

Warm Up

Get to know everyone at your tables name.

Tell something you did over the weekend.

Tell something you are excited for in the future.

ie spring break, summer, a vacation...

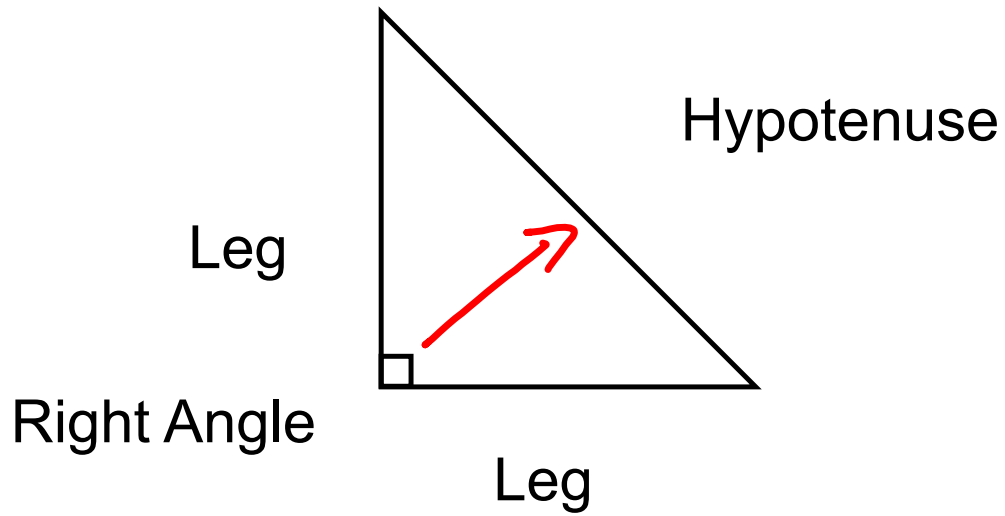
9-1

Pythagorean Theorem
and Solving Right Triangles

I can solve right triangles.

I can use the pythagorean theorem.

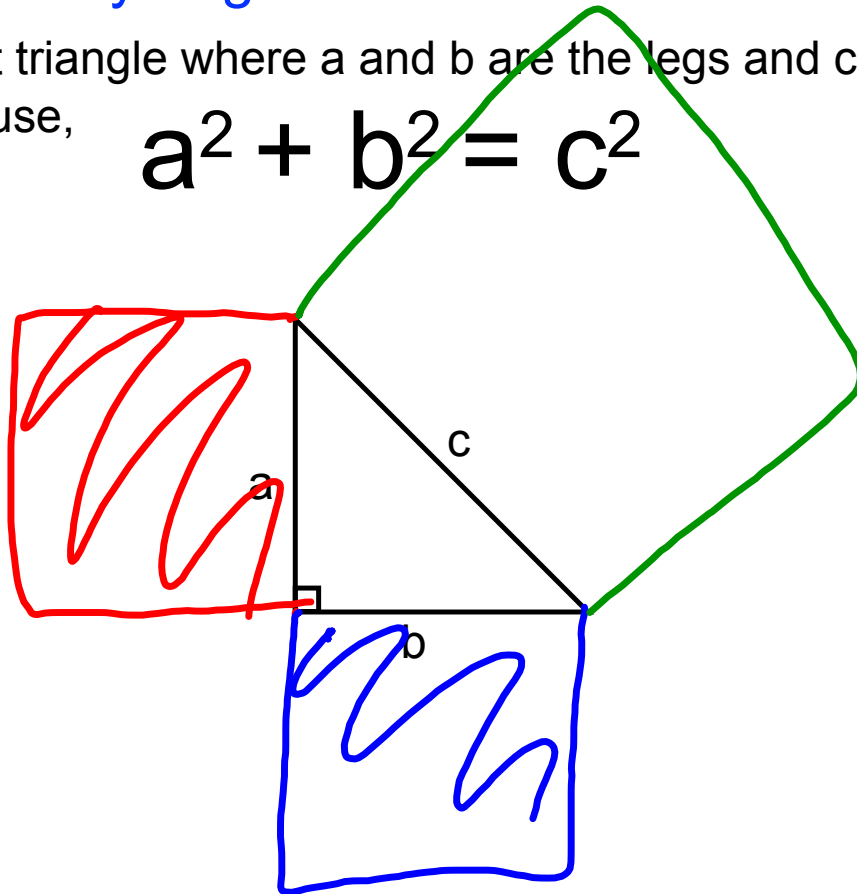
Right Triangle



Pythagorean Theorem

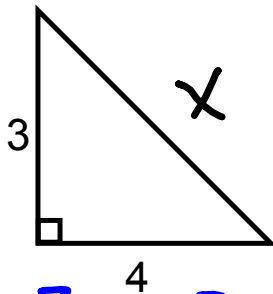
In a right triangle where a and b are the legs and c is the hypotenuse,

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



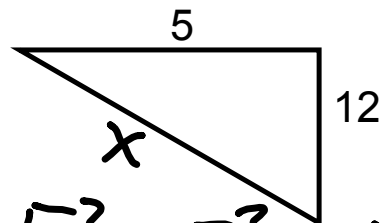
Find the missing side in the right triangle using the pythagorean theorem:

ex.



$$\begin{aligned}3^2 + 4^2 &= x^2 \\9 + 16 &= x^2 \\ \sqrt{25} &= \sqrt{x^2} \\ x &= 5\end{aligned}$$

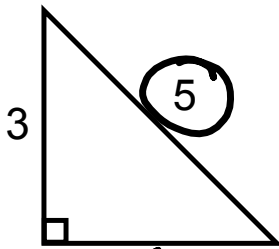
ex.



$$\begin{aligned}5^2 + 12^2 &= x^2 \\25 + 144 &= x^2 \\ \sqrt{169} &= \sqrt{x^2} \\ 13 &= x\end{aligned}$$

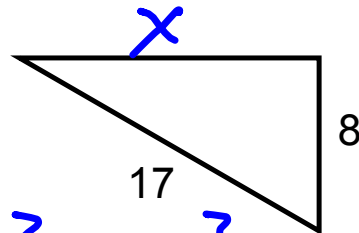
Find the missing side in the right triangle using the pythagorean theorem:

ex.



$$3^2 + x^2 = 5^2$$
$$x = 4$$

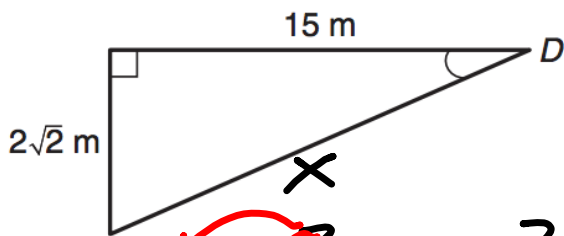
ex.



$$x^2 + 8^2 = 17^2$$
$$x^2 + 64 = 289$$
$$\begin{array}{r} -64 \\ -64 \end{array}$$
$$\sqrt{x^2} = \sqrt{225}$$
$$x = 15$$

Find the missing side in the right triangle using the pythagorean theorem:

ex.



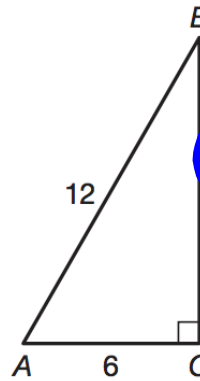
$$(2\sqrt{2})^2 + 15^2 = x^2$$

$$4(2) + 225 = x^2$$

$$8 + 225 = x^2$$

$$\sqrt{233} = \sqrt{x^2}$$

ex.



$$\sqrt{82}$$

$$41.2$$

$$\sqrt{976}$$

$$488$$

$$4 \ 122$$

$$2 \ 2 \ 612$$

$$4\sqrt{61}$$

$$a = 22 \quad c = 37$$

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

$$22^2 + b^2 = 37^2$$

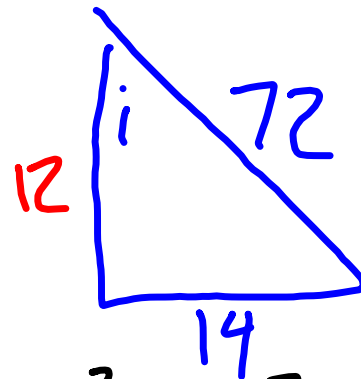
$$484 + b^2 = 1369$$

-484

-484

$$\sqrt{b^2} = \sqrt{885}$$

$$\begin{array}{r} 5 \overline{) 885} \\ \underline{5} \\ 38 \\ \underline{35} \\ 30 \\ \underline{30} \\ 0 \end{array}$$



$$12^2 + 14^2 = 72^2$$

$$144 + 196 \neq 5184$$

Not Right
△