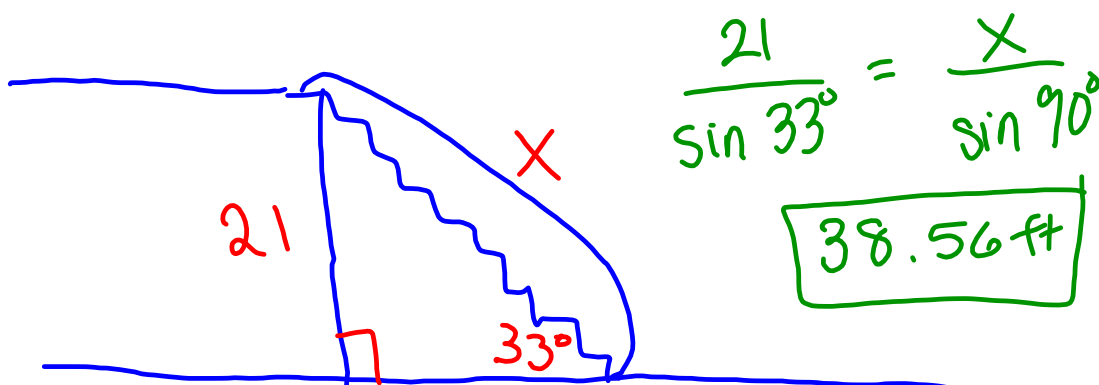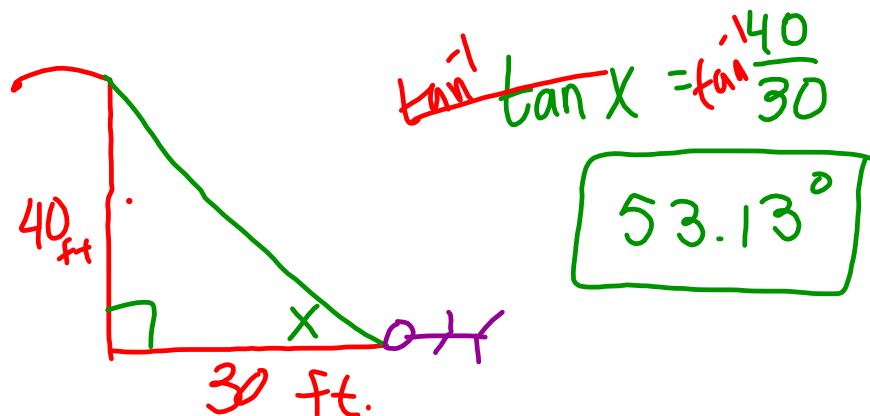*Day 1*

Unit 4

Learning Target 4

I can solve application problems using right triangles.

1.) How long should an escalator be if it is to make an angle of 33° with the floor and carry people a vertical distance of 21 feet between floors?
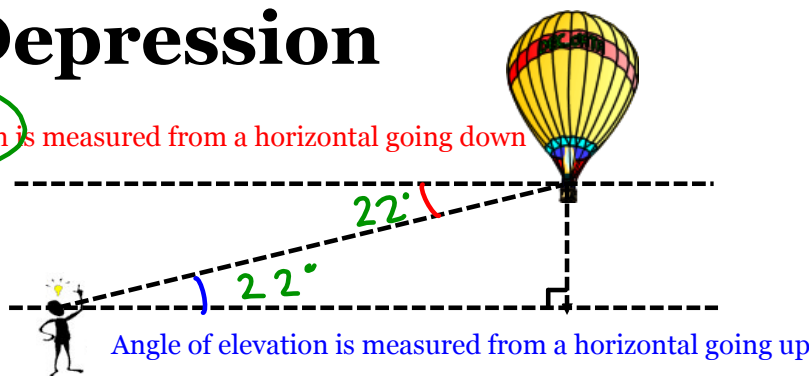

$$\frac{21}{\sin 33°} = \frac{x}{\sin 90°}$$

$$\boxed{38.56 \text{ ft}}$$

2.) A 40 foot streetlight casts a 30 foot shadow. What angle does the shadow make with the ground?

$$\tan^{-1}\tan x = \tan^{-1}\frac{40}{30}$$

$$53.13°$$

40 ft

X

30 ft.

Angle of Elevation & Depression

Angle of depression is measured from a horizontal going down

*mostly outside

22°

22°

Angle of elevation is measured from a horizontal going up

3.) Mrs. Wozniak wants to measure the height of a tree to see what size ladder she needs to buy so she can hang lights for Valentine's Day. If she walks exactly 100 feet from the base of the tree, observes the angle of elevation to be 33° and her eyes are 5.5 feet above the ground, how tall is the tree?
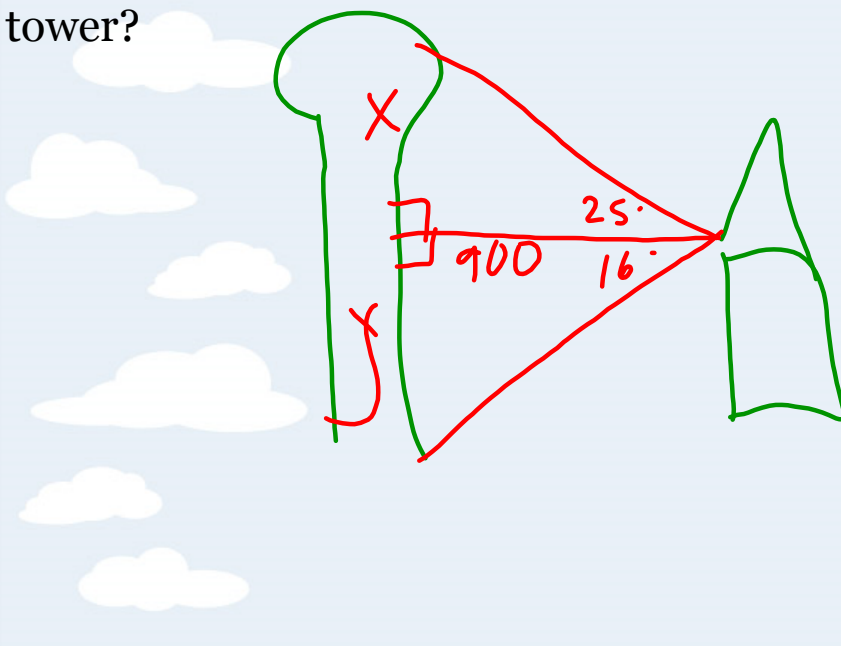
$$100 \tan 33° = \frac{x}{100} \cdot 100$$

$$64.94 \text{ ft}$$
$$+ \ 5.5$$
$$\overline{70.44 \text{ f}}$$

33°

100

5.5
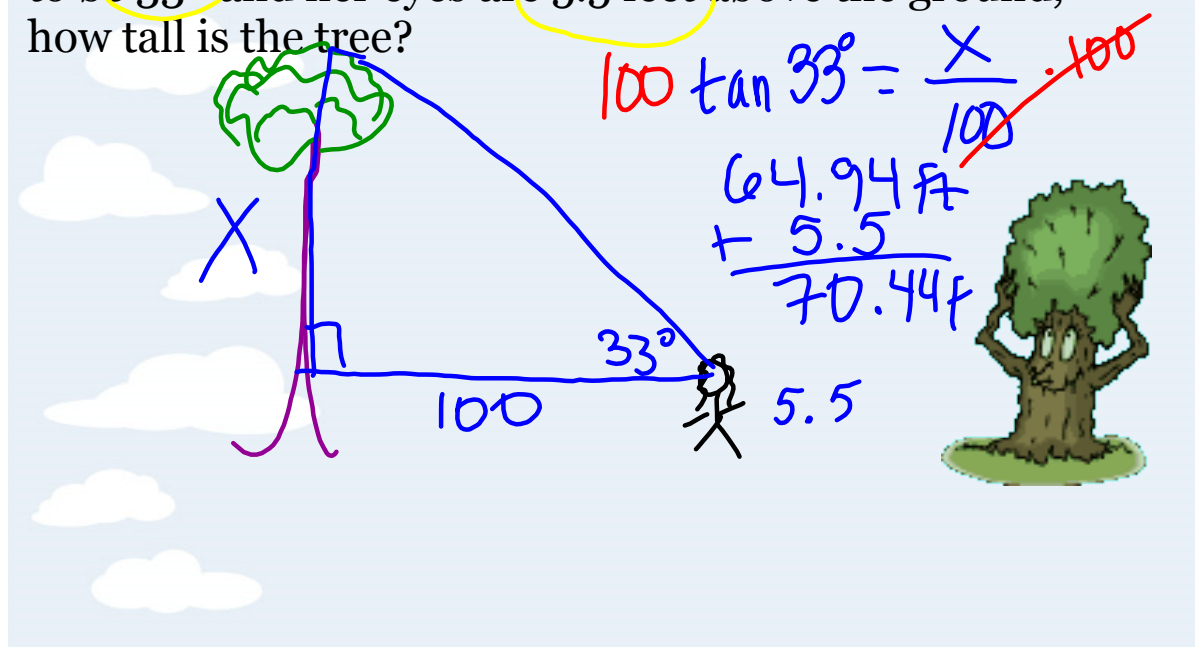
$$S\frac{O}{H} \ C\frac{A}{H} \ T\frac{O}{A}$$

4.) An airplane is flying 2 miles above the ground. The distance along the ground from the airplane to the airport is 5 miles. What is the angle of depression from the airplane to the airport?

$\tan^{-1}$

$\tan x = \frac{2}{5}$

$x = \tan^{-1} \frac{2}{5}$

$x = <21.8$

2 mi

5 mi
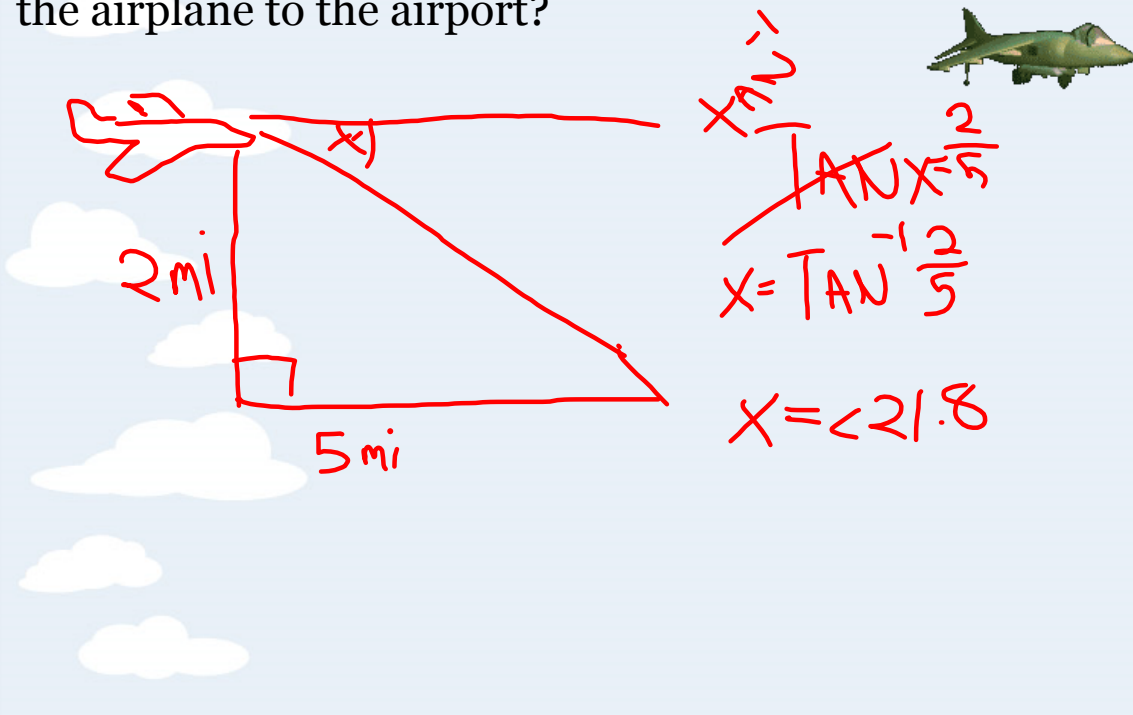
5.) From the top of your house the angle of elevation to the top of a water tower is 25°. The angle of depression to the base of the water tower is 16°. If the water tower is 900 feet away from your house, how tall is the water tower?

X

25°

900   16°

HOMEWORK