

SAMPLE QUESTION PAPER - 8

Self Assessment _____

Time : 3 Hours

Maximum Marks : 90


SECTION 'A'

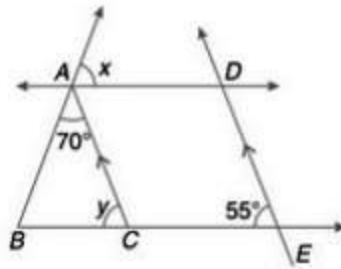
Question numbers 1 to 4 carry one mark each. For each question four alternative choices have been provided of which only one is correct. You have to select the correct choice.

- The rationalising factor of $\frac{1}{\sqrt{50}}$ is :
 (A) $5\sqrt{2}$ (B) $\sqrt{2}$ (C) 50 (D) $\sqrt{5}$
- Degree of the polynomial $2x^3 + x^2 - 2x + 34$ is :
 (A) 1 (B) 3 (C) 2 (D) 4
- If $x^{31} + 31$ is divided by $(x + 1)$, then the remainder is :
 (A) 0 (B) 1 (C) 30 (D) 31
- $\left(x + \frac{1}{2}\right)\left(x + \frac{3}{2}\right)$ is :
 (A) $x^2 + \frac{3}{4}x + \frac{3}{4}$ (B) $x^2 + 2x + \frac{3}{4}$ (C) $x^2 + \frac{x}{4} + \frac{3}{4}$ (D) $x^2 + \frac{5x}{4} + \frac{3}{4}$

SECTION 'B'

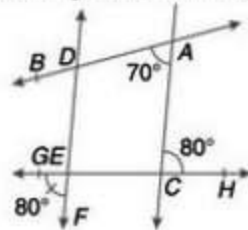
Question numbers 5 to 10 carry two marks each.

- Express $0.\overline{237}$ in $\frac{p}{q}$ form, where p and q are integers and $q \neq 0$.
- Factorise : $x^4 - 125xy^3$.
- Factorise : $12(x^2 + 7)^2 - 8(x^2 + 7)(2x - 1) - 15(2x - 1)^2$.
- In figure, C is the mid point of AB and D is the mid point of AC . Prove that $AD = \frac{1}{4} AB$.

- In the given figure, $AC \parallel DE$ and $AD \parallel CE$, find x and y , when it is given that $\angle BAC = 70^\circ$ and $\angle DEC = 55^\circ$.



OR

In the given figure, state which lines are parallel and why ?



10. Using heron's formula, find the area of an isosceles triangle whose equal sides are of length 12 cm each and third side is 12 cm.

SECTION 'C'

Question numbers 11 to 20 carry three marks each.

11. If $x = 3 + 2\sqrt{2}$, then find the value of $\left(x - \frac{1}{x}\right)^2$.

OR

If $x = 9 + 4\sqrt{5}$, find the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$.

12. Simplify: $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{2}{\sqrt{3}+\sqrt{5}}$

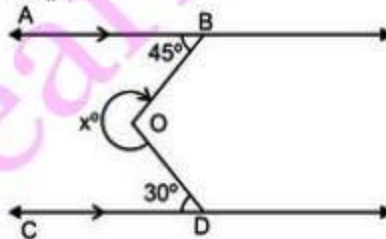
13. If $x + y + 4 = 0$, then find the value of $x^3 + y^3 - 12xy + 64$.

OR

Factorise: $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$

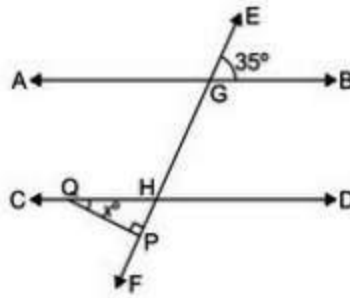
14. Factorise: $(x^2 - 4x)(x^2 - 4x - 1) - 20$

15. In the given figure, find x , if $AB \parallel CD$

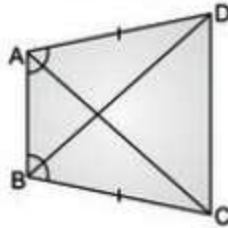


OR

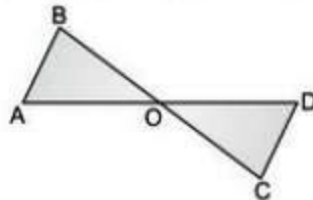
In the given figure, $AB \parallel CD$ and EF is a transversal cutting them at G and H respectively. If $\angle EGB = 35^\circ$ and $QP \perp EF$, then find $\angle PQH$.



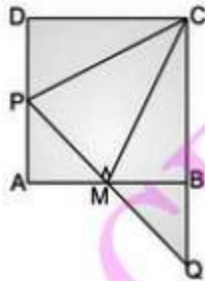
16. $\Delta ABCD$ is a quadrilateral in which $AD = BC$ and $\angle DAB = \angle CBA$. Prove that $BD = AC$.



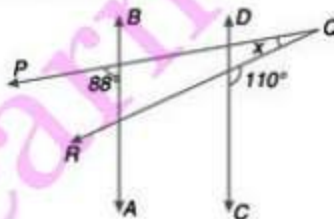
17. In the given figure, if $\angle B > \angle A$ and $\angle C > \angle D$, show that $AD > BC$.



18. In the given figure, $ABCD$ is a square and M is the mid point of AB . $PQ \perp CM$ meets AD at P and CB produced at Q . Prove that $PA = BQ$.



19. In figure, if $AB \parallel CD$, then find the measure of x .



20. Sides of a triangle are in the ratio of $12 : 17 : 25$ and its perimeter is 540 cm.
- Find its area.
 - Which mathematical concept is used in this problem ?
 - What is its value ?

SECTION 'D'

Question numbers 21 to 31 carry four marks each.

21. Rationalise the denominator of $\frac{1}{(\sqrt{2} + \sqrt{3}) - \sqrt{4}}$.

OR

If $x = \frac{5 - \sqrt{21}}{2}$, then find the value of $\left(x^3 + \frac{1}{x^3}\right) - 5\left(x^2 + \frac{1}{x^2}\right) + \left(x + \frac{1}{x}\right)$.

22. If $\frac{9^{n+1}(3^{-n/2})^{-2} - 27^n}{(3^m \times 3)^3} = \frac{1}{729}$, Prove that $m - n = 2$.

23. If $ab + bc + ca = 36$ and $a^2 + b^2 + c^2 = 85$, then find $a + b + c$.

24. If $(x + 1)$ and $(x - 1)$ are factors of $ax^3 + x^2 - 2x + b$, then find the values of a and b . Also find the third factor.

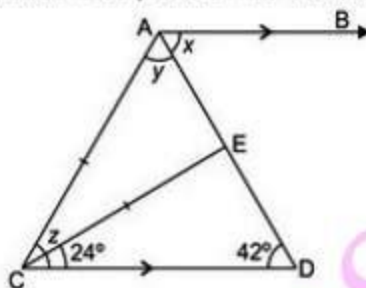
25. Factorise : $y^3 - 2y^2 - 29y - 42$.

26. Plot the following points, join them in order and identify the figure thus formed :

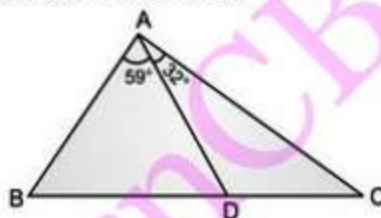
$A(1, 3)$, $B(1, -1)$, $C(7, -1)$ and $D(7, 3)$.

Write the co-ordinate of the point of intersection of diagonals.

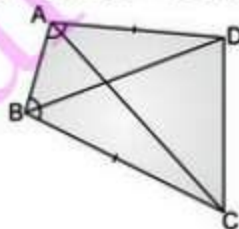
27. In the given figure, $AB \parallel CD$, $\angle ECD = 24^\circ$, $\angle EDC = 42^\circ$ and $AC = CE$. Find x , y and z .



28. In the given figure, $AD = BD$. Prove that $BD < AC$.



29. In figure, $ABCD$ is a quadrilateral in which $AD = BC$ and $\angle DAB = \angle CBA$.



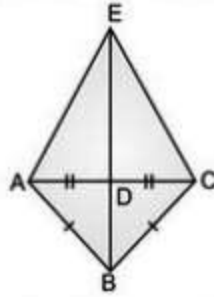
Prove that :

(i) $\triangle ABD \cong \triangle BAC$

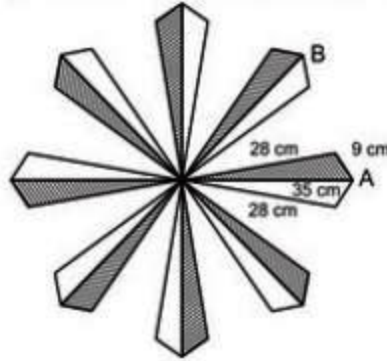
(ii) $BD = AC$

(iii) $\angle ABD = \angle BAC$.

30. In the given figure, $AB = BC$, $AD = CD$. Prove that $\angle ADE$ is a right angle and AE and EC are equal.



31. A floral design on a floor is made up of 16 tiles which are triangular. The sides of the triangle being 9 cm, 28 cm and 35 cm (see figure). Find the cost of polishing the tiles at the rate of 50 p per cm^2 .



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