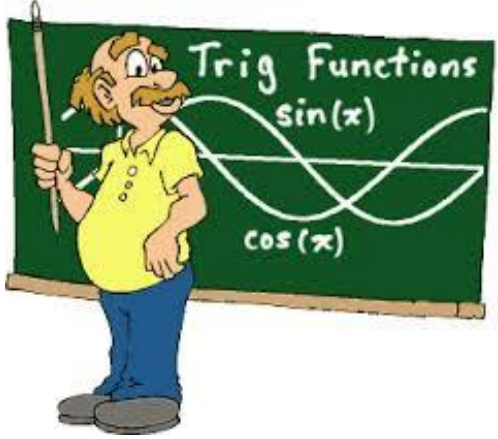
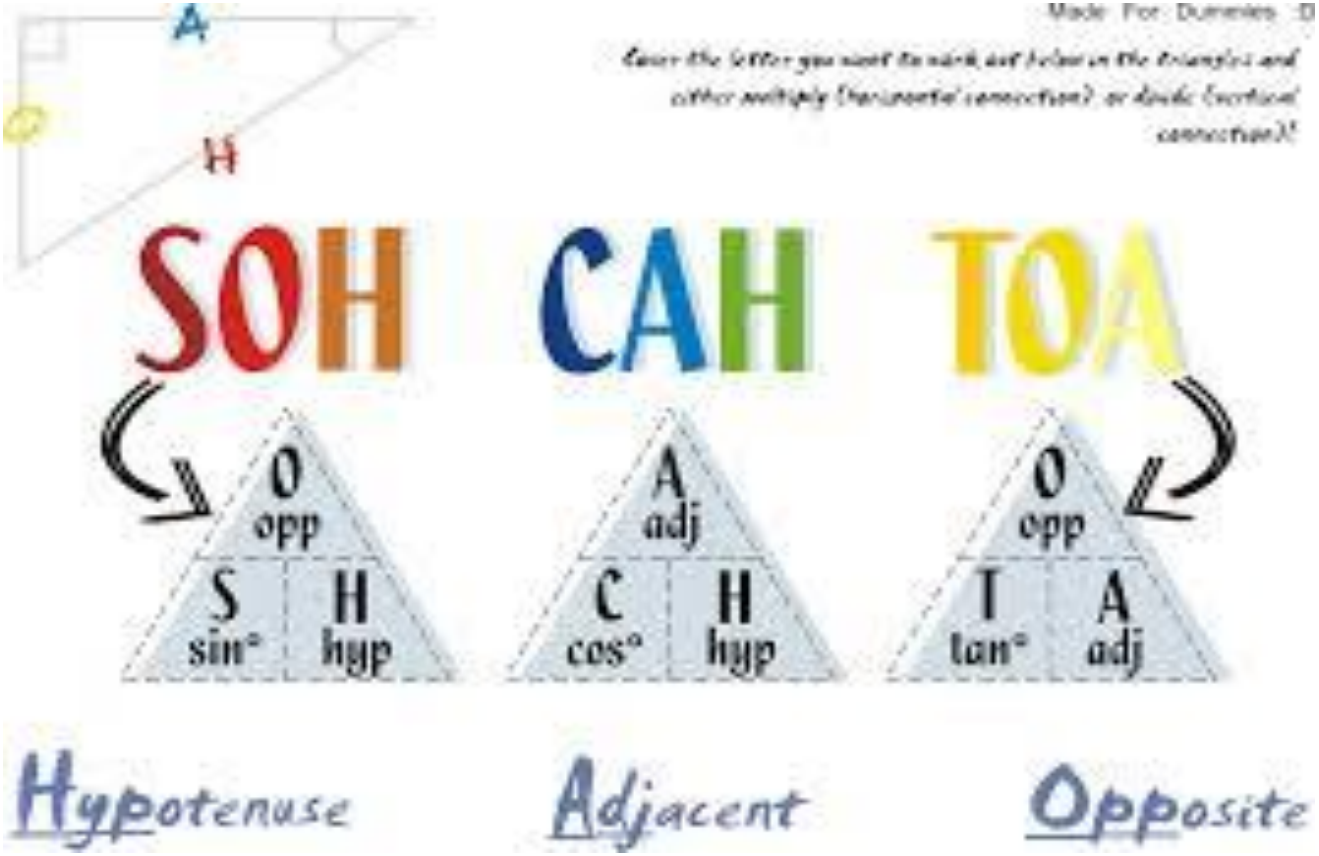
Trigonometry
Day 1



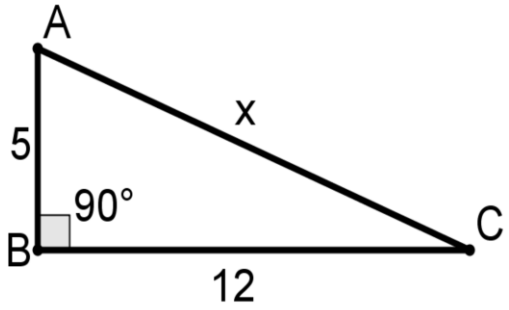


Warm Up

Please make sure you have a ruler that measures in Centimeters (cm)!

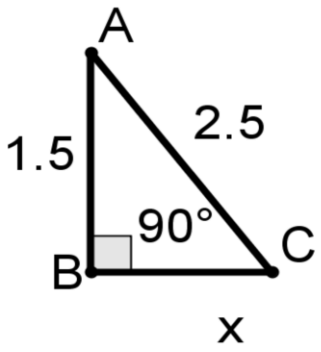
Given the following triangles, find x.

1.



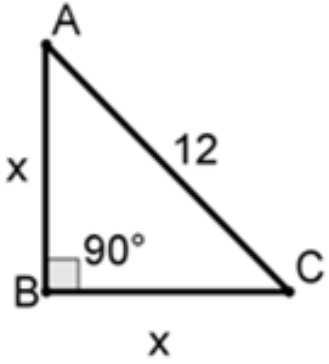
X = 13

2.



X = 2

3.



$X = 6\sqrt{2}$

Solve for the missing variables

4. $x^2 - 12x = 45$

X = 15, -3

5. $y = \frac{1}{2}x - 5$

$3x + 8y = 2$

X = 6 and Y = -2

6. Simplify $(-5\sqrt{3})^2$

75

Cumulative Review Answers

1. $BC = 9$
2. $AB = 1$
3. $AB = 5$
4. $AB = 10$
5. $\dfrac{4b^{10}}{a^3c^{13}}$
6. $6x\sqrt[3]{10x^2}$
7. $5x^3\sqrt{5x}$
8. $B.\ (3,1)$
9. $y = 15$
10. $x = 4\sqrt{10}$
11. $a = 6\sqrt{2},\ b = 6\sqrt{2}, c = 45^\circ$
12. $(3,1)$
13. $(-3,4)$
14. reflection over line CD
15. rotation 180° about the origin
16. translation right DP units,
    reflect over x-axis

Cumulative Review Answers

17. translation left AM units

18. m = 9, 4/3

19. $\dfrac{3 \pm \sqrt{13}}{2}$ *Use* $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

20. *C*

21. *B*

22. *A*

23. *D*

24. *a.* $y = 65(2)^{x/4}$ *b.* 4160

25. *B* Use point-ratio $y = y_1 \bullet b^{x - x_1}$

Tonight's Homework

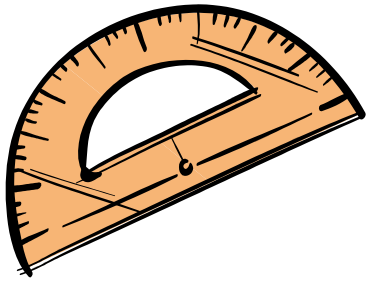
Packet Page 1 Odds AND Page 2 All

Print your Unit 5 Homework Packet, if you have not yet done so!!!

Finish assembling your clinometer for the lab – Clinometer due Tomorrow!!

(more details on next slide – and on handout)

Instructions on Clinometer Assembly (handout)



Please have this instrument constructed by ***tomorrow, Tuesday November 22***.

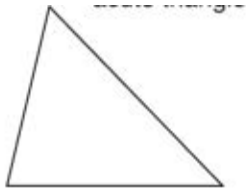
NOTE: ALL parts must be ready and **assembled** BEFORE class for credit! ☺

Notes Today: Classifying Triangles and Solving for Sides with Trigonometry

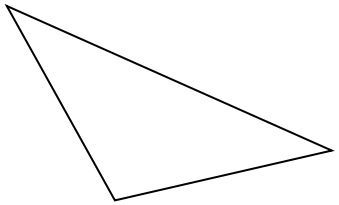
You need Notebook Paper for the
1st Part on Classifying Triangles

Classifying Triangles By Their Angles:

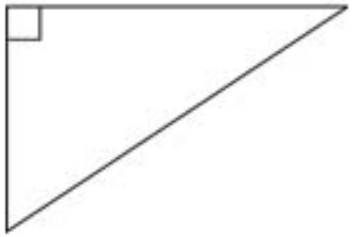
- Acute Triangle
  - An acute triangle is a triangle that has **All Acute Angles**



- Obtuse Triangle
  - An obtuse triangle is a triangle that has **One Obtuse Angle**



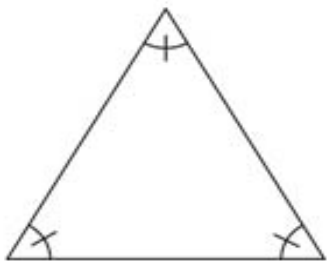
- Right Triangle
  - A right triangle is a triangle that has **One Right Angle**



Classifying Triangles By Their Angles:

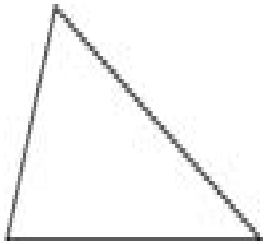
- Oblique Triangle
  - An oblique triangle is a **Non-Right Triangle**
  - These can be **Acute** triangles or **Obtuse** triangles

- Equiangular Triangle
  - An equiangular triangle is a triangle that has **All Congruent Angles**

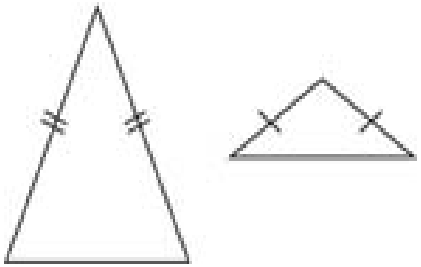


Classifying Triangles By Their Sides:

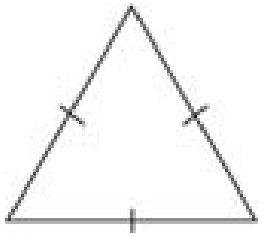
- Scalene Triangle
  - A scalene triangle is a triangle that **No Congruent Sides**



- Isosceles Triangle
  - An isosceles triangle is a triangle that has **At least two congruent sides**

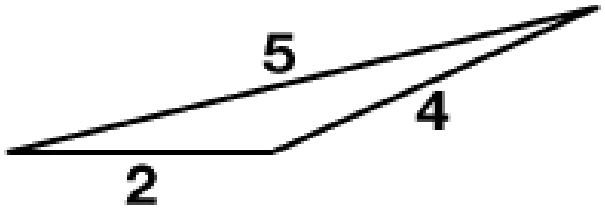


- Equilateral Triangle
  - An equilateral triangle is a triangle that has **All congruent sides**



Examples

Classify the triangle by its sides and its angles.



The three sides of the triangle have three different lengths, so the triangle is scalene.

One angle has a measure greater than 90, so the triangle is obtuse.

∴ The triangle is an obtuse scalene triangle.

These 3 dots are notation for “therefore”. ☺

Examples

A triangle with a 90° angle has sides that are 3 cm, 4 cm, and 5 cm long. Classify the triangle.

The three sides of the triangle have three different lengths, so the triangle is scalene.

One angle has a measure of 90, so the triangle is right.

∴ **The triangle is a right scalene triangle.**

These 3 dots are notation for “therefore”. ☺

Notes Part 2:
Solving for Sides with Trigonometry

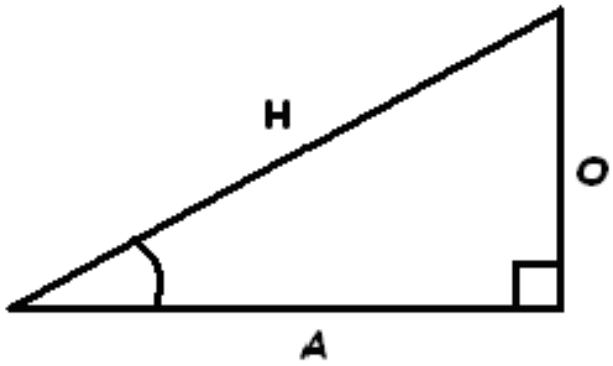
You need notebook paper
& the printed notes

Trig Measuring
Exercise / Exploration

Complete worksheet with a partner on a sheet of notebook paper (or the back side of your notes). You can also print a personal copy by going onto our website later.

Determine the ratios in fraction form and also in decimal form rounded to the nearest ten-thousandth.

Use centimeters!



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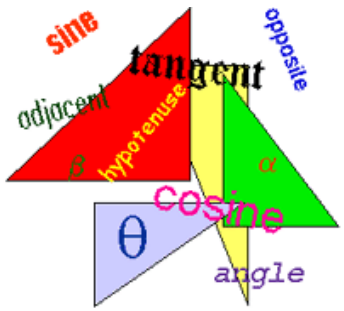
Before you begin, let me explain how to differentiate between sides of a right triangle…Opposite, Adjacent and Hypotenuse

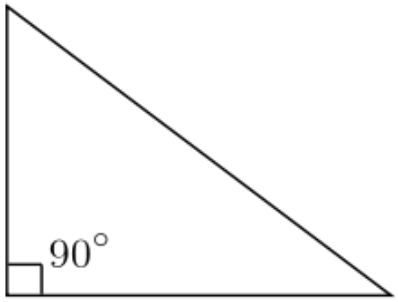
Day 1: Trigonometric Functions



The trigonometric (trig) functions are Sine, Cosine, and Tangent.

These functions can be used to find angle measures,
knowing the ratio of the sides
OR length of a side,
knowing one side and an angle measure.

They are used only for RIGHT triangles!

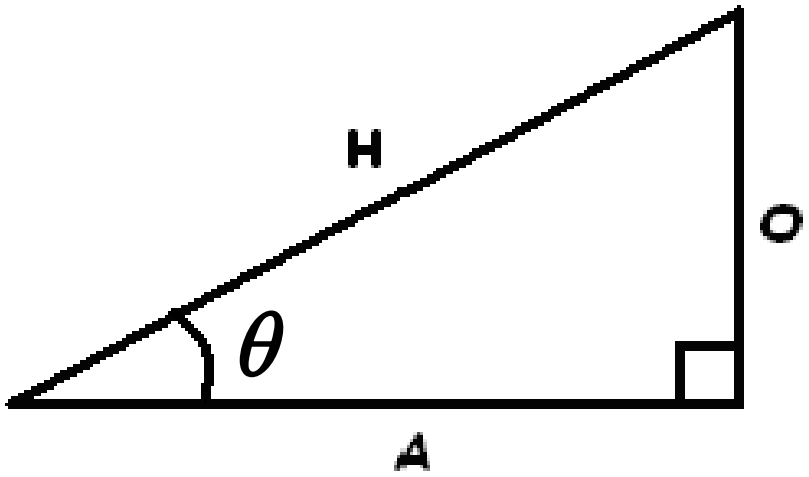


The trig functions are:

$$\text{Sin}\theta = \frac{Opposite}{Hypotenuse} = \frac{O}{H}$$

$$\text{Cos}\theta = \frac{Adjacent}{Hypotenuse} = \frac{A}{H}$$

$$\text{Tan}\theta = \frac{Opposite}{Adjacent} = \frac{O}{A}$$



where O = opposite, A = adjacent, and H = hypotenuse

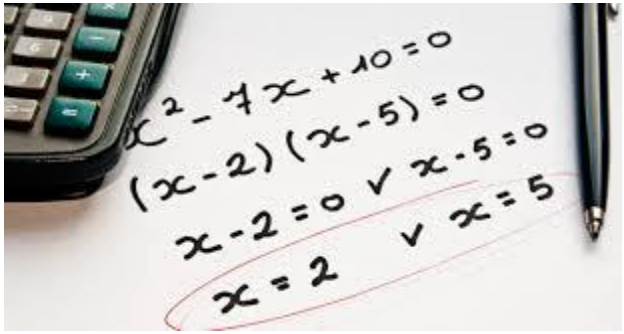
and θ = an angle measurement.

SOH CAH TOA

To set up trig ratios, look at the first letter of the trig function you're trying to evaluate and use SOH CAH TOA to help you set up the ratio!

Want to know how I remember SOH CAH TOA??

SOH CAH TOA



Some **O**ld **H**orse

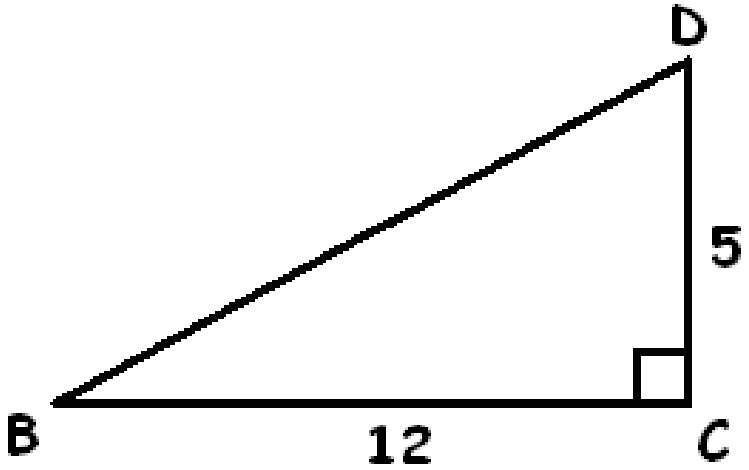
Caught **A**nother **H**orse

Tasting **O**ld **A**pples

Finding Trigonometric Ratios

SOH CAH TOA

Ex 1: tan(B) $\frac{5}{12}$



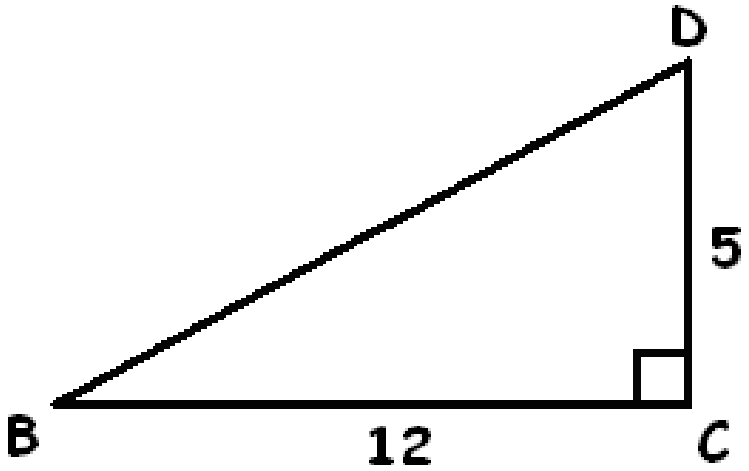
Ex 2: tan(D) $\frac{12}{5}$

You try! ☺ SOH CAH TOA

Ex 3: sin(D) $\frac{12}{13}$

Ex 4: cos(D) $\frac{5}{13}$

Ex 5: cos(B) $\frac{12}{13}$



Cannibal Puzzle Practice Worksheet

“The Cold Shoulder”

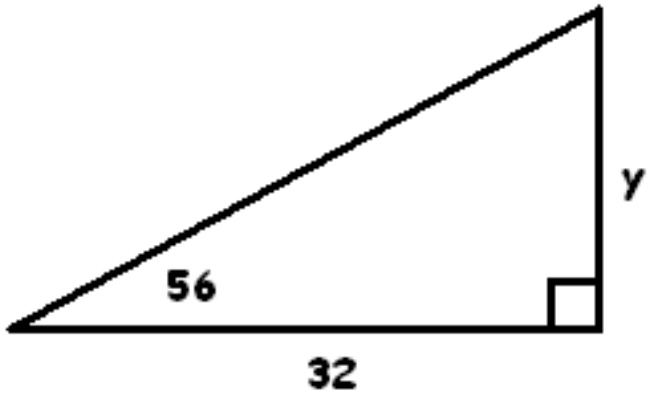
Finding missing side lengths with the Trigonometric Ratios

To solve for *missing side lengths*; 1. Set up the *trigonometric ratio*, 2. Put the trig function *over one*, 3. Then cross-multiply to solve.

Ex 1: Find y. **(Round to nearest tenth)**

$$\tan(56) = \frac{y}{32}$$

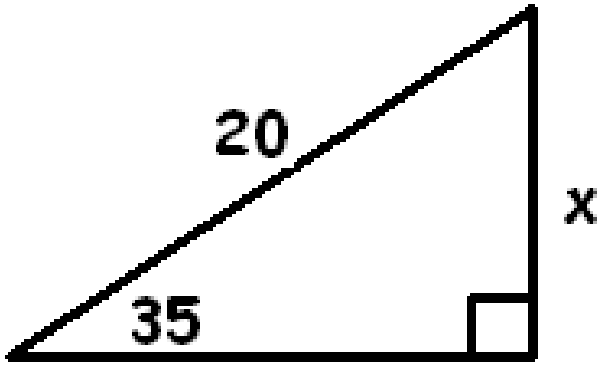
$$y = 47.4$$



SOH CAH TOA

Ex 2: Find x.

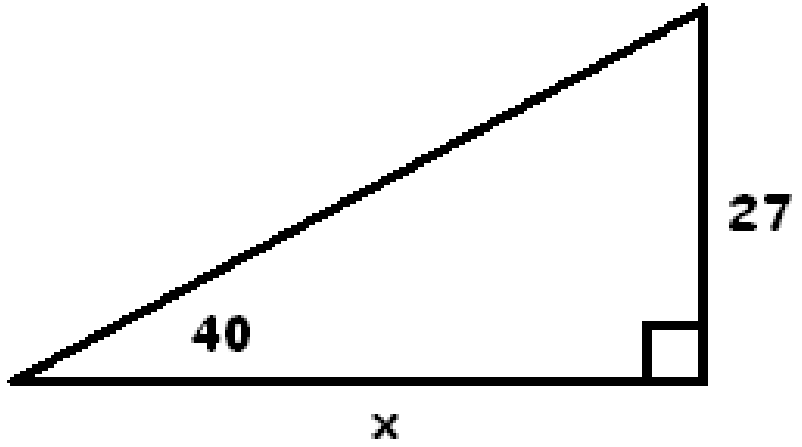
$$\sin(35) = \frac{x}{20}$$



$$x = 11.5$$

Ex 3: Find x.

$$\tan(40) = \frac{27}{x}$$

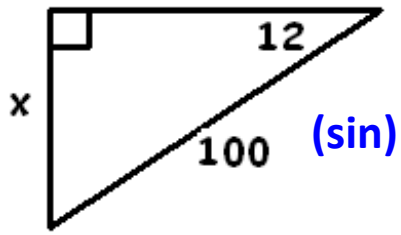


$$x = 32.2$$

You Try: (Remember SOH CAH TOA)

Use the trig ratios to find the length of the side labeled with a variable. All angle measures for these examples are in degrees.

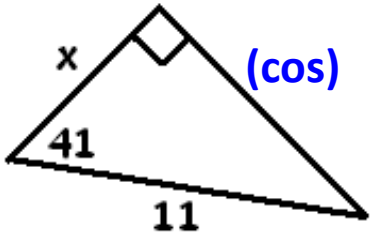
1)



(sin)

X = 20.8

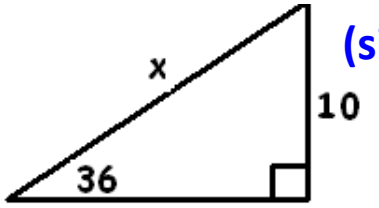
2)



(cos)

x = 8.3

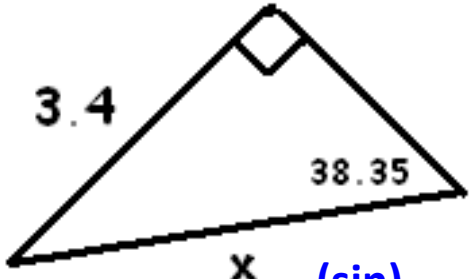
3)



(sin)

x = 17.0

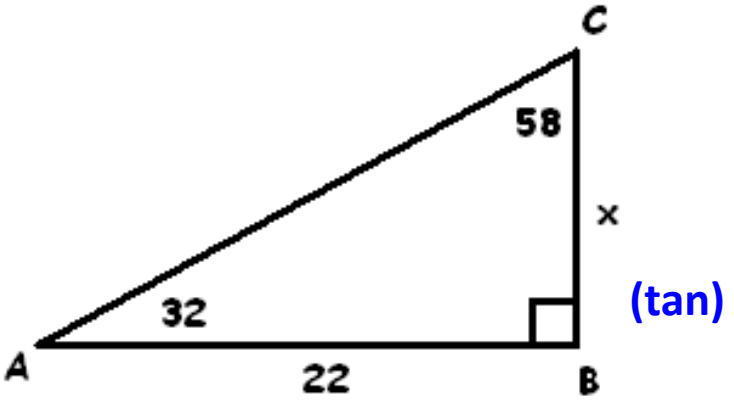
4)



(sin)

X = 5.5

5)



(tan)

x = 13.7

You Try!
Easter Rabbit Puzzle

What do you get when you cross an insect with the Easter rabbit?

“BUGS BUNNY”

Tonight's Homework

Packet Page 1 Odds AND Page 2 All

Print your Unit 5 Homework Packet, if you have not yet done so!!!

Finish assembling your clinometer for the lab – Clinometer due Tomorrow!!