO = 20°$ and $\angle ACO = 30°$, where A,B,C are point on the circle. The value of x is

(a) 120° **(b)** 130°

(c) 100° **(d)** 150°

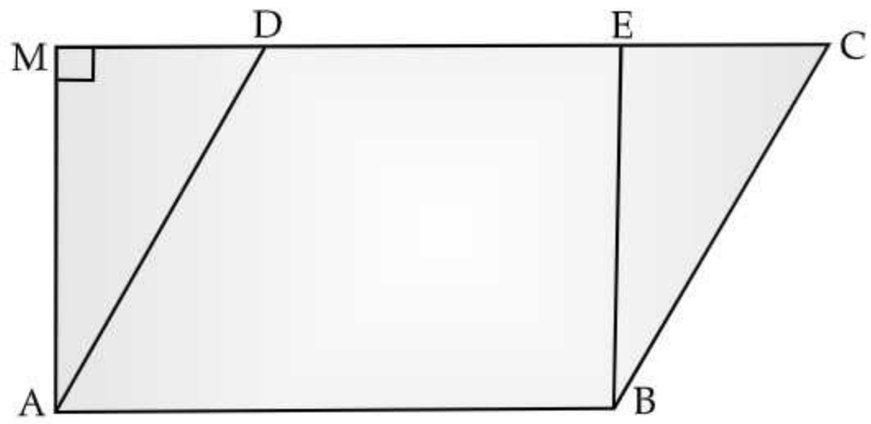


8. The angles of a quadrilateral are in the ratio 3 : 4 : 5 : 6. The respectively angles of the quadrilateral are

(a) 60°, 80°, 100°, 120° **(b)** 120°, 100°, 80°, 60°

(c) 120°, 60°, 80°, 100° **(d)** 80°, 100°, 120°, 60°

9. In the given figure, if parallelogram ABCD and rectangle ABEM are of equal area, then



(a) Perimeter of ABCD = Perimeter of ABEM. **(b)** Perimeter of ABCD < Perimeter of ABEM.

(c) Perimeter of ABCD > Perimeter of ABEM. **(d)** Perimeter of ABCD = $\frac{1}{2}$ (Perimeter of ABEM).

10. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140°$, then $\angle BAC$ is equal to

(a) 80° **(b)** 50°

(c) 40° **(d)** 30°

Questions 11 to 15 carry one mark each

11. What is the degree of polynomial $\sqrt{3}$?

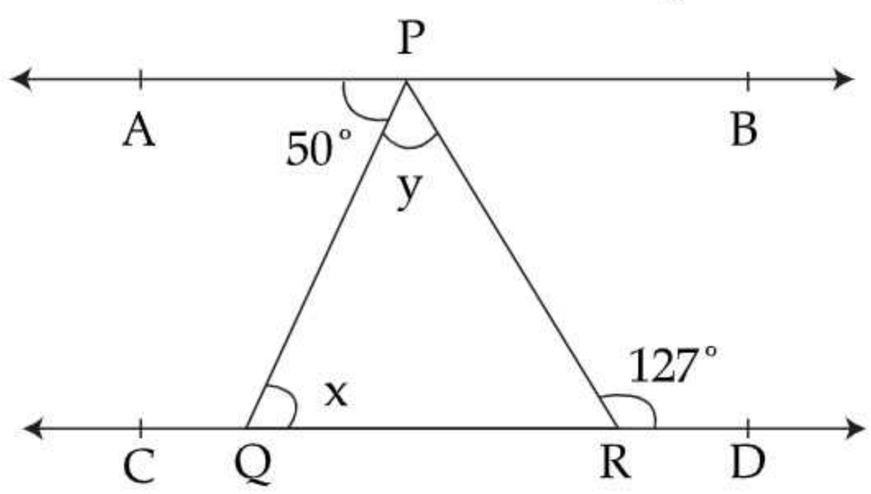
OR

If $x^2 + kx + 6 = (x+2)(x+3)$. Find k.

AI 12. Two supplementary angles are in ratio 2 : 7. Find the measures of angles.

OR

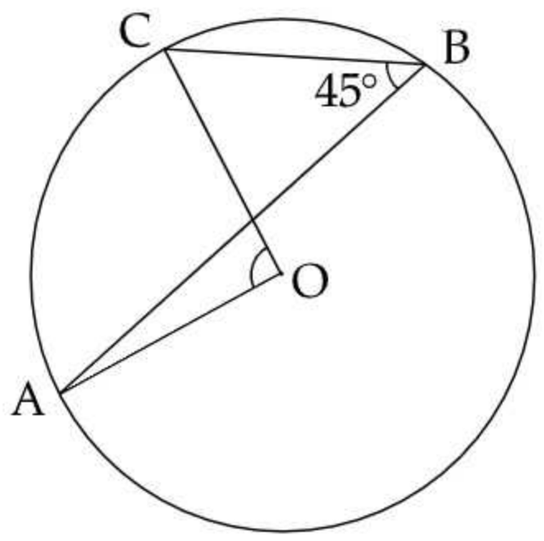
In fig. if AB||CD, $\angle APQ = 50°$ and $\angle PRD = 127°$, find x and y.



13. Two opposite angles of a parallelogram are $(3x - 2)°$ and $(50 - x)°$. Find the measure of each angle of the parallelogram.

14. The semi-perimeter of a equilateral triangle is 45 cm, find the area of equilateral triangle.

AI **15.** O is the centre of the circle and $\angle ABC = 45°$. Find $\angle AOC$.



Questions 16 to 20 : State true or false.

16. π is an irrational number

OR

In $5^{6x} = 125^2$, then $x = 1$

17. Diagonals of a parallelogram are perpendicular to each other.

AI **18.** Area of triangle with sides 4 cm, 5 cm and 6 cm is 15 square units

19. The edges of a surface are lines

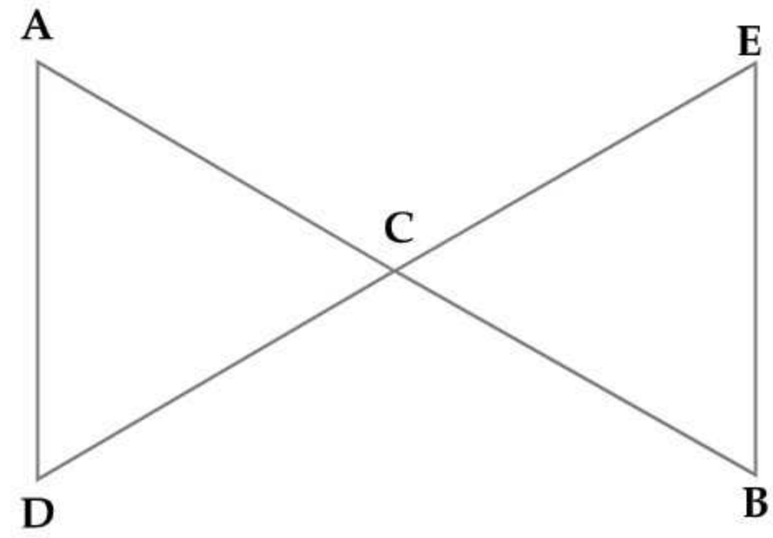
20. Area of a triangle is $b \times h$

Section 'B'

Question number 21 to 26, carry 2 marks each.

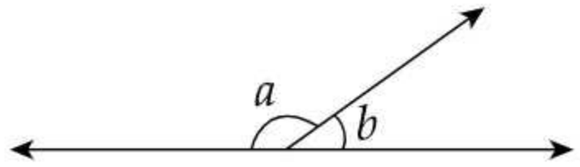
21. Represent $0.\overline{35}$ in the form $\frac{p}{q}$, where p and q are integers. **OR** Evaluate : $16^{\frac{3}{4}}$ **2**

AI **22.** In the given figure AC = DC, CB = CE, show that AB = DE.



Write Euclid's axiom to support this.

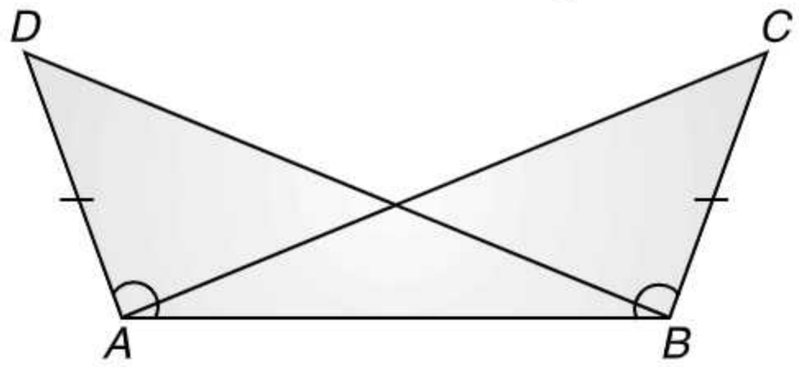
23. In the given figure, a is greater than b by $\frac{1}{6}$ of a straight angle. Find the values of a and b.



OR

The angles of a triangle are in the ratio 5:3:7. Show that the triangle is acute angled triangle.

AI **24.** In given fig., AD = BC and $\angle BAD = \angle ABC$, then prove that $\angle ACB = \angle BDA$.



25. What is the radius and curved surface area of a cone made from a quadrant of a circle of radius 28 cm ?

AI **26.** Find the mean of the first ten prime numbers.

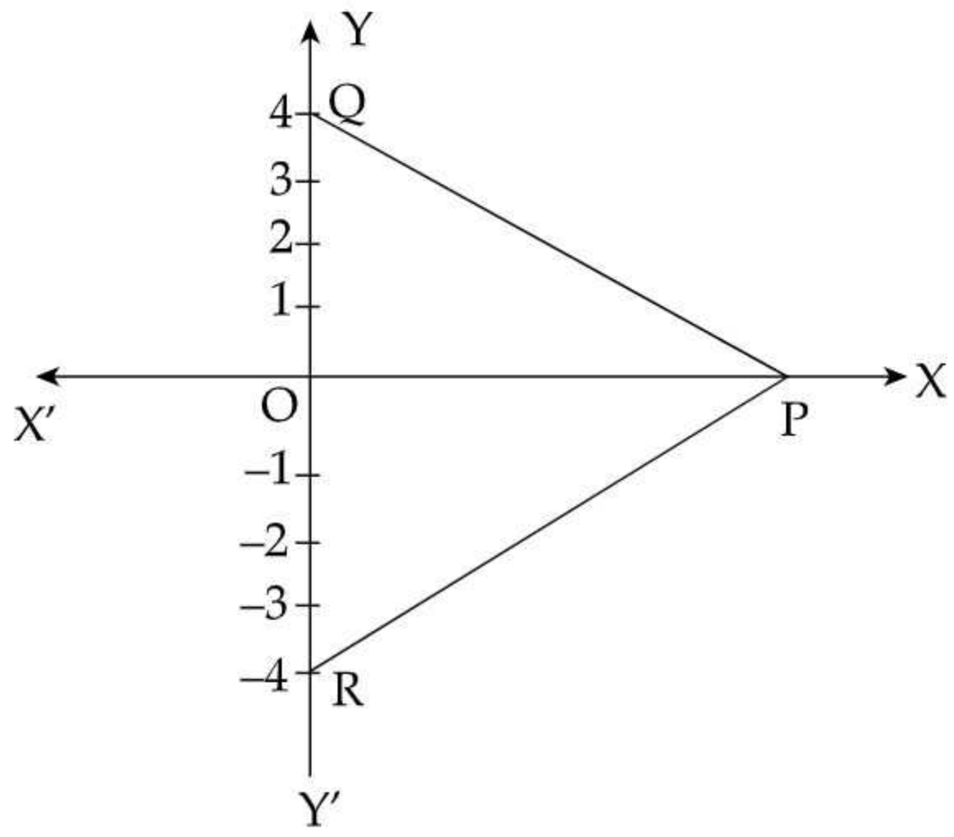
Section 'C'

Question 27 to 34, carry 3 marks each

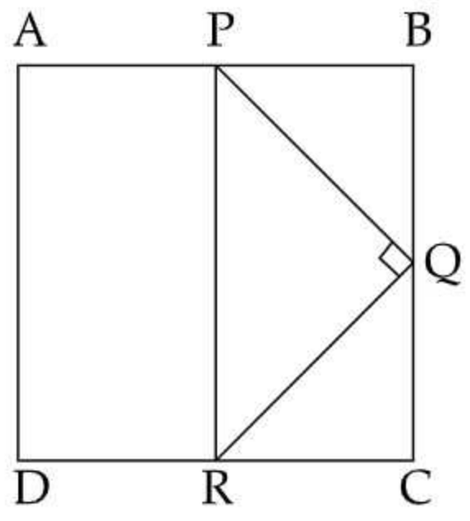
27. Check whether $7 + 3x$ is a factor of $3x^3 + 7x$.

AI **28.** Draw a triangle whose sides are represented by $x = 0$, $y = 0$ and $x + y = 3$ in the Cartesian system. Also find the co-ordinates of its vertices.

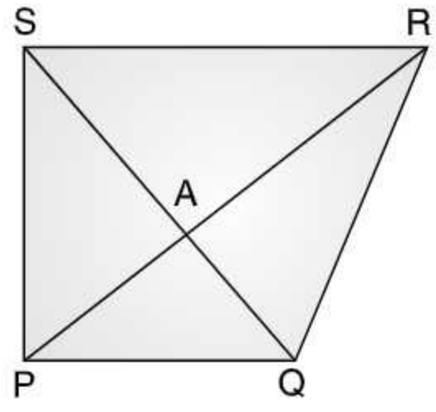
29. PQR is an equilateral triangle with the coordinates of Q and R as (0, 4) and (0, –4) respectively. Find the coordinates of the vertex P.



AI **30.** ABCD is a square. If $\angle PQR = 90°$ and PB = QC = DR, prove that $\angle QPR = 45°$.



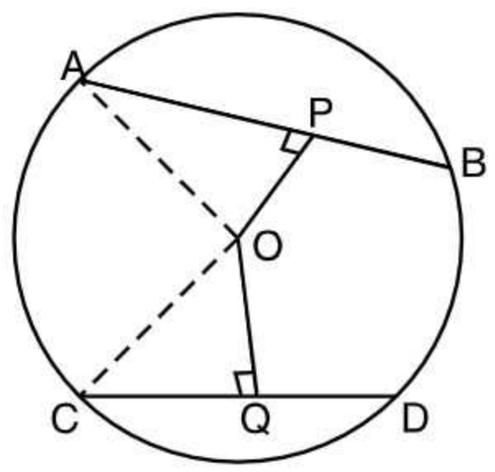
AI **31.** Diagonals PR and QS of quadrilateral PQRS intersect each other at A. Show that ar (ΔPSA) × ar (ΔQAR) = ar (ΔPAQ) × ar(ΔSAR)



OR

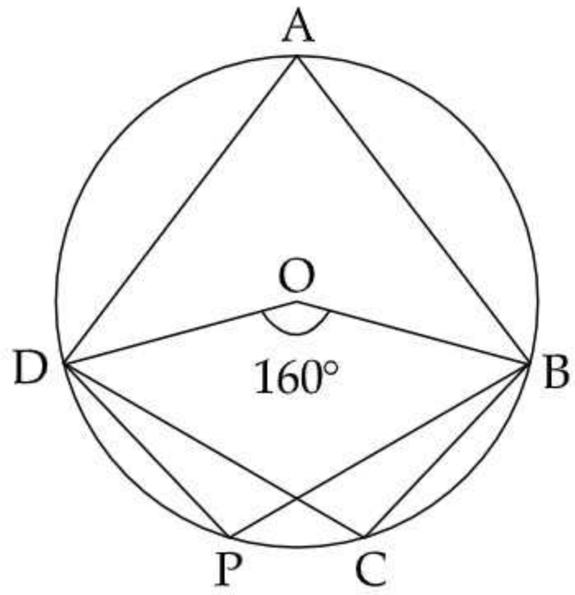
Show that the diagonals of a parallelogram divide it into four triangles of equal area.

32. In the given figure, AB and CD are two chords of a circle with centre O at a distance of 6 cm and 8 cm from O. If the radius of the circle is 10 cm, find the length of chords.

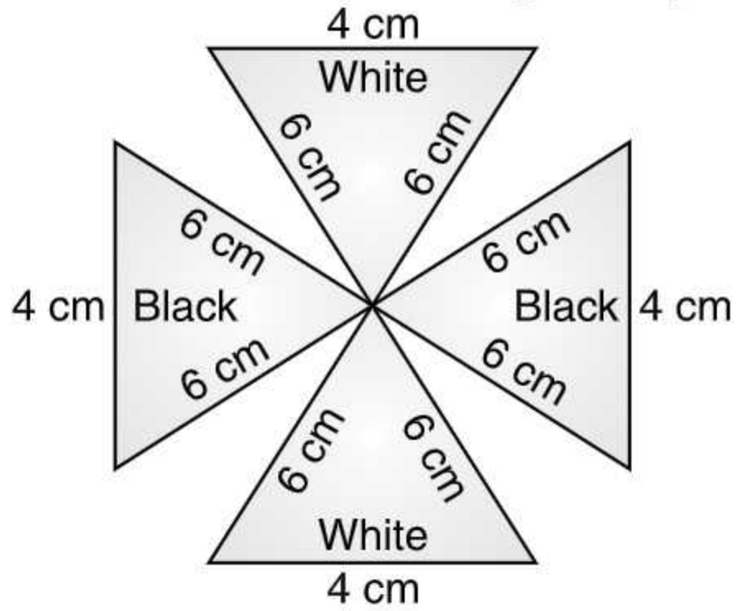


OR

In figure, ABCD is a cyclic quadrilateral; O is the centre of the circle. If $\angle BOD = 160°$, find the measure of $\angle BPD$.



AI **33.** Black and white coloured triangular sheets are used to make a toy as shown in figure. Find the total area of black and white colour sheets used for making the toy.



34. Cards marked with numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box. Find the probability that the number on the card is:

(a) a number less than 14

(b) a number which is a perfect square

(c) a prime number less than 29

OR

Three coins are tossed simultaneously 400 times and following frequencies of the outcomes were recorded

Outcomes	3 heads	2 heads	1 head	no head
Frequencies	103	124	98	x

(i) Find the probability of getting no head

(ii) Find the probability of getting one head

(iii) Find the probability of getting exactly two heads

Section 'D'

Question 35 to 40 carry 4 marks each

AI **35.** Express $0.6 + 0.\overline{7} + 0.4\overline{7}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

36. Verify if -2 and 3 are zeroes of the polynomial $2x^3 - 3x^2 - 11x + 6$. Hence factorise the polynomial.

OR

The polynomials $ax^3 - 3x^2 + 4$ and $2x^3 - 5x + a$ when divided by $x - 2$, leave the remainders p and q respectively. If $p - 2q = 4$, Find the value of a.

AI **37.** Cost of 1 pen ₹ x and that of a pencil is ₹ y. Cost of 2 pens and 3 pencils together is ₹ 18. Write a linear equation which satisfies this data. Draw the graph for the same.

38. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.

39. The frame of a lampshade is cylindrical in shape. It has base diameter 28 cm and height 17 cm. It is to be covered with a decorative cloth. A margin of 2 cm is to be given for folding it over top and bottom of the frame. If $\frac{1}{12}$ of cloth is wasted in cutting and pasting, find how much cloth is required to be purchased for covering the frame.

OR

AI The capacity of a cuboidal tank is 50,000 litres of water. Find the breadth of the tank, if its length and depth are respectively 2.5 m and 10 m.

AI **40.** Consider the marks out of 100, obtained by 50 students of a class in a test, given as below.

Marks	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Number of Students	15	10	10	11	4

Draw a frequency polygon representing the data.

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