

Converse of the Pythagorean Theorem: use Pythagorean Thm to find out if a triangle is a right triangle

Determine if the following sides form right triangles. Then state if they form a Pythagorean Triple. ← must be whole numbers

Example 1:

60, 80, 100

$60^2 + 80^2 \stackrel{?}{=} 100^2$
 $3600 + 6400 \stackrel{?}{=} 10000$
 $10000 = 10000$
 right Δ ? Yes
 Pythag. Triple? Yes

Example 2:

45, 60, 76

$45^2 + 60^2 \stackrel{?}{=} 76^2$
 $2025 + 3600 \stackrel{?}{=} 5776$
 $5625 \neq 5776$
 right Δ ? No
 Pythag. Triple? No

Example 3:

2, 4, $\sqrt{20}$

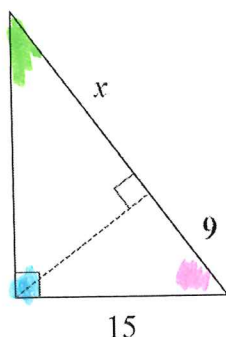
$2^2 + 4^2 \stackrel{?}{=} \sqrt{20}^2$
 $4 + 8 = 20$
 $20 = 20$

right Δ ? Yes
 Pythagorean Triple? No

GEOMETRIC MEAN In-Class Practice

Directions: Draw out the 3 triangles and color code to help find x, y, and/or z. In each problem, find the missing length(s) that are indicated. Leave your answer in SIMPLEST RADICAL FORM!

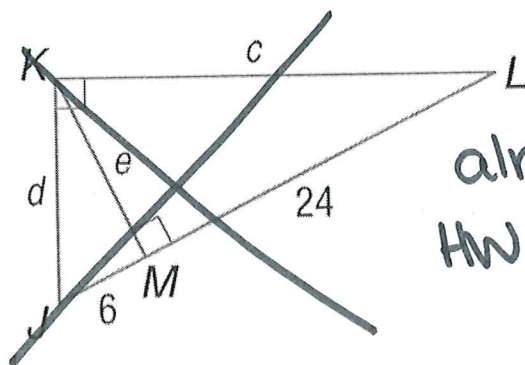
1.



$$\frac{x+9}{15} = \frac{15}{9}$$

$225 = 9x + 81$
 $144 = 9x$
 $16 = x$

2.



already on HW #1

2 #

$\frac{y}{9} = \frac{9}{8}$
 $81 = 8y$
 $10.125 = y$

$\frac{y-8}{x} = \frac{x}{8} \Rightarrow \frac{2.125}{x} = \frac{x}{8}$

$x^2 = 17$
 $x = \sqrt{17}$

3 #

$\frac{x}{8} = \frac{33}{x}$
 $x^2 = 264$
 $x = 2\sqrt{66}$

$\frac{y}{25} = \frac{33}{y}$
 $y^2 = 825$
 $y = 5\sqrt{33}$

$\frac{z}{25} = \frac{8}{z}$
 $z^2 = 200$
 $z = 10\sqrt{2}$

4 #

$\frac{25}{z} = \frac{z}{20}$
 $z^2 = 500$
 $z = 10\sqrt{5}$

$\frac{y}{5} = \frac{25}{y}$
 $y^2 = 125$
 $y = 5\sqrt{5}$

$\frac{x}{20} = \frac{5}{x}$
 $x^2 = 100$
 $x = 10$