

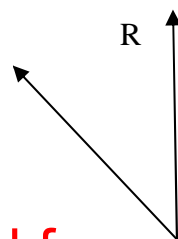
Section-A (Questions from 1 to 4 carry 1 mark each)

1. If the area of an equilateral triangle is $16\sqrt{3}$ cm, then its perimeter is?
2. Find the zero of the polynomial $p(x) = x$.
3. The distance of the point $(-6, -2)$ from y-axis is.
4. The complement of an angle 'm' is?

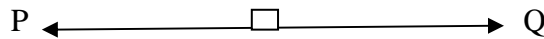
Section-B (Questions from 5 to 10 carry 2 marks each)

5. Represent $\sqrt{13}$ on the number line.
6. Prove that if a transversal intersects two parallel lines then each pair of alternate interior angles is equal.
7. Find the value of k if $(x - 1)$ is a factor of $4x^3 + 3x^2 - 4x + k$.
8. A policeman and a thief are equidistant from a jewel box. Upon considering jewel box as origin, the position of policeman is $(0, 5)$, if the ordinate of the position of thief is zero, then write the coordinates of the position of the thief.
9. Find the cost of turfing a triangular field at the rate of Rs $5/m^2$ having lengths of its sides as 40m, 70m & 90m. (Take $\sqrt{20} = 4.47$).
10. Factorise $21x^2 - 2x + \frac{1}{21}$.
11. If $\frac{2}{\sqrt{3}+\sqrt{5}} + \frac{5}{\sqrt{3}-\sqrt{5}} = a\sqrt{3} + b\sqrt{5}$, find a & b.
12. Factorise $a^{12}y^4 - a^4y^{12}$.
13. Factorise $x^2 + 3\sqrt{3}x - 30$.
14. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.

15. In figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that: $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.



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16. Write the mirror image of the following points on X-axis and Y-axis:

- i) (2, -3)
- ii) (0, 4)
- iii) (3.5, -2)
- iv) (-2, 0.5)
- v) (-5, -4.4)
- vi) (0.5, -1)

17. A field is in the shape of a trapezium whose parallel sides are 50 m and 15 m. The non-parallel sides are 20m and 25m. Prove that the area of the trapezium is $\frac{1300\sqrt{6}}{7} \text{m}^2$.

18. If $x^2 - 1$ is a factor of $px^4 + qx^3 + rx^2 + sx + t$, show that $p + r + t = q + s = 0$

19. If $a + b + c = 0$ then prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$

20. Represent \sqrt{x} on the number line where x is any positive real number.

Section-D (Questions from 21 to 31 carry 4 marks each)

21. Express 2.123333... in the form of $\frac{p}{q}$ where p and q are integers and q is non zero.

22. If $x = 3 - 2\sqrt{2}$, find $x^3 - \frac{1}{x^3}$

23. Simplify and factorise $(a + b + c)^2 - (a - b - c)^2 + 4b^2 - 4c^2$

24. The polynomial $bx^3 + 3x^2 - 3$ and $2x^3 - 5x + b$ when divided by $x - 4$ leaves the remainders R_1 and R_2 . Find the value of b if $2R_1 - R_2 = 0$

25. The side QR of ΔPQR is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that $\angle QTR = \frac{1}{2} \angle QPR$.

26. The bisectors of $\angle ABC$ & $\angle BCA$ intersect each other at point O. Prove that $\angle BOC = 90^\circ + \frac{1}{2} \angle A$.

27. Evaluate : $(\sqrt{5 + 2\sqrt{6}}) + (\sqrt{8 - 2\sqrt{15}})$

28. If $a^2 + b^2 + c^2 = 280$ & $ab + bc + ca = 9/2$, find $(a + b + c)^3$.

29. Find the area of a triangle two sides of which are 18 cm and 10cm and the perimeter is 42cm.

30. Draw a quadrilateral with vertices A(2,2) B(2,-2) C (-2,-2) D(-2,2). Classify the quadrilateral and also find its area.

31. State and prove factor theorem?