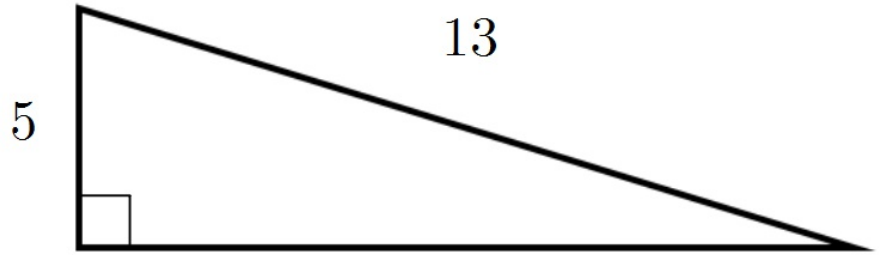
Good afternoon and welcome back! Warm up in notebooks please:

Find the perimeter of the triangle:

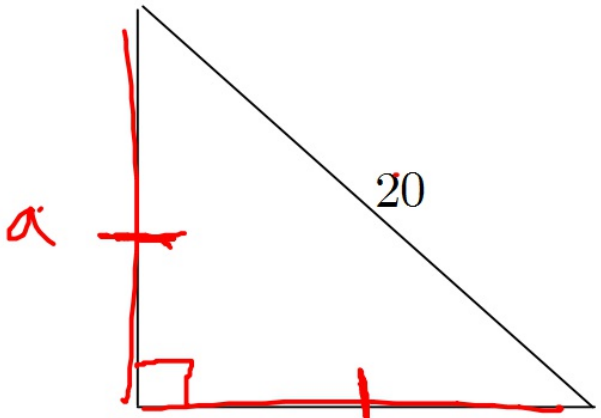


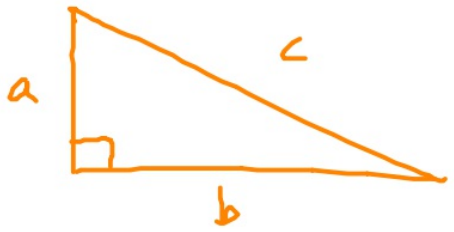
WILL NEED
TEXTBOOK
TODAY

answer: 30

Warm up #2

Find the perimeter!





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

48.28

$a^2 + a^2 = 20^2$

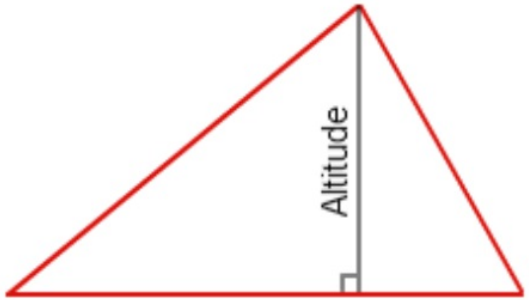
$2a^2 = 400$

$\sqrt{a^2} = \sqrt{200}$

$a \approx 14.14$

Similarity Within Right Triangles

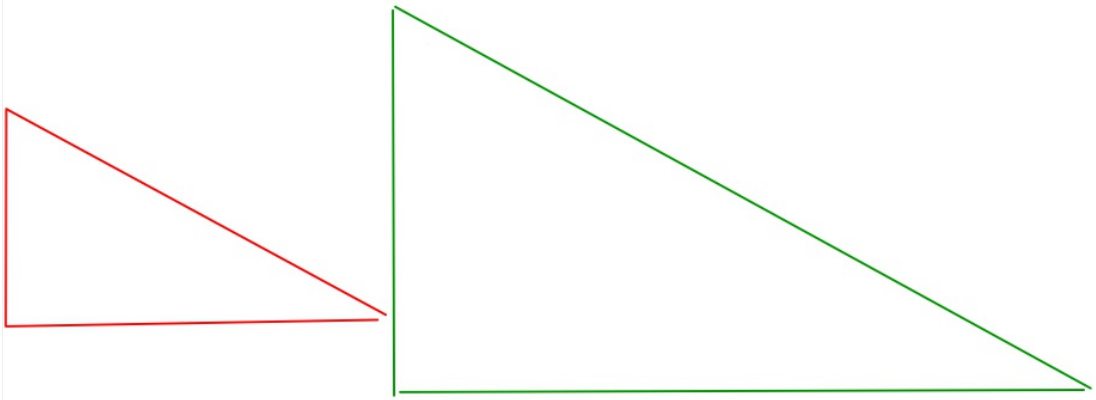
1. Create 2 congruent right triangles using all of the construction paper.

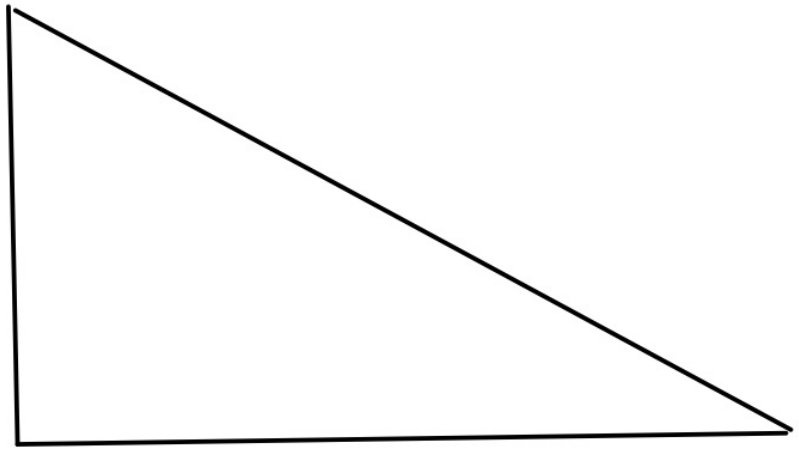


2. Using one of the triangles, fold to create an altitude that connects the right angle to the hypotenuse. Think about how you know its an altitude.

3. Cut along this altitude. You should now have 3 triangles.

4. Play around with the 3 triangles and make a conjecture about their relationship. Can you prove anything about them?



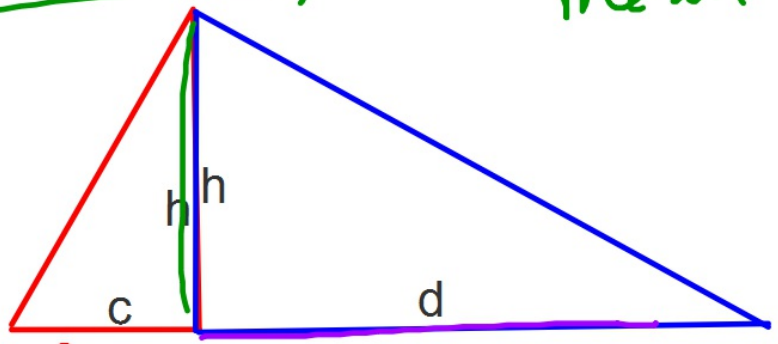


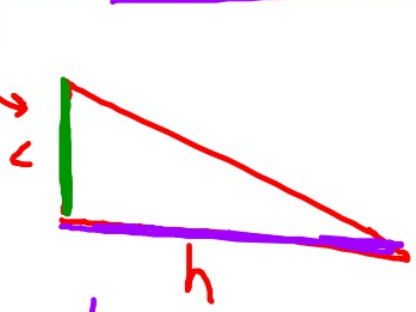
They're all similar to each other!

AA~

Self-Similarity / Geometric mean

[Draw this in notes]



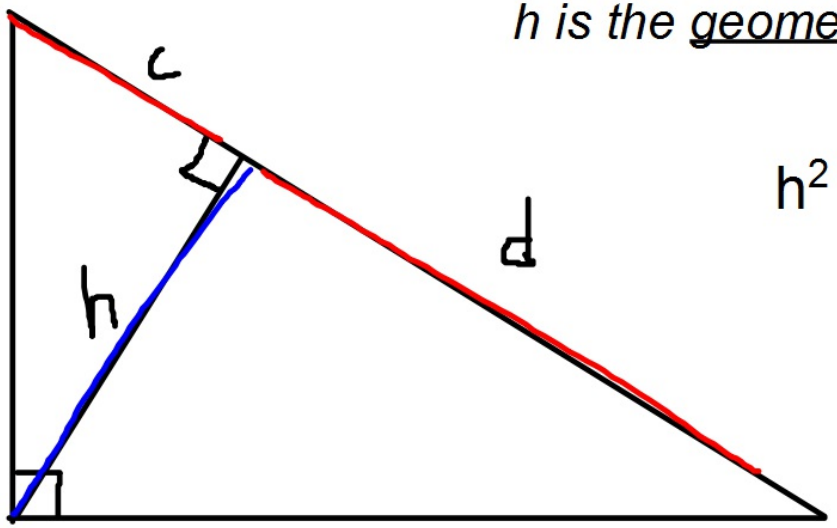


$$\frac{c}{h} = \frac{h}{d} \rightarrow \sqrt{c \cdot d} = \sqrt{h^2}$$

Geometric mean

$$h = \sqrt{c \cdot d}$$

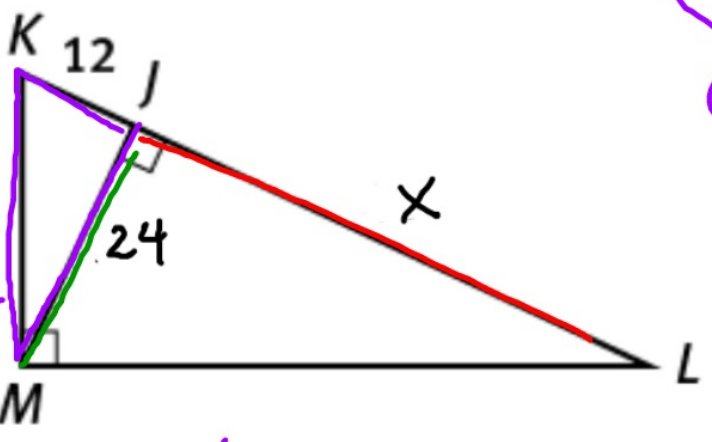
Geometric Mean Formula

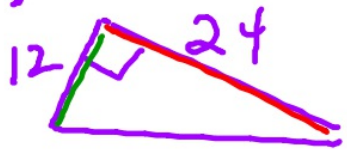


h is the geometric mean of c and d

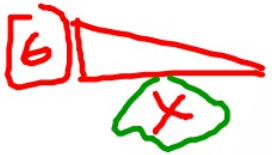
$h^2 = c*d$ or, $h = \sqrt{cd}$

Find the value of x in each

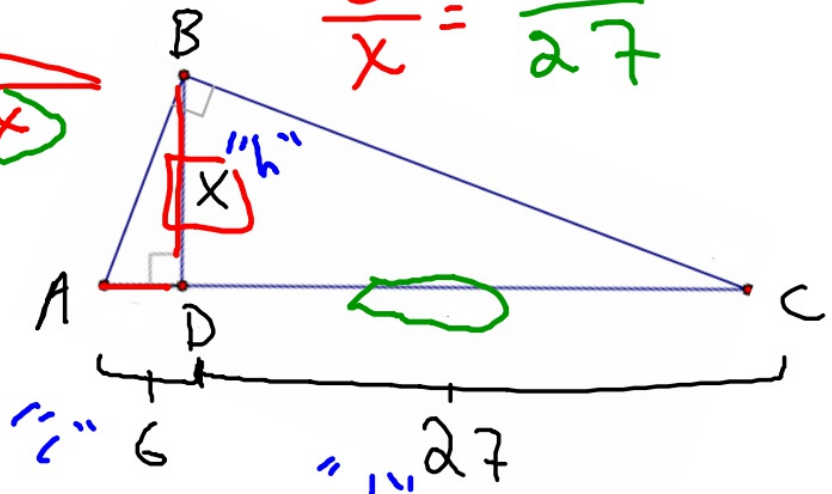




$$\frac{12}{24} = \frac{24}{x} \Rightarrow 12x = 576 \Rightarrow x = 48$$



$$\frac{6}{x} = \frac{x}{27}$$



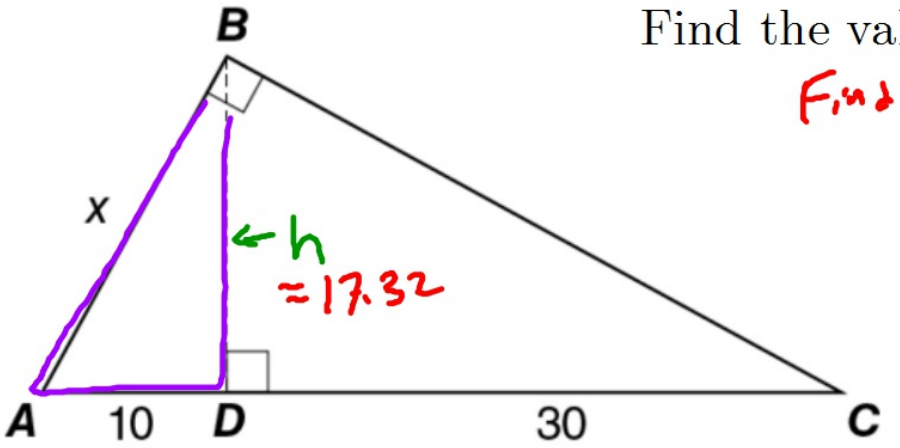
$$h = \sqrt{c \cdot d}$$

$$x = \sqrt{6 \cdot 27}$$

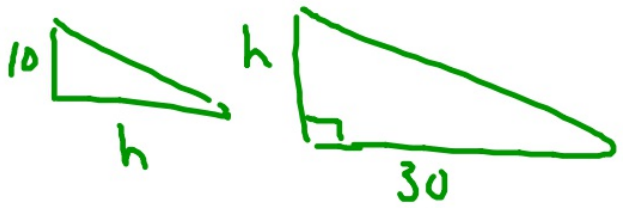
$$x = \sqrt{162} \approx 12.7$$

AB

Find the value of x



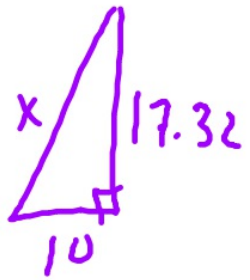
Find h first!



$h = \sqrt{c \cdot d}$ or, use $\frac{10}{h} = \frac{h}{30}$

$h = \sqrt{10 \cdot 30}$

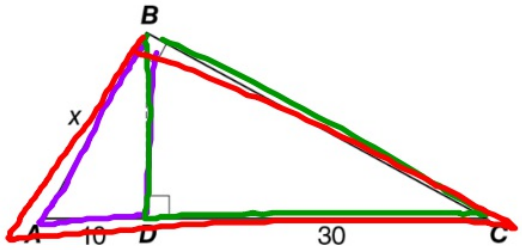
$h = \sqrt{300} \approx 17.32$



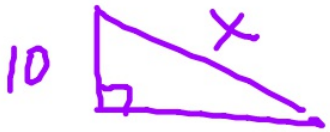
$10^2 + 17.32^2 = x^2$

$100 + 300 = x^2 \rightarrow \sqrt{400} = \sqrt{x^2} \rightarrow x = 20$

OR...

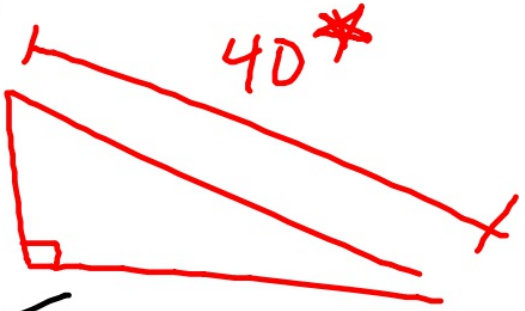


Small:



med:

Large



$$\frac{10}{x} = \frac{x}{40} \rightsquigarrow 400 = x^2$$

$$\sqrt{400} = x$$

$20 = x$

Whoa!