Name:_____                          Date:_____
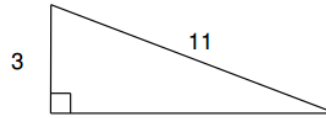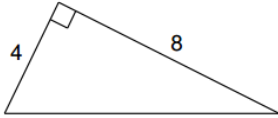Period:_____                                                     Mr. Valentino

*Pythagorean Theorem*

1. What is the Pythagorean theorem?_____

2. When can you use the Pythagorean theorem?_____

3. Find the missing side of each of the triangles below in simplest radical form:



4. A soccer field is a rectangle 90 meters wide and 120 meters long.  The coach asks players to run from one corner to the corner diagonally across the field.   How far do the players run?

5. How far from the base of the house do you need to place a 15' ladder so that it exactly reaches the top of a 12' wall?

How can the Pythagorean theorem be used to determine if a triangle is acute, obtuse, or right?
If _____ then it's acute
If _____ then it's obtuse
If _____ then it's right

Determine if the following sides lengths form an acute, obtuse or right triangle:
3.  {5, 10, 12}                          4.  {8, 15, 17}                          5.  {10, 11, 13}

What makes a set of sides of a triangle form a Pythagorean triple?
_____

## Trigonometry

1. What are the trig ratios (that's a theta):

      sin(Θ)=             cos(Θ)=             tan(Θ)=

2. Complete the following trig ratios using the diagram below:

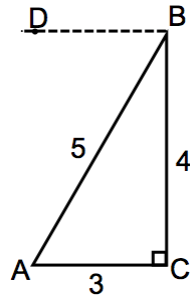sin(A)=             sin(B)=

cos(A)=             cos(B)=

tan(A)=             tan(B)=

3. Which angle is the angle of elevation? _____

4. Which angle is the angle of depression? _____
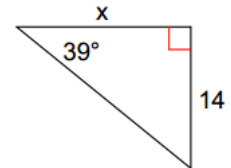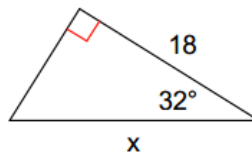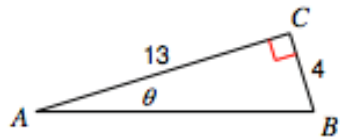
(Diagram: triangle with D, B at top; sides 5, 4, 3, right angle at C, A at bottom left)

5. Why can't a sine or cosine ratio be greater than 1?

_____

_____

6. In ΔABC with right angle at C, if sin(A)=5x-0.1 and cos(B)=3x+.4, what is the value of x?

7. When finding a side of a triangle, I use _____, _____, or _____.

8. When finding an angle of a triangle, I use _____, _____, or _____.

9. Find the missing side or angle. Round all answers to the nearest tenth.

(Three triangles: first with C, 13, 4, θ, A, B; second with 18, 32°, x; third with x, 39°, 14)

10. A boy, 6ft tall, looks up at the top of a tree at an angle of elevation of 30°. If the boy stands 40 feet from the tree, what is the height of the tree to the nearest foot?

11. A bird sits on a fence 5ft tall. The bird spots a bug on a tree 15 ft from the ground. If the bird looks up at the bug at an angle of 50°, how far is the bird from the bug to the nearest foot?
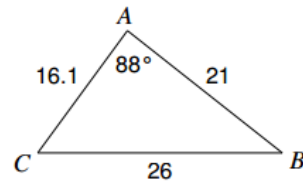
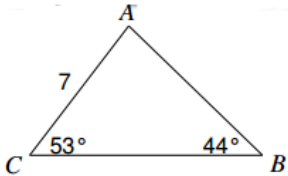*Law of Sines*

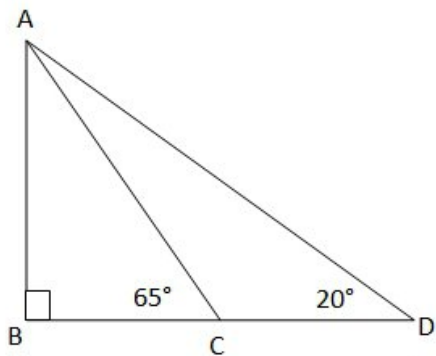*Round to the nearest whole number*

1. **Find BC**
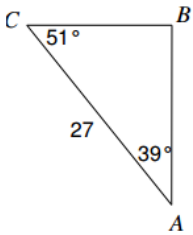


2. **Find m∠C**



3. Find AB
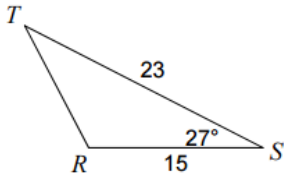


4. Find m<C if   $m\angle A = 70°, c = 26, a = 25$

5. For the figure below, find AB to the nearest whole number if CD = 20

Law of Cosines
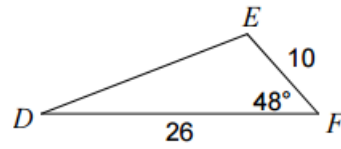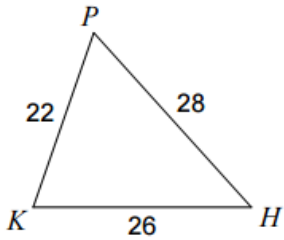
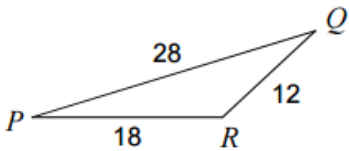*Round all answers to the nearest whole number*

**1) Find RT**

T
23
27°
R   15   S

**2) Find DE**

E
10
48°
D   26   F

3)   **Find $m\angle H$**

P
22      28
K   26   H

4) Find $r$ if   In $\triangle RPQ$, $q = 11$, $p = 22$, $m\angle R = 96°$

5) **Find $m\angle R$**

28
12
P   18   R   Q

6) What is the measure of the smallest angle if
In $\triangle RST$, $s = 13$, $r = 30$, $t = 20$