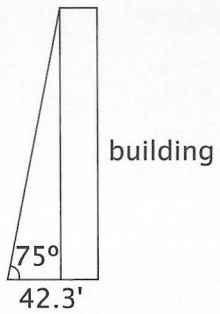
You can see a right triangle with the side adjacent to the 12° angle measuring 9.41 miles. To find the height of the mountain, or the side opposite the 12° angle, the tangent is the best choice.

$$\tan 12^\circ = \frac{\text{height}}{9.41 \text{ mi}}$$
$$(9.41)(\tan 12^\circ) = \text{height}$$
$$(9.41)(.2126) = \text{height}$$
$$2 \text{ miles} = \text{height}$$

Example ~~2~~ 3

At a point 42.3 feet from the base of a building, the angle of elevation of the top is 75°. How tall is the building?

$$\tan 75^\circ = \frac{\text{height}}{42.3'}$$
$$(42.3)(\tan 75^\circ) = \text{height}$$
$$(42.3)(3.7321) = \text{height}$$
$$157.87' = \text{height of the building}$$



Practice Problems 1

1. How far from the door must a ramp begin in order to rise three feet with an 8° angle of elevation?

2. An A-frame cabin is 26.23 feet high at the center, and the angle the roof makes with the base is 53°15'. How wide is the base?