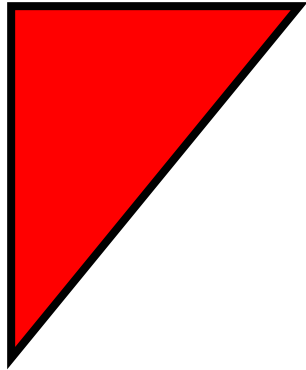


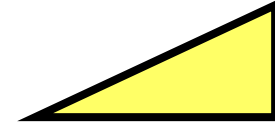


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Special Right Triangles



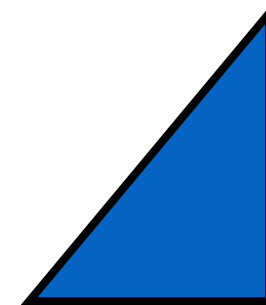
*You will be able to find the lengths of sides of special right triangles



45-45-90

And

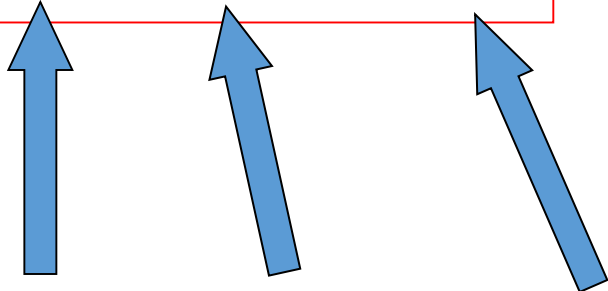
30-60-90





Special Right Triangles

$45^\circ - 45^\circ - 90^\circ$

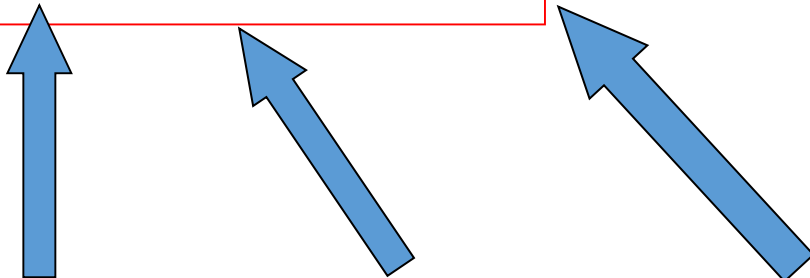


Leg:Leg:Hypotenuse

$1:1:\sqrt{2}$

$x:x:x\sqrt{2}$

$30^\circ - 60^\circ - 90^\circ$



Short Leg:Long Leg:Hypotenuse

$1:\sqrt{3}:2$

$x:x\sqrt{3}:2x$



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In a 45-45-90 triangle...

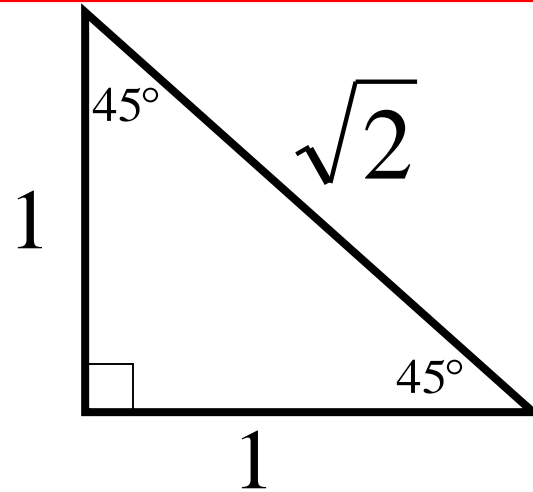
LEGS ARE THE SAME LENGTH

**We will use a reference triangle
to set up a proportion then solve.**



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45-45-90 Right Triangle

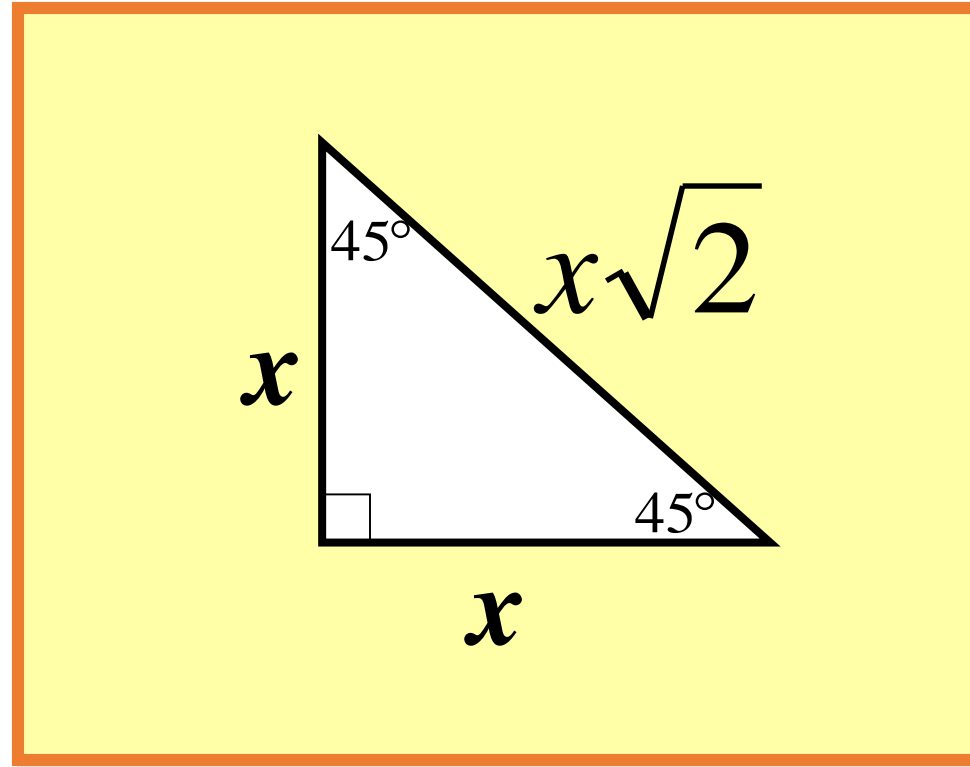


This is our reference triangle for
the 45-45-90.



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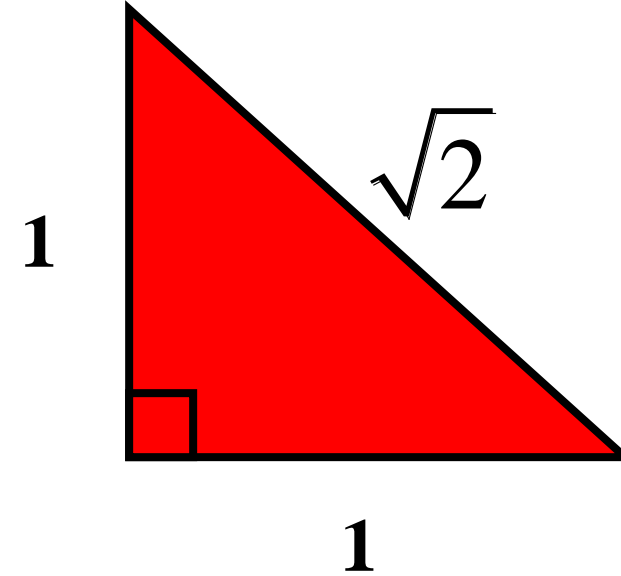
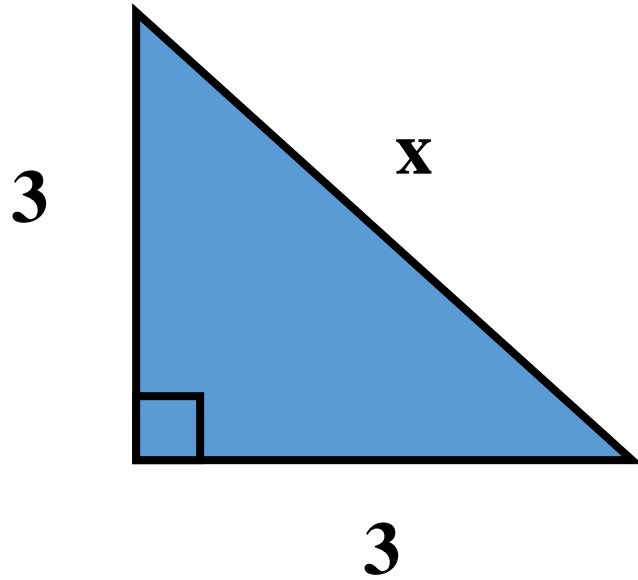
45-45-90 Right Triangle





EX: 1 Solve for x
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Let's set up a proportion by using our reference triangle.



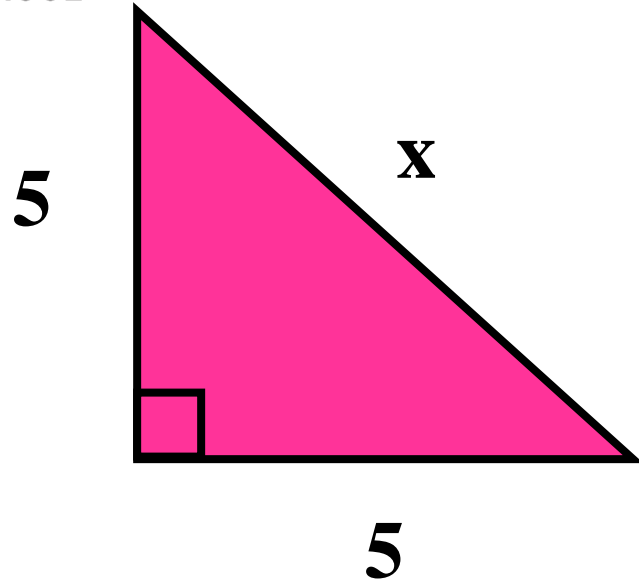
$$\frac{3}{1} = \frac{x}{\sqrt{2}}$$

$$x = 3\sqrt{2}$$



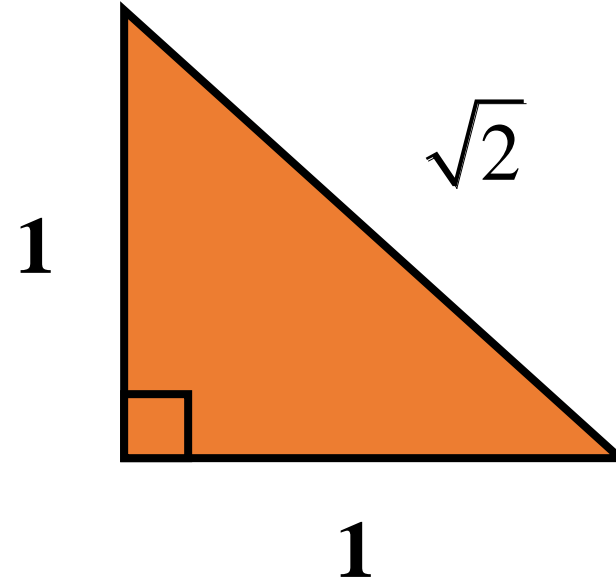
EX: 2 Solve for x

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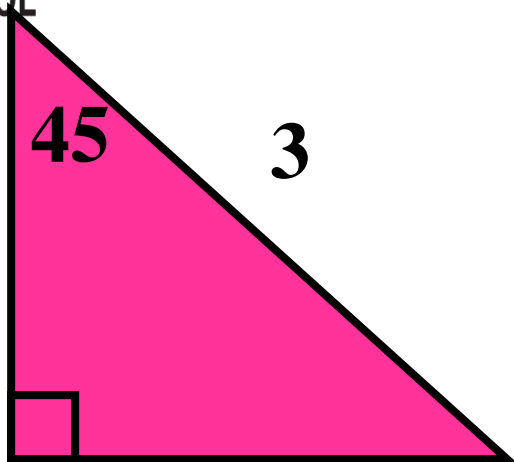
$$\frac{5}{1} = \frac{x}{\sqrt{2}}$$

$$x = 5\sqrt{2}$$

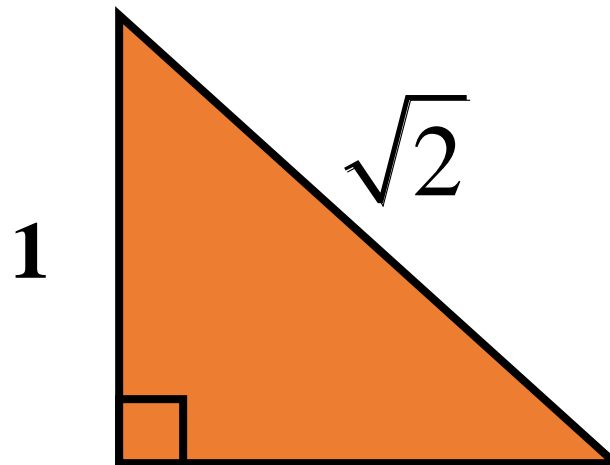




EX: 3 Solve for **x**
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$$\frac{3}{\sqrt{2}} = \frac{x}{1}$$



x

$$x = \frac{3}{\sqrt{2}}$$

$$x = \frac{3}{\sqrt{2}} \bullet \frac{\sqrt{2}}{\sqrt{2}}$$

$$x = \frac{3\sqrt{2}}{2}$$

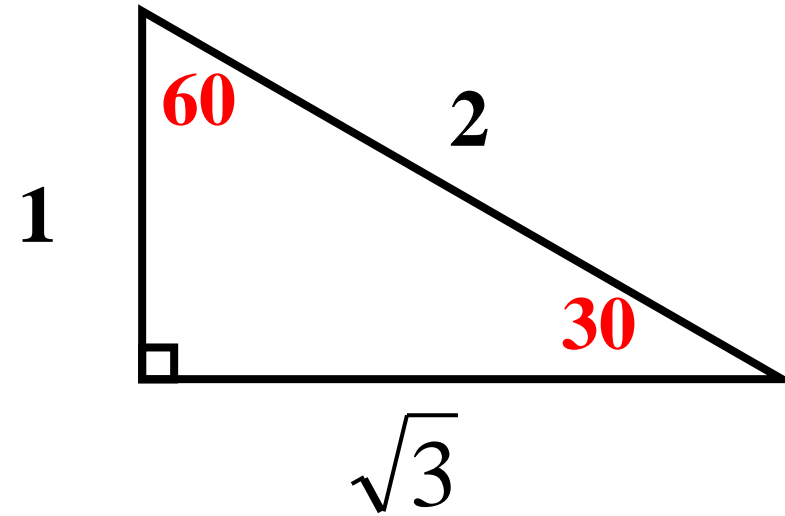


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30-60-90



30-60-90 Right Triangle



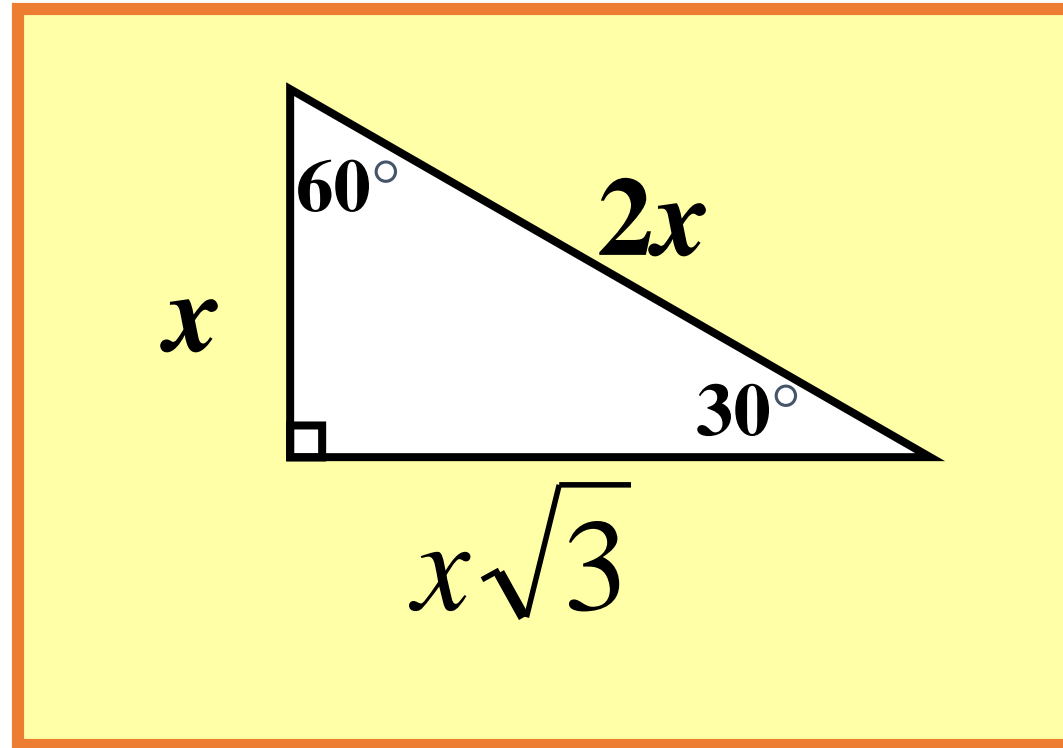
This is our reference triangle for the 30-60-90 triangle.

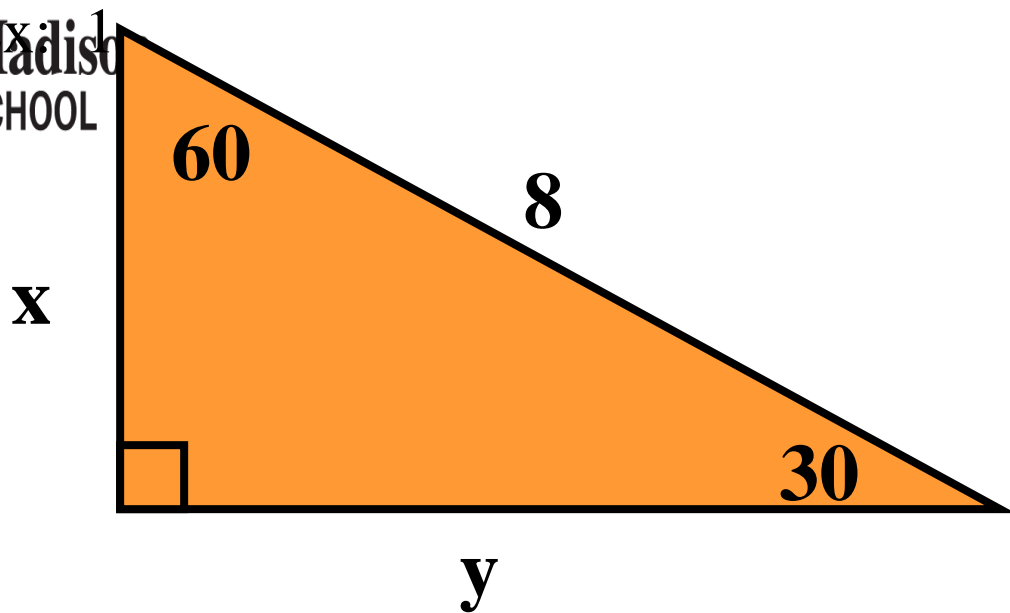
We will use a reference triangle to set up a proportion then solve.



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30-60-90 Right Triangle

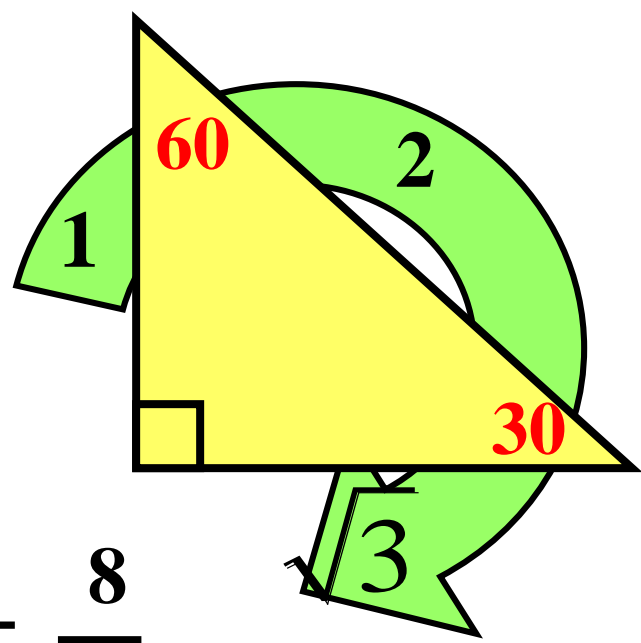




$$\frac{x}{1} = \frac{8}{2}$$

$$2x = 8$$

$$x = 4$$



$$\frac{y}{\sqrt{3}} = \frac{8}{2}$$

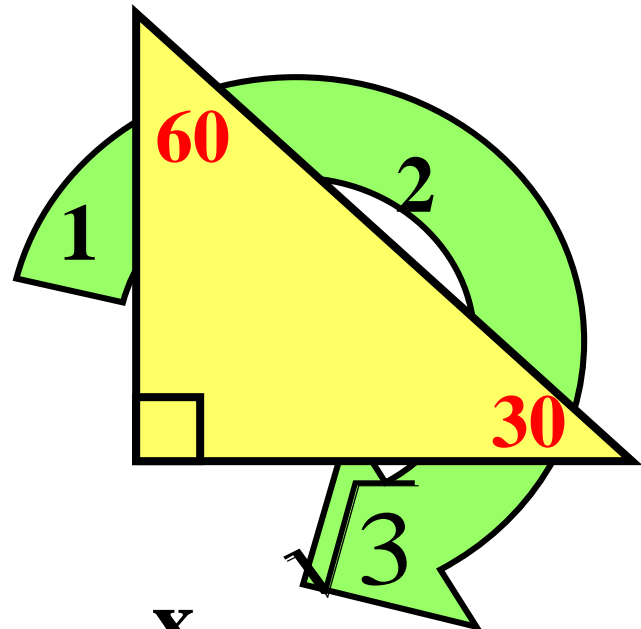
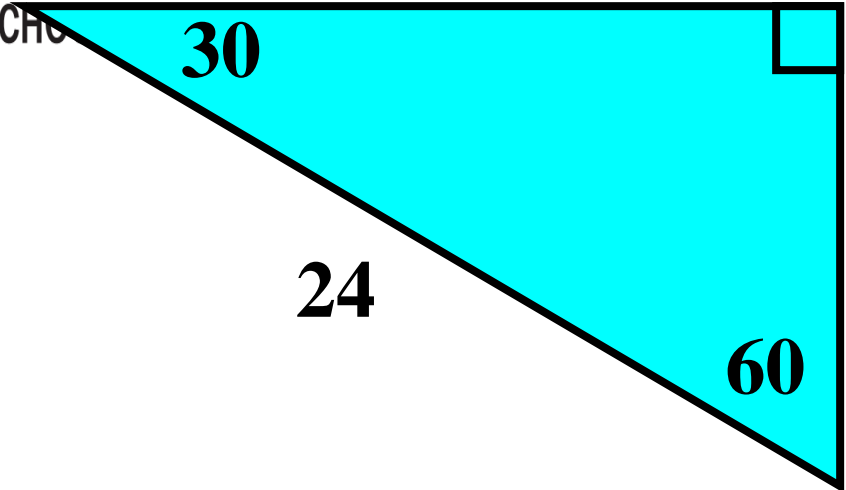
$$8\sqrt{3} = 2y$$

$$4\sqrt{3} = y$$



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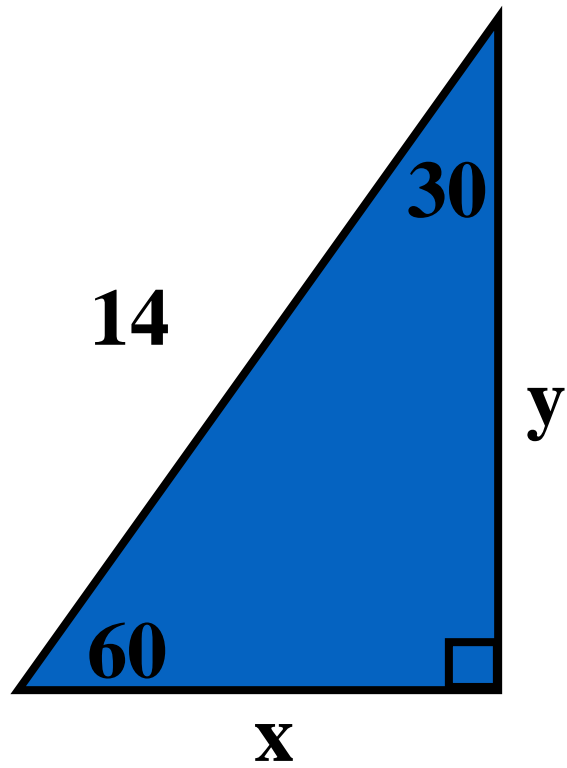
Solve for x



$$\frac{24}{2} = \frac{x}{1}$$

$$2x = 24$$

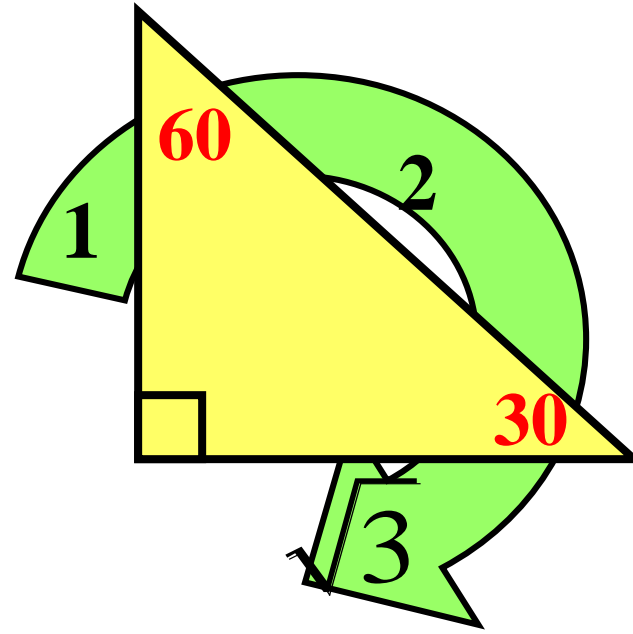
$$x = 12$$



$$\frac{14}{2} = \frac{x}{1}$$

$$2x = 14$$

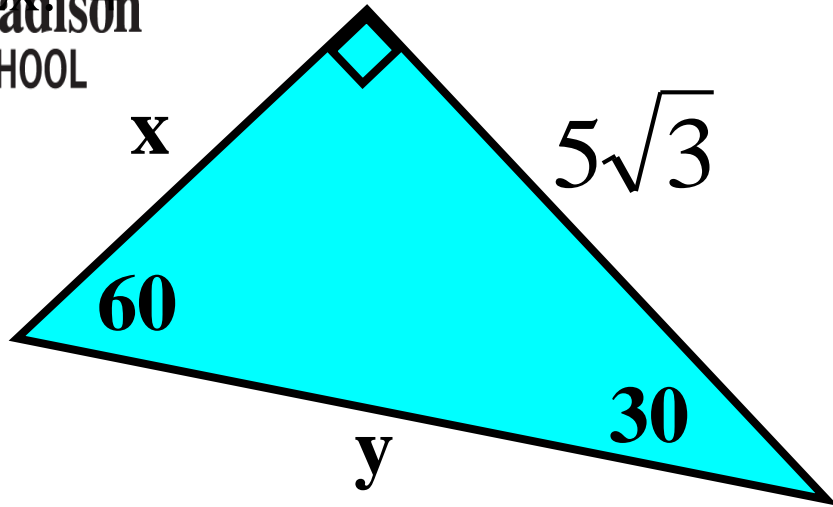
$$x = 7$$



$$\frac{14}{2} = \frac{y}{\sqrt{3}}$$

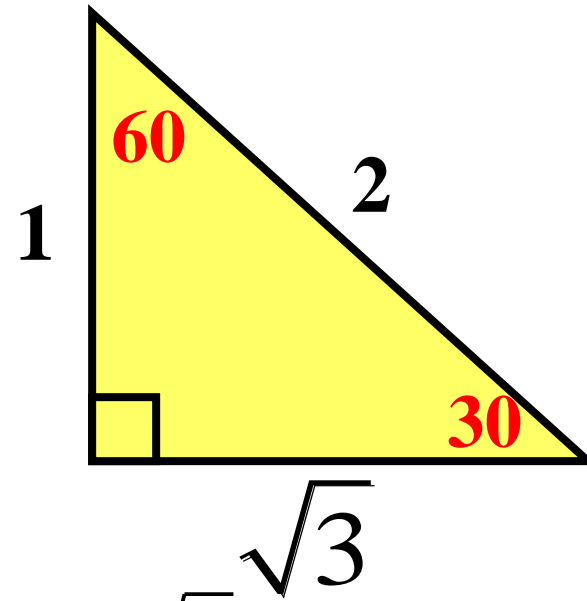
$$2y = 14\sqrt{3}$$

$$y = 7\sqrt{3}$$



$$\frac{5\sqrt{3}}{\sqrt{3}} = \frac{x}{1}$$

$$x = 5$$



$$\frac{5\sqrt{3}}{\sqrt{3}} = \frac{y}{2}$$

$$y = 10$$