

Chapter 8: Right Triangles & Trigonometry

SECTION 4: ANGLES OF DEPRESSION & ELEVATION

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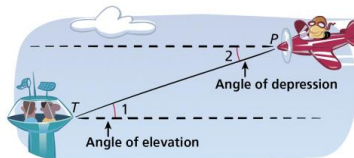
I Can

- Solve problems involving angles of elevation and angles of depression

Angles of Elevation & Depression

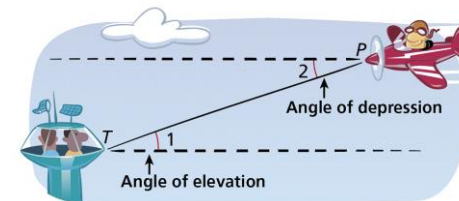
An **angle of elevation** is the angle formed by a horizontal line and a line of sight to a point *above* the line. In the diagram, $\angle 1$ is the angle of elevation from the tower T to the plane P .

An **angle of depression** is the angle formed by a horizontal line and a line of sight to a point *below* the line. $\angle 2$ is the angle of depression from the plane to the tower.



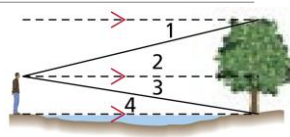
Congruent Angles

Since horizontal lines are parallel, $\angle 1 \cong \angle 2$ by the Alternate Interior Angles Theorem. Therefore the angle of elevation from one point is congruent to the angle of depression from the other point.



Classifying

Classify each angle as an angle of elevation or an angle of depression.



$\angle 1$

$\angle 2$

$\angle 3$

Example

The Seattle Space Needle casts a 67-meter shadow. If the angle of elevation from the tip of the shadow to the top of the Space Needle is 70° , how tall is the Space Needle? Round to the nearest meter.

Example

An ice climber stands at the edge of a crevasse that is 115 ft wide. The angle of depression from the edge where she stands to the bottom of the opposite side is 52° . How deep is the crevasse at this point? Round to the nearest foot.

Example

An observer in a lighthouse is 69 ft above the water. He sights two boats in the water directly in front of him. The angle of depression to the nearest boat is 48° . The angle of depression to the other boat is 22° . What is the distance between the two boats? Round to the nearest foot.

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