

1. Do all the questions:-

1 If $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, then find the value of $x^2 + y^2$.

2 If both $x - 2$ and $x - \frac{1}{2}$ are factors of $px^2 + 5x + r$, show that $p = r$.

3 Verify that

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$$

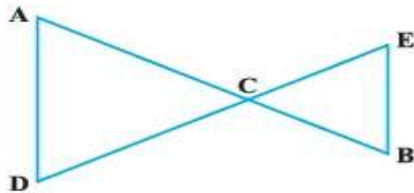
4 Factorise:

(i) $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$

(ii) $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$

5 In the Fig. 5.10, we have

$AC = DC$, $CB = CE$. Show that $AB = DE$.



6 In the Fig. 5.12 :

(i) $AB = BC$, M is the mid-point of AB and N is the mid-point of BC. Show that $AM = NC$.

(ii) $BM = BN$, M is the mid-point of AB and N is the mid-point of BC. Show that $AB = BC$.

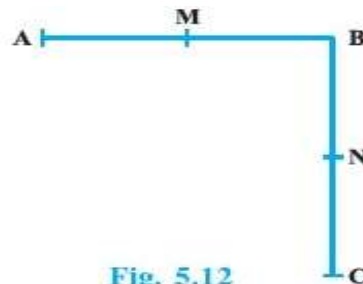


Fig. 5.12

7

Bisectors of interior $\angle B$ and exterior $\angle ACD$ of a ΔABC intersect at the point T. Prove that

$$\angle BTC = \frac{1}{2} \angle BAC.$$

8

In triangles ABC and PQR, $\angle A = \angle Q$ and $\angle B = \angle R$. Which side of ΔPQR should be equal to side AB of ΔABC so that the two triangles are congruent? Give reason for your answer.

- 9 AP and BQ are the bisectors of the two alternate interior angles formed by the intersection of a transversal t with parallel lines l and m (Fig. 6.11). Show that $AP \parallel BQ$.

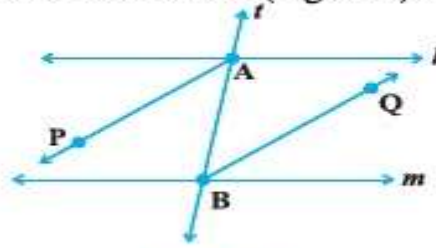


Fig. 6.11

- 10 CDE is an equilateral triangle formed on a side CD of a square ABCD (Fig.7.5). Show that $\triangle ADE \cong \triangle BCE$.

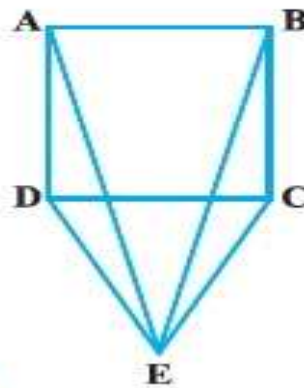


Fig. 7.5

- 11 . In Fig. 10.9, $\angle AOB = 90^\circ$ and $\angle ABC = 30^\circ$, then $\angle CAO$ is equal to:
 (A) 30° (B) 45° (C) 90° (D) 60°

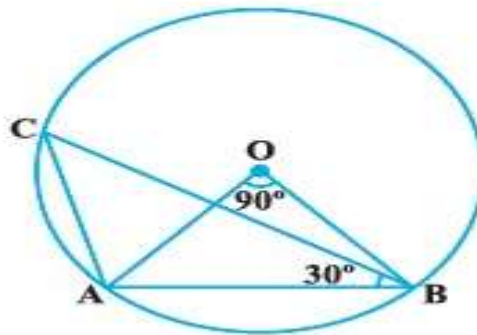


Fig. 10.9

- 12 Two equal chords AB and CD of a circle when produced intersect at a point P. Prove that $PB = PD$.
- 13 A quadrilateral ABCD is inscribed in a circle such that AB is a diameter and $\angle ADC = 130^\circ$. Find $\angle BAC$.
- 14 A cylindrical roller 2.5 m in length, 1.75 m in radius when rolled on a road was found to cover the area of 5500 m^2 . How many revolutions did it make?
- 15 A cylindrical tube opened at both the ends is made of iron sheet which is 2 cm thick. If the outer diameter is 16 cm and its length is 100 cm, find how many cubic centimeters of iron has been used in making the tube ?

- 16 If the mean of the following data is 20.2, find the value of p :

x	10	15	20	25	30
f	6	8	p	10	6

- 17 Ten observations 6, 14, 15, $\hat{17}$, $x + 1$, $2x - 13$, 30, 32, 34, 43 are written in an ascending order. The median of the data is 24. Find the value of x .

- 18 The marks obtained (out of 100) by a class of 80 students are given below :

Marks	Number of students
10 - 20	6
20 - 30	17
30 - 50	15
50 - 70	16
70 - 100	26

Construct a histogram to represent the data above.