1/23/20 - Warm Up Problem

Find the measure of x and y.

$\frac{2x}{16} = \frac{20}{15}$

$\frac{30x}{30} = \frac{360}{30}$

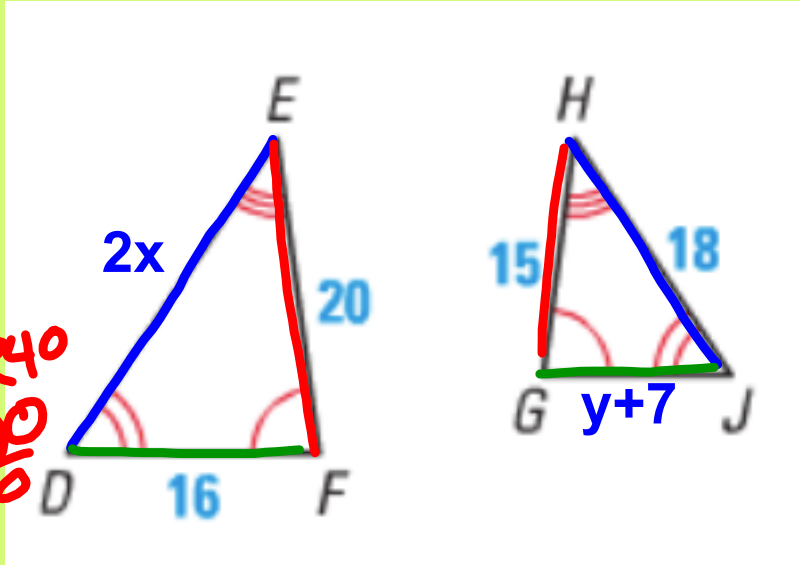
$x = 12$

$\frac{16}{y+7} = \frac{20}{15}$

$120y + 840 = 240$

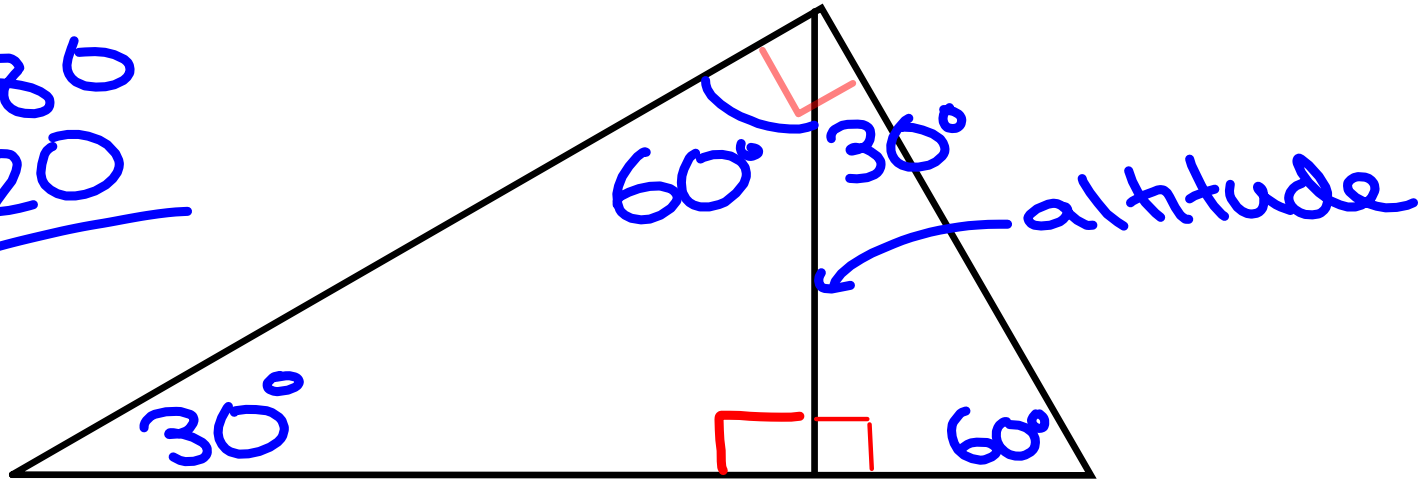
$\frac{120y}{120} = \frac{100}{120}$

$y = 5$



Section 7.4 - Similarity in Right Triangles

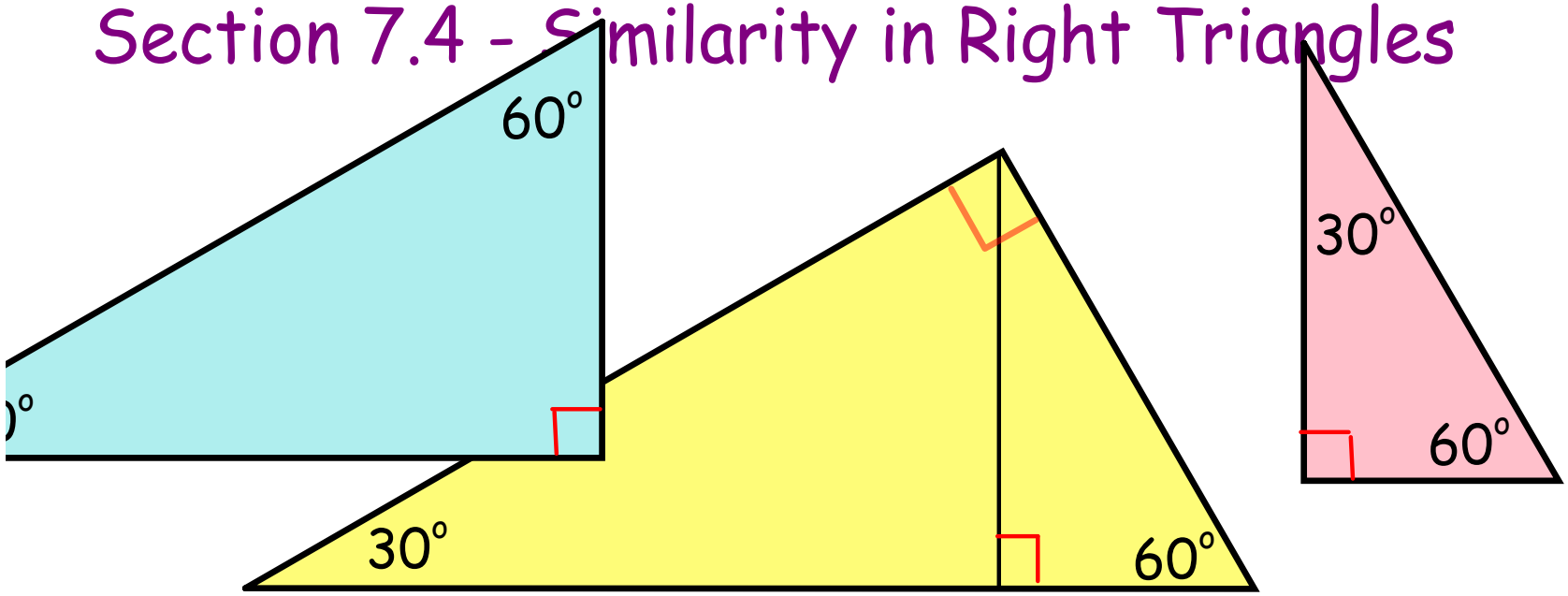
180
- 120



What is an altitude?

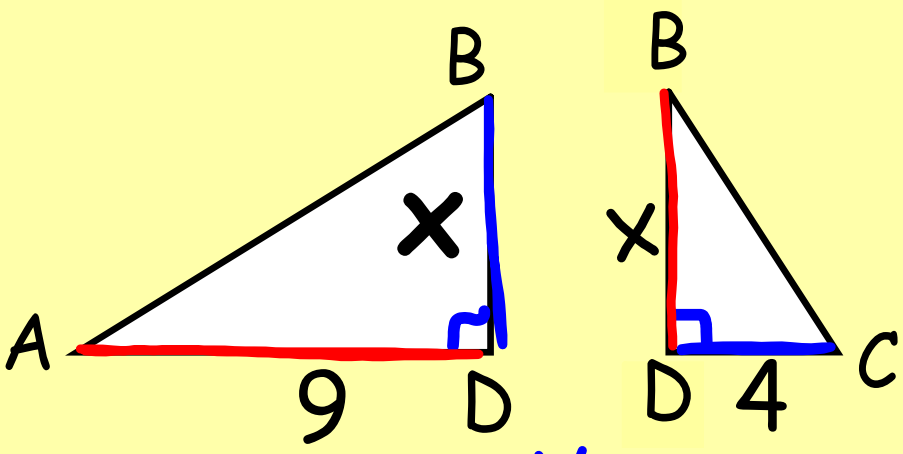
What type of triangles are formed by drawing in an altitude?

Section 7.4 - Similarity in Right Triangles



How would you describe all three of the triangles shown in this diagram?

Find the value of x.



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

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

$$6 = x$$

Proportions where the numbers along one diagonal are the same are called **geometric mean** proportions.

Geometric Mean

The geometric mean of two positive numbers a and b is the positive number x that satisfies $\frac{a}{x} = \frac{x}{b}$

FIND THE GEOMETRIC MEAN OF 12 AND 27.

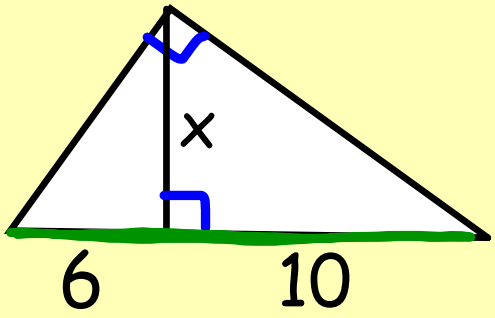
$\frac{12}{x} = \frac{x}{27}$

$\sqrt{x^2} = \sqrt{324}$

$x = 18$

RIGHT TRIANGLE SIMILARITY – FINDING THE ALTITUDE

The length of the altitude to the hypotenuse of a right triangle is the geometric mean of the lengths of the segments of the hypotenuse.



$$\frac{6}{x} = \frac{x}{10}$$

$$\sqrt{x^2} = \sqrt{60}$$

$$x \approx 7.7$$

Assignment:

Concept 18 Worksheet
(front)

USING THE GEOMETRIC MEAN

Find the geometric mean between each pair of numbers. Round answers to the nearest tenth if necessary.

1. 4 and 4

2. 4 and 6

3. 6 and 9

4. $\frac{1}{2}$ and 2

5. 2 and 22

6. 4 and 25

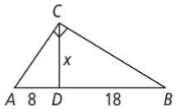
$\frac{1}{2} \quad \frac{x}{2}$

x

$\sqrt{x^2} = \sqrt{1}$ $\quad x = 1$

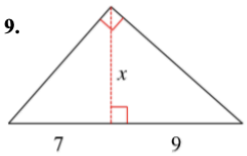
Find the length of the altitude in each right triangle. Round answers to the nearest tenth if necessary.

7.



8.

9.



10.