

SAMPLE QUESTION PAPER - 10

Self Assessment _____

Time : 3 Hours

Maximum Marks : 90

SECTION 'A'

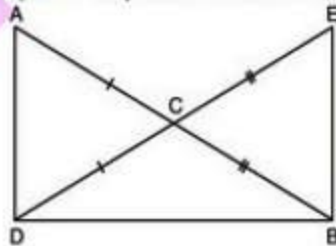
Question numbers 1 to 4 carry one mark each. For each question four alternative choices have been provided of which only one is correct. You have to select the correct choice.

- The number $(\sqrt{2} + \sqrt{5})^2$ is :
(A) not a real number (B) rational number (C) an integer (D) irrational number
- One of the factor of $(9x^2 - 1) - (1 + 3x)^2$ is :
(A) $(3 + x)$ (B) $(3 - x)$ (C) $(3x - 1)$ (D) $(3x + 1)$
- The value of p , if $x = 2$ is a zero of the polynomial $2x^2 + 3x - p$ is :
(A) -4 (B) 8 (C) 14 (D) 0
- The coefficient of x^2 in $(2x^2 - 5)(4 + 3x^2)$ is :
(A) 2 (B) 3 (C) 8 (D) -7

SECTION 'B'

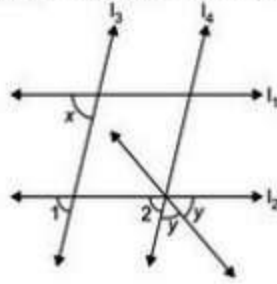
Question numbers 5 to 10 carry two marks each.

- Insert three rational numbers between $\frac{3}{5}$ and $\frac{5}{7}$.
- Find the remainder when $x^3 + x^2 + x + 1$ is divided by $x - \frac{1}{2}$, using remainder theorem.
- If $\left(\frac{8}{15}\right)^3 - \left(\frac{1}{3}\right)^3 - \left(\frac{1}{5}\right)^3 = \frac{x}{75}$, find x .
- In the given figure $AC = DC$, $CB = CE$, show that $AB = DE$.



Write Euclid axiom to support this.

9. In the given figure, if $l_1 \parallel l_2$ and $l_3 \parallel l_4$, what is y in terms of x ?



OR

In $\triangle ABC$, $\angle A + \angle B = 65^\circ$ and $\angle B + \angle C = 140^\circ$, find the value of $\angle B$ and $\angle C$.

10. The longest side of a right triangle is 90 cm and one of the remaining two sides is 54 cm. Find its area.

SECTION 'C'

Question numbers 11 to 20 carry three marks each.

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

OR

Prove that: $\frac{a^{-1}}{a^{-1} + b^{-1}} + \frac{a^{-1}}{a^{-1} - b^{-1}} = \frac{-(2b^2)}{a^2 - b^2}$.

12. If $5^{2x-1} - (25)^{x-1} = 2500$, then find the value of x .

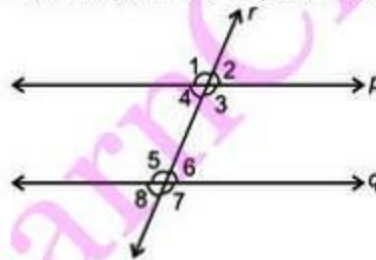
13. Find the value of $p^3 - q^3$, if $p - q = \frac{10}{9}$ and $pq = \frac{5}{3}$.

OR

Factorise: $\frac{1}{64}x^3 - 8y^3 + \frac{3}{16}x^2y - \frac{3}{2}xy^2$.

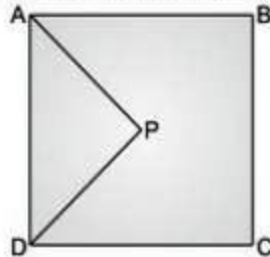
14. Factorise: $x^4 + 2x^3y - 2xy^2 - y^4$.

15. In the figure, if $p \parallel q$ and $\angle 1 = 2x + 90^\circ$, $\angle 6 = 70^\circ - x$, then find the measure of $\angle 4$ and $\angle 8$.

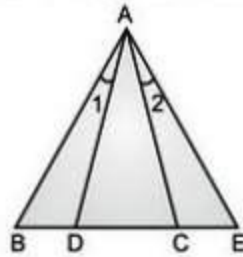


OR

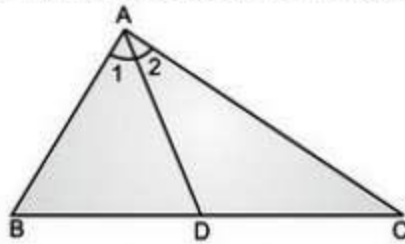
In the given figure, AP and DP are bisectors of $\angle A$ and $\angle D$. Prove that $2\angle APD = \angle B + \angle C$.



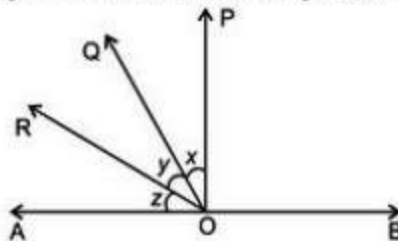
16. In figure, $\angle B = \angle E$, $BD = CE$ and $\angle 1 = \angle 2$. Show that $\triangle ABC \cong \triangle AED$.



17. In the given figure, $AC > AB$ and AD is the bisector of $\angle A$. Show that $\angle ADC > \angle ADB$.



18. ABC is a right triangle and right angled at B such that $\angle BCA = 2\angle BAC$. Show that hypotenuse $AC = 2BC$.
19. In the figure, $PO \perp AB$. If $x : y : z = 1 : 3 : 5$, then find x , y and z .



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. Simplify the following by rationalising the denominators

$$\frac{2\sqrt{6}}{\sqrt{2} + \sqrt{3}} + \frac{6\sqrt{2}}{\sqrt{6} + \sqrt{3}} + \frac{8}{\sqrt{6} + \sqrt{2}}$$

OR

If $\frac{(\sqrt{5} + \sqrt{3})}{\sqrt{5} - \sqrt{3}} + \frac{7(\sqrt{5} - 2\sqrt{3})}{\sqrt{5} + 2\sqrt{3}} = a - \sqrt{15} b$, find the values of a and b .

22. You know that $\frac{1}{7} = 0.142857$. Can you predict the decimal expansions of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}, \frac{6}{7}$, without actually doing the long division? If so, how?
23. Let p and q be the remainders, when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively. If $2p + q = 6$, find the value of a .

24. Prove that :

$$(x + y)^3 + (y + z)^3 + (z + x)^3 - 3(x + y)(y + z)(z + x) = 2(x^3 + y^3 + z^3 - 3xyz)$$

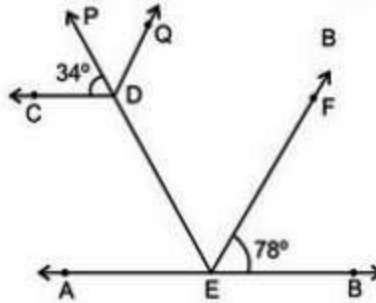
25. Factorise : $4x^3 + 12x^2 - x - 3$.

26. Plot the points $A(1, -1)$ and $B(4, 5)$.

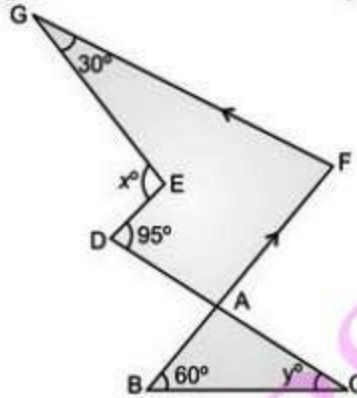
(i) Draw a line segment joining these points. Write the co-ordinates of a point on this line segment between the points A and B .

(ii) Extend this line segment and write the co-ordinates of a point on this line which lies outside the line segment AB .

27. In the below figure, $AB \parallel CD$ and $EF \parallel DQ$. Determine $\angle PDQ$, $\angle AED$ and $\angle DEF$.

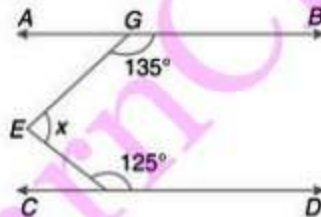


28. In below figure, $DE \parallel AF$, $AD \parallel FG$, find the values of x° and y° .

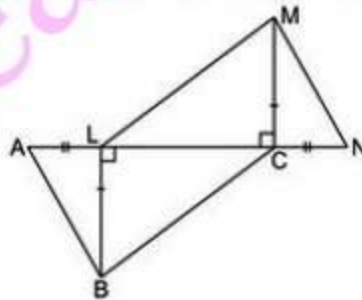


OR

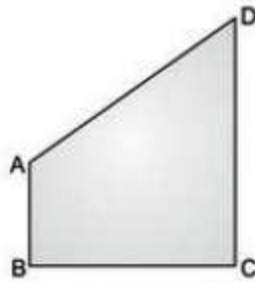
In the figure, $AB \parallel CD$, then find x .



29. In the given figure, $BL \perp AC$, $MC \perp LN$, $AL = CN$ and $BL = CM$. Prove that $\triangle ABC \cong \triangle NML$.



30. AB and CD are respectively the smallest and longest sides of a quadrilateral $ABCD$. Show that $\angle A > \angle C$ and $\angle B > \angle D$.



31. There is a slide in a park. One of its side wall has been painted in blue colour with a message "KEEP THE PARK GREEN AND CLEAN", (see figure). If the sides of the walls are 15 m, 11 m and 6 m, find the area painted in colour.



LearnCBSE.in