

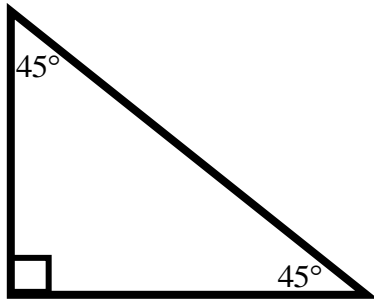
Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Special Right Triangles: $45^\circ - 45^\circ - 90^\circ$ & Pythagorean Theorem

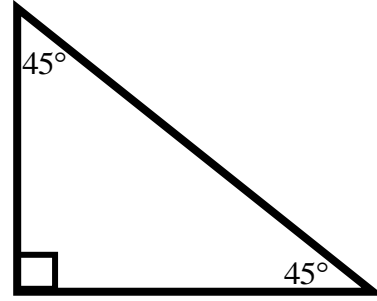
UNIT QUESTION: What patterns can I find in right triangles?

Today's Question: How do I find the length of a side of a right triangle with only one side and an angle given?

#### $45^\circ, 45^\circ, 90^\circ$ Triangle Vocab.

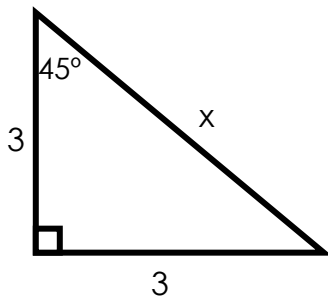


#### Reference Triangle Ratios

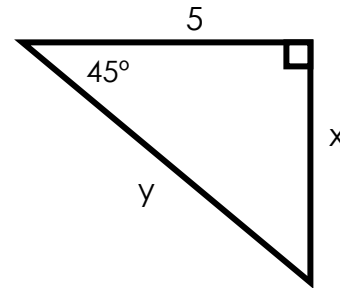


In a  $45^\circ, 45^\circ, 90^\circ$  triangle, the legs are \_\_\_\_\_.

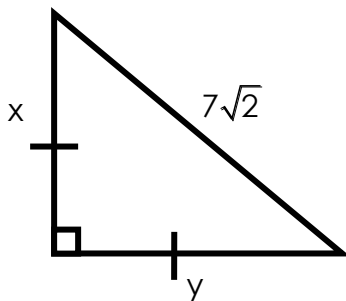
1.  $x =$  \_\_\_\_\_



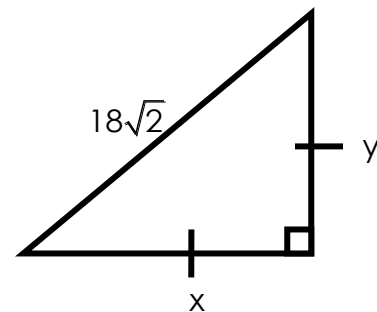
2.  $x =$  \_\_\_\_\_,  $y =$  \_\_\_\_\_



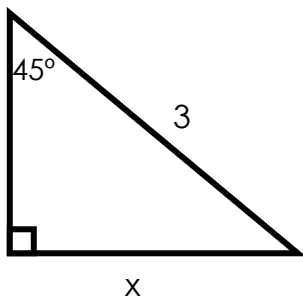
3.  $x =$  \_\_\_\_\_,  $y =$  \_\_\_\_\_



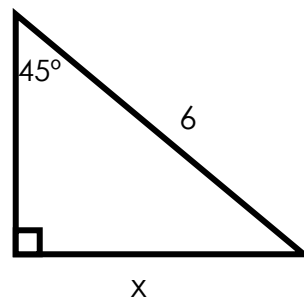
4.  $x =$  \_\_\_\_\_,  $y =$  \_\_\_\_\_



5.  $x =$  \_\_\_\_\_



6.  $x =$  \_\_\_\_\_

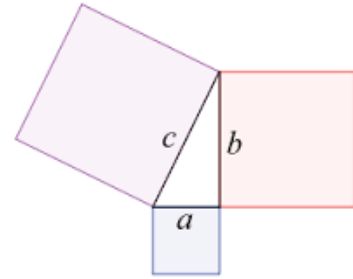


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## Pythagorean Theorem

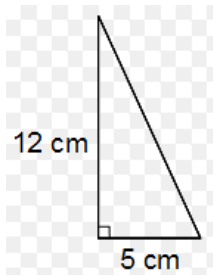
$$a^2 + b^2 = c^2$$

- $c$  is the \_\_\_\_\_
- $a$  and  $b$  are the \_\_\_\_\_



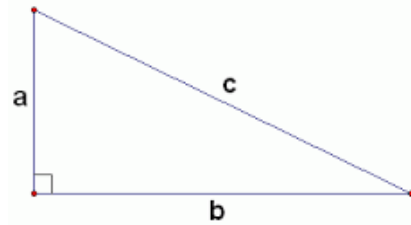
### If $x$ is the hypotenuse...

EX1:



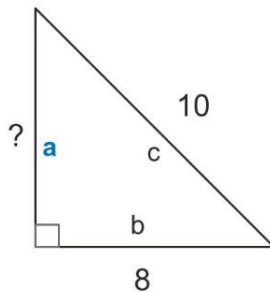
EX2:

In a right triangle, if  $a = 195\text{m}$  and  $b = 28\text{m}$ , find  $C$ .

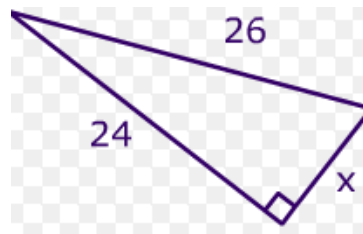


### If $x$ is $a$ or $b$ ...

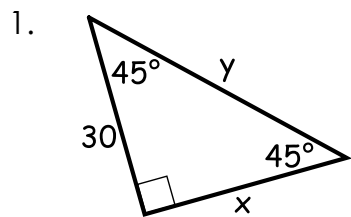
EX3:



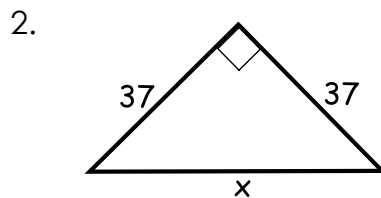
EX4:



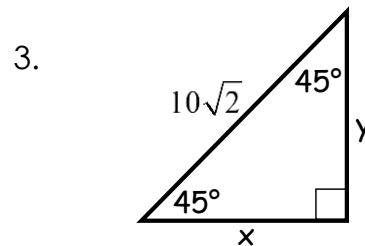
Find x and y.



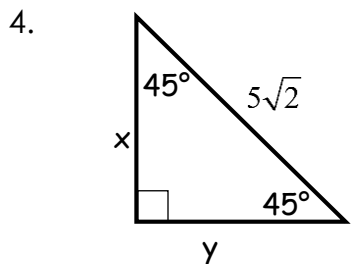
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



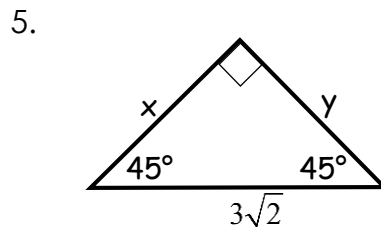
$x = \underline{\hspace{2cm}}$



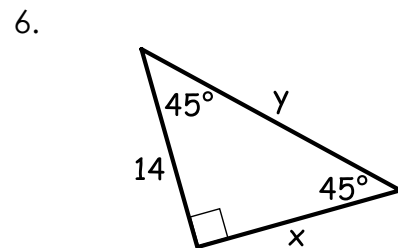
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



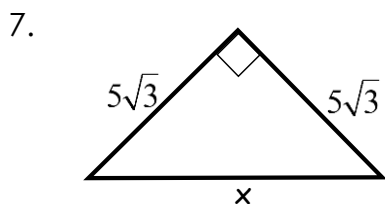
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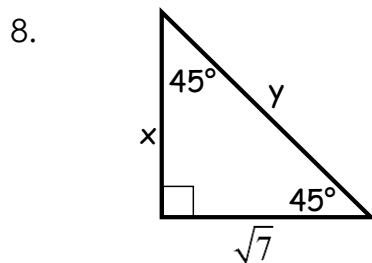
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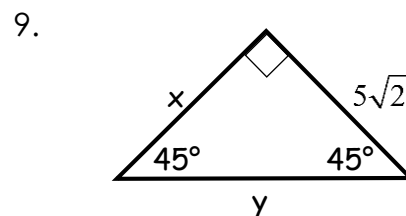
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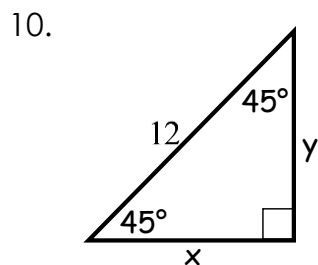
$x = \underline{\hspace{2cm}}$



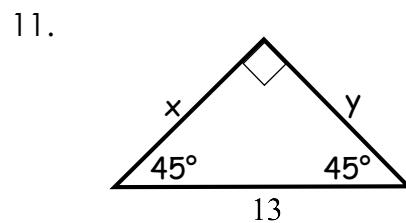
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



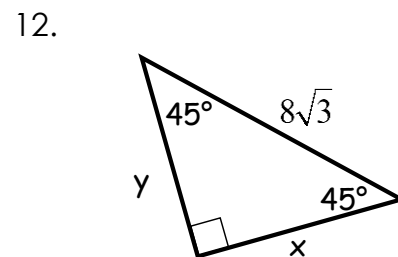
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



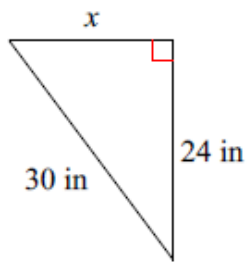
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$



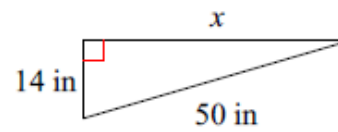
$x = \underline{\hspace{2cm}}$   $y = \underline{\hspace{2cm}}$

Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

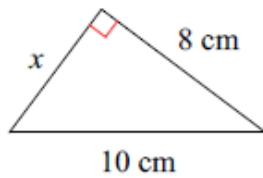
1)



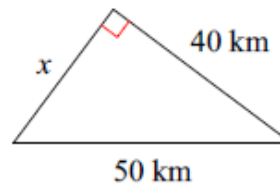
2)



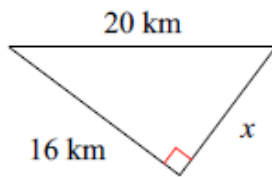
3)



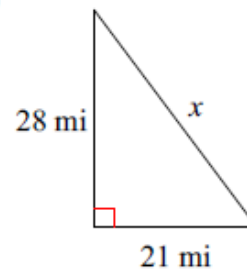
4)



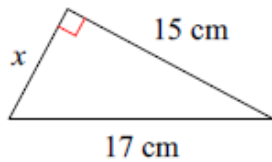
5)



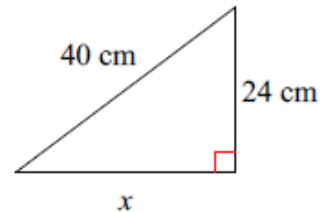
6)



7)



8)



Find the missing side of each right triangle. Side  $c$  is the hypotenuse. Sides  $a$  and  $b$  are the legs. Round your answers to the nearest tenth if necessary.

9)  $a = 8$  ft,  $b = 15$  ft

10)  $a = 5$  ft,  $c = 13$  ft

11)  $b = 8$  mi,  $c = 10$  mi

12)  $a = 9$  m,  $c = 15$  m

13)  $a = 12$  ft,  $c = 20$  ft