MATHEMATICS

Class-7th

Chapter-6

The Triangle and its properties

Solution of Exercise-6.5

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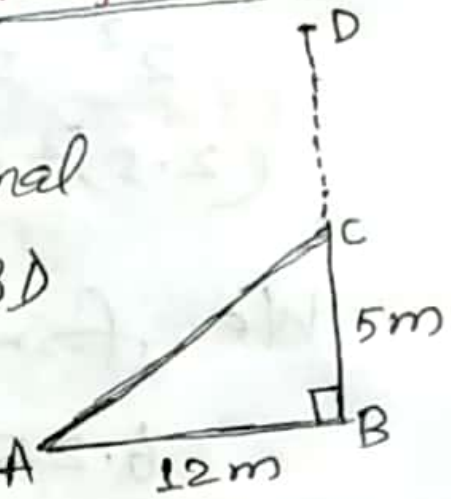
Mathematics

"Class - VII" "Ch - 06" "Triangle and its Properties."

Ex - 6.5

8.5. Sol. Let the original height of tree be BD and tree is broken at point C, at a height of 5 m from the ground.



Let top of the tree D touches the ground at point A, 12 m away from the base of the tree.

Since it is from a right-angled triangle $\triangle ABC$

Now, using Pythagoras property

$$AC^2 = AB^2 + BC^2$$

$$= (12)^2 + (5)^2$$

$$= 144 + 25$$

$$= 169$$

Now, $AC = \sqrt{169}$

$$= \sqrt{13 \times 13}$$

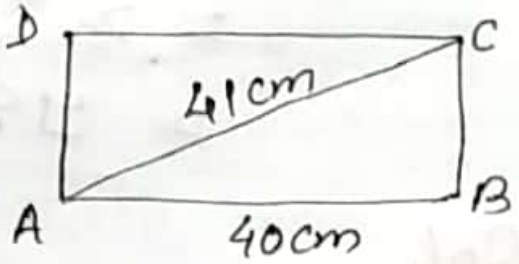
$\Rightarrow$ Ac = 13 m.

Hence, Original height of the tree

= Bc + cA

= 5m + 13m = 18m. Ans

Q. 7. Sol:



Let rectangle be ABCD in which length AB = 40cm

And diagonal Ac = 41 cm,

Now, in right-angled ΔABC;

Using Pythagoras property, we have

$$AC^2 = AB^2 + BC^2$$

$$\Rightarrow (41)^2 = (40)^2 + BC^2$$

$$\Rightarrow 1681 = 1600 + BC^2$$

$$\Rightarrow 1681 - 1600 = BC^2$$

$$\Rightarrow 81 = BC^2$$

$$\Rightarrow \sqrt{81} = BC$$

$$\Rightarrow \sqrt{9 \times 9} = BC = 9$$

$$\Rightarrow BC = 9 \text{ cm}$$

Perimeter of rectangle ABCD

$= 2 \times (\text{length} + \text{breadth})$.

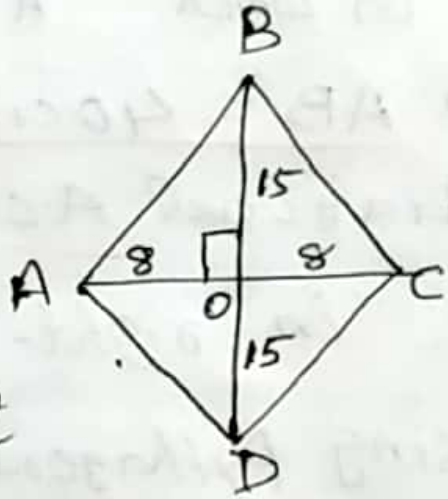
$= 2 \times (AB + BC)$

$= 2 \times (40 + 9)$

$= 2 \times 49$

$= 98$ cm. Ans.

Q. 8. Sol.



Let rhombus be ABCD in which diagonals AC and BD intersect at point O.

Here, $AC = 16$ cm & $BD = 30$ cm.

Diagonals of a rhombus bisect each other at right angle.

$\therefore AO = OC = \frac{1}{2} AC = \frac{1}{2} \times 16 = 8$ cm.

And $OB = OD = \frac{1}{2} BD = \frac{1}{2} \times 30 = 15$ cm

Now, in right angled $\triangle AOB$;

Using Pythagoras property,

$AB^2 = OA^2 + OB^2$

$= 8^2 + 15^2$

$= 64 + 225 = 289$

$\Rightarrow AB^2 = 289$

$\Rightarrow AB = \sqrt{289} = \sqrt{17 \times 17}$

$\Rightarrow AB = 17$ cm

In rhombus; all sides are of equal length.

$\therefore AB = BC = CD = AD = 17$ cm

Now, perimeter of rhombus

$= 4 \times$ Side

$= 4 \times 17$ cm

$= 68$ cm.

Hence, Perimeter of given rhombus $= 68$ cm.

The End.