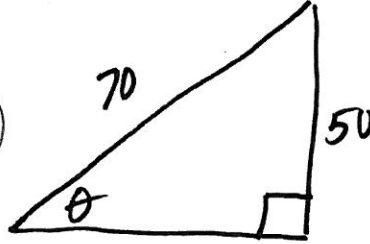Name: _____Key_____

Date: _____ Period: _____

se inverse trig functions to solve problems #1-3. Drawing a diagram might help.

1. A supporting wire for a radio transmitter antenna is 70 feet long. It is attached to the antenna at a distance of 50 feet from the ground. Find the measure of the angle that the wire makes with the ground.

$$Sin\,\theta = \frac{50}{70}$$

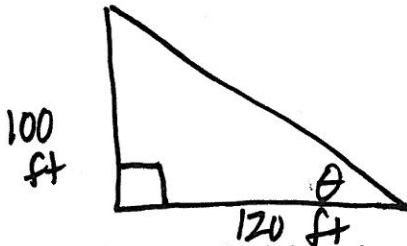$$\theta = Sin^{-1}\left(\frac{50}{70}\right) = 45.6°$$

2. A 40-foot ladder is used to reach the top of a wall which is 24 feet high. If the ladder extends 10 feet past the top of the wall, find the measure of the angle that the ladder forms with the ground.

$$Sin\,\theta = \frac{24}{30}$$
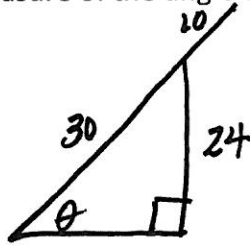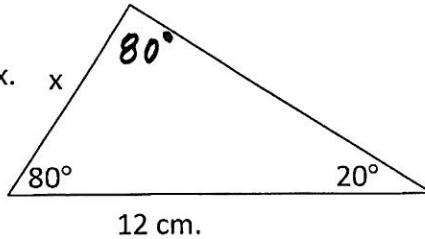
$$\theta = Sin^{-1}\left(\frac{24}{30}\right) = 53.1°$$

A tree that is 100 feet tall casts a shadow that is 120 feet in length. Find the angle of elevation of the sun.

$$tan\,\theta = \frac{100}{120}$$
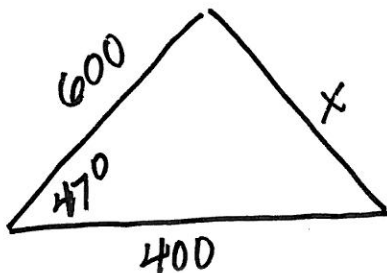
$$\theta = tan^{-1}\left(\frac{100}{120}\right) = 39.8°$$

4. Use the law of sines to find the value of x.   x

$$\frac{Sin\,80}{12} = \frac{Sin\,20}{X}$$

$$X \approx 4.17\ cm$$

80°

80°   20°

12 cm.

5. A triangular plot of land has one side with length 400 feet and a second side with length 600 feet. The measure of the angle between these two sides is 47°. Use the law of cosines to find the perimeter of the plot.

$$x^2 = 400^2 + 600^2 - 2(400)(600)\,Cos\,47°$$

$$x \approx 438.9\ ft.$$

$$P \approx 1438.9$$