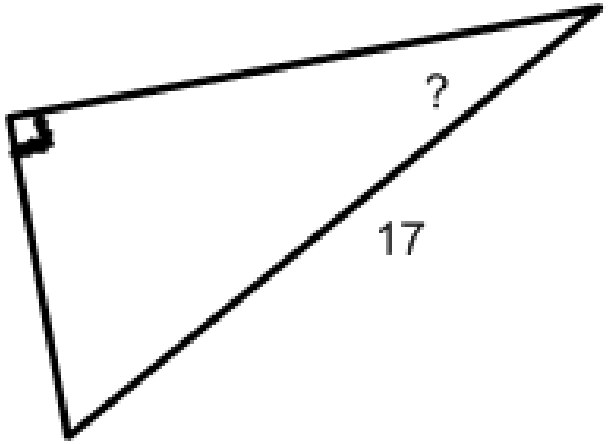
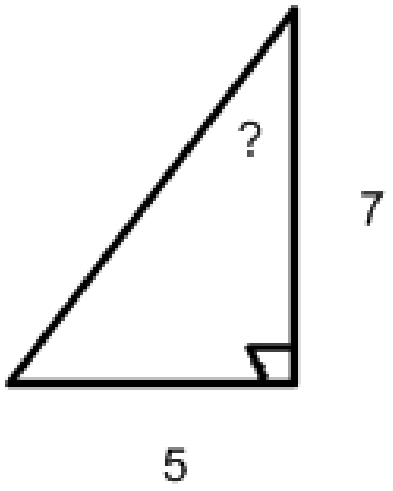
Finding Missing Angle Comp Check

Sept 14th

1.



2.



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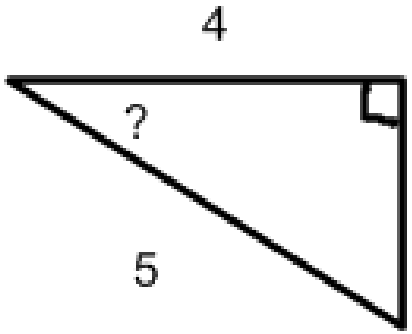
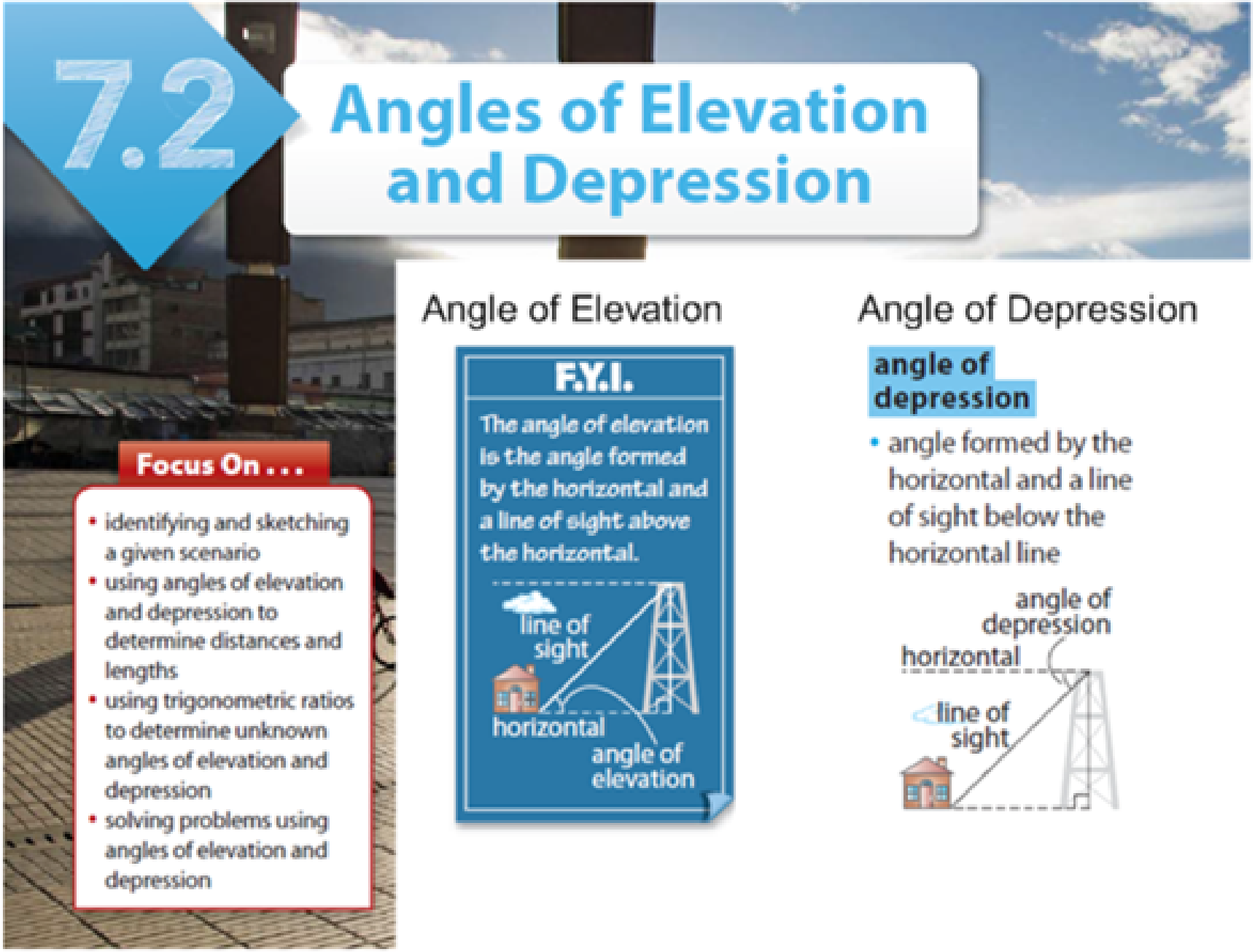




7.2 Angles of Elevation and Depression

Focus On . . .

- identifying and sketching a given scenario
- using angles of elevation and depression to determine distances and lengths
- using trigonometric ratios to determine unknown angles of elevation and depression
- solving problems using angles of elevation and depression

Angle of Elevation

F.Y.I.

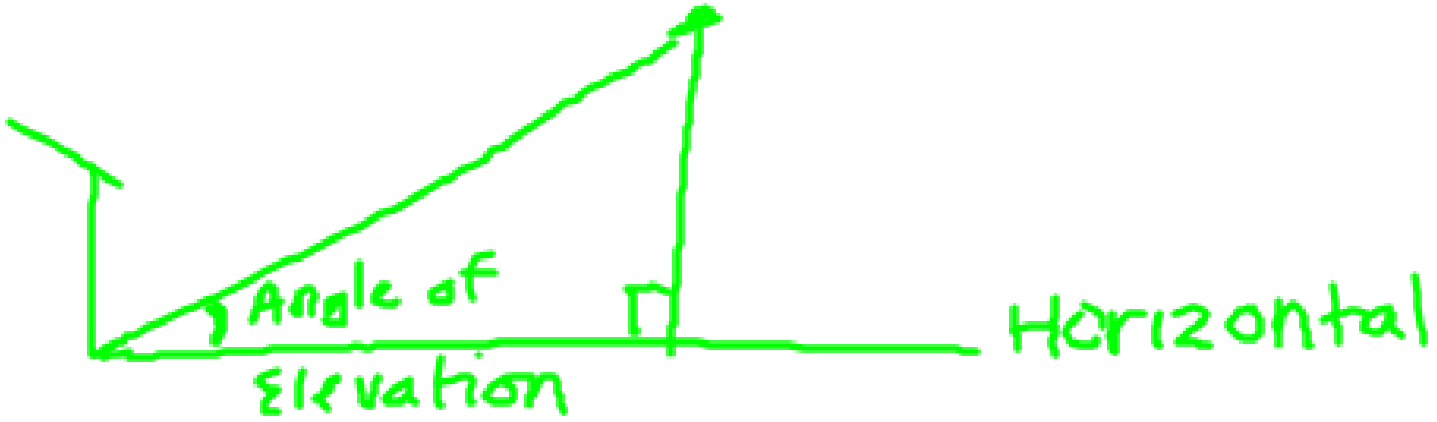
The angle of elevation is the angle formed by the horizontal and a line of sight above the horizontal.

Angle of Depression

angle of depression

- angle formed by the horizontal and a line of sight below the horizontal line

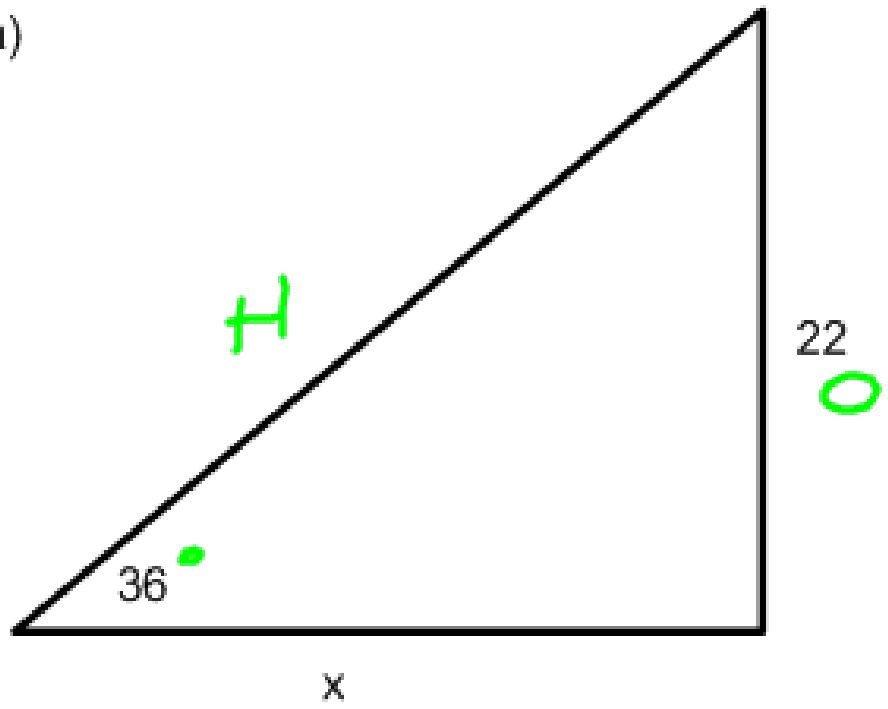
Angle of Elevation: The angle formed by the angle and the line of siight above the horizontal.



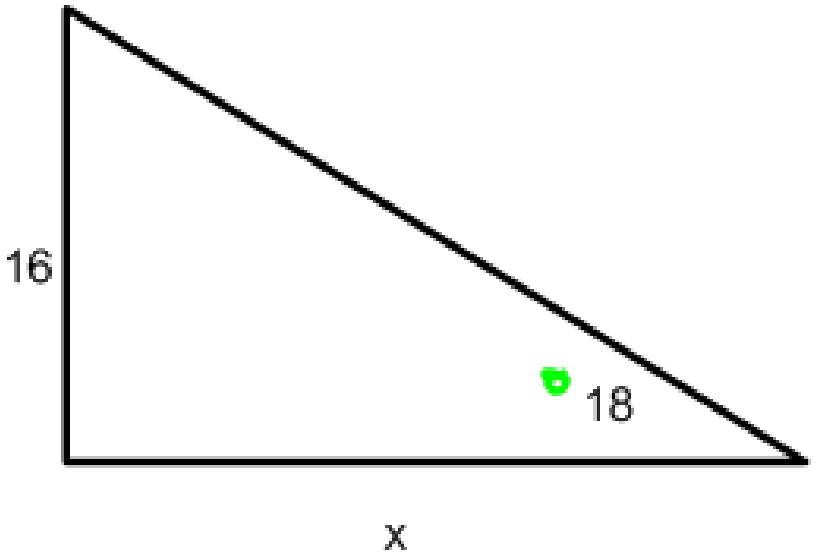
Angle of Depression: The angle fromed by the angle and the line of sight below the horizontal.

Example 1: Solve x given the angle of elevation:

a)



b)



$\tan\theta = \frac{O}{A}$

$\tan 36 = \frac{22}{x}$

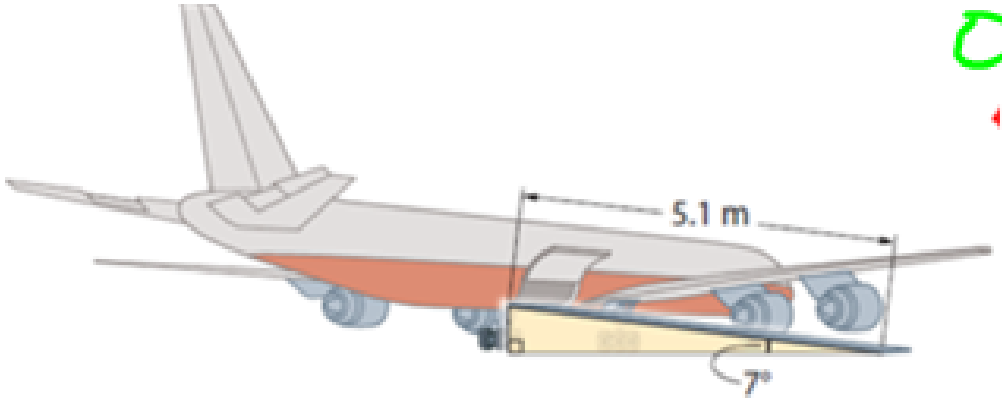
$A \quad x \cdot 0.7265 = \frac{22}{x} \cdot x$

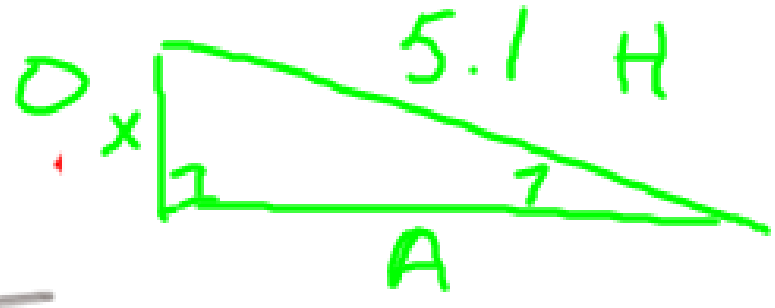
$\frac{0.7265x}{0.7265} = \frac{22}{0.7265}$

$x = 30.28$

Example 2:

Callum is a cargo agent at an airport. He loads and unloads equipment and cargo inside airplanes. He uses a ramp that is 5.1 m long to load cargo onto the planes. The angle of elevation of the ramp is 7 .





How high is the cargo door of the airplane above the ground?

$\sin\theta = \frac{O}{H}$

$\sin 7 = \frac{x}{5.1}$

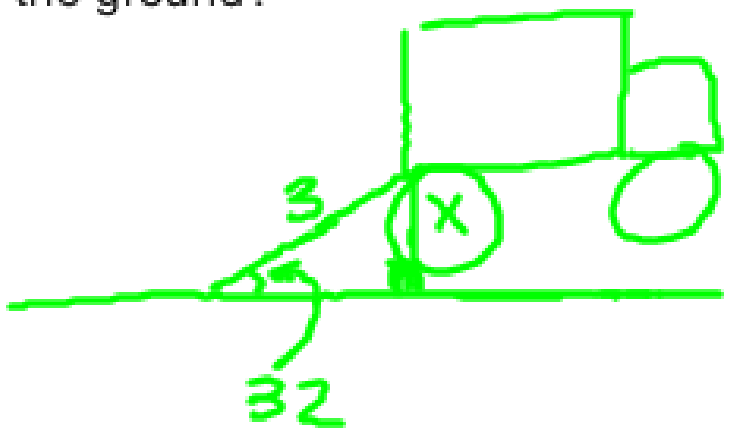
$5.1(0.121) = \frac{x}{5.1} \cdot 5.1$

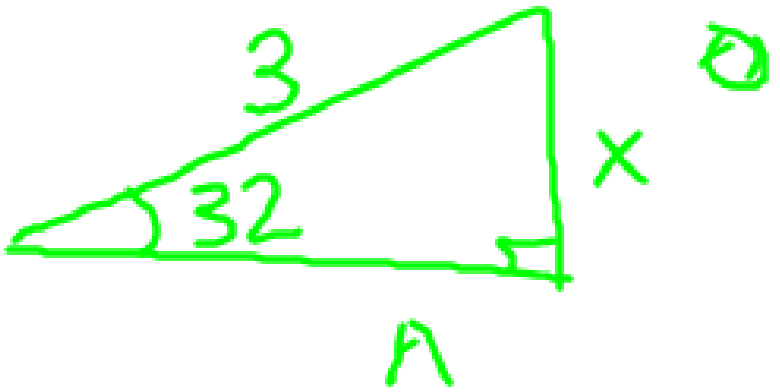
$x = 0.621$

The door is 0.6 m above ground.

Example 3:

Keisha is helping her neighbour move. The ramp to the moving truck is 3 m long, and makes an angle of 32 with the ground. Keisha wants to know if she can lift boxes from the ground into the truck without using the ramp. How high is the loading door of the truck off the ground?





$\sin\theta = \frac{O}{H}$

$\sin 32 = \frac{x}{3}$

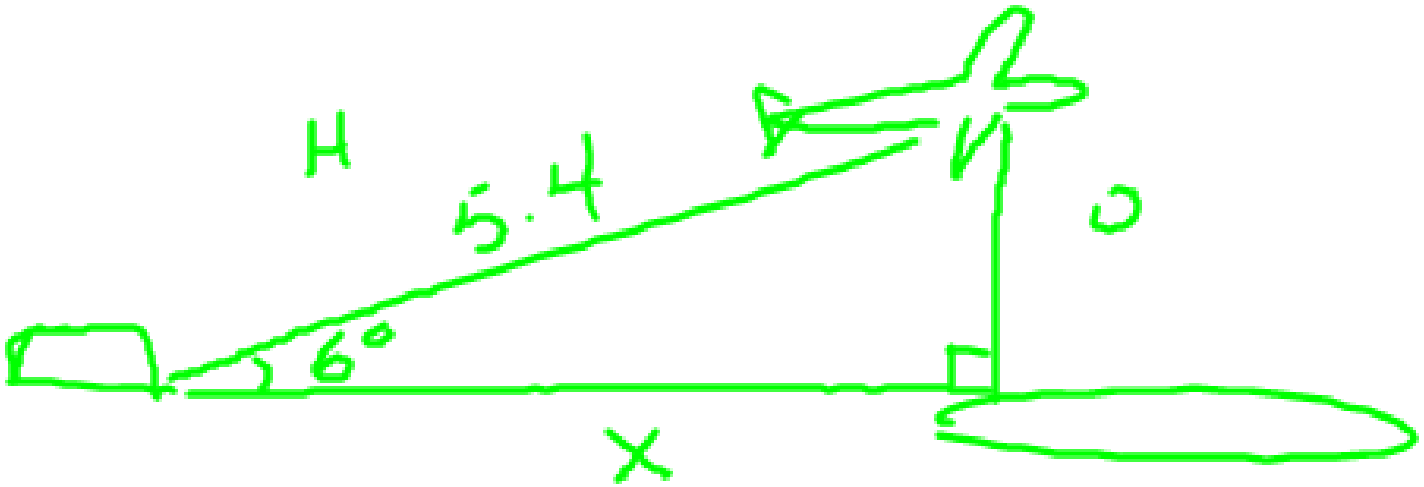
$3 \times 0.58 = \frac{x}{3} \times 3$

$1.59 = x$

The door is 1.59 m tall.

Example 4:

Aaron is a leisure pilot. His plane takes off from an airport at an angle of 6 with the ground. He flies 5.4 km until he is over a lake. What is the horizontal distance from the airport to the point in the lake that is directly below Aaron's plane?



$\cos\theta = \frac{A}{H}$ A

$\cos 6 = \frac{x}{5.4}$

$5.4(0.994) = \frac{X}{5.4}\ 5.4$

$5.36 = X$

The horiz. dist. is 5.36m.

Example 5:

Janie is displaying a kite that she made. The kite is attached to a stake in the ground. The kite is 32 m above the ground, and makes an angle of 40 with the ground. How long is the kite string?

Homework:

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#, 2, 5, 7