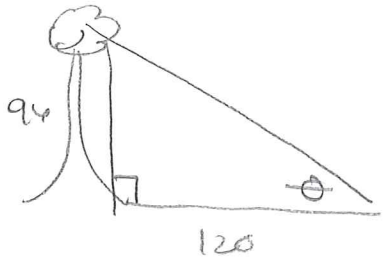
College Algebra Name: Key

4.4 – Right Triangle Applications Day 1 Date: _____ Period: _____

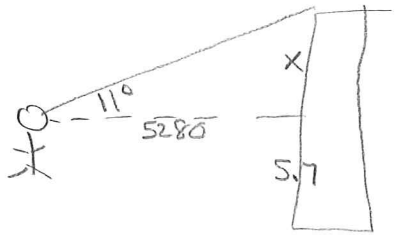
1.) The length of the shadow of a tree 96 feet tall is 120 feet. What is the angle of elevation of the sun?



$\tan\theta = \frac{96}{120}$

$\theta = 38.66^\circ$

2.) Ms. Boynton knows that when she stands 1 mile (5,280 feet) from the base of the Empire State Building, the angle of elevation to the top of the building is 11°. If her eyes are 5.7 feet above the ground, what is the height of the Empire State Building?



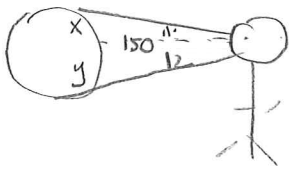
$\tan 11 = \frac{x}{5280}$

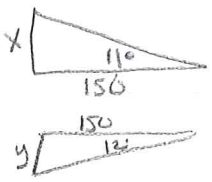
$x = 1026.33$

$+ 5.7$

1032.03 feet

3.) A person standing 150 cm from a mirror notices that the angle of depression from his eyes to the bottom of the mirror is 12°, while the angle of elevation to the top of the mirror is 11°. How tall is the mirror?





$\tan 11 = \frac{x}{150}$

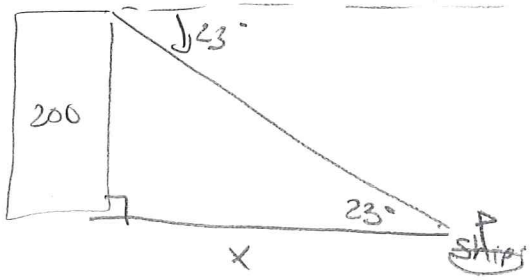
$x = 29.16$

$\tan 12 = \frac{y}{150}$

$y = 31.88$

61.04 cm

4.) From the top of a 200 foot lighthouse, the angle of depression to a ship in the ocean is 23°. How far is the ship from the base of the lighthouse?



$\tan 23 = \frac{200}{x}$

$x = \frac{200}{\tan 23}$

$x = 471.17$ feet