Name_____ Date_____

Unit 9: Pythagorean Theorem Math 8R

9-2: Using the Pythagorean Theorem

"I can use the Pythagorean Theorem to find the missing side in a right triangle."

Warm Up: Use the Converse of the Pythagorean Theorem to show whether it is possible to have a right triangle with legs of 8 and 12 ft. and a hypotenuse of 15 ft. Show all work and explain your answer.

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

$8^2+12^2=15^2$

$64+144=225$

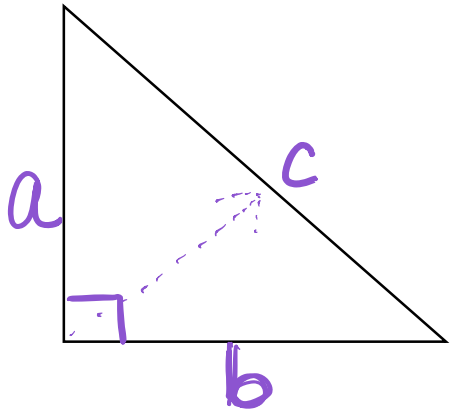
c

$208 \neq 225$

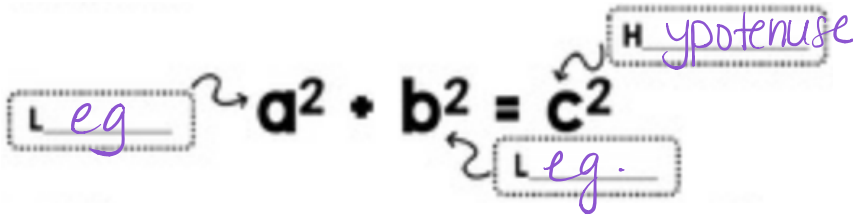
Not possible!

- The Pythagorean Theorem **only works** with RIGHT triangles. It can be used to prove that a triangle is a RIGHT triangle or to find a missing side.
- You must label and identify the sides, correctly.

  The longest side is the hypotenuse, the other two are the legs



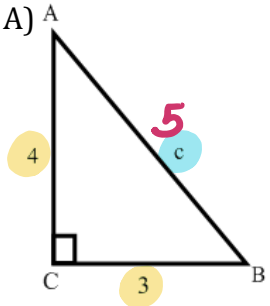
The side opposite the right angles is always your hypotenuse



Exercise 1- Use the Pythagorean Theorem to find the missing side of the following triangles. Round your answer to the nearest hundredth if necessary.

2 decimal

A)



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

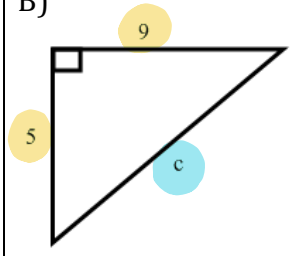
$3^2+4^2=c^2$

$9+16=c^2$

$\sqrt{25}=\sqrt{c^2}$

$5=c$

B)



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

$5^2+9^2=c^2$

$25+81=c^2$

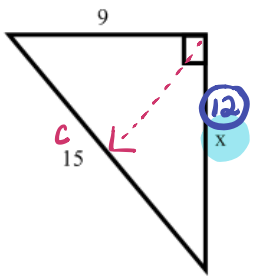
$\sqrt{106}=\sqrt{c^2}$

$10.295\ldots = c$

$c = 10.30$

Exercise 2- Use the Pythagorean Theorem to find the missing side of the following triangles. Round your answer to the nearest hundredth, if necessary.

A)



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

$x^2+9^2=15^2$

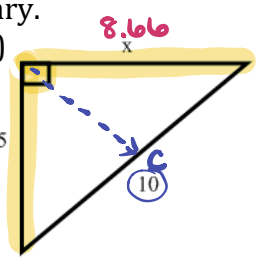
$x^2+81=225$

$-81 \quad -81$

$\sqrt{x^2}=\sqrt{144}$

$x=12$

B)



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

$x^2+5^2=10^2$

$x^2+25=100$

$-25 \quad -25$

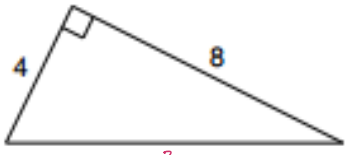
$\sqrt{x^2}=\sqrt{75}$

$x=8.6602\ldots$

$x=8.66$

Problem Set: Determine the length of the missing side. Be sure to round all answers to the nearest **tenth**.

1.



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

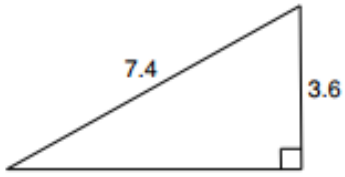
$4^2+8^2=c^2$

$16+64=c^2$

$\sqrt{80}=\sqrt{c^2}$

$8.9=c$

2.



$x^2+3.6^2=7.4^2$

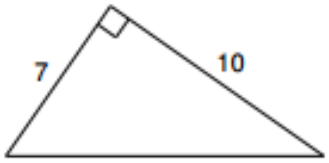
$x^2+12.96=54.76$

$-12.96 \quad -12.96$

$\sqrt{x^2}=\sqrt{41.8}$

$x=6.5$

3.



$7^2+10^2=c^2$

$49+100=c^2$

$\sqrt{149}=\sqrt{c^2}$

$12.2=c$

4.

$13^2+x^2=15^2$

$169+x^2=225$

$-169 \quad -169$

$\sqrt{x^2}=\sqrt{56}$

$x=7.5$

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