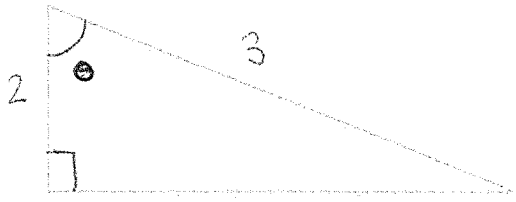
Name:_____ Date:_____ Prd:_____

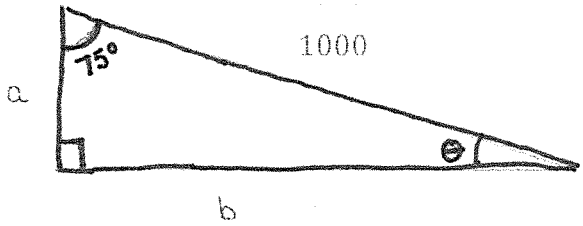
HW #11 RIGHT TRIANGLE TRIGONOMETRY! Problem Set.

Work on the following problem set in groups.

1.) Find the EXACT values of the six trig ratios of the angle θ in the triangle.



2.) Solve the right triangle (i.e. identify all angles and sides of the triangle.



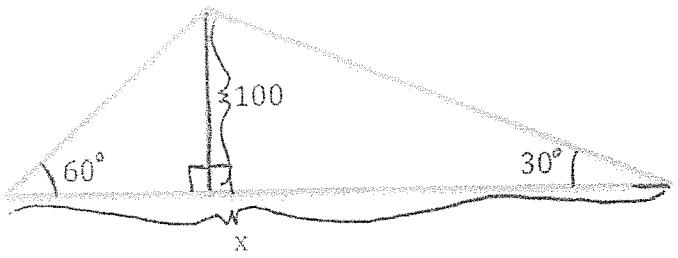
3.) Evaluate the expression without using a calculator. (see table 1 on page 445). Show ALL work!
OR USE Your NOTES

a.) $(\sin 60°)^2 + (\cos 60°)^2$

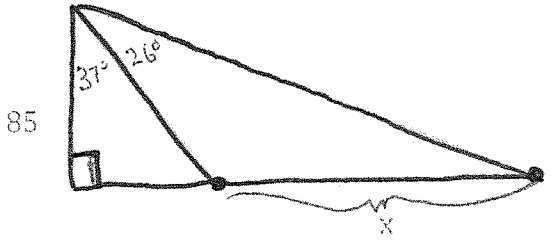
b.) $\left(\sin\frac{\pi}{3}\cos\frac{\pi}{4} - \sin\frac{\pi}{4}\cos\frac{\pi}{3}\right)^2$

Name:_____ Date:_____ Prd:_____

4.) Solve for x in each triangle below.



5.)



Right Triangle Trig Applications .

Directions: Always sketch a drawing of the given info.

1.) You are driving into New York and know that you are 1 mile away from the empire state building. From where you are, the angle of elevation to the top of the empire state building is found to be 15.5°. Find the height of the empire state building in feet (to the nearest foot). (Note: 5280 feet in a mile).

2.) TRUE STORY: To determine the height of his house, Mr. Young walks 62 feet away from the house and takes out his clinometer (to measure the angle of elevation and depression. He finds that the angle of elevation to the top of the house is 39° and the angle of depression to the bottom of the house is 1.2°. How tall is Mr. Young's house (to the nearest foot)?

Name:_____ Date:_____ Prd:_____

3.) Looking out of your office window in downtown Providence, you see the Biltmore hotel, which you know to be 400 feet away. You measure the angle to the top of the hotel to be 28° and the angle of depression to the bottom of the hotel to be 14°. How tall is the Biltmore hotel?

4.) You are standing at a distance from a magnificent giant redwood. Rather than count the number of steps to the base of the tree, you take the angle of elevation (from the ground) from where you are standing and find it to be 38°. You then walk 80 feet further away from the tree and take the angle of elevation (from the ground) and find it to be 34°. Determine the height of the tree.

5.) You are in a hot air balloon floating above a straight road. To estimate your height above the ground, you simultaneously measure the angle of depression to two consecutive mileposts on the road on the same side of the balloon. The angles of depression are found to be 20° and 22°. How high is the balloon?

Name:_____ Date:_____ Prd:_____

GOING OUTSIDE AND USING TRIG TO CALCULATE HEIGHTS OF LARGE OBJECTS

We will be going outside and measuring the height of three different tall objects using angles and trig ratios. Be sure to draw a diagram including all of your measurements.

a.) Measure the approximate height of Middle House.

b.) Measure the approximate height of a tree on the soccer field.

c.) Measure the height of the tallest tower on Hope High. Assume that your "line of sight" is the on the ground (for simplicity) and keep in mind that you will need to take two angle measurements at different distances.

d.) Let's assume the roof on the gym is a parabola (it probably technically is not). Find distance of the focus from the very top of the roof (i.e. the focal length). Hint Hint: Use Trig.

e.) Pick an object of your choice (i.e. your house, another building on campus, etc.) and measure the height using trigonometry.