

# Quadrilaterals

## Exercise 17A

Q1

**Answer :**

- (i) The diagonals are AC and BD.
- (ii) AB and CD, and AD and BC are the two pairs of opposite sides.
- (iii)  $\angle A$  and  $\angle C$ , and  $\angle B$  and  $\angle D$  are the two pairs of opposite angles.
- (iv) AB and BC, and AD and DC are the two pairs of adjacent sides.
- (v)  $\angle A$  and  $\angle B$ , and  $\angle C$  and  $\angle D$  are the two pairs of adjacent angles.

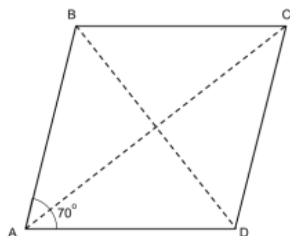
Q2

**Answer :**

Since ABCD is a parallelogram,  $AB = DC = 6.5$  cm and  $AD = BC = 4.8$  cm.

Given:

$\angle A = 70^\circ$



Steps of construction :

- 1) Draw AD equal to 4.8 cm.
- 2) Make an angle of  $70^\circ$  at A and cut an arc of 6.5 cm. Name it B.
- 3) Cut an arc of 4.8 cm from B and 6.5 cm from D. Name it C.
- 4) Join AB, BC and CD.
- 5) Measuring the diagonals AC and BD, we get AC equal to 9.2 cm and BD equal to 6.6 cm.

Q3

**Answer :**

Two sides of a parallelogram are in the ratio 4:3.

Let the two sides be  $4x$  and  $3x$ .

In a parallelogram, opposite sides are equal and parallel. So, they are also in the ratio of 4:3, i.e.  $4x$  and  $3x$ .

$$\text{Perimeter} = 4x + 3x + 4x + 3x$$

$$56 = 14x$$

$$x = \frac{56}{14}$$

$$x = 4$$

$$\therefore 4x = 16$$

$$3x = 12$$

Length of its sides are 16cm, 12 cm, 16cm and 12cm.

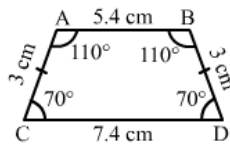
Q4

**Answer :**

- (i) Rectangle
- (ii) Square
- (iii) Rhombus

Q5

**Answer :**



A trapezium has only one pair of parallel sides.

A trapezium is said to be an isosceles trapezium if its non-parallel sides are equal.

Following are the measures of the isosceles trapezium:

$$AB = 5.4 \text{ cm}$$

$$BC = 3 \text{ cm}$$

$$DC = 7.4 \text{ cm}$$

$$AD = 3 \text{ cm}$$

$$\angle A = \angle B = 110^\circ \angle D = \angle C = 70^\circ$$

Q6

**Answer :**

- (a) False
- (b) False
- (c) False

Q7

**Answer :**

- (a) This is because a rectangle with equal sides becomes a square.
- (b) This is because a rhombus with each angle a right angle becomes a square.
- (c) This is because a parallelogram with each angle a right angle becomes a rectangle.
- (d) This is because in a square opposite sides are parallel.

Q8

**Answer :**

A square is a regular quadrilateral all of whose sides are equal in length and all of whose angles are equal in measure.

# Quadrilaterals

## Exercise 17B

Q1

**Answer :**

(c)  $360^\circ$

The sum of all the angles of a quadrilateral is  $360^\circ$ .

Q2

**Answer :**

(c)  $90^\circ$

The three angles of a quadrilateral are  $80^\circ$ ,  $70^\circ$  and  $120^\circ$ .

Let the fourth angle be  $x$ .

We know that the sum of all the angles of a quadrilateral is  $360^\circ$ .

$$80^\circ + 70^\circ + 120^\circ + x = 360^\circ$$

$$\Rightarrow 270^\circ + x = 360^\circ$$

$$\Rightarrow x = 360^\circ - 270^\circ$$

$$\Rightarrow x = 90^\circ$$

Thus, the fourth angle is  $90^\circ$ .

Q3

**Answer :**

Let the angles of a quadrilateral be  $(3x)^\circ$ ,  $(4x)^\circ$ ,  $(5x)^\circ$  and  $(6x)^\circ$ .

Sum of all the angles of a quadrilateral is  $360^\circ$ .

$$\therefore 3x + 4x + 5x + 6x = 360^\circ$$

$$\Rightarrow 18x = 360^\circ$$

$$\Rightarrow x = \frac{360}{18}$$

$$\Rightarrow x = 20^\circ$$

So,

$$3x = 60^\circ$$

$$4x = 80^\circ$$

$$5x = 100^\circ$$

$$6x = 120^\circ$$

The largest of these angles is  $120^\circ$ .

So, the correct answer is given in option (b).

Q4

**Answer :**

(d) a trapezium

A trapezium is a quadrilateral that has only one pair of parallel sides.

Q5

**Answer :**

(d) a parallelogram

A parallelogram is a quadrilateral whose opposite sides are parallel.

Q6

**Answer :**

(b) equal nonparallel sides

The non-parallel sides of an isosceles trapezium are equal.

Q7

**Answer :**

(b) a rhombus

The diagonals of a rhombus bisect each other at right angle.

Q8

**Answer :**

(b) all sides equal and diagonals equal

In a square, all the sides are equal. All of its diagonals are also equal.

Q9

**Answer :**

(c) kite

A kite has two pairs of equal adjacent sides, but unequal opposite sides.

Q10

**Answer :**

(c) A square

The only regular quadrilateral is a square. This is because all of its sides and angles are equal.