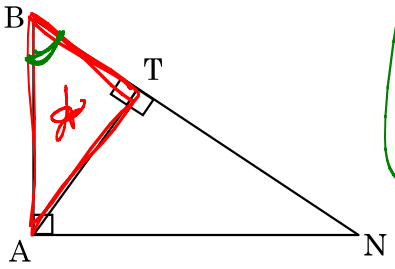
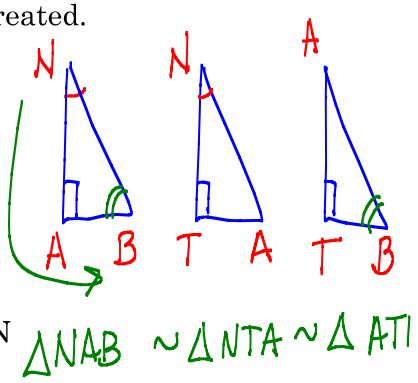
Worksheet 1 Altitude to the Hypotenuse Name _____

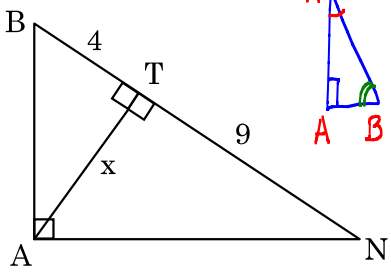
1) If an altitude is drawn to the hypotenuse of triangle BAN below, then name and redraw the 3 similar triangles created.

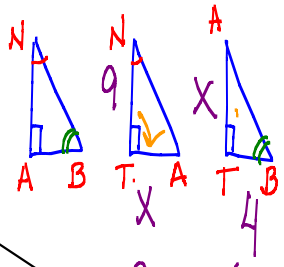




Find the missing value "x" below:

2)

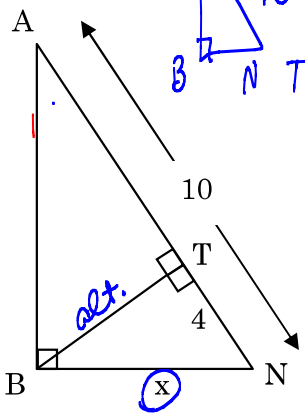


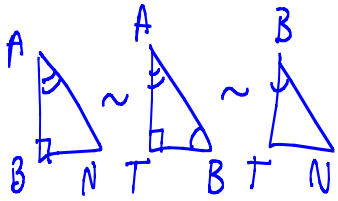


$\frac{9}{x} = \frac{x}{4}$

$\frac{\text{long leg}}{\text{short}} = \frac{\text{long}}{\text{short}}$

3)





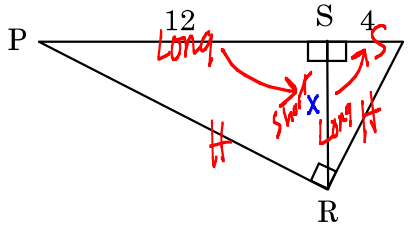
$\frac{10}{x} = \frac{x}{4} \rightarrow x = 2\sqrt{10}$

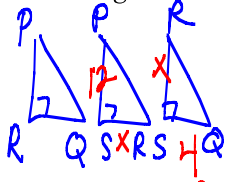
$\frac{\text{hyp}}{\text{leg}} = \frac{\text{hyp}}{\text{leg}}$

$\frac{\text{leg}}{\text{hyp}} = \frac{\text{leg}}{\text{hyp}} \rightarrow \frac{x}{10} = \frac{4}{x}$

For 4-6 find the length of the altitude of right triangle PQR.

4)

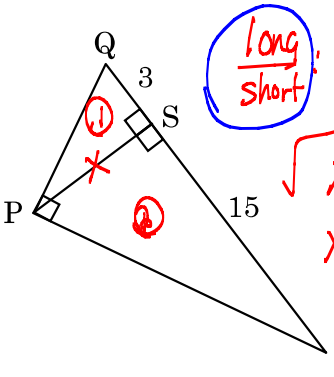




$\frac{12}{x} = \frac{x}{4} \rightarrow x^2 = 4 \cdot 4 \cdot 3$

$x = 4\sqrt{3}$

5)

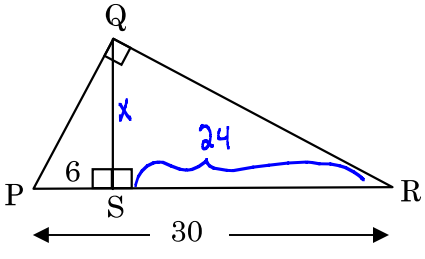


$\frac{\text{long}}{\text{short}}: \frac{x}{3} = \frac{15}{x}$

$x^2 = 3 \cdot 3 \cdot 5$

$x = 3\sqrt{5}$

6)



$\frac{6}{x} = \frac{x}{24}$

$x^2 = 6 \cdot 6 \cdot 4$

$x = 6\sqrt{4}$

$x = 12$

Find the geometric mean of the following numbers.

7) 5 and 8

$\frac{5}{x} = \frac{x}{8}$

8) 7 and 11

$x = \sqrt{77}$

9) 4 and 9

$x = 6$

10) 2 and 25

$x = 5\sqrt{2}$

11) 6 and 8

$x = 4\sqrt{3}$

12) 8 and 32

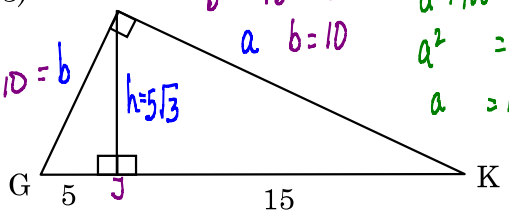
$x = 16$

For 7-9 find the length of each leg of right triangle GHK. (find GH and HK)

Hint: find altitude first, then you can do similar triangles or Pythagorean Theorem.

$leg^2 + leg^2 = hyp^2$

13)



$b^2 = h^2 + 5^2$

$b^2 = 75 + 25$

$b = 10$

$a^2 + b^2 = 6K^2$

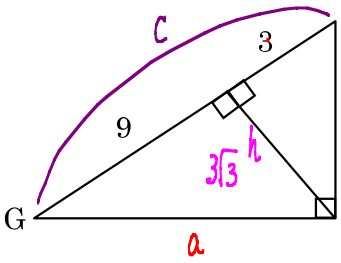
$a^2 + 100 = 400$

$a^2 = 300$

$a = 10\sqrt{3}$

$\frac{5}{h} = \frac{h}{15} \rightarrow h = 5\sqrt{3}$

14)



$\frac{3}{h} = \frac{h}{9}$

$h^2 + 3^2 = b^2$

$27 + 9 = b^2$

$36 = b^2$

$6 = b$

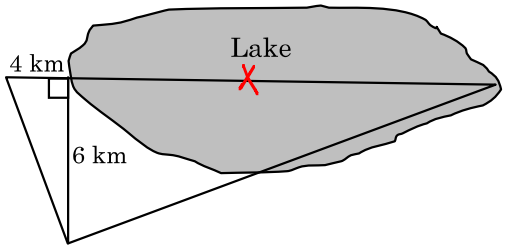
$a^2 + 6^2 = 12^2$

$a^2 = 144 - 36$

$a^2 = 108$

$a = 6\sqrt{3}$

15) How far is it across the lake?



$\frac{4}{6} = \frac{6}{x}$

$x = 9$