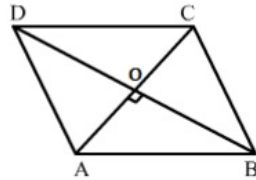




### Exercise 16A

Q10

Answer :



Let  $ABCD$  be a rhombus.

Let  $AC$  and  $BD$  be the diagonals of the rhombus intersecting at a point  $O$ .

Let  $AC = 16$  cm

$BD = 12$  cm

We know that the diagonals of a rhombus bisect each other at right angles.

$$\therefore AO = \frac{1}{2} AC$$

$$= \left( \frac{1}{2} \times 16 \right) \text{ cm}$$

$$= 8 \text{ cm}$$

$$BO = \frac{1}{2} BD$$

$$= \left( \frac{1}{2} \times 12 \right) \text{ cm}$$

$$= 6 \text{ cm}$$

From the right  $\triangle AOB$  :

$$AB^2 = AO^2 + BO^2$$

$$= \left\{ (8)^2 + (6)^2 \right\} \text{ cm}^2$$

$$= (64 + 36) \text{ cm}^2$$

$$= 100 \text{ cm}^2$$

$$\Rightarrow AB = \sqrt{100} \text{ cm}$$

$$= 10 \text{ cm}$$

Hence, the length of the side  $AB$  is 10 cm.

$$AB = BC = CD = DA = 10 \text{ cm} \quad \left( \text{all sides of a rhombus are equal} \right)$$

Q11

Answer :

Refer to the figure given in the book.

In  $\triangle ADC$  :

$$DA = DC \quad \left( \text{all sides of a square are equal} \right)$$

$$\Rightarrow \angle ACD = \angle CAD$$

$$\text{Let } \angle ACD = \angle CAD = x^\circ \quad \left[ \text{Angle opposite to the equal sides are equal} \right]$$

$$x + x + 90 = 180 \quad [\text{since the sum of the angles of a triangle is } 180^\circ]$$

$$\Rightarrow 2x + 90 = 180$$

$$\Rightarrow 2x = 90$$

$$\Rightarrow x = \frac{90}{2}$$

$$\Rightarrow x = 45$$

$$\therefore \angle CAD = 45^\circ$$

Q12

Answer :

Let the length of two sides of the rectangle be  $5x$  cm and  $4x$  cm, respectively.

Then, its perimeter =  $2(5x + 4x)$  cm

$$= 18x \text{ cm}$$

$$\therefore 18x = 90$$

$$\Rightarrow x = \frac{90}{18}$$

$$\Rightarrow x = 5$$

Length of one side  $\Rightarrow (5 \times 5)$  cm = 25 cm

Length of the other side  $\Rightarrow (4 \times 5)$  cm = 20 cm

$\therefore$  Length of the rectangle = 25 cm

Breadth = 20 cm

Q13

Answer :

(i) The diagonals are equal and the adjacent sides are unequal.

Hence, the given parallelogram is a rectangle.

(ii) The diagonals are equal and the adjacent sides are equal.

Hence, the given parallelogram is a square.

(iii) The diagonals are unequal and the adjacent sides are equal.

Hence, the given parallelogram is a rhombus.

(iv) All the sides are equal and one angle is  $60^\circ$ .

Hence, the given parallelogram is a rhombus.

(v) All the sides are equal and one angle is  $90^\circ$ .

Hence, the given parallelogram is a square.

(vi) All the angles are equal and the adjacent sides are unequal.

Hence, the given parallelogram is a rectangle.

Q14

Answer :

(i) The given statement is false.

The diagonals of a parallelogram bisect each other, but they are not equal in length.

(ii) The given statement is false.

The diagonals of a rectangle are equal and bisect each other, but they are not perpendicular.

(iii) The given statement is false.

All the sides of a rhombus are equal, but the diagonals are not equal.

(iv) The given statement is true.

(v) The given statement is false.

Every square is a rectangle, but every rectangle is not a square.

(vi) The given statement is true.

(vii) The given statement is true.

(viii) The given statement is true.

(ix) The given statement is false.

A rectangle is a special type of parallelogram, but every parallelogram is not a rectangle.

(x) The given statement is true.

\*\*\*\*\* END \*\*\*\*\*