

13. Zeroes of the polynomial $p(x) = (x - 2)^2 - (x + 2)^2$ are

- a) 2, -2
- b) 2x
- c) 0, -2
- d) 0

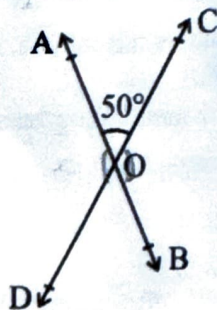
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14. In right $\triangle ABC$, $AB = BC$. Then $\angle A$ is equal to

- a) 45°
- b) 90°
- c) 60°
- d) None of these

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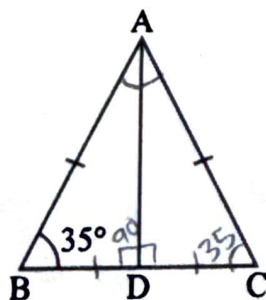
15. In the given figure, if $\angle AOC = 50^\circ$, then $(\angle AOD + \angle COB)$ is equal to



- a) 100°
- b) 140°
- c) 260°
- d) 130°

1

16. In the given figure, AD is the median, then $\angle BAD$ is



- a) 35°
- b) 70°
- c) 110°
- d) 55°

1

17. In a parallelogram ABCD, if $\angle A = 60^\circ$, then $\angle D$ is equal to

- a) 110°
- b) 140°
- c) 120°
- d) 130°

1

18. If the polynomial $p(x) = 3x^4 - 4x^3 - 3x - 1$ is divided by $(x - 1)$, then remainder is

- a) 3
- b) -5
- c) -1
- d) 1

1

Directions : In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option :

- A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
 C) Assertion (A) is true but Reason (R) is false.
 D) Assertion (A) is false but Reason (R) is true.

19. Assertion (A) : The point (1, 1) is the solution of $x + y = 2$. 1
 Reason (R) : Every point which satisfy the linear equation is a solution of the equation.
20. Assertion (A) : If angles 'a' and 'b' form a linear pair of angles and $a = 40^\circ$, then $b = 140^\circ$. 1
 Reason (R) : Sum of linear pair of angles is always 180° . 1

SECTION-B

Section B consists of 5 questions of 2 marks each.

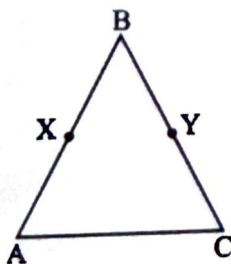
21. A) Find the perimeter of an equilateral triangle, if its area is $64\sqrt{3}$ cm². 2

OR

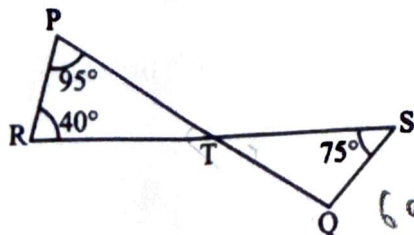
- B) The sides of a triangle are 16 cm, 30 cm, 34 cm. Find its area. 2

22. The mid-value of a class interval is 42. If the class size is 10, then find the upper and lower limits of the class. 2

23. In the given figure, If $BX = \frac{1}{2}AB$, $BY = \frac{1}{2}BC$ and $AB = BC$, then show that $BX = BY$. 2

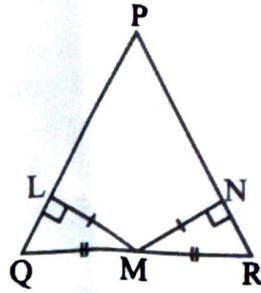


24. A) In the given figure, line segments PQ and RS intersect each other at a point T such that $\angle PRT = 40^\circ$, $\angle RPT = 95^\circ$ and $\angle TSQ = 75^\circ$. Find $\angle SQT$. 2



OR

- B) In the given figure, $LM = MN$, $QM = MR$, $ML \perp PQ$ and $MN \perp PR$. Prove that $PQ = PR$. 2



25. If the coordinates of two points P and Q are $(2, -3)$ and $(-6, 5)$ respectively, then find the value of (abscissa of P) - (abscissa of Q) 2

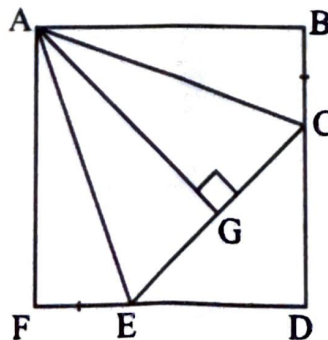
SECTION-C

Section C consists of 6 questions of 3 marks each.

26. Find the values of a and b if, $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a - b\sqrt{3}$ 3
27. If $x + y + z = 0$, show that $x^3 + y^3 + z^3 = 3xyz$ 3
28. A) The height of a cone is 24 cm and the diameter of its base is 14 cm. Find the slant height, volume and the total surface area of the cone. 3

OR

- B) A metallic sphere of diameter 12.6 cm is melted to make a right circular cone of height 25.2 cm. Calculate the radius of cone. 3
29. ABDF is a square and $BC = EF$ in the given figure. 3



- Prove that
- i) $\triangle ABC \cong \triangle AFE$
 - ii) $\triangle ACG \cong \triangle AEG$

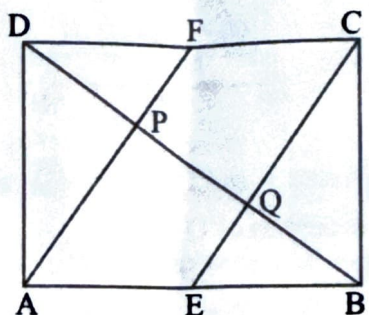
30. A) ABCD is a rectangle in which diagonal AC bisects $\angle A$ as well as $\angle C$. Show that
- ABCD is a square
 - diagonal BD bisects $\angle B$ as well as $\angle D$

3

OR

- B) In a parallelogram ABCD, E and F are the midpoints of sides AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD.

3



✓ 31

Draw frequency polygon for the following data :

3

Class Interval	150-200	200-250	250-300	300-350	350-400	400-450	450-500
Frequency	5	3	5	6	8	7	1

SECTION-D

Section D consists of 4 questions of 5 marks each.

32. A) Simplify and give the result in exponent form :
- $$\frac{(25)^{\frac{5}{2}} \times (729)^{\frac{1}{2}}}{(125)^{\frac{2}{3}} \times (27)^{\frac{2}{3}} \times (8)^{\frac{4}{3}}}$$

5

OR

- B) If x is a positive real number and exponents are rational numbers, simplify

5

$$\left(\frac{x^b}{x^c}\right)^{b+c-a} \cdot \left(\frac{x^c}{x^a}\right)^{c+a-b} \cdot \left(\frac{x^a}{x^b}\right)^{a+b-c}$$

33. The polynomial $p(x) = 2x^3 + kx^2 - 3x + 5$ and $q(x) = x^3 + 2x^2 - x + k$, when divided by $(x - 2)$ leave the same remainder, then find the value of k . $-\frac{1}{3}$

5

34. A) Prove that the angle bisectors of a cyclic quadrilateral form another cyclic quadrilateral.

5

OR

- B) Two chords AB and CD of lengths 5 cm and 11 cm respectively are parallel and are on opposite sides of the centre of a circle. If the distance between AB and CD is 6 cm. Find the radius of the circle. 3.9

5

35. The total cost of making a spherical ball is ₹ 33,957 at the rate of ₹ 7 per cubic metre. What will be the radius of this ball ?

5

SECTION-E

Case Study - Based questions are compulsory.

36. **Case Study-1**

Shourya, a student of class IX visited a book shop of his school for purchasing the Science lab kit. Mr. Harish, who is running the bookshop in school told Shourya that Science lab kit consists of a lab manual and a notebook and the total cost of lab kit is $x^2 + 6x + 9$. He also told Shourya that total price of kit includes individual price of Manual and Notebook.

On the basis of above information, answer the following questions :

- i) The price of kit is given by $x^2 + 6x + 9$. What is the degree of given polynomial ? 1
- ii) $x^2 + 6x + 9$ is which type of polynomial ? 1
- iii) A) Examine whether $(x + 1)$ is a factor of $x^2 + 6x + 9$. 2

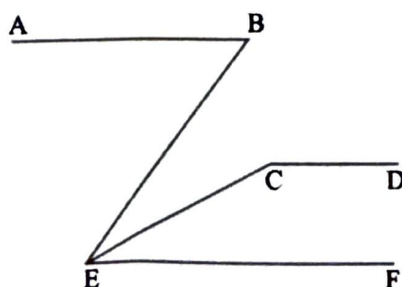
OR

- B) Find the zero of the polynomial $x^2 + 6x + 9$.

37. **Case Study-2**

Three book shelves AB, CD and EF, made up of wooden boards are fitted on the wall horizontal to the floor as shown in the figure. To give stability and a good look, the two shelves AB and CD were joined by a wooden plank BE. Similarly CD and EF were joined by CE. The entire arrangement was such that the angles measured as follows :

$$\angle ABE = 76^\circ, \angle BEC = 36^\circ, \angle CEF = 40^\circ, \angle DCE = 140^\circ$$



Based on the above information and the given figure answer the following questions :

- i) What is the measure of $\angle BEF$? 1
- ii) What is the relation between AB and EF ? 1
- iii) A) What is the relation between $\angle DCE$ and $\angle CEF$? Also find the value of reflex $\angle DCE$. 2

OR

- B) What can we conclude about CD and EF ?

38. **Case Study-3**

On the 16th birthday Mridul went to an orphanage to share his happiness. He bought apples to give to children and to the adults working there. He gave 2 apples to each child and 3 apples to each adult, thus he distributed a total of 60 apples.

- i) Represent the above situation as linear equation in two variable, taking number of children as x and that of adults as y . 1
- ii) How many solutions a linear equation in two variables can have? 1
- iii) A) Find the coordinates of the point where graph of linear equation $2x - 9y + 18 = 0$ meets x -axis. 2

OR

- B) If $x = k + 1, y = 2k - 1$ is a solution of the equation $3x - 2y + 7 = 0$, then find the value of k .