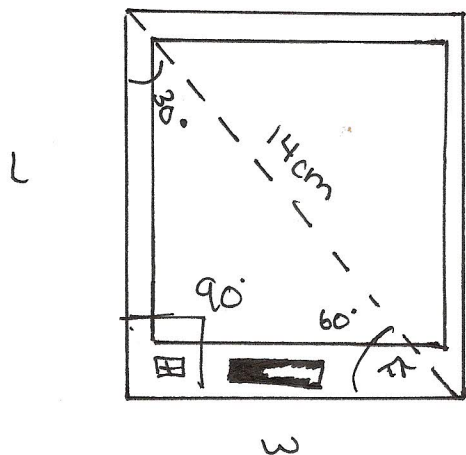


Practice Problem #1

The company DSAR Corp. International just released a new phone. They want to calculate its dimensions but don't have the length and width. All they know is that the diagonal of the phone is 14cm and the phone is a rectangle. Find the length and width. *(Also the other 2 \angle 's are 30° and 60°) \leftarrow Hint



$$\begin{aligned} 30-60-90 & \quad L=7 \checkmark \\ x-x\sqrt{3}-2x & \\ 2x=14 & \quad w=x\sqrt{3} \\ x=7 & \quad w=7\sqrt{3} \checkmark \end{aligned}$$

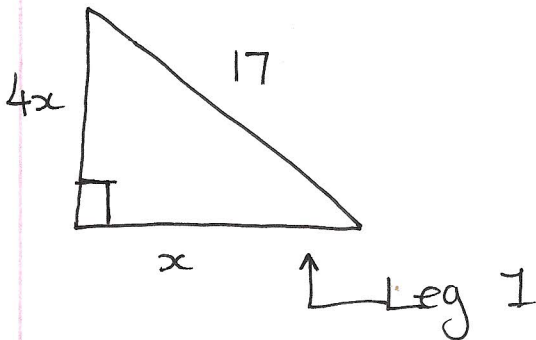
Answer:

We know that it forms a $30-60-90$ triangle which has the side ratios of $x-x\sqrt{3}-2x$. We can also see that the 14 corresponds with the $2x$ so $2x=14$. This means that x or the width is equal to 7. Then the length corresponds to $x\sqrt{3}$ so the length must be $7\sqrt{3}$. So our answer is...

$$\begin{aligned} \text{Length} &= 7\sqrt{3} \\ \text{width} &= 7 \end{aligned}$$

Practice Problem #2

The legs of a right triangle have a ratio of 4:1. The hypotenuse is 17. Find the length of the legs.



Solve:

$$x^2 + (4x)^2 = 17^2$$

$$x^2 + 16x^2 = 289$$

$$17x^2 = 289$$

$$x^2 = 17$$

$$x = \sqrt{17}$$

$$4x = 4\sqrt{17}$$

Explanation

To solve this we start with the Pythagorean Theorem. Then we implement the 4:1 ratio into the legs to make them $4x$ and x . Then using the PT, we get $(x)^2 + (4x)^2 = 17^2$. By simplifying this we get that $x = \sqrt{17}$. So if $x = \sqrt{17}$, the side 4 times larger than it must be $4\sqrt{17}$. Our final answer is...

$$\text{Leg 1} = \sqrt{17}$$

$$\text{Leg 2} = 4\sqrt{17}$$