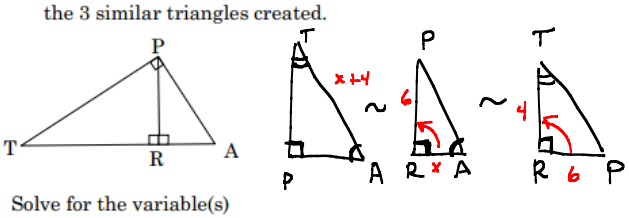
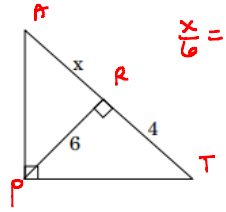
Note Title 2/13/2015

**Worksheet 2 Altitude to the hypotenuse** Name _____

1) If an altitude is drawn to the hypotenuse of triangle TAP below, then name and redraw the 3 similar triangles created.

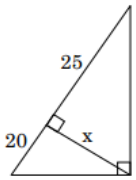



Solve for the variable(s)

2) 


$\frac{x}{6} = \frac{6}{4} \rightarrow 6^2 = x4$

$9 = x$

3) 

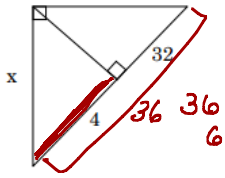

$25(20) = x^2$

$\sqrt{25}\sqrt{20} = x$

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

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

$10\sqrt{5} = x$

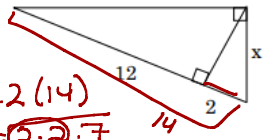
4) 


$leg^2 = adj \cdot whole$

$36 \cdot 4 = x^2$

$6 \cdot 2 = x$

$12 = x$

5) 

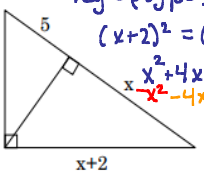

$x^2 = 2(14)$

$\sqrt{x^2} = \sqrt{2 \cdot 2 \cdot 7}$

$x = 2\sqrt{7}$

6) $(x+2)(x+2)$

$x^2 + 2x + 2x + 4$



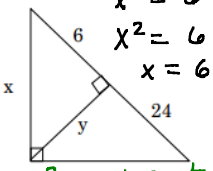

$leg^2 = (adj\ pt)(whole)$

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

$x^2 + 4x + 4 = x^2 + 5x$

$-x^2 - 4x \quad -x^2 - 4x$

$4 = x$

7) 


$leg^2 = adj\ (whl)$

$x^2 = 6(30)$

$x^2 = 6 \cdot 6 \cdot 5$

$x = 6\sqrt{5}$

$alt^2 = part \cdot part$

$y^2 = 6 \cdot 24$

$y^2 = 144$

$y = 12$

Find the geometric mean for the following numbers.

8) 32 and 2

$\frac{32}{x} = \frac{x}{2} \rightarrow x^2 = 64$

$x = 8$

9) 6 and 8

$\frac{6}{x} = \frac{x}{8} \rightarrow x^2 = 48$

$x = \sqrt{16}\sqrt{3}$

$x = 4\sqrt{3}$

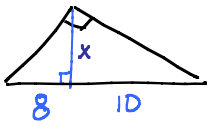
10) 6 and 7

11) 10 and 6

12) 3 and 50

13) 16 and 25

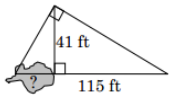
14) The altitude, $\overline{XR}$, to the hypotenuse of right $\triangle WXY$ divides the hypotenuse into segments that are 8 and 10 cm long. Find the length of the altitude.




$x^2 = 8 \cdot 10$

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

15) How far is it across the quicksand?

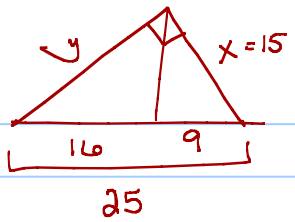



$41^2 = ?(115)$

$\frac{1681}{115} = ?$

$14.6\text{ft} = ?$

16) The altitude of a right triangle divides the hypotenuse into two segments whose lengths are 9 cm and 16 cm. Find the lengths of the two legs.



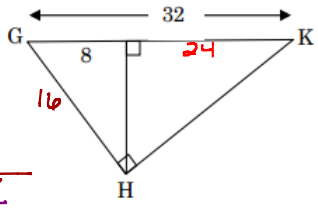

$25 \cdot 9 = x^2$

$5 \cdot 3 = x$

$y^2 = 25 \cdot 16$

$y = 5 \cdot 4 = 20$

17) Find the lengths of GH and HK.




$GH^2 = 32 \cdot 8$

$GH = \sqrt{2 \cdot 2 \cdot 8 \cdot 8}$

$GH = 16$

$HK^2 = 24 \cdot 32$

$HK = \sqrt{4 \cdot 6 \cdot 4 \cdot 8}$

$HK = \sqrt{4 \cdot 4 \cdot 2 \cdot 3 \cdot 2 \cdot 2 \cdot 2}$

$KH = 4 \cdot 2 \cdot 2\sqrt{3}$

$HK = 16\sqrt{3}$

Homework
9.3: 377/ 1-17 all, 21