Quadrilaterals
Exercise 17A

Q1

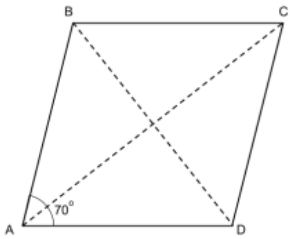
Answer :

(i) The diagonals are AC and BD.
(ii) AB and CD, and AD and BC are the two pairs of opposite sides.
(iii) ∠A and ∠C, and ∠B and ∠D are the two pairs of opposite angles.
(iv) AB and BC, and AD and DC are the two pairs of adjacent sides.
(v) ∠A and ∠B, and ∠C and ∠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:
∠A = 70°



Steps of construction :
1) Draw AD equal to 4.8 cm.
2) Make an angle of 70° 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.
Perimeter = 4x + 3x + 4x +3x

$$56 = 14x$$

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

$$x = 4$$

∴ 4x = 16
3x = 12
Length of its sides are 16cm, 12 cm, 16cm and 12cm.

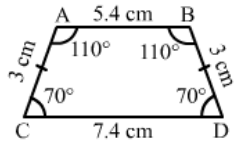
Q4

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 cm
BC = 3 cm
DC = 7.4 cm
AD = 3 cm

∠A =∠B =110°∠D = ∠C = 70°

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°

The sum of all the angles of a quadrilateral is 360°.

Q2

Answer :

(c) 90°

The three angles of a quadrilateral are 80°, 70° and 120°.

Let the fourth angle be x.

We know that the sum of all the angles of a quadrilateral is 360°.

$$80° + 70° + 120° + x = 360°$$
$$\Rightarrow 270° + x = 360°$$
$$\Rightarrow x = 360° - 270°$$
$$\Rightarrow x = 90°$$

Thus, the fourth angle is 90°.

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°.

$\therefore 3x + 4x + 5x + 6x = 360°$

$\Rightarrow 18x = 360°$

$\Rightarrow x = \_36018$

$\Rightarrow x = 20°$

So,

$3x = 60°$

$4x = 80°$

$5x = 100°$

$6x = 120°$

The largest of these angles is 120°.

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.