

Geometry CC – Mr. Valentino

Name: _____

Unit 6 Lesson 5: Altitudes Drawn in Right Triangles

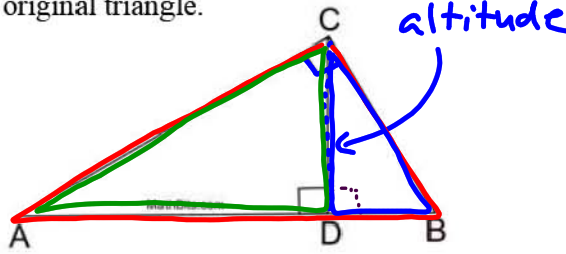
Date: _____ Period: _____

Do Now: Please take out your **HW** from yesterday. We are going to go over it.

THEOREM! 

The altitude to the hypotenuse of a right triangle forms two triangles that are Similar to each other and to the original triangle.

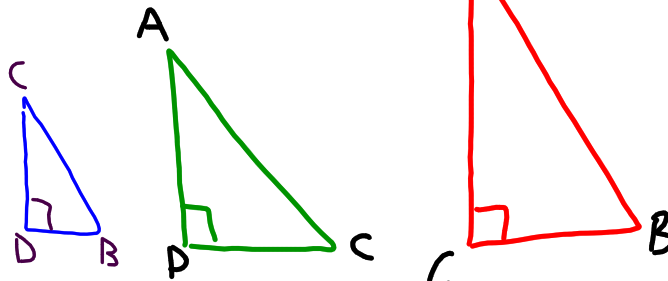
If right $\triangle ABC$, altitude \overline{CD} ,
 then $\triangle ADC \sim \triangle CDB$,
 $\triangle ACB \sim \triangle ADC$, and
 $\triangle ACB \sim \triangle CDB$.



We are going to break down the above triangle into 3 **SIMILAR** triangles.

Recall! What do we know about similar triangles:

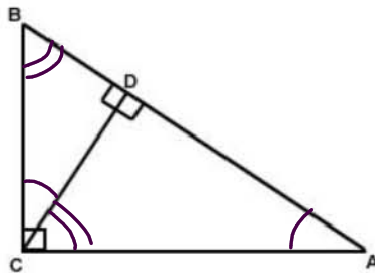
corresponding sides are proportional



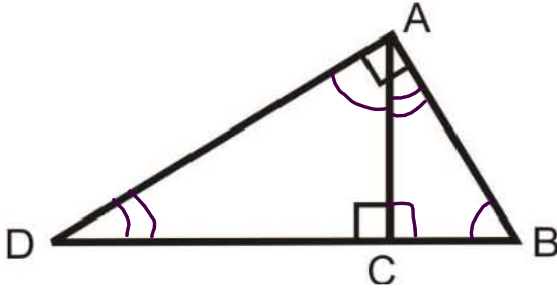
What are some of the proportions that we can set up:

$$\frac{CD}{AD} = \frac{DB}{DC}$$

There is an extremely valuable **trick** that we can use to solve problems associated with this spectacular theorem. Let's discuss it.

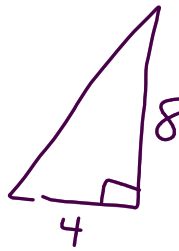
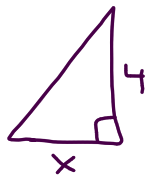
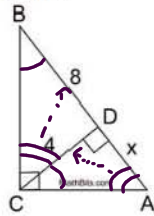


Let's try that strategy **one more time!**



OK! Time for some practice.

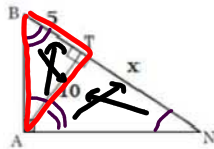
1. Find x.



$$\frac{8}{4} = \frac{4}{x} \quad \frac{8x}{8} = \frac{16}{8}$$

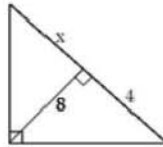
$$x = 2$$

2)



$$\frac{5}{10} = \frac{10}{x}$$

3)



4)



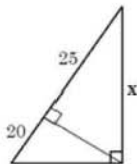
$$\frac{12}{2} = \frac{x}{14}$$

$$\sqrt{x^2} = \sqrt{28}$$

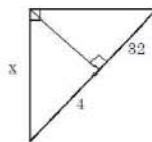
$$x = \sqrt{28}$$

$$x = 2\sqrt{7}$$

5)

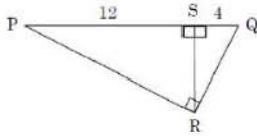


6)

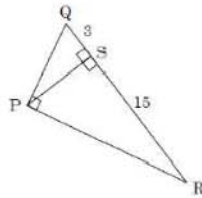


Find the length of the **altitude** in each of the below triangles.

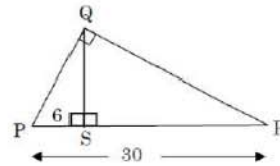
7)



8)

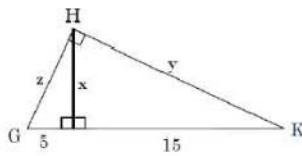


9)

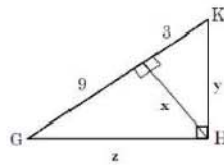


Solve for the variables x , y , and z in each triangle.

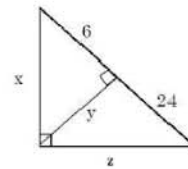
16)



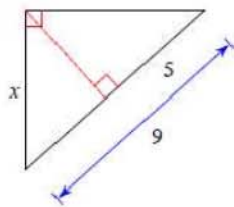
17)



18)



9)



10)

