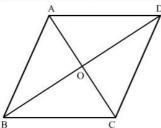


Triangles Ex 4.7 Q14

Answer:

We know that a quadrilateral is said to a rhombus if all sides of the quadrilateral are equal. Diagonals of a rhombus bisect each other at right angles.

Quadrilateral ABCD is a rhombus and diagonals AC and BD intersect at point O.



As we defined above, we get AB=BC=CD=AD, AO=OC, BO=OD and angle $\angle AOD=\angle AOB=\angle BOC=\angle COD=90^{\circ}$.

We are given that AC = 10 cm and BD = 24 cm.

Therefore, we get, AO = OC = 5 cm and BO = OD = 12 cm.

Now we will use Pythagoras theorem in the right angled triangle AOD as below,

$$AD^2 = AO^2 + OD^2 \dots (1)$$

Now we will substitute the values of AO and OD in equation (1) we get,

$$AD^2 = 5^2 + 12^2$$

$$AD^2 = 25 + 144$$

$$AD^2 = 169$$

Let us take the square root

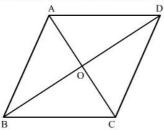
Therefore, length of the side of the rhombus is 13cm

Triangles Ex 4.7 Q15

Answer:

We know that a quadrilateral is said to a rhombus if all sides of the quadrilateral are equal. Diagonals of a rhombus bisect each other at right angles.

Quadrilateral ABCD is a rhombus and diagonals AC and BD intersect at point O.



As we defined above, we get AB = BC = CD = AD, AO = OC, BO = OD and angle $\angle AOD = \angle AOB = \angle BOC = \angle COD = 90^{\circ}$

We are given that AB = 10 cm and AC = 16 cm. Now we will find length of BD.

As we know the definition of rhombus we get AB = BC = CD = AD. Therefore, we get, AB = BC = CD = AD = 10 cm

Also we know that diagonals of rhombus bisect each other at right angles therefore, we get,

$$AO = OC$$

$$BO = OD$$

and
$$\angle AOD = \angle AOB = \angle BOC = \angle COD = 90^{\circ}$$

Here, we know the length of AC therefore, we get, $AO = OC = 8 \ cm$.

Now we will use Pythagoras theorem in the right angled triangle AOD as below,

$$AD^2 = AO^2 + OD^2 \dots (1)$$

Now we will substitute the values of AD and AO in equation (1) we get,

$$10^2 = 8^2 + OD^2$$

$$100 = 64 + OD^2 \cdot \cdot \cdot \cdot (2)$$

Now we will subtract 64 from both sides of the equation (2)

$$OD^2 = 100 - 64$$

$$OD^2 = 36$$

Now we will take the square root.

OD = 6

We know that BD = 20D

$$\therefore BD = 2 \times 6$$

$$\therefore BD = 12$$

Therefore, length of the other diagonal is 12 cm