Name Key

Converse of the Pythagorean Theorem Homework

Directions: Show all work for each problem.

1. Is a triangle with sides of length 30 centimeters, 40 centimeters, and 50 centimeters a right triangle?

$30^2 + 40^2 = 50^2$

$2500 = 2500$ Yes

2. Is a triangle with sides of length 25 centimeters, 60 centimeters, and 66 centimeters a right triangle?

$25^2 + 60^2 \stackrel{?}{=} 66^2$

$4225 \neq 4356$ No

3. Is a triangle with sides of length 15 centimeters, 20 centimeters, and 26 centimeters a right triangle?

$15^2 + 20^2 \stackrel{?}{=} 26^2$

$625 \neq 676$ NO

4. Is a triangle with sides of length 45 centimeters, 60 centimeters, and 75 centimeters a right triangle?

$45^2 + 60^2 \stackrel{?}{=} 75^2$

$5625 = 5625$ Yes!

5. Is a triangle with sides of length 15 centimeters, 20 centimeters, and 25 centimeters a right triangle?

$15^2 + 20^2 \stackrel{?}{=} 25^2$

$625 = 625$ Yes

6. Which of the triples below could be sides of a right triangle?

(12 mm, 16 mm, 20 mm) Yes

(9 yd, 40 yd, 40 yd) NO

(12 km, 60 km, 61 km) $3744 \neq 3721$ NO

(10 ft, 25 ft, 26 ft) $725 \neq 676$ NO

NAME _____ DATE _____ PERIOD _____

8-1 Practice

Geometric Mean

Find the geometric mean between each pair of numbers to the nearest tenth.

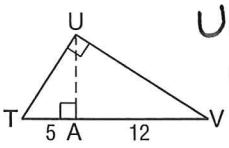
1. 8 and 12 $\sqrt{96}$ $4\sqrt{6}$

2. $3\sqrt{7}$ and $6\sqrt{7}$ $\sqrt{126}$ $3\sqrt{14}$

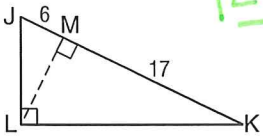
3. $\frac{4}{5}$ and 2 $\sqrt{8/5}$ $\frac{\sqrt{8}}{\sqrt{5}} = \frac{2\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{10}}{5}$

Find the measure of the altitude drawn to the hypotenuse. State exact answers and answers to the nearest tenth.

4. $UA = \sqrt{60}$ $UA = 2\sqrt{15}$

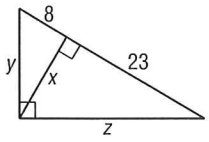


5. $LM = \sqrt{102}$

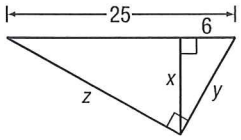


Find x, y, and z.

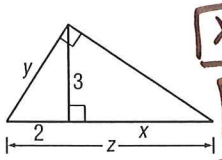
6. $X = \sqrt{184}$ $X = 2\sqrt{46}$ $Y = 2\sqrt{62}$ $Z = \sqrt{713}$



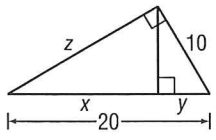
7. $X = \sqrt{114}$ $Y = 5\sqrt{6}$ $Z = 5\sqrt{19}$



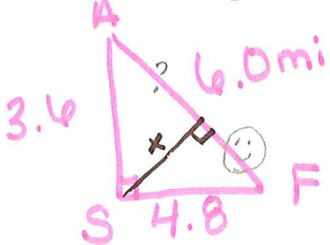
8. $X = 4.5$ $Y = \sqrt{13}$ $Z = 6.5$



9. $X = 15$ $Y = 5$ $Z = 10\sqrt{3}$



10. CIVIL ENGINEERING An airport, a factory, and a shopping center are at the vertices of a right triangle formed by three highways. The airport and factory are 6.0 miles apart. Their distances from the shopping center are 3.6 miles and 4.8 miles, respectively. A service road will be constructed from the shopping center to the highway that connects the airport and factory. What is the shortest possible length for the service road? Round to the nearest hundredth.



$\frac{3.6}{?} = \frac{6}{3.6}$ $? = 2.16$

$\frac{4.8}{\text{☺}} = \frac{6}{4.8}$ ☺ $= 3.84$

$\frac{x}{2.16} = \frac{3.84}{x}$

$x^2 = 8.294$ $x = 2.88\text{mi}$