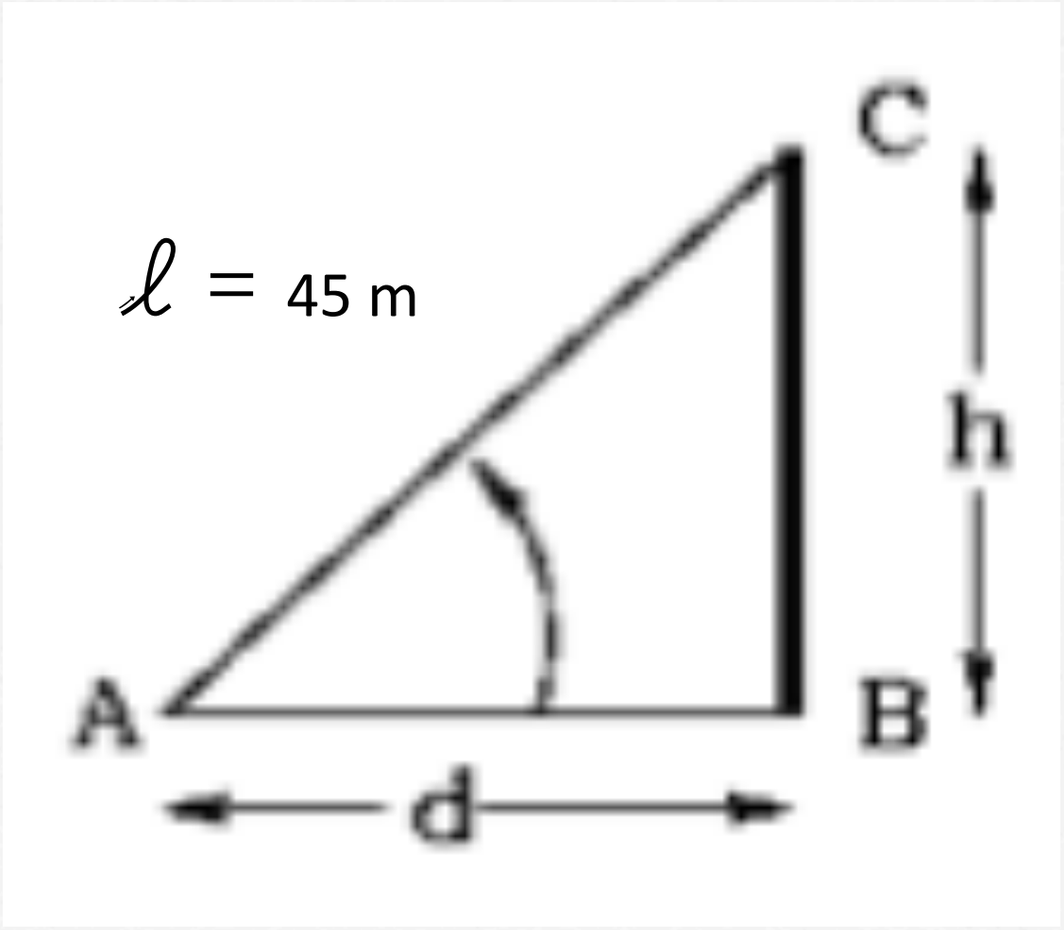
# Trigonometry

## Practicing with Sine, Cosine, & Tangent

You are standing  36 meters away from a building holding a rope extended from the top of the building.  If the rope has a length of 45 meters, how high is the building?




h = ?

d = 36 m

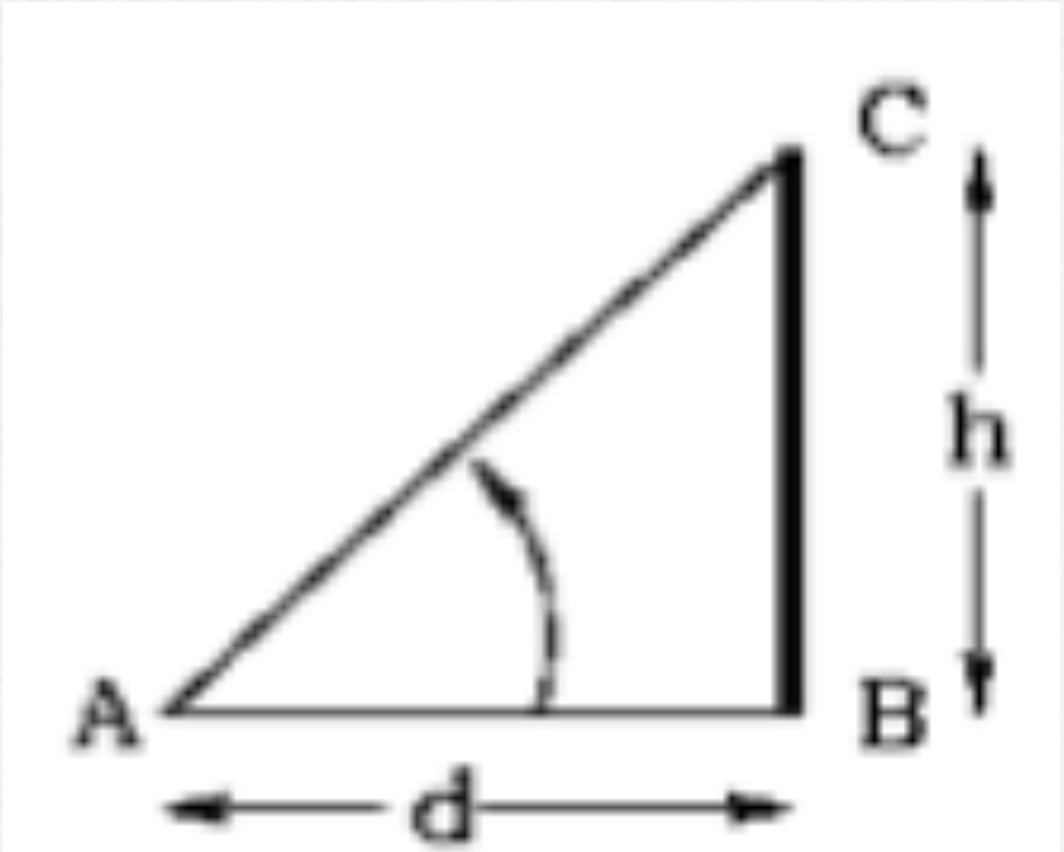
$h^2 + d^2 = \ell^2$

$h^2 + 36^2 = 45^2$

$h^2 + 1296 = 2025$

$h^2 = 729$ $\qquad$ $h = 27m$

A building known to be 35 meters high is 20.21 meters away from you . What is the angle of elevation from where you're standing to the top of the building?




$h = 35$

$d = 20.21$

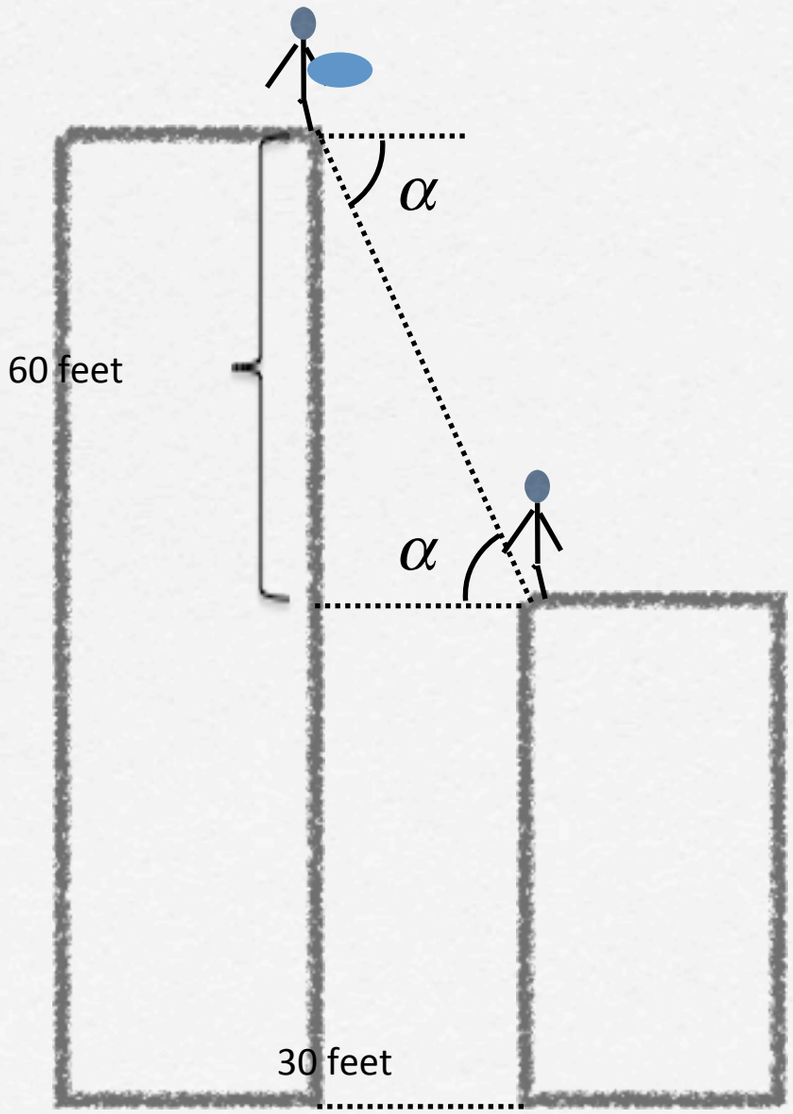
$$\tan A = \frac{35}{20.21}$$

$$A = \tan^{-1}\frac{35}{20.21}$$

$$A \approx 60°$$

Camille is standing on top of a building. She sees Mr. Murphy standing on top of another building 30 feet away from her building.

She wants to lob a water balloon on top of Mr Murphy but needs to know her angle of depression in order to do it.




Her building is 60 feet taller than Mr. Murphy's building.

Find her angle of depression with the point where Mr. Murphy is standing.

$$\tan\alpha = \frac{60}{30} = 2$$

$$\tan^{-1} 2 = \alpha$$

$$\alpha \approx 63.435°$$

How far is she from Mr. Murphy?

$$d^2 = 60^2 + 30^2$$

$$d \approx 67.082 \text{feet}$$