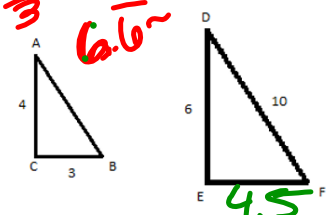
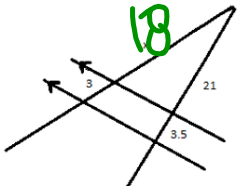
Quiz 1

1.) Use proportions to find the missing side lengths. ΔABC and ΔDEF are similar.

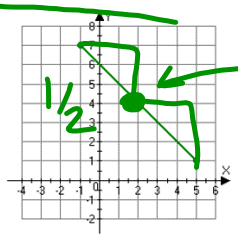


2.) Find the value of x.

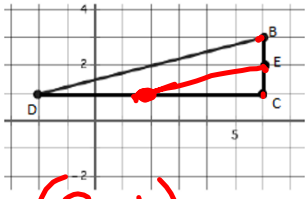


3.) Find the arithmetic mean of 33, 4, 75, 108, 89

4.) Find the coordinates of the midpoint of the line segment below.

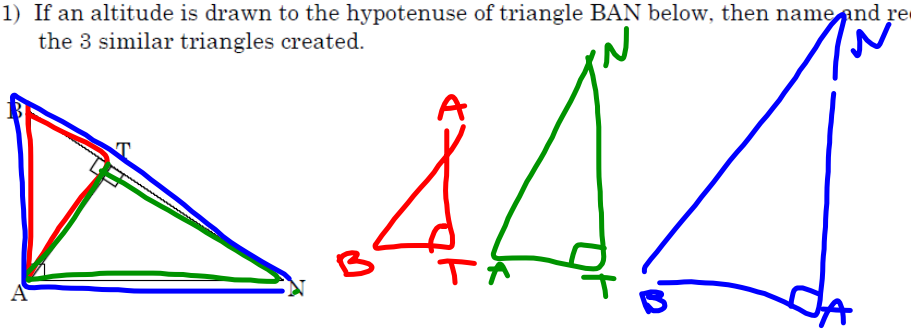


5.) If a line is drawn parallel to $\overline{BD}$ and through point E.
At what coordinates will the intersection of this parallel line be with $\overline{DC}$? Use proportional relationships!



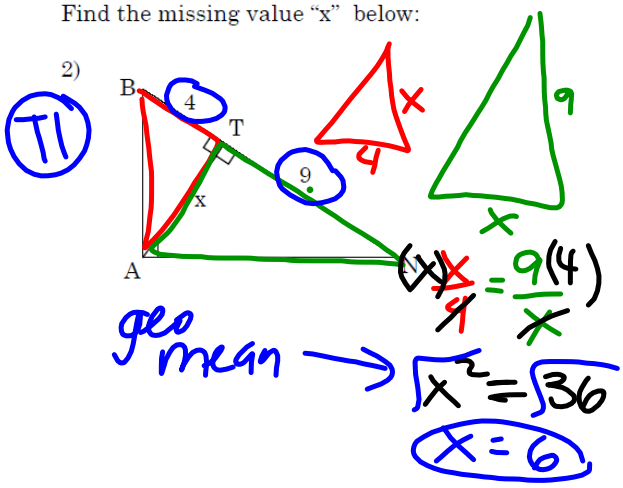
Worksheet 1 Altitude to the Hypotenuse Name _____

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

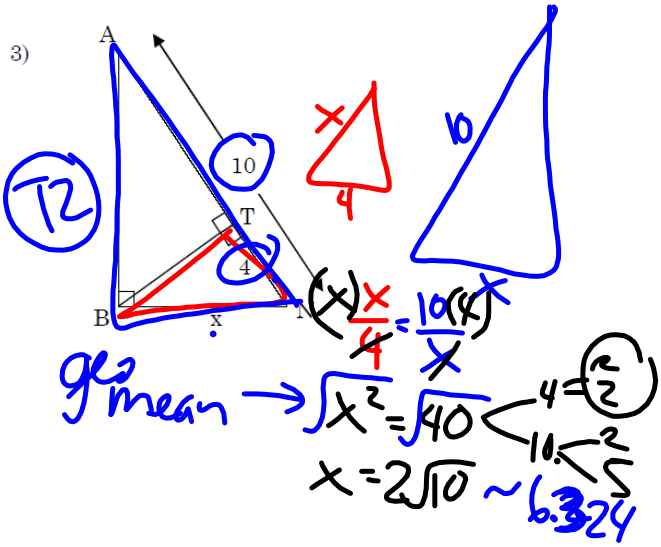


Find the missing value "x" below:

2)

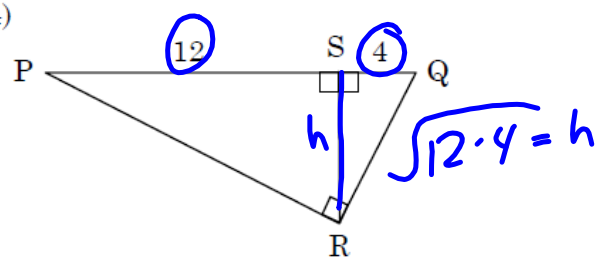


3)



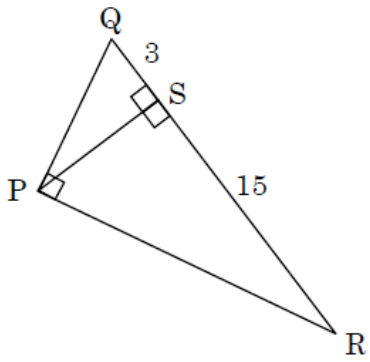
For 4-6 find the length of the altitude of right triangle PQR.

4)

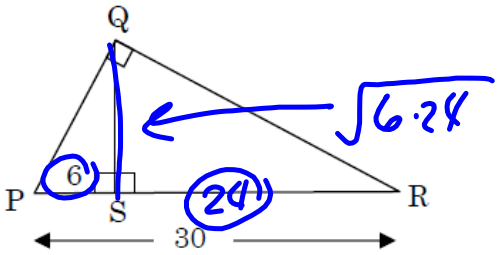


$\sqrt{12 \cdot 4} = h$

5)



6)



$\sqrt{6 \cdot 24}$

Find the geometric mean of the following numbers.

7) 5 and 8

$\sqrt{5 \cdot 8}$

8) 7 and 11

9) 4 and 9

10) 2 and 25

11) 6 and 8

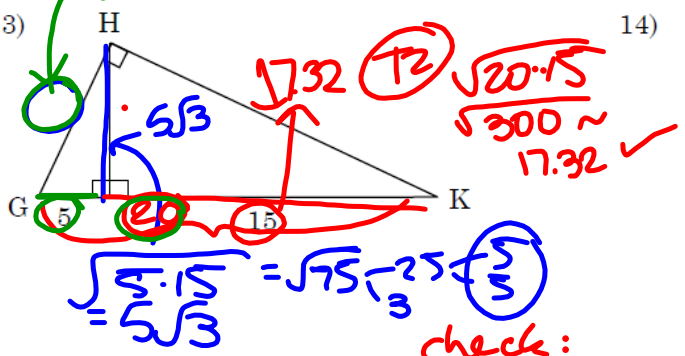
12) 8 and 32

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

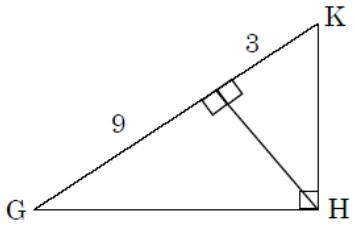
Hint: find altitude first, then you can do similar triangles or Pythagorean Theorem.

A7 Notes

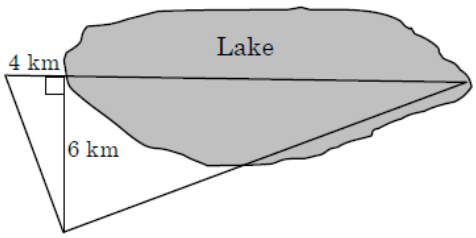
13)



14)



15) How far is it across the lake?

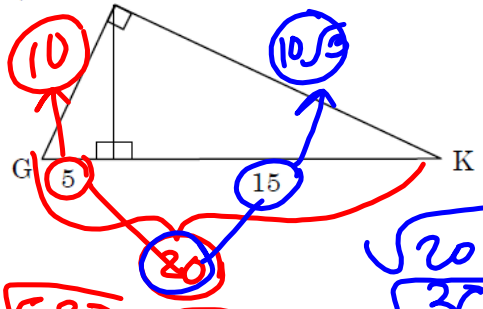


For 7-9 find the length of each leg of right triangle GHK. (find GH and HK)

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

B1 Notes

13)



$\sqrt{5 \cdot 20} = \sqrt{100} = 10$

$\sqrt{20 \cdot 15}$

$\sqrt{300}$

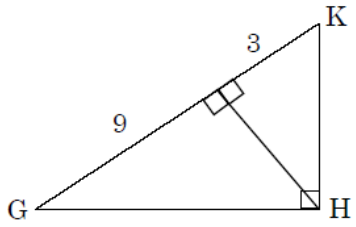
$10\sqrt{3}$

$20 - 15 = 5$

$4 + 5 = 9$

2

14)



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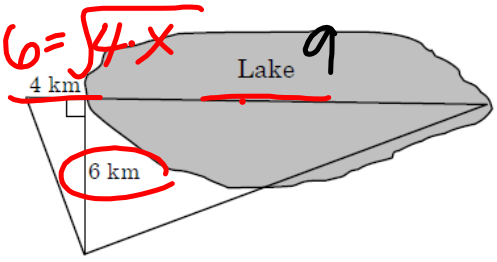


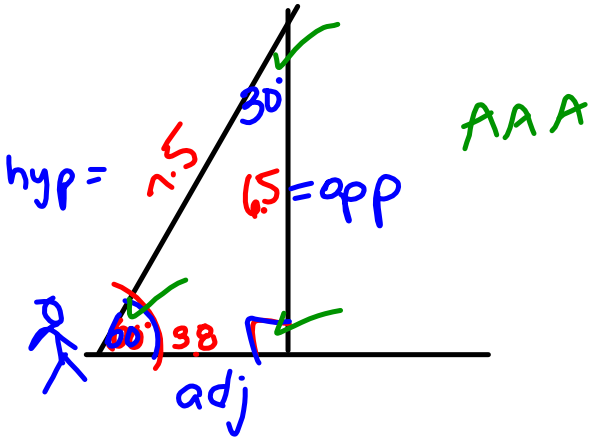
$6 = \sqrt{4 \cdot x}$

$6^2 = \sqrt{4x}^2$

$\frac{36}{4} = \frac{4 \cdot x}{4}$

$x = 9$

Lesson 6.8



6. 8 Are Relationships Predictable?

A Develop Understanding Task

In your notebook draw a right triangle with one angle of 60°.
Measure each side of your triangle as accurately as you can with a centimeter ruler.
Using the 60^0 angle as the ***angle of reference*** list the measure for each of the following:

Length of the ***adjacent*** side: 3.8 Length of the ***opposite*** side: 6.5

Length of the ***hypotenuse***: 7.5

Create the following ratios using your measurements:

$$\frac{\textit{opposite side}}{\textit{hypotenuse}} = \frac{6.5}{7.5} = .84 \checkmark \quad .86 \quad .\overline{86} \quad .85$$

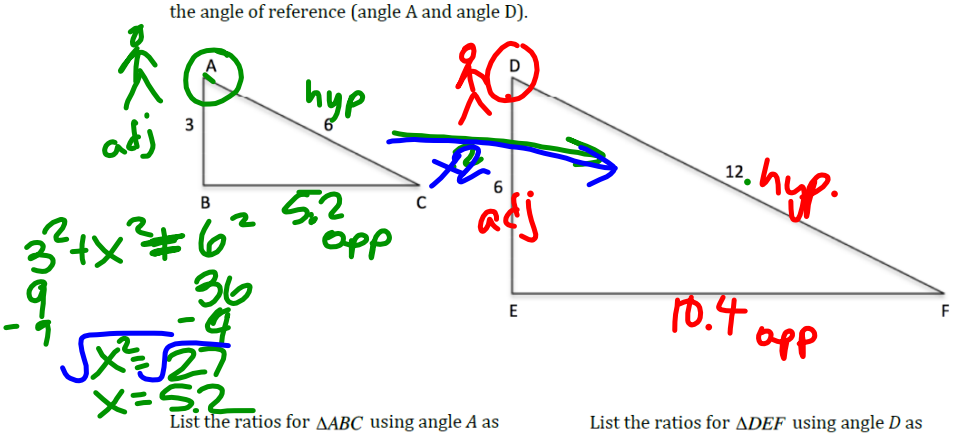
$$\frac{\textit{adjacent side}}{\textit{hypotenuse}} = \frac{3.8}{7.5} \quad .5 \quad .5 \checkmark \quad .48 \quad .49$$

$$\frac{\textit{opposite side}}{\textit{adjacent side}} = \frac{6.5}{3.8} \quad 1.8 \quad 1.8 \checkmark \quad 1.7 \quad 1.8\overline{3}$$

1. Compare your ratios with others that had a triangle of a different size. What do you notice? Explain any connections you find to others' work?

They were similar
- All Δ's were similar

2. In the right triangles below find the missing side length and then create the desired ratios based on the angle of reference (angle A and angle D).



List the ratios for ΔABC using angle A as the angle of reference.

$\sin = \frac{\text{opposite side}}{\text{hypotenuse}} = \frac{5.2}{6} = .8\overline{6}$

$\cos = \frac{\text{adjacent side}}{\text{hypotenuse}} = \frac{3}{6} = .5$

$\tan = \frac{\text{opposite side}}{\text{adjacent side}} = \frac{5.2}{3} = 1.7\overline{3}$

List the ratios for ΔDEF using angle D as the angle of reference.

$\frac{\text{opposite side}}{\text{hypotenuse}} = \frac{10.4}{12} = .8\overline{6}$

$\frac{\text{adjacent side}}{\text{hypotenuse}} = \frac{6}{12} = .5$

$\frac{\text{opposite side}}{\text{adjacent side}} = \frac{10.4}{6} = 1.7\overline{3}$

3. What do you notice about the ratios from the two given triangles? How do these ratios compare to the ratios from the triangle you made on the previous page?

They are the same. Compared to mine, really close, maybe some measurement error.

4. What can you infer about the angle measures of ΔABC and ΔDEF?

Since they are similar Δ's, because there is a constant ratio, all the angles are the same.

5. Why do the relationships you have noticed occur?

if the sides are proportional, then the ratio of sides is proportional.

6. What can you conclude about the ratio of sides in a right triangle that has a 60° angle? Would you think that right triangles with other angle measures would have similar relationships among their ratios?

$\sin\theta = \frac{O}{H}$

$\cos\theta = \frac{A}{H}$

$\tan\theta = \frac{O}{A}$

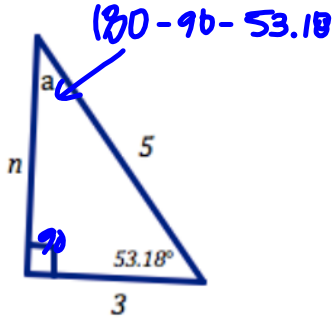
SoH CAH TOA

READY

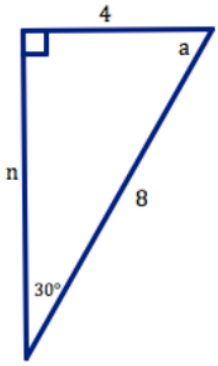
Topic: Properties of angles and sides in right triangles

For each right triangle below find the missing side *n* (Pythagorean Theorem could be helpful) and the missing angle, a (Angle Sum Theorem for Triangles could be useful).

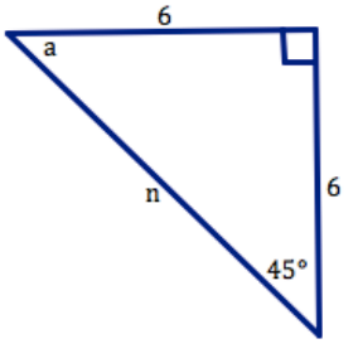
1.



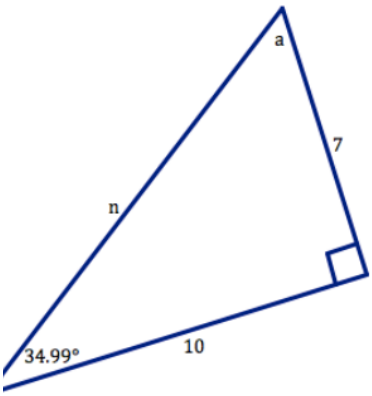
2. 180



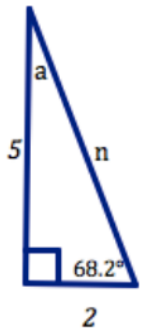
3.



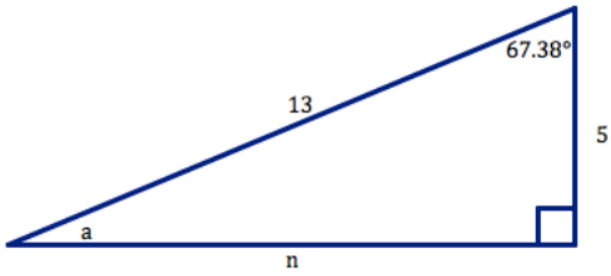
4.



5.



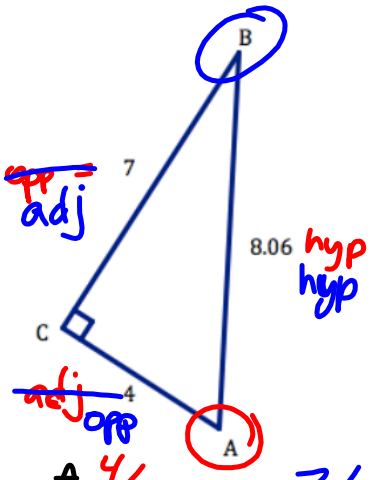
6.



Topic: Creating trigonometric ratios for right triangles

For each right triangle and the identified angle of reference create the desired trigonometric ratios. If any sides of the triangle are missing, find them before determining the ratio.

7.

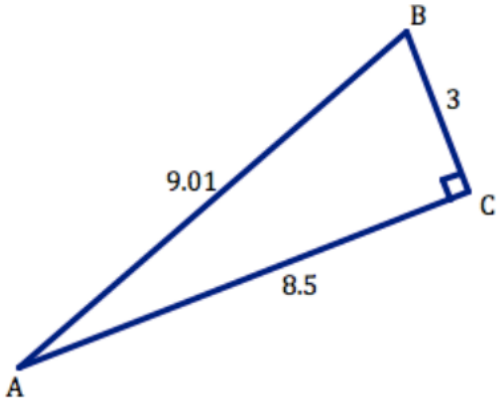


Cos (A)= A/H 4/8.06 Cos (B)= 7/8.06

Sin (A)= O/H 7/8.06 Sin (B)= 4/8.06

Tan (A)= O/A 7/4 Tan (B)= 4/7

8.

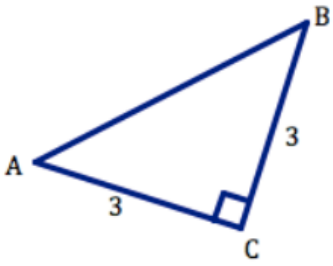


Cos (A)= Cos (B)=

Sin (A)= Sin (B)=

Tan (A)= Tan (B)=

9.

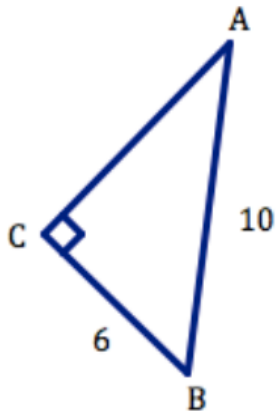


Cos (A)= Cos (B)=

Sin (A)= Sin (B)=

Tan (A)= Tan (B)=

10.



Cos (A)= Cos (B)=

Sin (A)= Sin (B)=

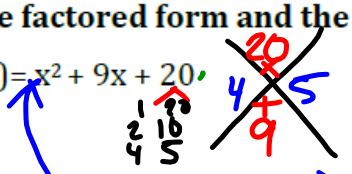
Tan (A)= Tan (B)=

GO

Topic: Factoring quadratics

Provide the factored form and the x- and y-intercepts

11. $f(x)= x^2 + 9x + 20$



factored form: $(x+4)(x+5)=0$

x-intercepts: sub $y=0$ $x=-4, -5$

y-intercept: Sub $x=0$ $0^2+9(0)+20$ $=20$

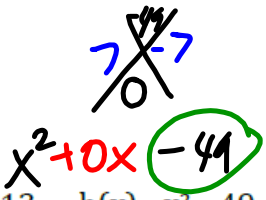
12. $g(x)= x^2 + 2x - 15$

factored form:

x-intercepts:

y-intercept:

13. $h(x)= x^2 - 49$



factored form: $(x+7)(x-7)$

x-intercepts: $x=-7, 7$

y-intercept: -49

14. $r(x)= x^2 - 13x + 30$

factored form:

x-intercepts:

y-intercept:

15. $f(x)= x^2 + 20x + 100$

factored form:

x-intercepts:

y-intercept:

16. $g(x)= x^2 - 8x - 48$

factored form:

x-intercepts:

y-intercept:

17. $h(x)= x^2 + 16x + 64$

factored form:

x-intercepts:

y-intercept:

18. $k(x)= x^2 - 36$

factored form:

x-intercepts:

y-intercept:

19. $p(x)= x^2 - 2x - 24$

factored form:

x-intercepts:

y-intercept: