Self Assessment Paper 3

Section 'A'

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

AI **1.** Which of the following is irrational?

(a) $\sqrt{\frac{4}{9}}$ **(b)** $\frac{\sqrt{12}}{\sqrt{3}}$

(c) $\sqrt{7}$ **(d)** $\sqrt{81}$

OR

A rational number between $\sqrt{2}$ and $\sqrt{3}$ is

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

(c) 1 **(d)** 5

2. If $x + 1$ is a factor of the polynomial $2x^2 + kx$, then the value of k is

(a) –3 **(b)** 4

(c) 2 **(d)** –2

OR

Polynomial, $f(x) = 2x^4 + 3x^3 - 5x^2 + 9x + 1$ is:

(a) Linear polynomial (b) Quadratic polynomial

(c) Cubic polynomial (d) Biquadratic polynomial

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. A linear equation in two variables $ax + by + c = 0$, has

(a) infinitely many solutions **(b)** a unique solution

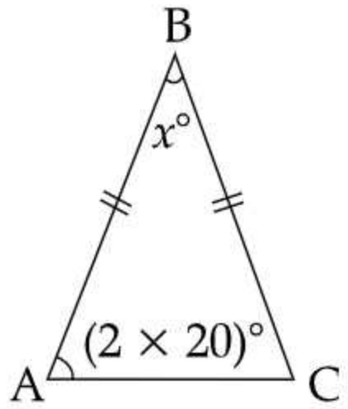
(c) two solutions only **(d)** no solution

5. ΔABC has $AB = BC$, $\angle B = x^\circ$ and $\angle A = (2x - 20)^\circ$ Then, the measure of $\angle B$ is

(a) 30° **(b)** 40°

(c) 44° **(d)** 64°

B



6. The bisectors of any two adjacent angles of a parallel intersect at

(a) 30° **(b)** 45°

(c) 60° **(d)** 90°

7. The ratio of the radii of two cylinder is 2:3 and the ratio of their height is 5:3. Then , the ratio of their volumes will be

(a) 10 : 17 **(b)** 17 : 27

(c) 20 : 27 **(d)** 20 : 37

8. In a survey of 400 students, 160 liked Mathematics and rest disliked it. The probability that a student chosen at random likes Mathematics is

(a) $\frac{6}{5}$ **(b)** $\frac{3}{5}$

(c) $\frac{2}{5}$ **(d)** $\frac{1}{5}$

OR

In a medical examination of students of a class, the following blood group are recorded:

Blood group	A	AB	B	O
Number of students	10	13	12	5

A student is selected at random from the class. The probability that he/she has blood group B, is

(a) $\frac{1}{4}$ **(b)** $\frac{13}{40}$

(c) $\frac{3}{10}$ **(d)** $\frac{1}{8}$

9. If a parallelogram and a triangle are on the same base and between the same parallels, then the ratio of the area of the parallelogram and triangle is:

(a) 2 : 1 **(b)** 1 : 1

(c) 1 : 2 **(d)** 1 : 4

10. If a chord of a circle is equal to its radius, then the angle subtended by this chord at the minor arc of the circle is

(a) 160° **(b)** 120°

(c) 150° **(d)** 75°

Questions 11 to 15 carry one mark each. State true or false.

11. All integers are rational numbers

12. The exterior angle of a quadrilateral is the sum of opposite interior angles.

OR

In a square and rhombus the diagonals are equal

AI 13. The area of a ΔABC is 8 cm^2 in which $AB = AC = 4\,cm$ and $\angle A = 90°$.

14. If the area of a triangle equals the area of a rectangle and the area of the rectangle equals that of a square, then the area of the triangle also equals the area of the square.

15. Area of a square is $\frac{1}{2} d^{2,}$ where d is the diagonal

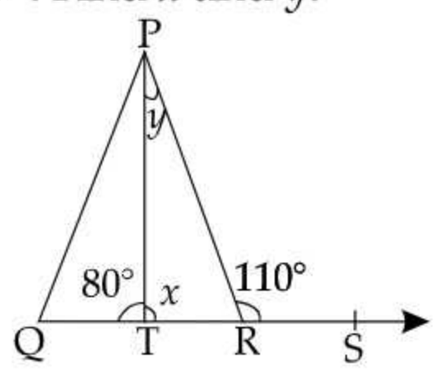
Questions 16 to 20 carry one mark each

16. In the expression $x^2 + \frac{\neq}{2} x - 7$, what is the co-efficient of x ?

AI 17. Find the measure of an angle which is equal to its supplement.

OR

In Fig., $\angle PRS = 110°$ and $\angle PTQ = 80°$. Find x and y.

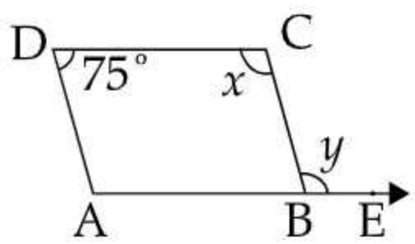


18. If the length of the diagonal of a cube is $6\sqrt{3}$ cm, find the length of the edge of the cube.

19. Two consecutive angles of a parallelogram are in the ratio 1 : 3, then what will be the smaller angles ?

OR

ABCD is a parallelogram in which $\angle ADC = 75^\circ$ and side AB is produced to point E as shown in Fig. Find $(x + y)$.



20. Write Heron's formula.

Section 'B'

Question number 21 to 26 carry 2 marks each.

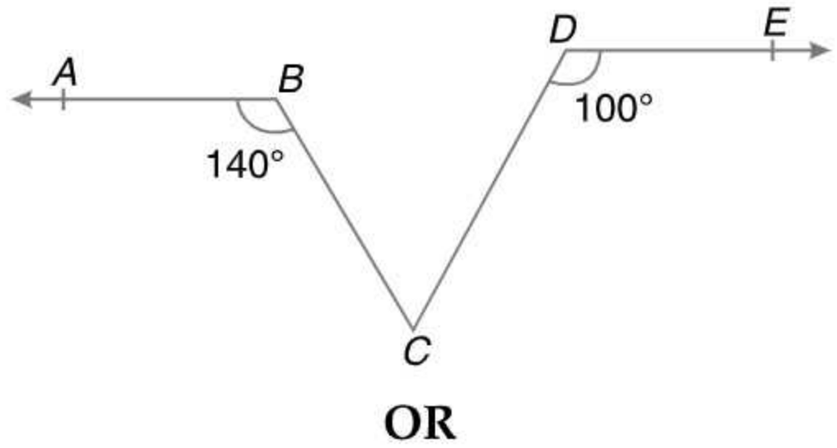
21. If $7x = 1$, then find the decimal expansion of x.

OR

AI Find the value of x if $2^{5x} \div 2^x = \sqrt[5]{2^{20}}$.

22. If a point C lies between two points A and B such that AC = BC, then prove that $AC = \frac{1}{2}AB$. Explain by drawing the figure.

AI **23.** In the figure, AB||DE, $\angle ABC = 140^\circ$ and $\angle CDE = 100^\circ$. Find $\angle BCD$.



OR

If an angle is 28° less that its complement, find its measure ?

24. PS is an altitude of an isosceles triangle PQR in which PQ = PR. Show that PS bisects $\angle P$.

25. The radius and slant height of a cone are in the ratio 4 : 7. If its curved surface area is 792 cm^2, find its radius.

26. If the mean of five observations x, $x + 2$, $x + 4$, $x + 6$, $x + 8$ is 13, then find the value of x.

Section 'C'

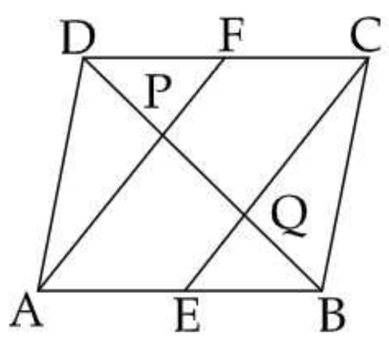
Questions 27 to 34 carry 3 marks each.

AI **27.** Factorize : $125x^3 - 27y^3 + z^3 + 45xyz$.

28. Taxi fare in a city is ₹ 8.00 for first kilometre and for the subsequent distance, it is ₹ 5.00 per km. Write an equation to represent this information in two variables taking distance covered as 'x' km and total fare as y (in ₹). Find the distance covered if he spent ₹ 63.00.

29. The sides of a triangular field are 41 m, 40 m and 9 m. Find the number of rose beds that can be prepared in the field, if each rose bed, on an average needs 900 cm^2 space.

AI **30.** In a parallelogram *ABCD*, *E* and *F* are the mid-points of sides *AB* and *CD* respectively (see Fig.), show that the line segment *AF* and *EC* trisect the diagonal *BD*.



AI **31.** The given table shows the month of birth of 50 students.

Month	Number of students
Jan	5
Feb	4
Mar	4
Apr	2
May	5
June	3
July	2
Aug	6
Sep	3
Oct	6
Nov	4
Dec	6

(i) Find the probability that a student was born in the month with 31 days.

(ii) Find the probability that a student was born in the month of February.

OR

The percentage of marks obtained by a student in monthly unit test are given below :

Test	I	II	III	IV	V	VI
Percentage of marks	52	60	65	75	80	72

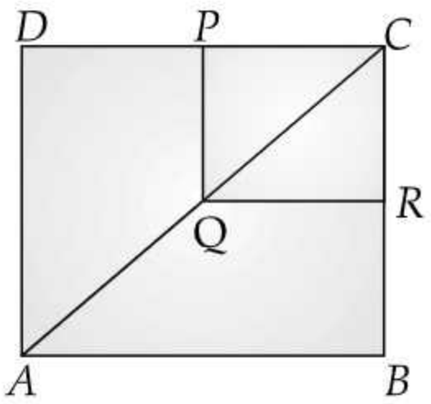
Find the probability that in the test the student gets

(i) more than 70% marks

(ii) less than 70% marks

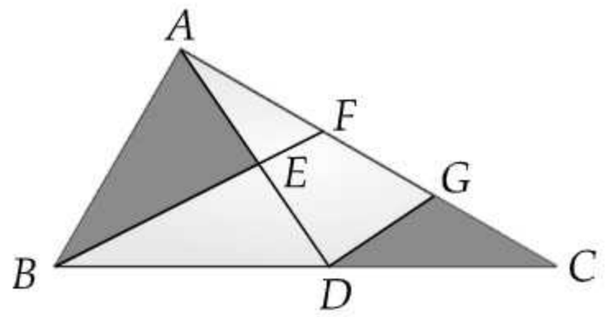
(iii) at least 60% marks

32. ABCD and PQRC are rectangles and Q is the mid-point of AC. Show that P is the mid-point of DC and R is the mid-point of BC. Also, find the ratio of ar(ABCD) and ar(PQRC).

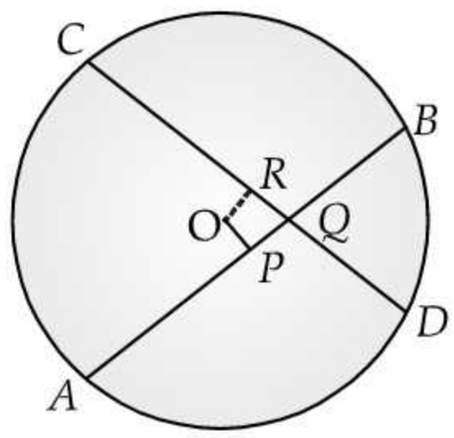


OR

In the given fig., AD is the median of ΔABC. E is the mid-point of AD and DG || BF. Prove that AC = 3AF.



33. In figure, equal chords AB and CD intersect each other at Q at right angle. P and R are the mid-points of AB and CD respectively. Show that OPQR is a square.



OR

OR

If the diagonals of a cyclic quadrilateral are the diameters of the circle through the vertices of a cyclic quadrilateral, prove that it is a rectangle.

34. Point A(4, 2), B(– 1, 2) and D(4, – 5) are three vertices of a rectangle ABCD. Plot these points and hence find the vertex C.

Section 'D'

Questions 35 to 40 carry 4 marks each

35. If $p(x) = x^3 + 3x^2 - 2x + 4$, then find the value of $p(2) + p(-2) - p(0)$.

OR

$x - \frac{1}{x} = 2$, find $x^4 + \frac{1}{x^4}$..

36. If $x = 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$, show that $x^3 - 6x = 6$

37. Two friends Sita and Gita, together contributed ₹ 200 towards Prime Minister's Relief Fund. Write a linear equation which satisfies this data. Draw the graph.

AI **38.** Construct a ΔABC in which BC = 4.7 cm, $\angle B = 45°$ and AB – AC = 2 cm.

AI **39.** A hemispherical bowl of internal diameter 36 cm contains a liquid is to be filled in cylindrical bottles of radius 3 cm and height 6 cm. How many bottles are required to empty the bowl ? $\left(Use\ \pi = \frac{22}{7}\right)$

OR

A pen stand is cylindrical in shape with the base radius 3.5 cm and height 10.5 cm. How much card board will be required to make 25 such pen stands ? Also, find volume of 1 pen stand.

40. The following table gives the pocket money (in ₹)given to children per day by their parents :

Pocket money	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Number of children	12	23	35	20	10

Represent the data in the form of a histogram.