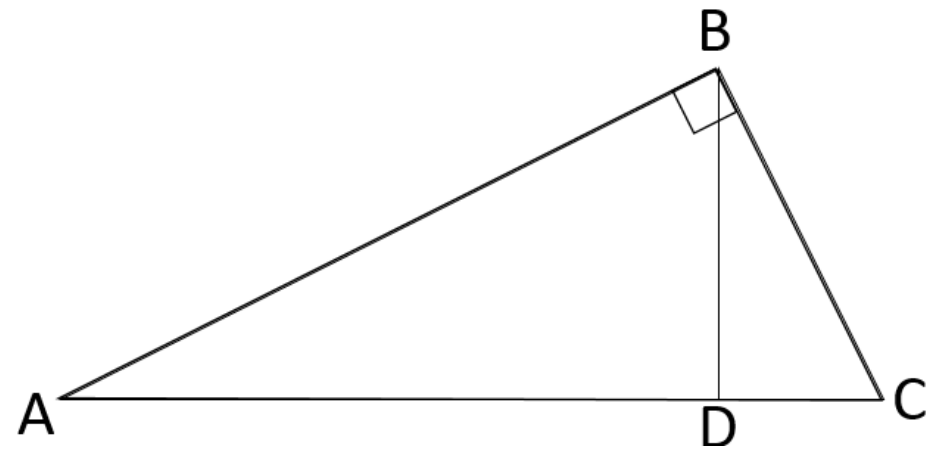


Similar Right Triangles

Section 9.3



Geometric Mean

The geometric mean of two positive numbers a and b is the positive number x such that:

$$\frac{a}{x} = \frac{x}{b}$$

Find the geometric mean for the following #'s:

4 and 9

$$\frac{4}{x} = \frac{x}{9}$$
$$x^2 = 36$$

$$\frac{4}{x} = \frac{x}{9}$$

$$x^2 = 36$$

$$\sqrt{x^2} = \sqrt{36}$$

$$x = 6$$

3 and 15

$$\frac{3}{x} = \frac{x}{15}$$

$$\frac{3}{x} = \frac{x}{15}$$

$$x^2 = 45$$

$$\sqrt{x^2} = \sqrt{45}$$

$$= \sqrt{9 \cdot 5}$$

$$x = 3\sqrt{5}$$

2 and 10

$$\frac{2}{x} = \frac{x}{10}$$

$$x^2 = 20$$

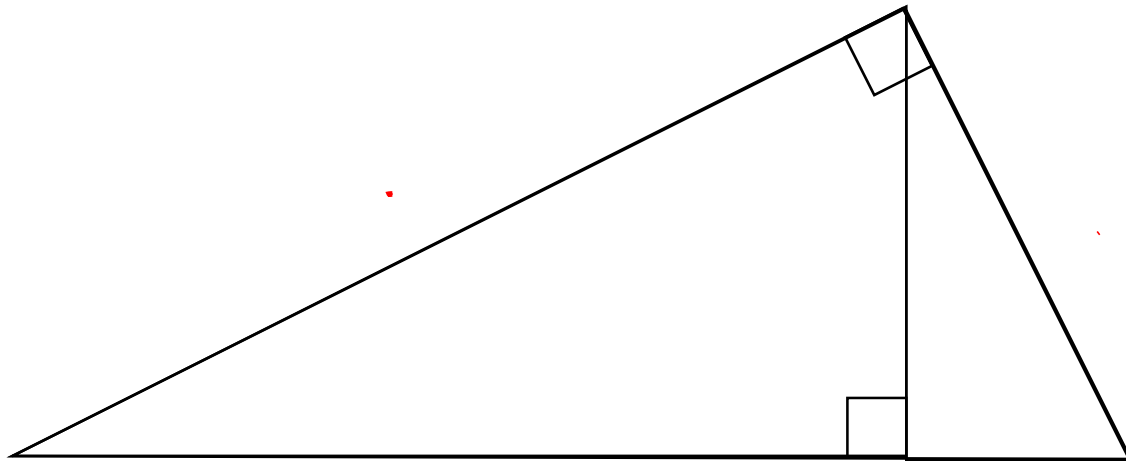
$$\sqrt{x^2} = \sqrt{20}$$

$$= \sqrt{4 \cdot 5}$$

$$x = 2\sqrt{5}$$

Similar Right Triangles

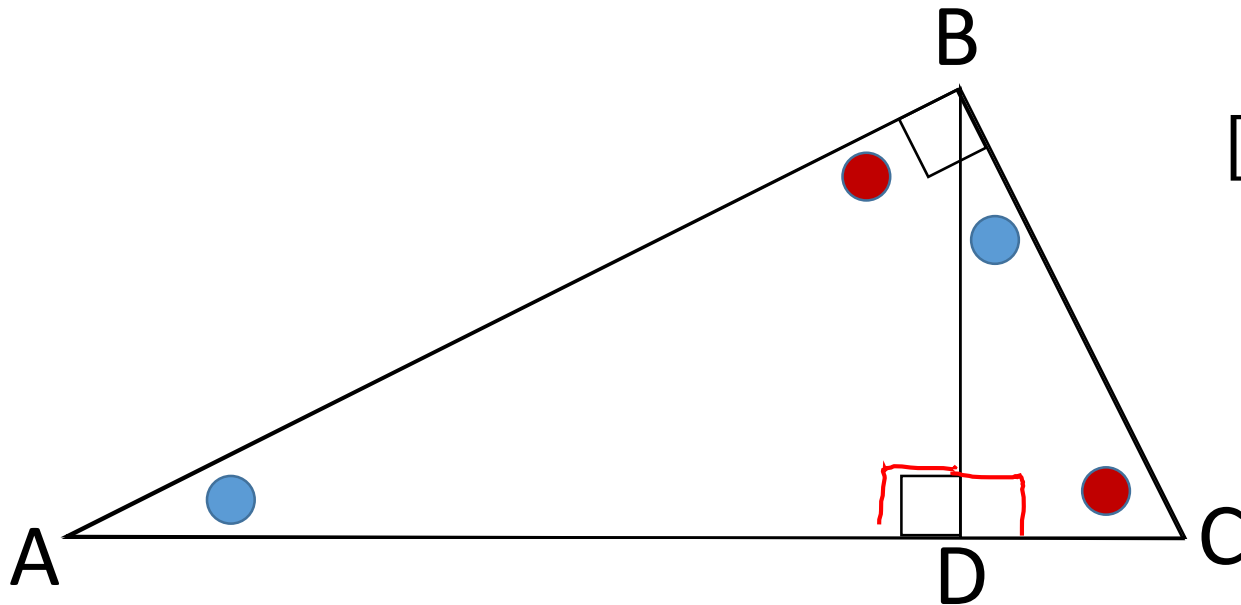
In a right triangle, if an altitude is drawn from the right angle to the hypotenuse, two triangles are formed that are similar to the original.



Similar Right Triangles

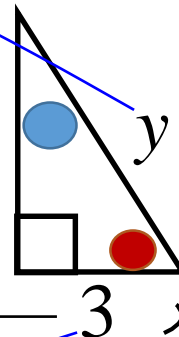
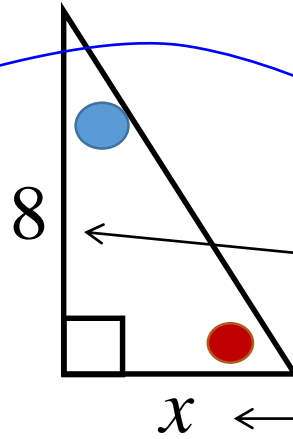
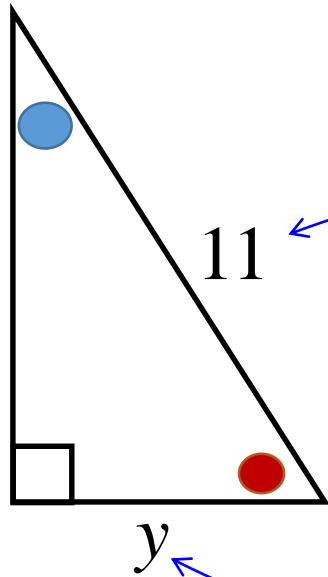
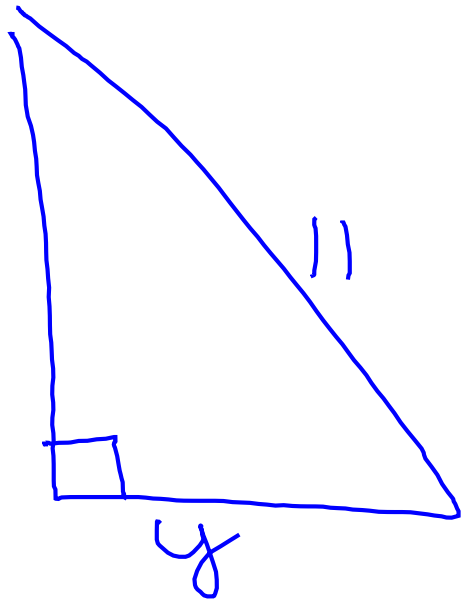
Write the similarity statement that relates the three triangles.

$$\triangle ACB \sim \triangle ABD \sim \triangle BCD$$



$$\triangle ABC \sim \triangle ADB \sim \triangle BDC$$

Find the value of each variable.



$$\frac{11}{8} = \frac{y}{3}$$

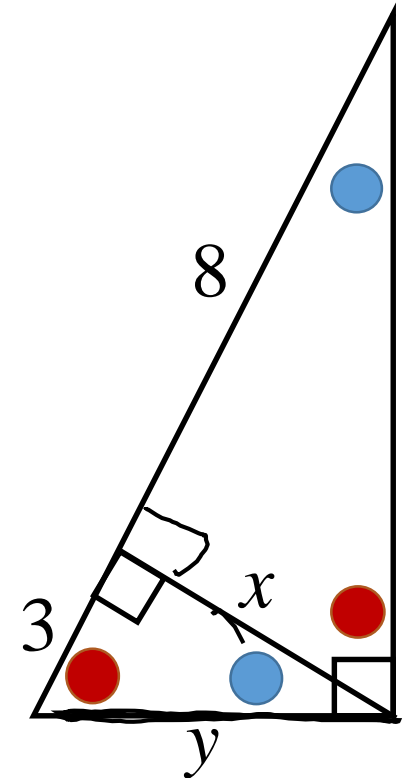
$$y = \frac{33}{8}$$

$$\frac{x}{8} = \frac{3}{x}$$

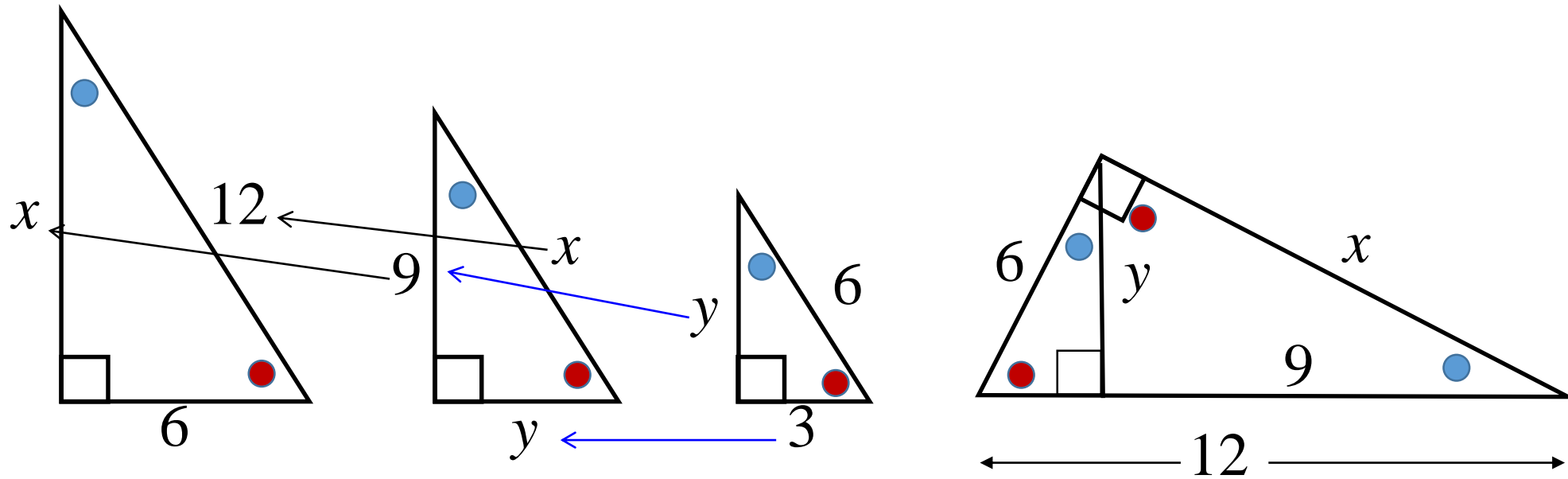
$$x^2 = 24$$

$$x = \sqrt{24}$$

$$2\sqrt{6}$$



Find the value of each variable.



Finish Similar Right Triangles Notes and WS p1

Similar Right Triangles Notes and WS

Name _____ Period _____

Geometric Mean

The geometric mean of two positive numbers a and b is the positive number x such that:

Find the geometric mean for the following #'s:
4 and 9 3 and 15 2 and 10

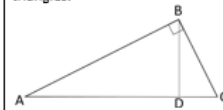
Find the geometric mean of the two numbers. Leave your answer in simplified radical form.

1. 8 and 32
2. 9 and 16
3. 14 and 20
4. 22 and 33
5. 4 and 12
6. 18 and 27
7. 3 and 81
8. 64 and 4

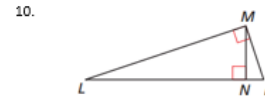
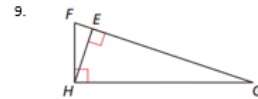
Similar Right Triangles

In a right triangle, if an altitude is drawn from the right angle to the hypotenuse, two triangles are formed that are similar to the original.

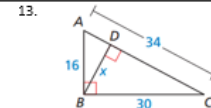
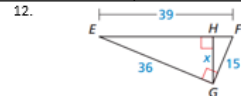
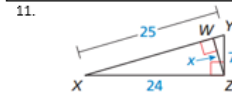
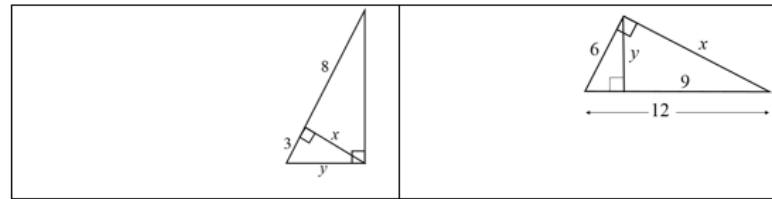
Write the similarity statement that relates the three triangles.



Identify the similar triangles.



Find the value of each variable.



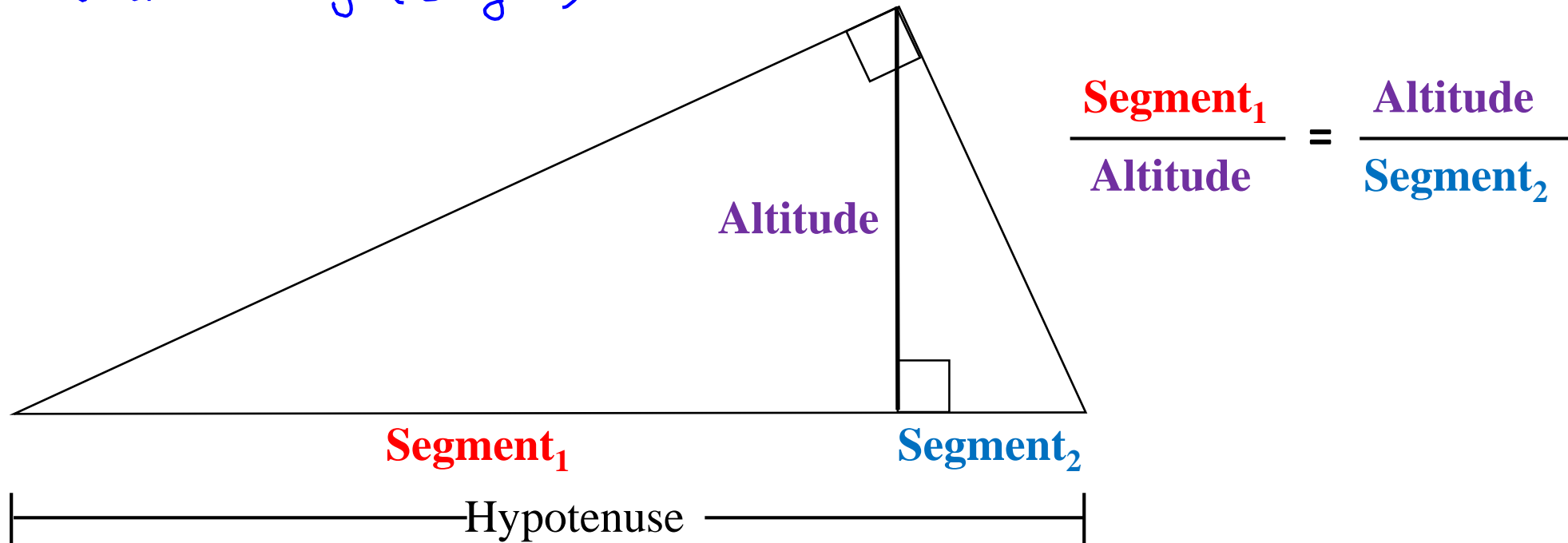
Geometric Mean

Lesson 9.3 Day 2

Geometric Mean

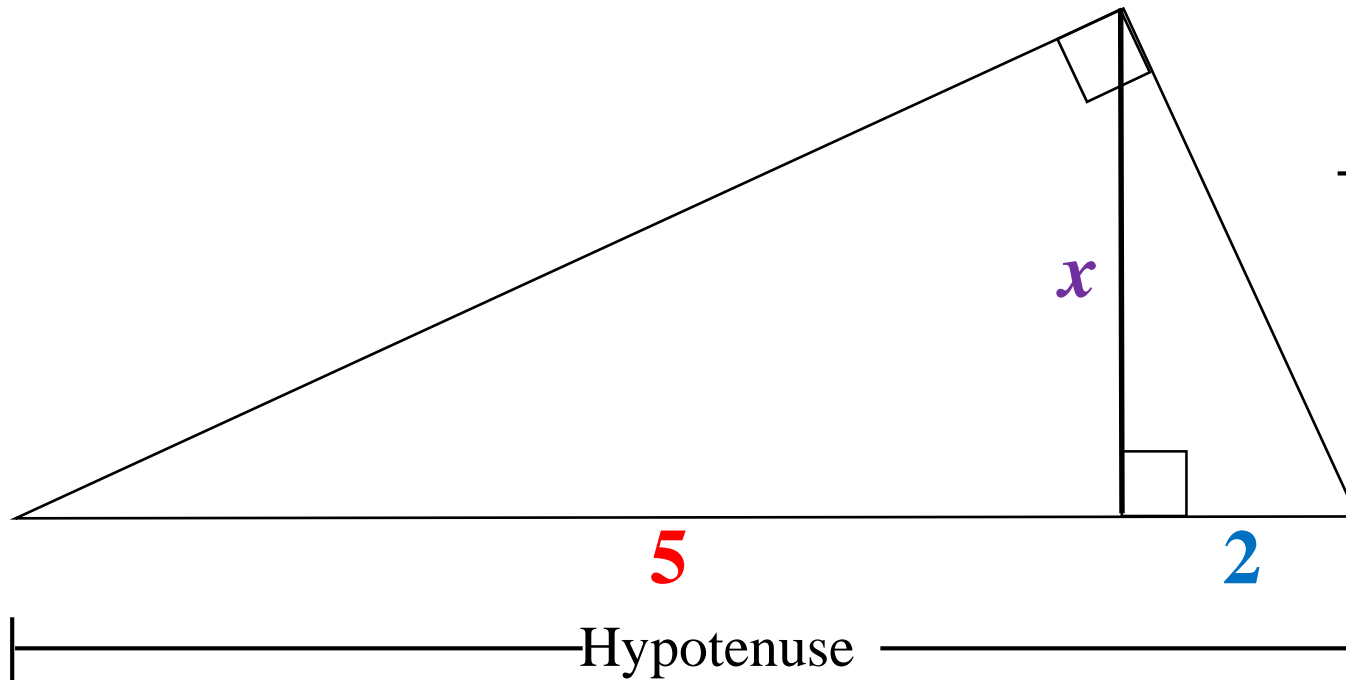
The altitude² is the geometric mean between the segments of the hypotenuse.

$$\text{alt}^2 = \text{seg}_1 (\text{seg}_2)$$



Geometric Mean

The altitude is the geometric mean between the segments of the hypotenuse.



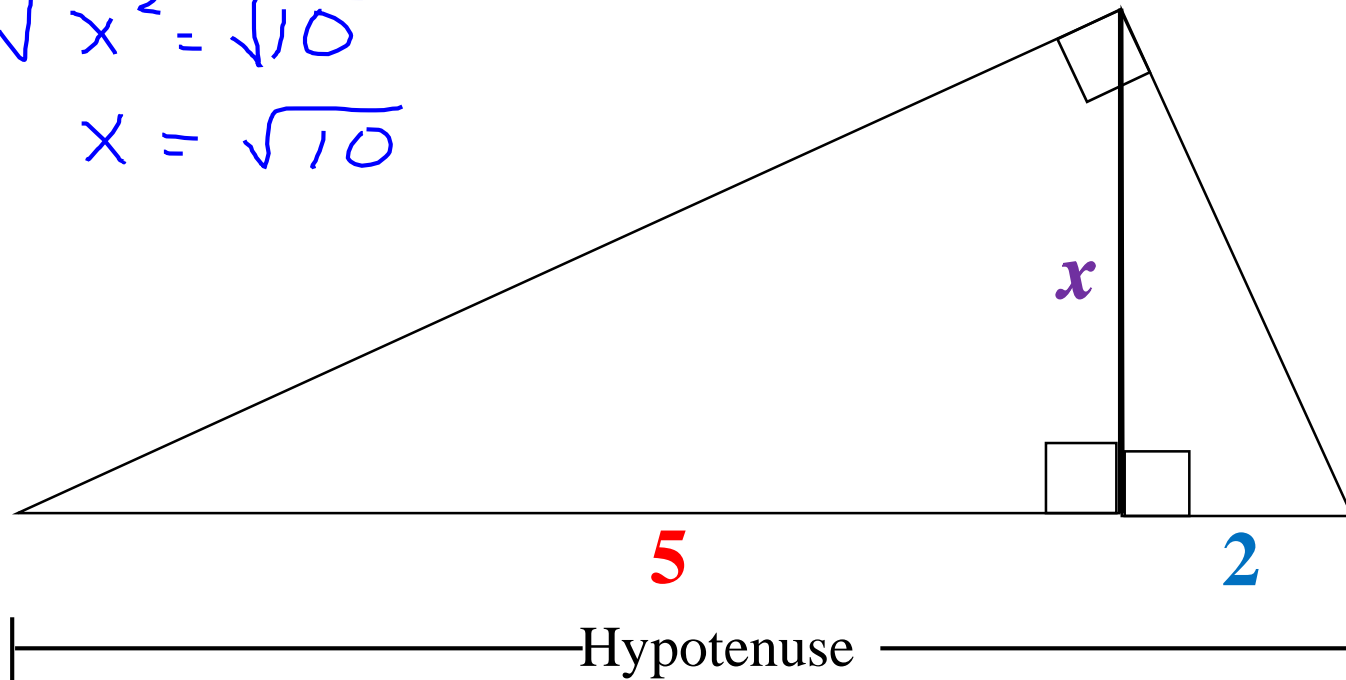
$$\frac{\text{Segment}_1}{\text{Altitude}} = \frac{\text{Altitude}}{\text{Segment}_2}$$

Geometric Mean

The altitude is the geometric mean between the segments of the hypotenuse.

$$x^2 = 5(2)$$
$$\sqrt{x^2} = \sqrt{10}$$
$$x = \sqrt{10}$$

$$\frac{\text{Segment}_1}{\text{Altitude}} = \frac{\text{Altitude}}{\text{Segment}_2}$$



Geometric Mean

The altitude is the geometric mean between the segments of the hypotenuse.

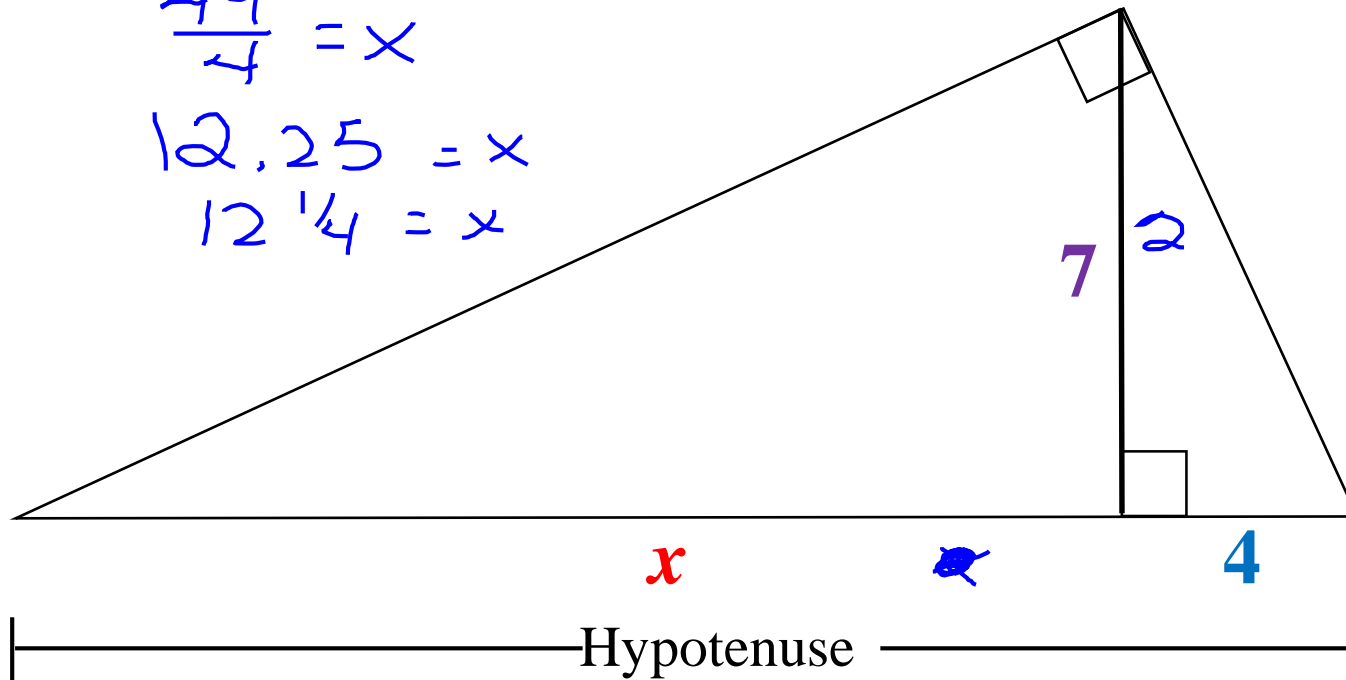
$$7^2 = 4x$$
$$49 = 4x$$

$$\frac{49}{4} = x$$

$$12.25 = x$$

$$12\frac{1}{4} = x$$

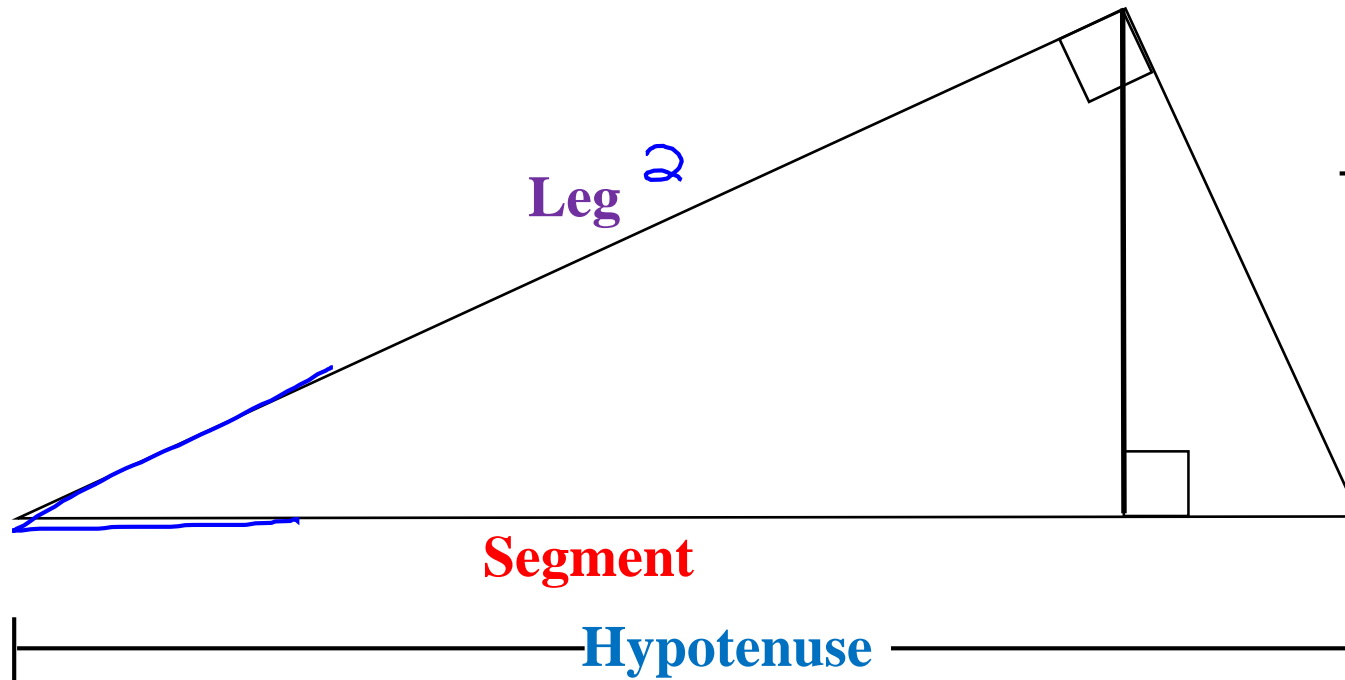
$$\frac{\text{Segment}_1}{\text{Altitude}} = \frac{\text{Altitude}}{\text{Segment}_2}$$



Geometric Mean

The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.

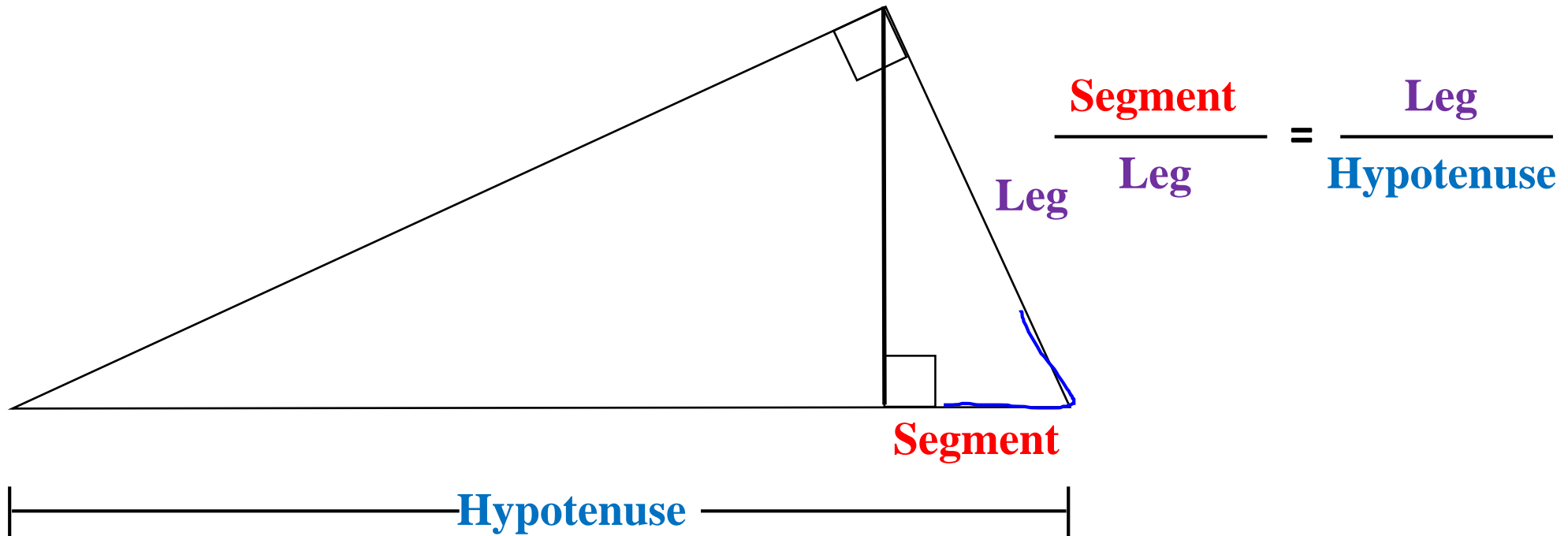
$$\text{leg}^2 = \text{seg} (\text{hyp})$$



$$\frac{\text{Segment}}{\text{Leg}} = \frac{\text{Leg}}{\text{Hypotenuse}}$$

Geometric Mean

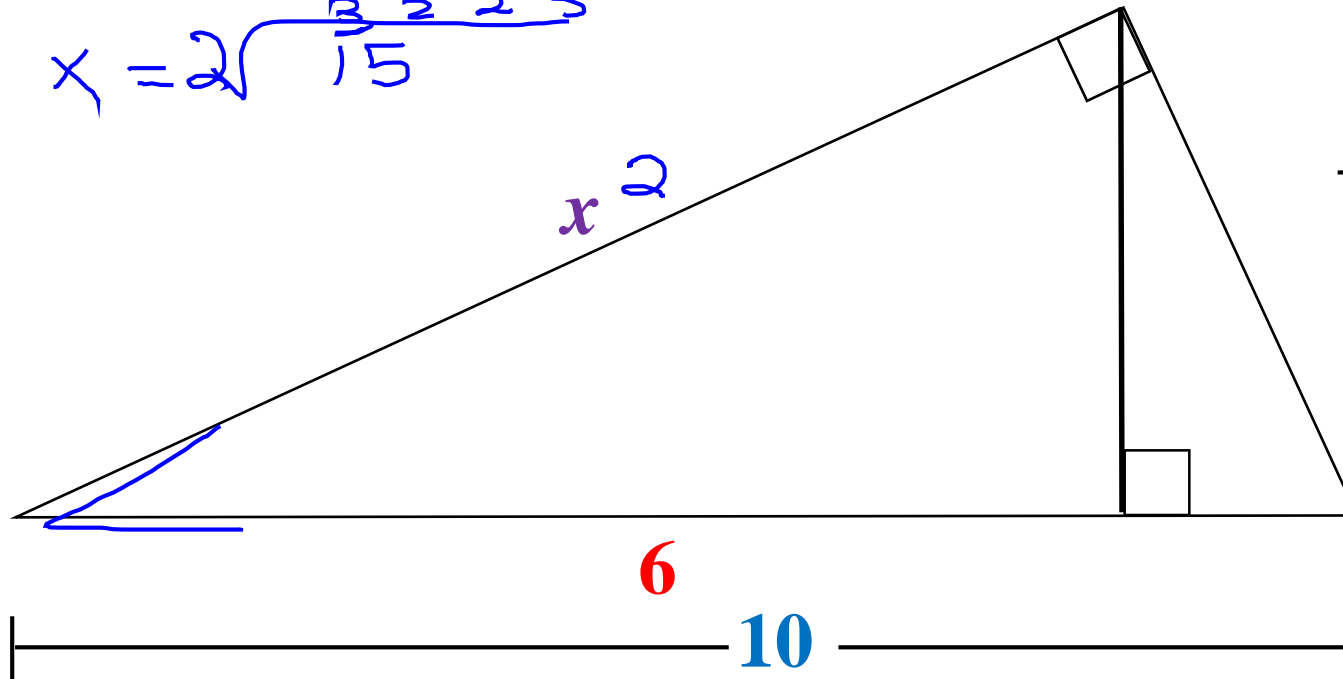
The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.



Geometric Mean

The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.

$$\sqrt{x^2} = \sqrt{6 \cdot 10}$$
$$x = \sqrt{\frac{3 \cdot 2 \cdot 2 \cdot 5}{15}}$$



$$\frac{\text{Segment}}{\text{Leg}} = \frac{\text{Leg}}{\text{Hypotenuse}}$$

Geometric Mean

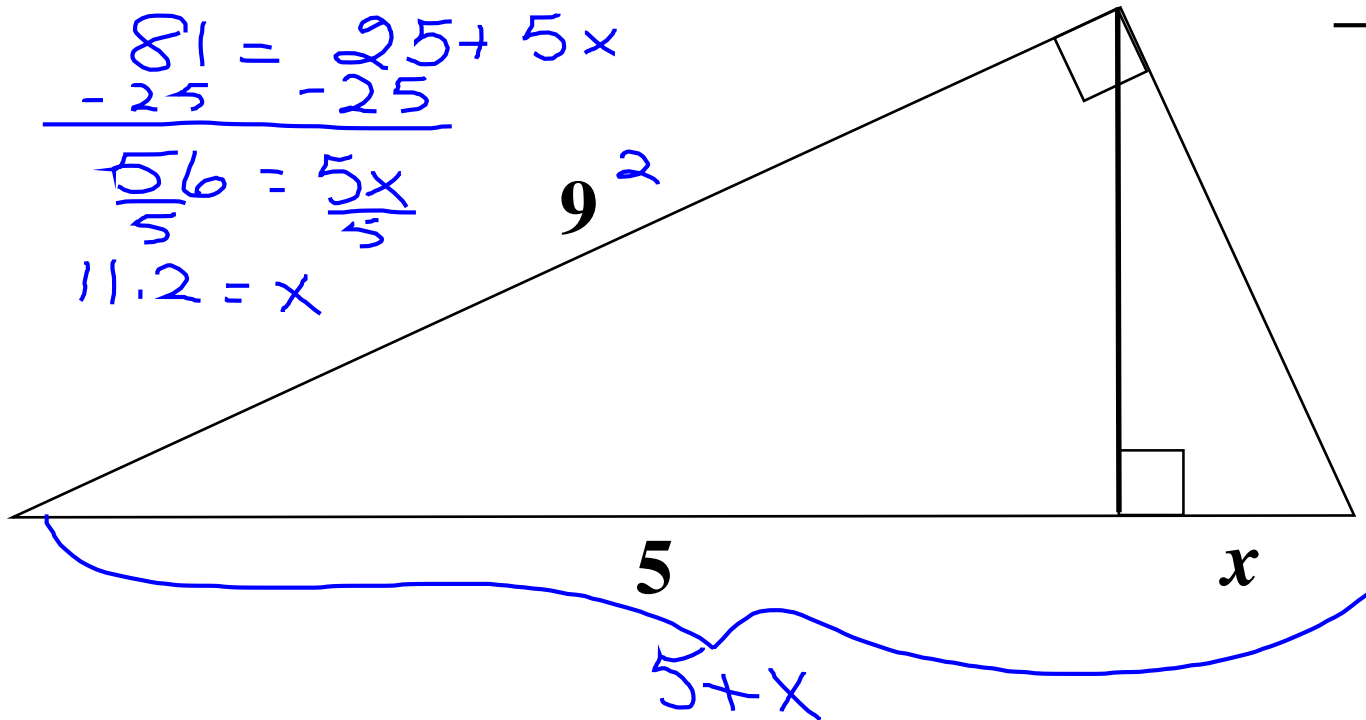
The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.

$$9^2 = 5(5+x)$$

$$\begin{array}{r} 81 = 25 + 5x \\ -25 \quad -25 \\ \hline \end{array}$$

$$\frac{56}{5} = \frac{5x}{5}$$

$$11.2 = x$$



$$\frac{\text{Segment}}{\text{Leg}} = \frac{\text{Leg}}{\text{Hypotenuse}}$$

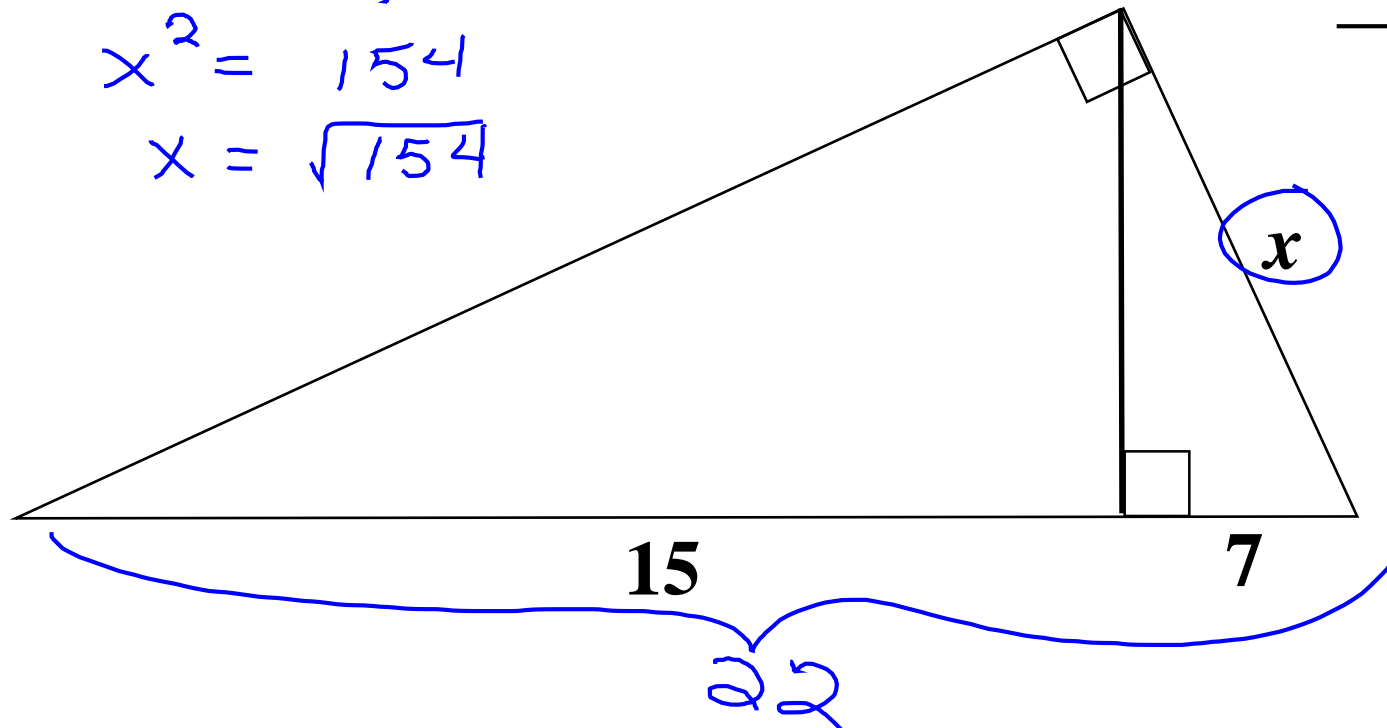
Geometric Mean

The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.

$$x^2 = 7(22)$$

$$x^2 = 154$$

$$x = \sqrt{154}$$

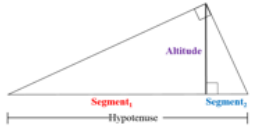
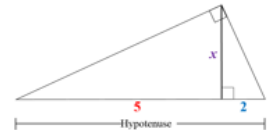
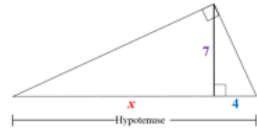

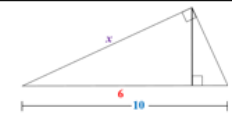

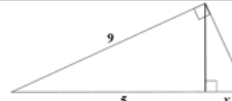
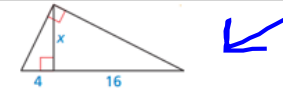


$$\frac{\text{Segment}}{\text{Leg}} = \frac{\text{Leg}}{\text{Hypotenuse}}$$

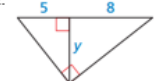

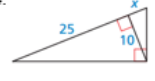




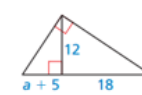


Finish p 2 of Geometric Mean Notes and WS

Geometric Mean Notes and WS

Name _____ Period _____

<p>Geometric Mean The altitude is the geometric mean between the segments of the hypotenuse.</p> 	<p>Find x.</p> 
<p>Find x.</p> 	<p>The leg is the geometric mean between the hypotenuse and the segment adjacent to the given leg.</p> 
<p>Find x.</p> 	<p>Find x.</p> 
<p>Find x.</p> 	<p>1. Find x.</p> 

Find the value of the variable. Leave your answers in simplified radical form.

2. 	3. 	4. 	5. 
6. 	7. 	8. 	9. 
10. 	11. 	12. 