Unit 7 Lesson 4 (Section 8-5) Angles of Elevation and Depression

OBJECTIVES: Solve problems involving angles of elevation
Solve problems involving angles of depression.

***Angle of Elevation*·**
The angle between the line of sight and the horizontal when an observer looks upward. **(Above the horizontal)**

***Angle of Depression*·**

The angle between the line of sight when an observer looks downward and the horizontal. **(Below the horizontal)**

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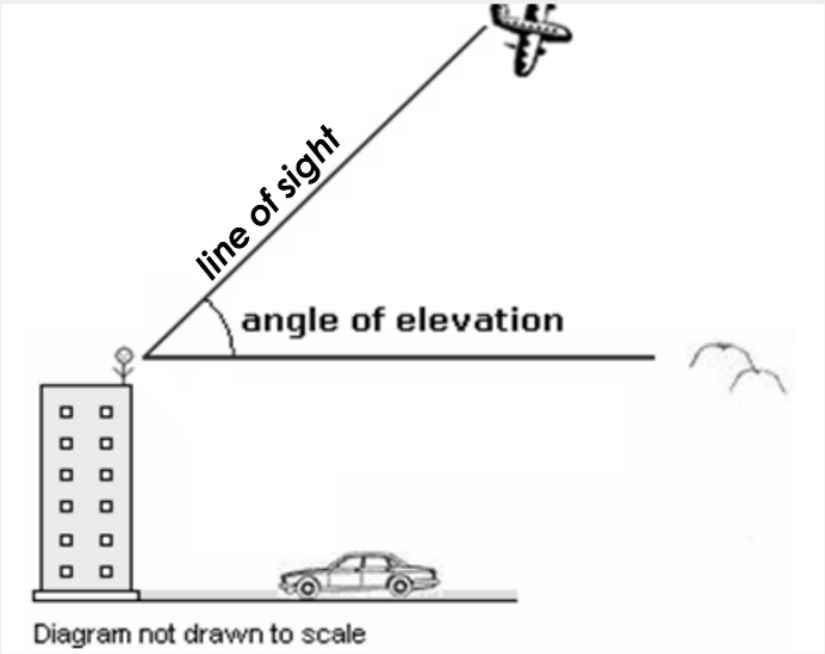

Diagram not drawn to scale

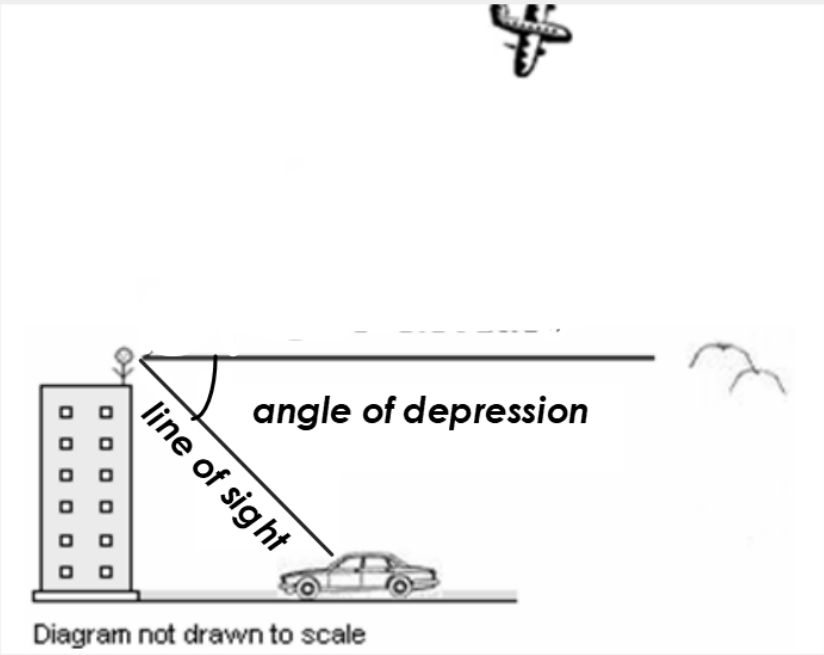

Diagram not drawn to scale

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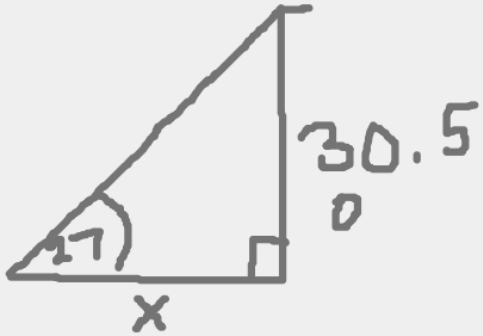
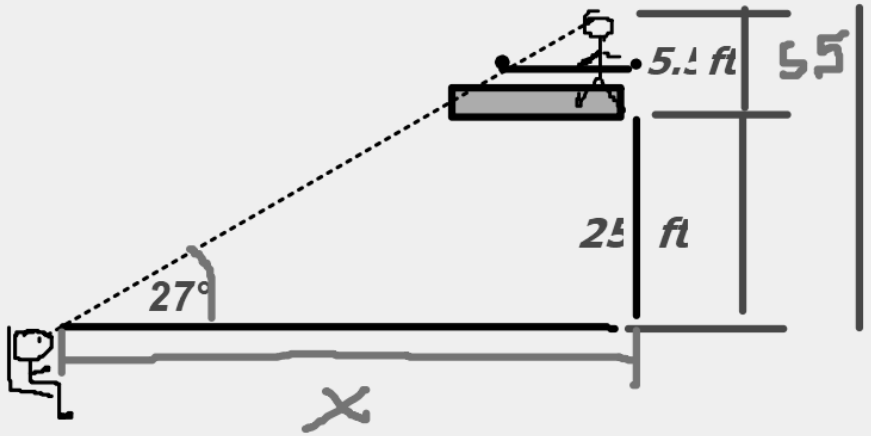
1.) At the circus, a person in the audience watches the high-wire routine. A 5-foot-6-inch tall acrobat is standing on a platform that is 25 feet off the ground. How far is the audience member, to the nearest tenth of a foot, from the base of the platform, if the angle of elevation from the audience member's line of sight to the top of the acrobat is 27°?

5.5





$$\tan 27 = \frac{30.5}{x}$$

$$x = \frac{30.5}{\tan 27} \approx 59.9\text{ ft}$$

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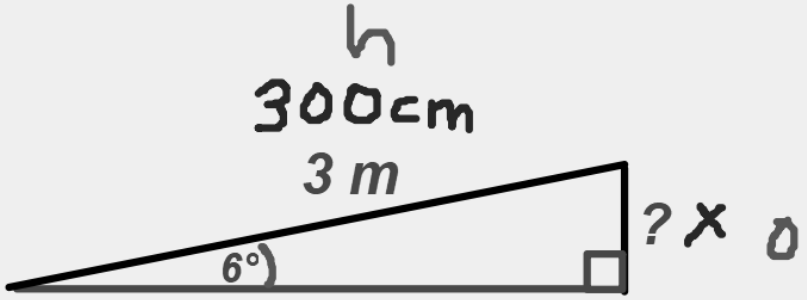
2.) A wheelchair ramp is 3 meters long and inclines at 6°. Find the height of the ramp to the nearest tenth of a centimeter.

$300 \cdot \sin 6 = \frac{x}{300} \cdot 300$



$x \approx \boxed{31.4 \text{ cm}}$

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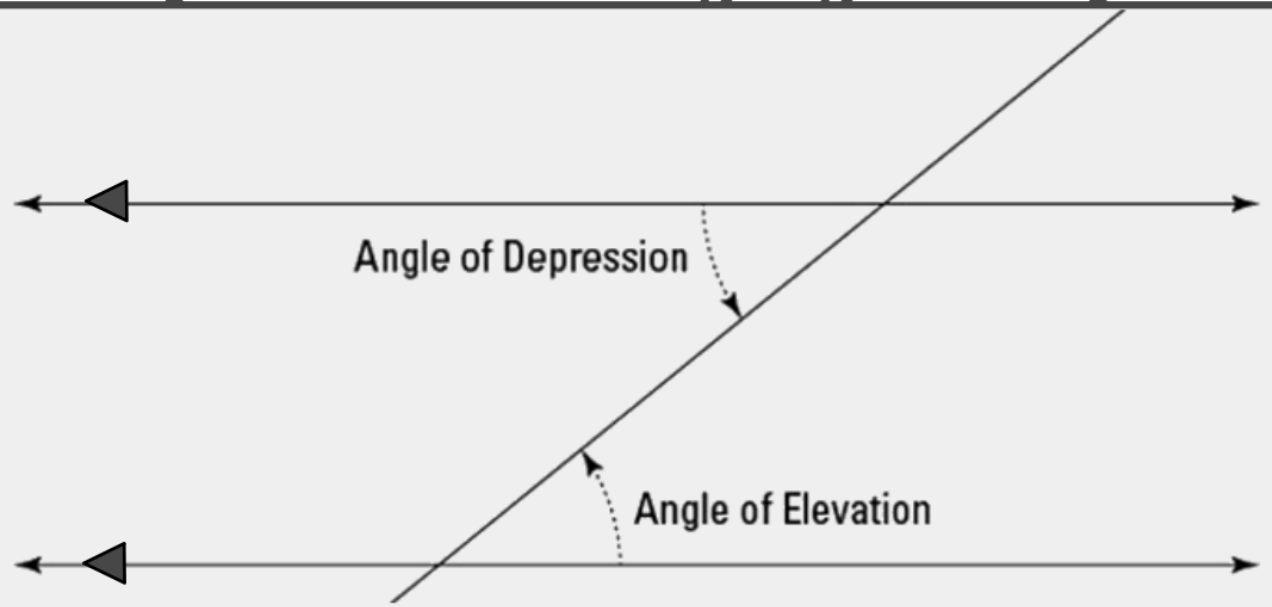

Since the two lines are horizontal, what do we know about this angle of depression and angle of elevation? Why? If || lines, alt. int ∠s are ≅.

they are equal.

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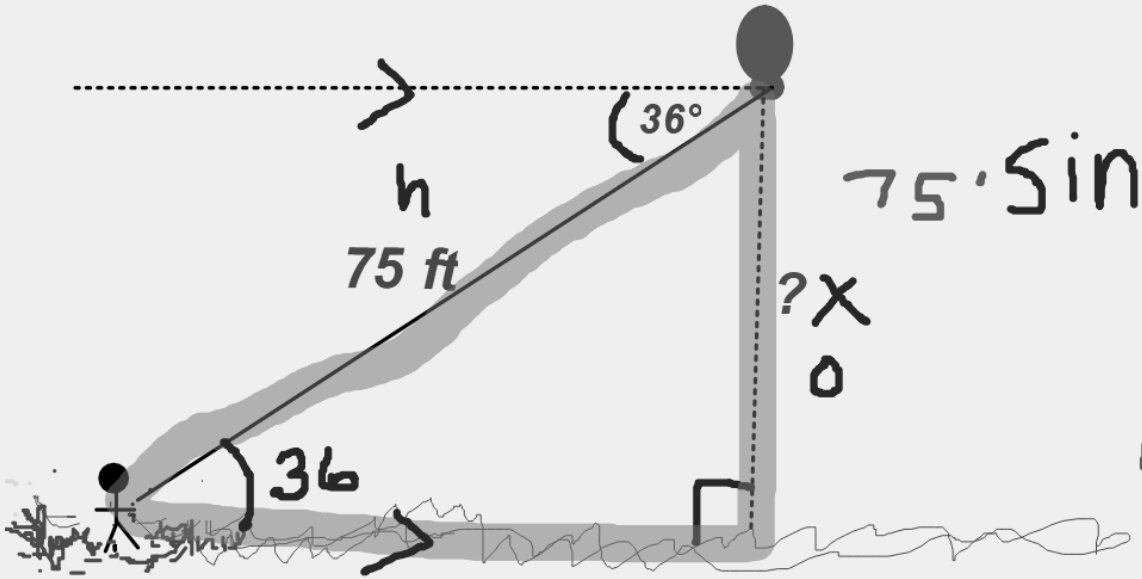
3.) The angle of depression from a balloon on a 75-foot string to a person on the ground is36°. How high is the balloon?



$75 \cdot \sin 36 = \frac{x}{75} \cdot 75$

$44.1 \approx x$

The balloon is about 44.1 ft above the ground.