Bellwork
01/09/2012

Find the geometric mean of the two numbers. Simplify in radical form.

Remember: Multiply, then take the square root!

1. 24 and 9

$\sqrt{216}$

$\sqrt{36} \cdot \sqrt{6}$

$6\sqrt{6}$

2. 32 and 15

$\sqrt{480}$

$\sqrt{16} \cdot \sqrt{30}$

$4\sqrt{30}$

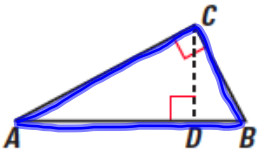
Geometry
7.3 Use Similar Right Triangles
Standard(s): 4, 6

Vocabulary:

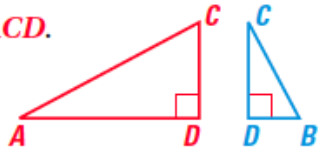
THEOREM *For Your Notebook*

THEOREM 7.5

If the altitude is drawn to the hypotenuse of a right triangle, then the two triangles formed are similar to the original triangle and to each other.



$\triangle CBD \sim \triangle ABC$, $\triangle ACD \sim \triangle ABC$, and $\triangle CBD \sim \triangle ACD$.

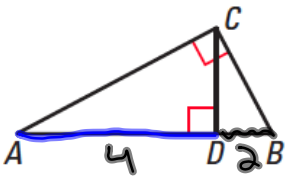


Proof: below; Ex. 35, p. 456

THEOREMS *For Your Notebook*

THEOREM 7.6 Geometric Mean (Altitude) Theorem

$$\frac{\text{piece of hypotenuse}}{\text{altitude}} = \frac{\text{altitude}}{\text{other piece of hypotenuse}}$$

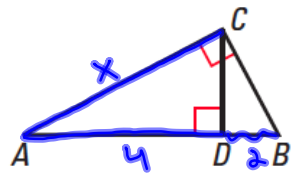


$\frac{BD}{CD} = \frac{CD}{AD}$

Proof: Ex. 36, p. 456

THEOREM 7.7 Geometric Mean (Leg) Theorem

$$\frac{\text{hypotenuse}}{\text{leg}} = \frac{\text{leg}}{\text{piece of hyp. adj. to leg}}$$



$\frac{AB}{CB} = \frac{CB}{DB}$ and $\frac{AB}{AC} = \frac{AC}{AD}$

$x^2 = 24$

Proof: Ex. 37, p. 456

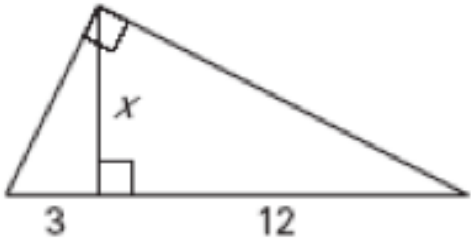
Use Proportions

Complete the statement and solve the proportions.

$$\frac{12}{x} = \frac{x}{3}$$

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

$x = 6$

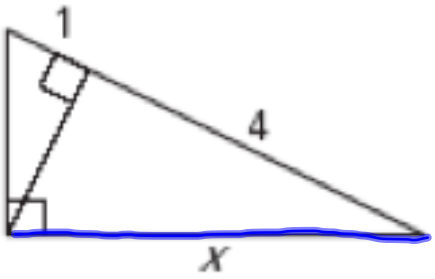


$$\frac{5}{x} = \frac{x}{4}$$

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

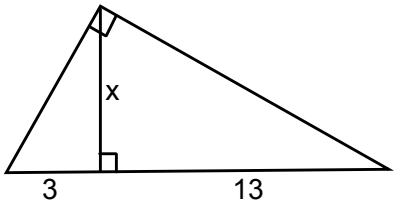
$\sqrt{4} \cdot \sqrt{5}$

$x = 2\sqrt{5}$

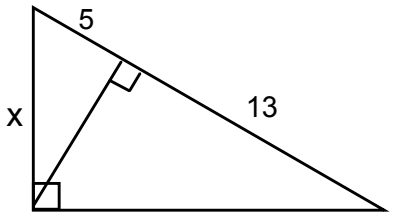


Find Missing Values

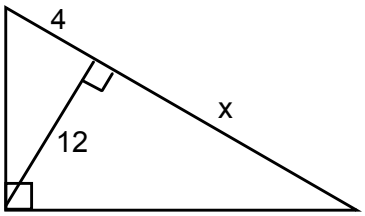
Find the value of the variables.



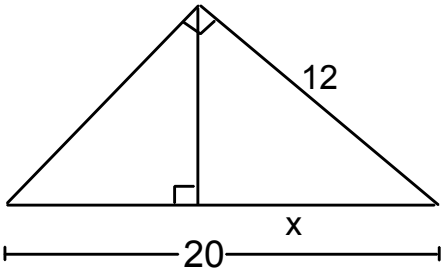
$$\frac{13}{x} = \frac{x}{3}$$
$$x^2 = 39$$
$$x = \sqrt{39}$$



$$\frac{18}{x} = \frac{x}{5}$$
$$\sqrt{x^2} = \sqrt{90}$$
$$x = \sqrt{90}$$
$$x = 3\sqrt{10}$$



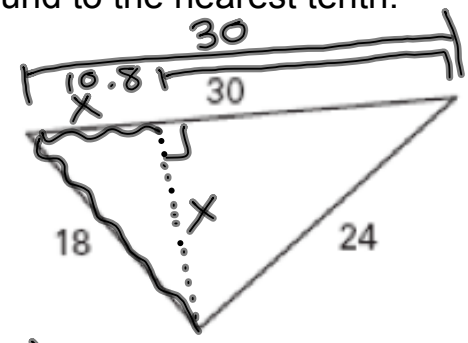
$$\frac{x}{12} = \frac{12}{4}$$
$$4x = 144$$
$$x = 36$$



$$\frac{20}{12} = \frac{12}{x}$$
$$20x = 144$$
$$x = 7.2$$

Classify Δ First

Tell whether the Δ is a right Δ. If so, find the length of the altitude. Round to the nearest tenth.



$(30)^2 \quad (18)^2+(24)^2$

$900 \quad 324+576$

$900=900$ ✓

1) $\frac{30}{18}=\frac{18}{x}$

$30x=324$

$x=10.8$

2) $30-10.8=$

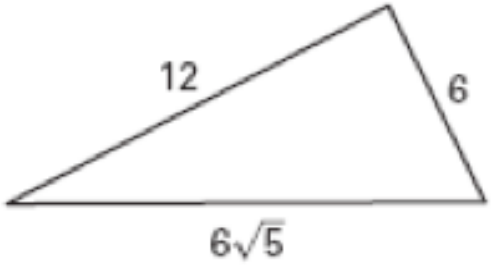
$19.2 \leftarrow 2^{nd}$ piece of hyp.

3) $\frac{10.8}{x}=\frac{x}{19.2}$

$x^2=207.36$

$x=\sqrt{207.36}$

$x=14.4$



Homework Assignment

Worksheet 7.3B