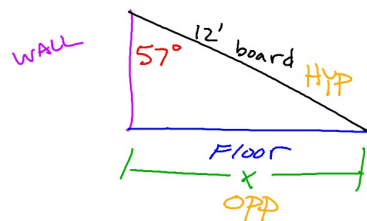


Carpenters attach a 12 foot long board to the top of a wall and to the floor in order to keep it supported while they finish the construction. If one end of this board makes a  $57^\circ$  angle with the wall how far from the wall is the other end of the board? Round to the nearest tenth of a foot.



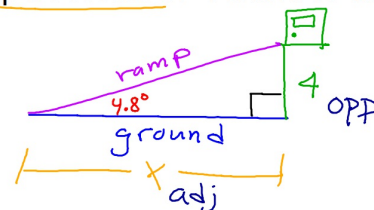
**SOHCAHTOA**

$$\sin 57^\circ = \frac{x}{12}$$

Multiply both sides by 12.

$$x = 10.1 \text{ ft}$$

In order for a building to be wheelchair accessible it needs to have a wheelchair ramp if the door isn't at ground level. According to the ADA the maximum angle a ramp can make with the ground is  $4.8^\circ$ . A ramp is needed to take a person from the level of the parking lot to a doorway that is 4 feet above the parking lot. How far from the building will the end of the ramp be located? Round to the nearest hundredth.



**SOHCAHTOA**

$$\tan 4.8 = \frac{4}{x}$$

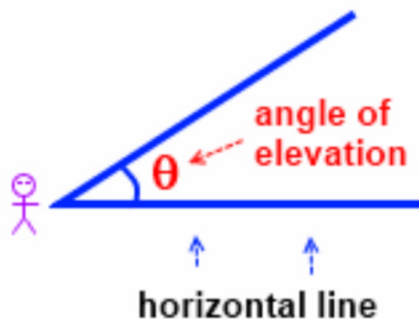
turn this into a proportion

$$\tan 4.8 = \frac{4}{x}$$

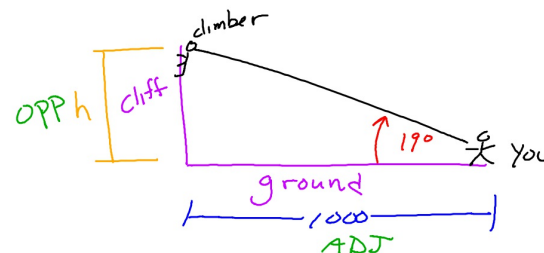
then cross multiply

$$x = 47.63 \text{ ft}$$

**Angle of Elevation:** Angle measured upward from the Horizontal.



You are 1000 feet from the base of a cliff and see a rock climber high on the cliff with an angle of elevation of  $19^\circ$ . How high up on the cliff is the rock climber? Round to the nearest whole foot.



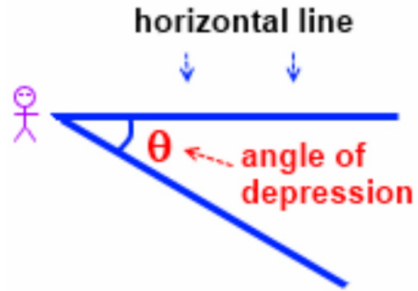
**SOHCAHTOA**

$$\tan 19^\circ = \frac{h}{1000}$$

multiply both sides by 1000

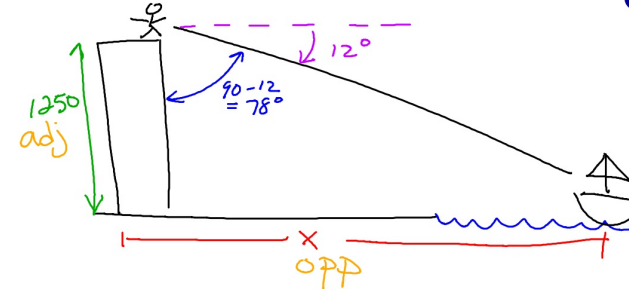
$$h = 344 \text{ ft}$$

Angle of Depression: Angle measured **downward** from the **Horizontal**.



You are at the top of the Empire State Building in New York City, 1250 above the ground. You see a ship on the East River with an angle of depression of  $12^\circ$ . How far away from the Empire State Building is the ship? Round to the nearest whole foot.

**SOHCAHTOA**



$$\tan 78^\circ = \frac{x}{1250}$$

multiply both sides by 1250

$$x = 5881 \text{ ft}$$