# Quadrilaterals

**Answer :**

(i) 4
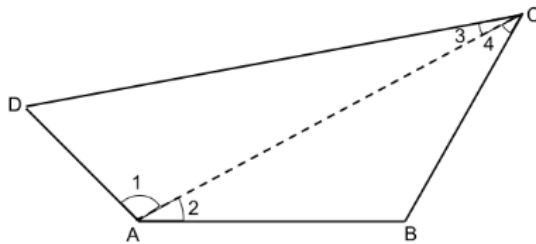
(ii) 4

(iii) 4, co-linear

(iv) 2

(v) opposite

(vi) 360°

Q2.

**Answer :**

(i) There are four pairs of adjacent sides, namely (AB,BC), (BC,CD), (CD,DA) and (DA,AB).

(ii) There are two pairs of opposite sides, namely (AB,DC) and (AD,BC).

(iii) There are four pairs of adjacent angles, namely ∠A,∠B, ∠B, ∠C, ∠C,∠D and ∠D,∠A.

(iv) There are two pairs of opposite angles, namely ∠A,∠C and ∠B,∠D.

**Answer :**

(v) There are two diagonals, namely AC and BD.

Q3.



Let *ABCD* be a quadrilateral.

Join *A* and *C*.

Now, we know that the sum of the angles of a triangle is 180°.

For △ABC: ∠2+∠4+∠B=180o        ... (1)

For △ADC: ∠1+∠3+∠D=180o      ... (2)

For $\triangle ADC$ :

$$\angle 1 + \angle 3 + \angle D = 180^o \qquad \dots (2)$$

Adding (1) and (2):

$$(\angle 1 + \angle 2 + \angle 3 + \angle 4) + \angle B + \angle D = 360^o$$

or $\angle A + \angle B + \angle C + \angle D = 360^o$

Hence, the sum of all the angles of a quadrilateral is 360°.

Q4.

**Answer :**

Sum of all the four angles of a quadrilateral is 360°.

Let the unknown angle be x°.76+54+108+x=360238+x=360x=122

The fourth angle measures 122°.

Q5

**Answer :**

Let the measures of the angles of the given quadrilateral be (3x)°,(5x)°,(7x)° and (9x)°. Sum of all the angles of a quadrilateral is 360o.∴3x+5x+7x+9x=36024x=360x=15

Angles measure: (3×15)°=45°(5×15)°=75°(7×15)°=105°(9×15)°=135°

Q6

**Answer :**

Sum of the four angles of a quadrilateral is 360°.

If the unknown angle is x°, then:

75+75+75+x=360x=360-225=135

The fourth angle measures 135°.

Q7.

**Answer :**

Let the three angles measure x° each.

Sum of all the angles of a quadrilateral is 360°.

∴ x+x+x+120=3603x+120=3603x=240x=2403=80

Each of the equal angles measure 80°.

**Answer :**

Sum of the angles of a quadrilateral is 360°.
∴∠A+∠B+60o+100o=360°∠A+∠B=360-100-
60=200°or12∠A+∠B=100°        ... (1)Sum of the angles of a triangle is 180°.In △APB: 12∠A+∠B+∠P=180°
Using equation (1):100°+∠P=180°⇒∠P=80°

∴ ∠APB=80°