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

1. $\dfrac{1}{\sqrt{9}-\sqrt{8}}$ is equal to

(a) $\dfrac{1}{2}(3-2\sqrt{2})$

(b) $\dfrac{1}{3+2\sqrt{2}}$

(c) $3-2\sqrt{2}$

(d) $3+2\sqrt{2}$

OR

The decimal expansion of the rational numbers $\dfrac{43}{2^4 \times 5^3}$ will terminate after how many places of decimal ?

(a) 4

(b) 3

(c) 2

(d) 1

2. What is the degree of the $p(x) = 2x + \dfrac{3}{2}x^3 - 7$

(a) 0

(b) 1

(c) 2

(d) 3

OR

Which of the following expressions is a polynomial ?

(a) $5x^2 - 4x + 3$

(b) $x + \dfrac{2}{x}$

(c) $x^{-\frac{1}{2}} - 3x + 2$

(d) None of these

3. Abscissa of all the points on the x-axis is

(a) 0.

(b) 1.

(c) 2.

(d) any number.

4. The graph of the linear equation $2x + 3y = 6$ cuts the y-axis at the point

(a) $(2, 0)$

(b) $(0, 3)$

(c) $(3, 0)$

(d) $(0, 2)$

5. An exterior angle of a triangle is 105° and its two interior opposite angles are equal. Each of these equal angles is

(a) $37\dfrac{1}{2}^\circ$

(b) $52\dfrac{1}{2}^\circ$

(c) $72\dfrac{1}{2}^\circ$

(d) 75°

6. In $\triangle ABC$, AB = AC and $\angle B = 50°$. Then $\angle C$ is equal to

(a) 40°

(b) 50°

(c) 80°

(d) 130°

7. A diagonal of a rectangle is inclined to one side of the rectangle at 25°. The acute angle between the diagonals is

(a) 55°.

(b) 50°.

(c) 40°.

(d) 25°.

8. An isosceles right triangle has area 8 cm². The length of its hypotenuse is

(a) $\sqrt{32}$ cm

(b) $\sqrt{16}$ cm

(c) $\sqrt{48}$ cm

(d) $\sqrt{24}$ cm

9. In a cylinder, radius is halved and height is doubled, the volume will be

(a) same.

(b) doubled.

(c) halved.

(d) four times.

10. A die is thrown 1000 times and the outcomes were recorded as follows :

Outcomes	1	2	3	4	5	6
Frequencies	180	150	160	170	150	190

If the die is thrown once more, then the probability that it shows 5 is :

(a) $\dfrac{9}{50}$

(b) $\dfrac{3}{40}$

(c) $\dfrac{4}{25}$

(d) $\dfrac{7}{25}$

OR

A coin is tossed 200 times. The head appears 79 times. The probability of a tail is

(a) $\dfrac{79}{200}$

(b) $\dfrac{121}{200}$

(c) 1

(d) 0

Questions 11 to 15 carry one mark each

11. Evaluate : $2^{\frac{1}{4}} \times 8^{\frac{1}{4}}$

12. Write an example of a constant polynomial.
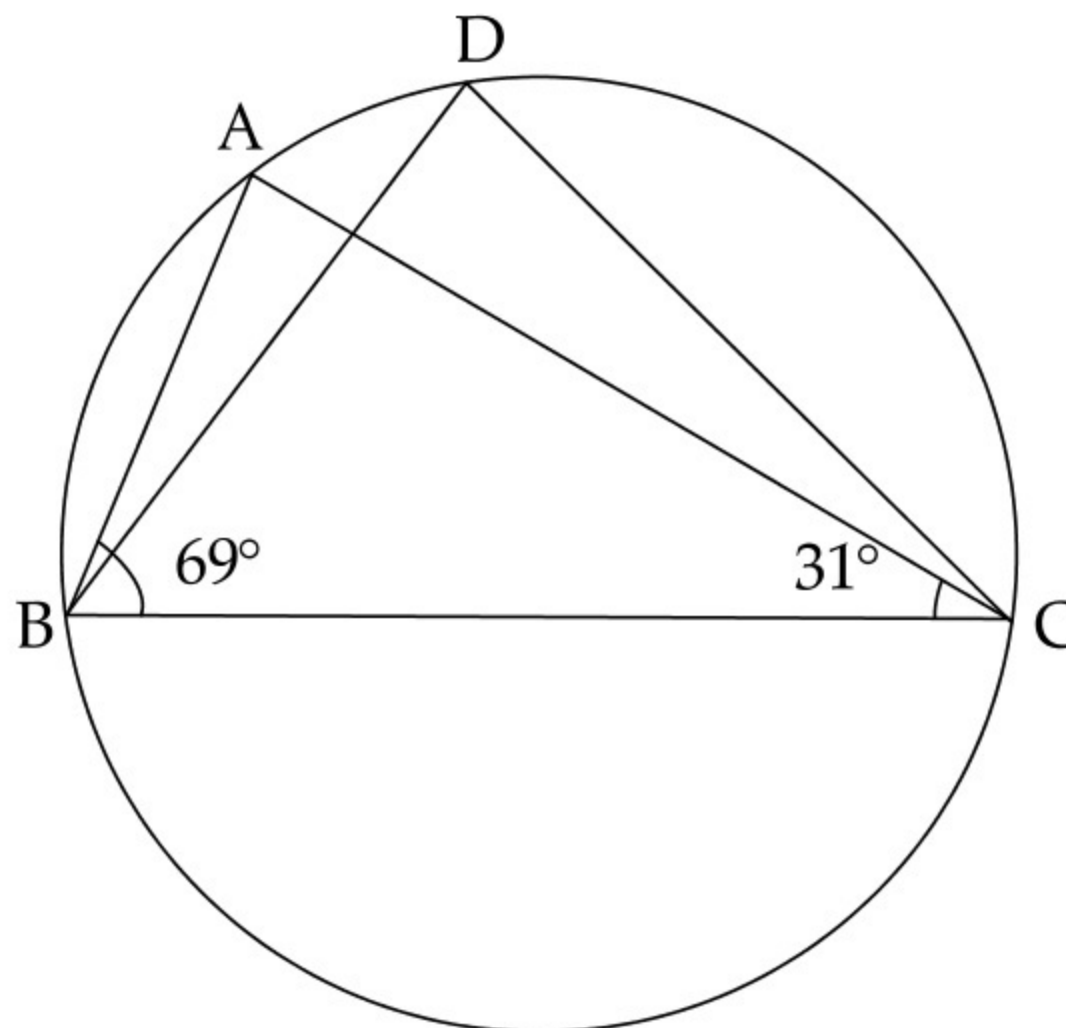
OR

Factorise $8x^3 - 64$

13. If perimeter of an equilateral triangle is 180 cm, what will be its area ?

OR

The volume of a cube is 1000 cubic cm. Find its total surface area.

⚠I 14. In the given figure, $\angle ABC = 69°$, $\angle ACB = 31°$, find $\angle BDC$.

15. The angles of a quadrilateral are $(4x°)$, $(7x°)$, $(15x°)$ and $(10x°)$. Find the value of x.

Questions 16 to 20 : State true or false. Carry 1 mark each

[AI] **16.** The volume of the largest right circular cone that can be fitted in a cube whose edge is $2r$ equals to the volume of a hemisphere of radius r.

17. If the two sides of a triangle are 13cm and 14cm and if its semi-perimeter is 18cm, then its third side is 10 cm.

18. In a parallelogram the diagonals are equal.

OR

An equilateral triangle is an acute angled triangle

19. A triangle and parallelogram having same base and between same parallels have equal area.

[AI] **20.** The things which are double of the same thing are equal to one another.

Section 'B'

Question number 21 to 26 carry 2 marks each.

21. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x.

29, 32, 48, 50, x, x + 2, 72, 78, 84, 95

[AI] **22.** Express $0.\overline{6}$ in the form of $\dfrac{p}{q}$ where p and q are integers and $q \neq 0$.

[AI] Write the following in decimal from and say what kind of decimal expansion each has ?

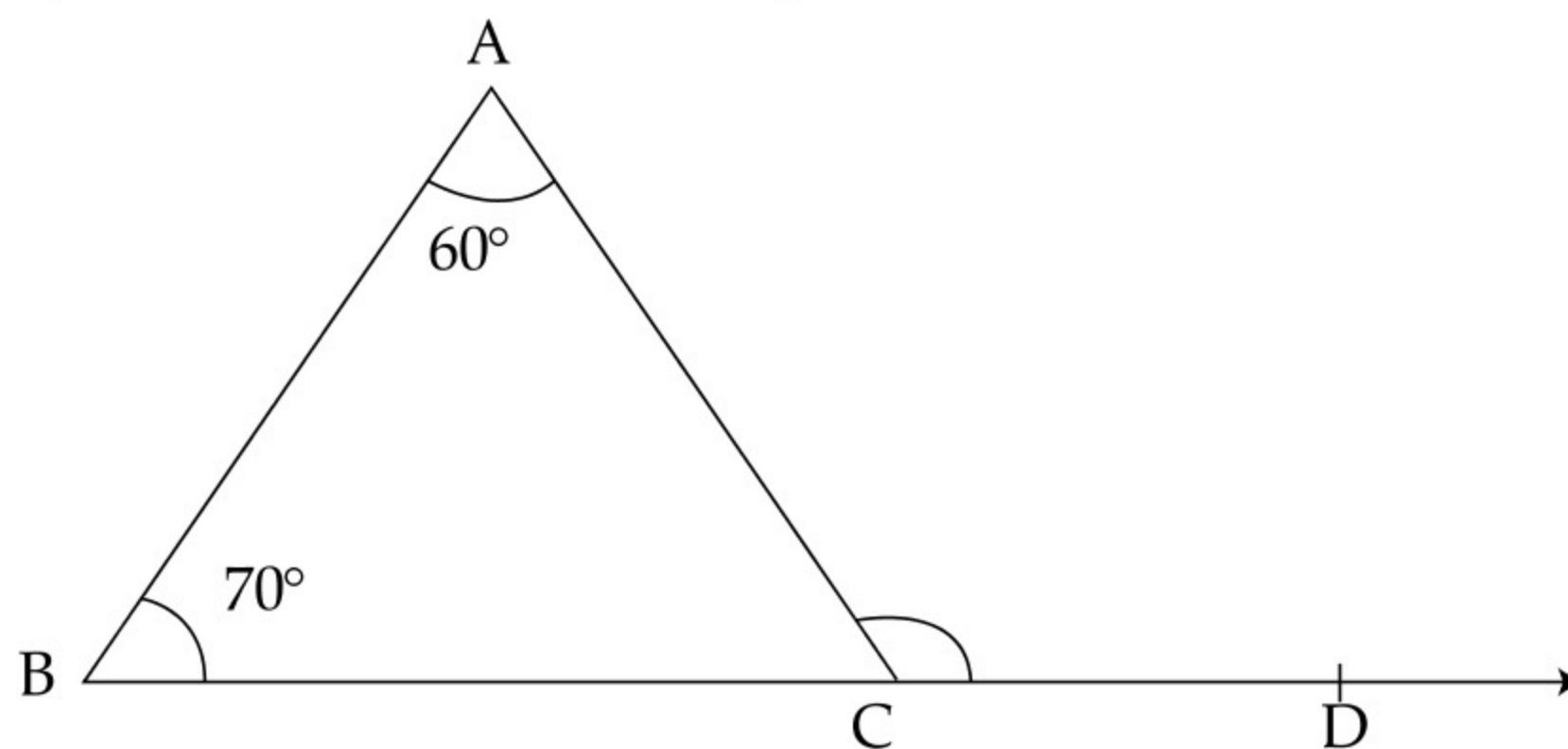**(i)** $\dfrac{49}{100}$ **(ii)** $\dfrac{2}{5}$

23. Solve the equation $x - 15 = 25$ and state Euclid's axiom used here.

24. If $(3x - 15°)$ and $(x + 5°)$ are complementary angles, find the angles.

25. In the given figure, if $\angle A = 60°$ and $\angle B = 70°$, then find $\angle ACD$.

26. Find the volume of a sphere whose surface area is 154 cm².

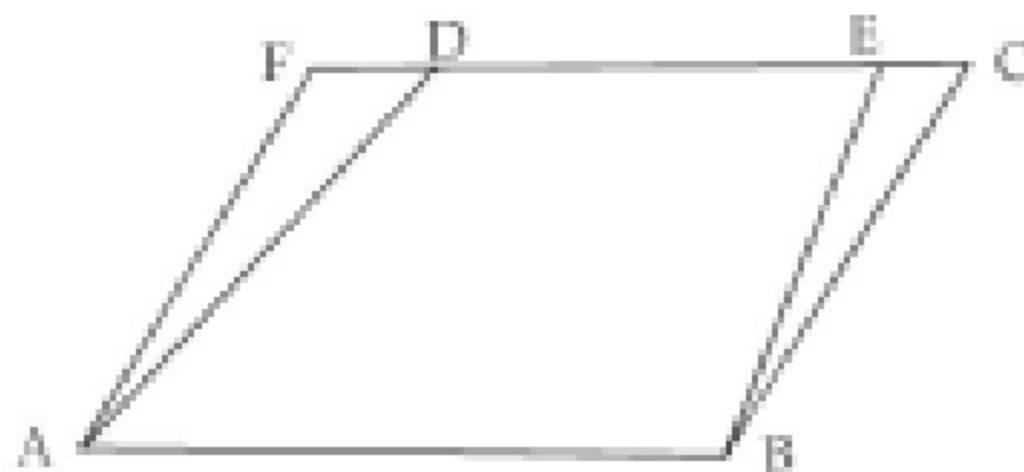**OR**

[AI] Find the length of the longest rod that can be placed in a room 12 cm long, 9 m broad and 8 m high.

Question 27 to 34 carry 3 marks each.

AI 27. In fig., ABCD and ABEF are parallelograms. The area of the parallelogram ABCD is 90 sq cm. Find

  (a) ar (ABEF)

  (b) ar (ABD)

  (c) ar (BEF)

OR

Show that a median of a triangle divides it into two triangles of equal areas.

28. Factorize $2x^2 + 3\sqrt{5}\,x + 5$.

OR

Factorize $x^3 - 2x^2 - x + 2$

29. Plot the following points and check whether these are collinear or not.

(4, –4), (3, –3), (–2, 2), (–1, 1)

30. Find the area of triangular region ABC having two sides are 18 m and 10 m and the perimeter is 42 m.

OR

Sides of a triangle ABC are in the ratio 12 : 17 : 25 and its perimeter is 540 cm. Find its area.

31. When 5 times larger of the two numbers is divided by the smaller, the quotient and remainder are 2 and 9 respectively. From a linear equation in two variables. Write it in standard form.

32. Prove that the diagonals of a rectangle are equal in length.

33. In the given figure, AB and CD are two chords of a circle with centre O such that $MP = NP$. If $OM \perp AB$ and $ON \perp DC$, show that $AB = CD$.
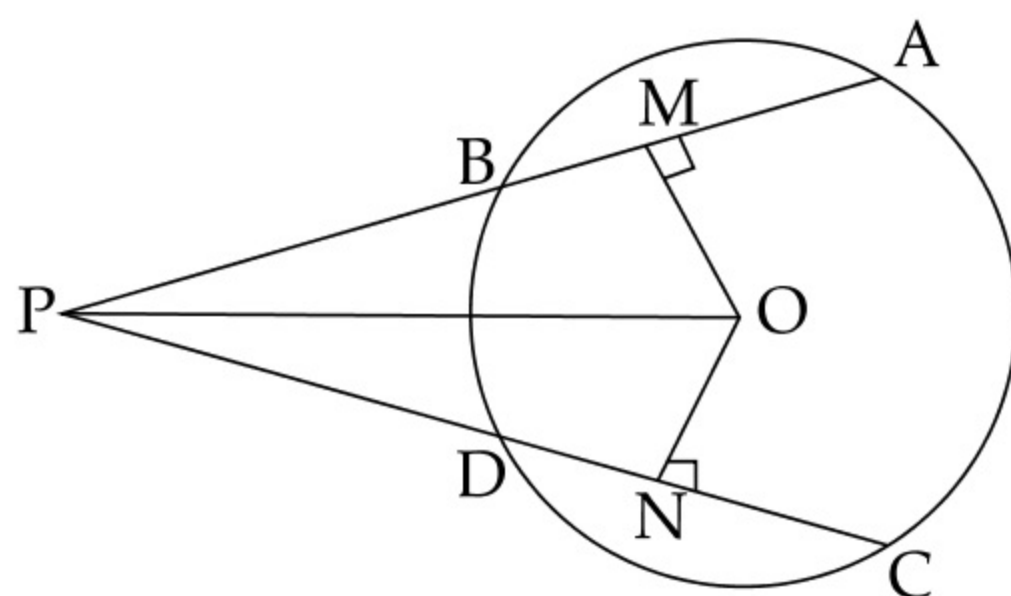
34. 1500 families with 2 children were selected randomly, and following data were recorded.

Number of girls	2	1	0
Number of families	475	814	211

Find the probability that a family chosen at random, having

  (i) 2 girls   **(ii)** 1 girl

  (iii) no girl

Questions 35 to 40 carry 4 marks each

35. Construct a right triangle whose base is 4 cm and sum of its hypotenuse and other side is 8 cm.

AI 36. Evaluate : $\left(\dfrac{81}{16}\right)^{\frac{-3}{4}} \times \left[\left(\dfrac{9}{25}\right)^{\frac{3}{2}} \div \left(\dfrac{5}{2}\right)^{-3}\right]$.

AI 37. In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it measured in Celsius. Here is a linear that converts Fahrenheit to Celsius.

$$F = \dfrac{9}{5}C + 32$$

   (a) If the temperature is 30°C, what is the temperature in Fahrenheit ?

   (b) If the temperature is 95°F, what is the temperature in Celsius?

AI 38. Evaluate the following using suitable identities.

   (a) $(102)^3$ **(b)** 104×96

OR

Find the value of 'a' if remainder is same when polynomial $p(x) = x^3 + 8x^2 + 17x + ax$ is divided by $(x + 2)$ and $(x + 1)$.

39. Curved surface area of right circular cylinder is 4.4 sq m. If the radius of the base of the cylinder is 0.7 m. Find its height. Also, find its volume.

40. The points scored by a basketball team in a series of 16 matches are as follows. Find the median and mode of data :

17, 2, 7, 27, 5, 14, 18, 10, 24, 25, 48, 10, 8, 7, 10, 28, 25. Find median and mode of the series.

OR

Find the mean salary of 60 workers of a factory from the following table.

Salary (Rs.)	No. of Workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
TOTAL	**60**