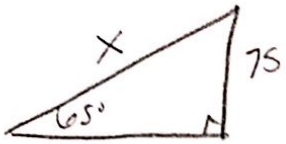
Name: Key

Date: _____ Period: _____

Word problems.

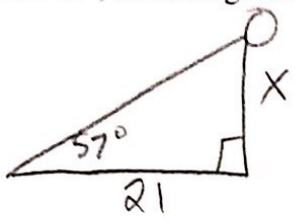
1) A guy wire is attached to the top of a 75 foot tower and meets the ground at a 65° angle. How long is the wire?



$\sin 65 = \frac{75}{X}$

$X = 82.8\text{ ft}$

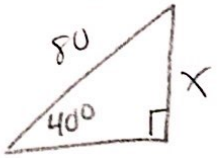
2) When the suns angle of elevation is 57°, a building casts a shadow 21 meters long. How high is the building?



$\tan 57 = \frac{X}{21}$

$X = 32.3\text{m}$

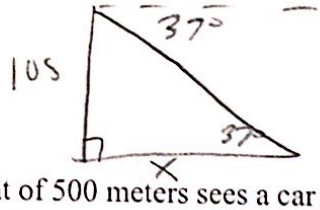
3) A kite is flying at an angle of elevation of about 40°. All 80 meters of string have been let out. Ignoring the sag in the string, find the height of the kite.



$\sin 40 = \frac{X}{80}$

$X = 51.4\text{m}$

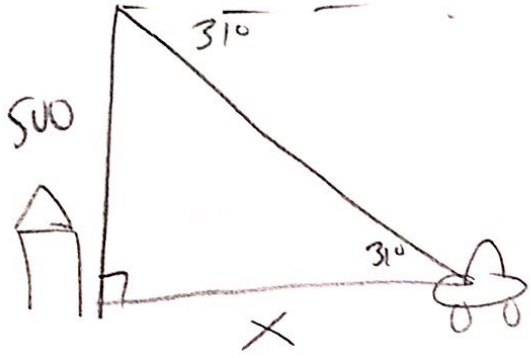
4) A man stands at the top of a 105 foot light house and sees a boat. The angle of depression to sight the boat is 37°, find the distance between the base of the light house and the boat.



$\tan 37 = \frac{105}{X}$

$X = 139.3\text{ ft}$

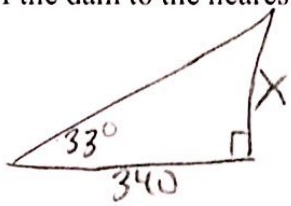
5) An observer in an airplane at a height of 500 meters sees a car at an angle of depression of 31°. If the plane is over a barn, how far is the car from the barn?



$\tan 31 = \frac{500}{X}$

$X = 832.1\text{m}$

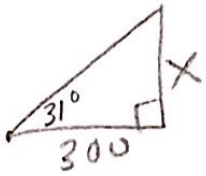
6) From a point 340 meters from the base of the Hoover Dam, the angle of elevation to the top of the dam is 33°. Find the height of the dam to the nearest meter.



$\tan 33 = \frac{x}{340}$

$x = 220.8$ m

7) The Pyramid of the Sun in the ancient Mexican city of Teotihuacan was unearthed from 1904 – 1910. From a point on the ground 300 feet from the center of its square base, the angle of elevation to its top would have been 31°. What was the height of the pyramid?



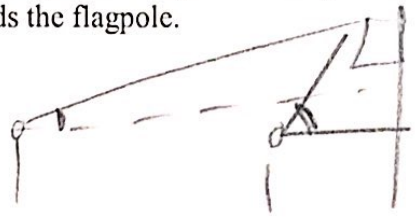
$\tan 31 = \frac{x}{300}$

$x = 180.3$ ft

Complete the following statements with always, sometimes, or never. Explain your answer with complete sentences.

8) The tangent of an angle is Sometimes less than 1.

9) The angle of elevation from your eye to the top of a twenty-foot flagpole Never gets smaller as you walk towards the flagpole.



10) Given the measure of an acute angle in a right triangle and the length of one of the triangle's legs, you can Always use trigonometry to find the length of the hypotenuse.

11) The angle of depression from the top of a building to a car traveling towards the building Always increases as the car travels closer.