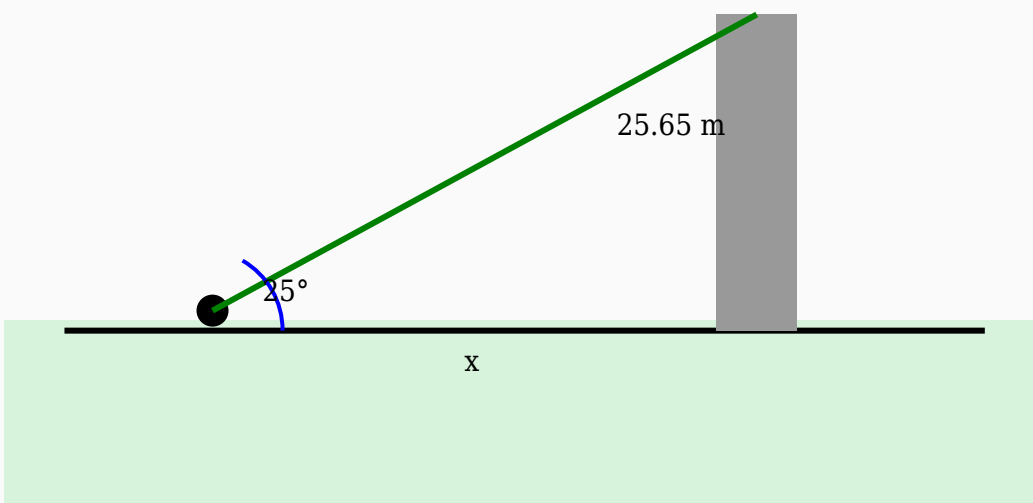


# Angle of Elevation Solved Worksheet

## Question 1

A surveyor notices the top of a flagpole at an angle of elevation of  $25^\circ$ . Determine the horizontal distance if the height of the flagpole is 25.65 m.



**Solution:**

**Using:**

$$\tan \theta = \text{Opposite} / \text{Adjacent}$$

$$\tan 25^\circ = 25.65 / \text{Distance}$$

$$0.47 = 25.65 / \text{Distance}$$

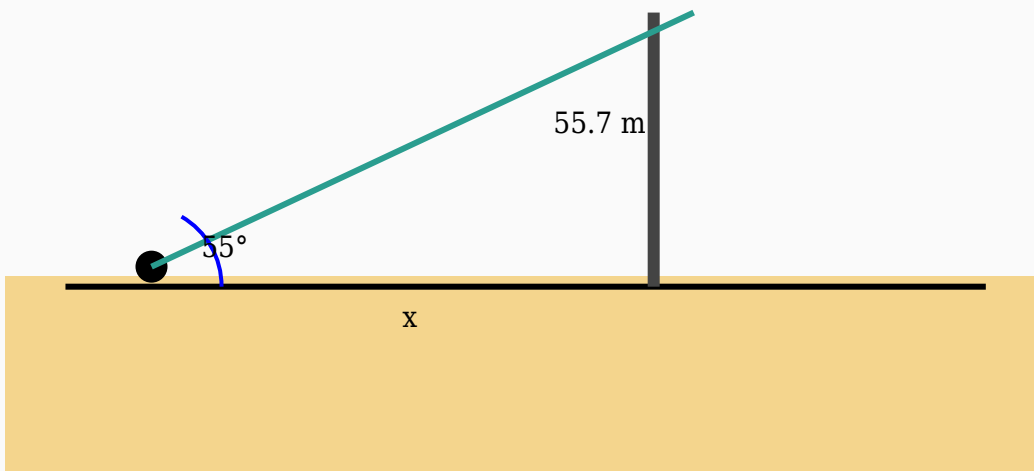
$$\text{Distance} = 25.65 / 0.47$$

$$\text{Distance} = 54.57 \text{ m}$$

**Answer:** 54.57 m

## Question 2

A tourist observes the top of a mountain at an angle of elevation of  $55^\circ$ . If the height of the mountain is 55.7 m, find the horizontal distance.



**Solution:**

**Using:**

$$\tan \theta = \text{Opposite} / \text{Adjacent}$$

$$\tan 55^\circ = 55.7 / \text{Distance}$$

$$1.43 = 55.7 / \text{Distance}$$

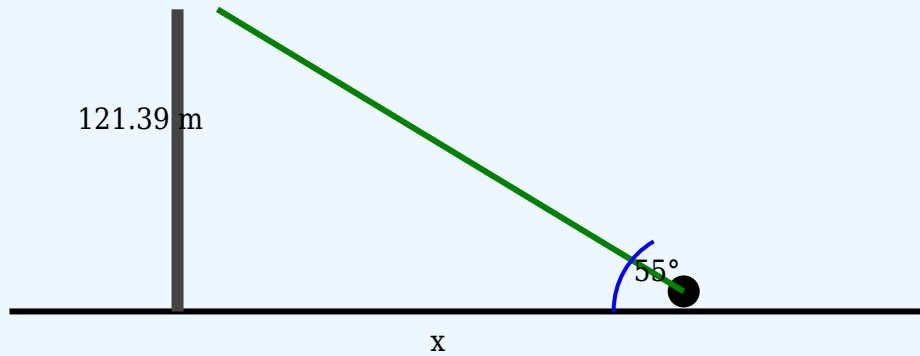
$$\text{Distance} = 55.7 / 1.43$$

$$\text{Distance} = 38.95 \text{ m}$$

**Answer:** 38.95 m

## Question 3

The height of a tower is 121.39 m. If the angle of elevation from a point on the ground is  $55^\circ$ , calculate the horizontal distance.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = 121.39 / \text{Distance}$

$1.43 = 121.39 / \text{Distance}$

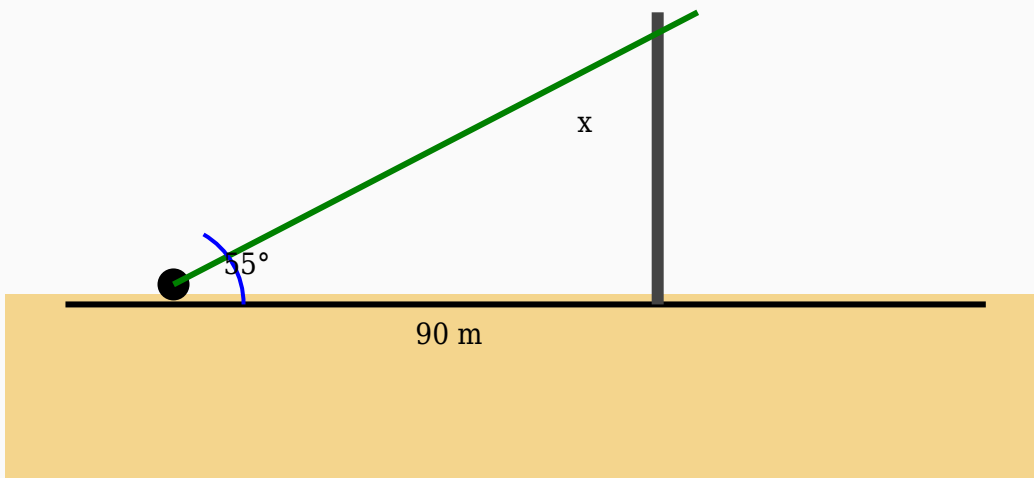
$\text{Distance} = 121.39 / 1.43$

$\text{Distance} = 84.89 \text{ m}$

**Answer:** 84.89 m

## Question 4

An observer looks at the top of a crane at an angle of elevation of  $55^\circ$ . Find the height of the crane if the distance from the base is 90 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = \text{Height} / 90$

$1.43 = \text{Height} / 90$

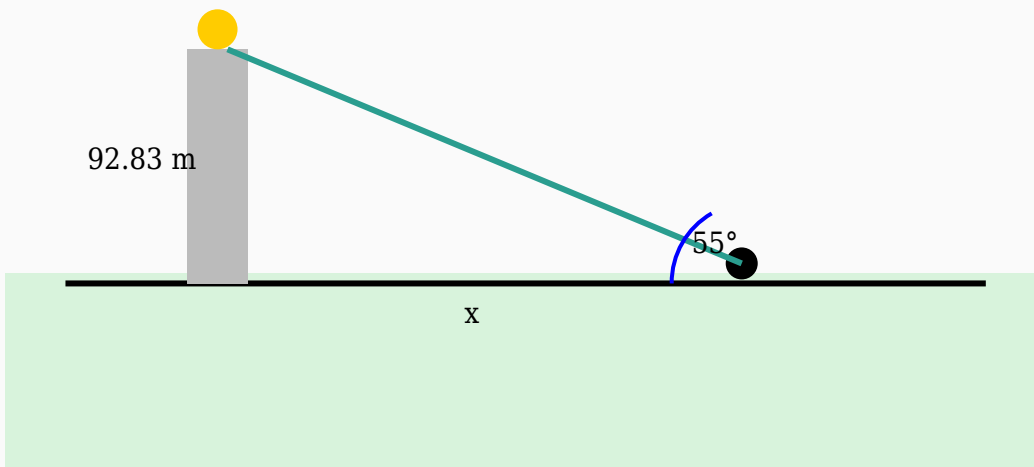
$\text{Height} = 90 \times 1.43$

$\text{Height} = 128.53 \text{ m}$

**Answer:** 128.53 m

## Question 5

A girl observes the top of a hill at an angle of elevation of  $55^\circ$ . If the height of the hill is 92.83 m, find the horizontal distance.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = 92.83 / \text{Distance}$

$1.43 = 92.83 / \text{Distance}$

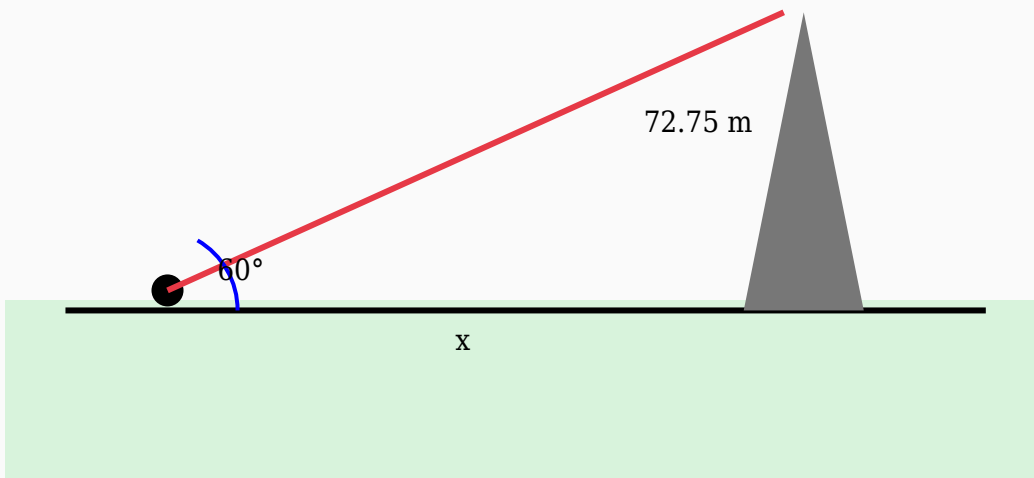
$\text{Distance} = 92.83 / 1.43$

$\text{Distance} = 64.92 \text{ m}$

**Answer:** 64.92 m

## Question 6

The height of a mountain is 72.75 m. If the angle of elevation from a point on the ground is  $60^\circ$ , calculate the horizontal distance.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 60^\circ = 72.75 / \text{Distance}$

$1.73 = 72.75 / \text{Distance}$

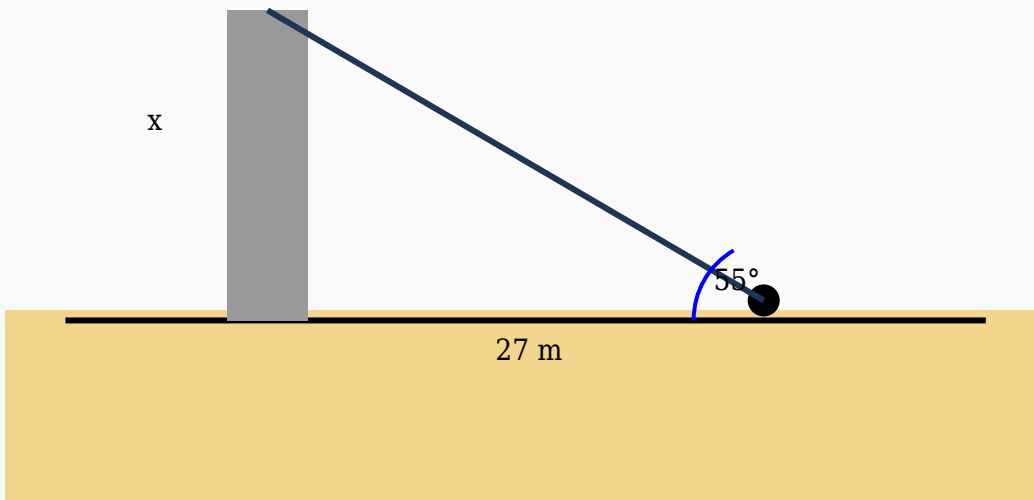
$\text{Distance} = 72.75 / 1.73$

$\text{Distance} = 42.05 \text{ m}$

**Answer:** 42.05 m

## Question 7

A woman looks at the top of a building at an angle of elevation of  $55^\circ$ . Find the height of the building if the distance from the base is 27 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = \text{Height} / 27$

$1.43 = \text{Height} / 27$

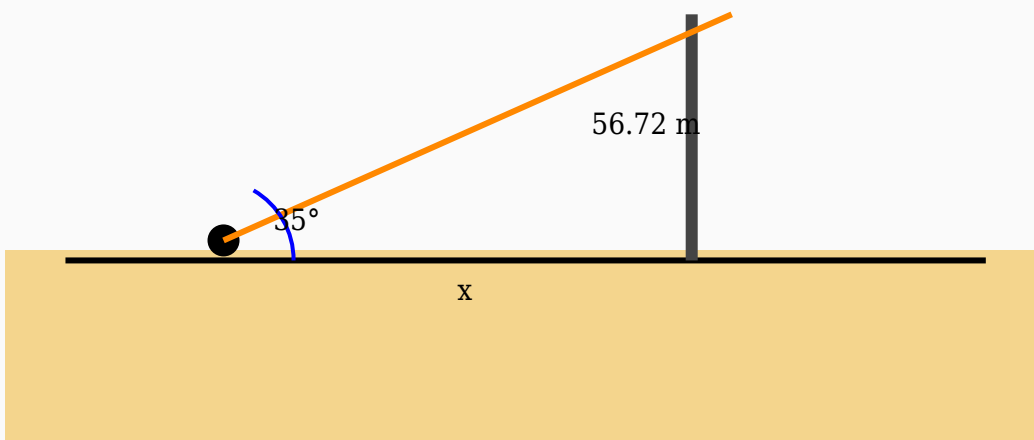
$\text{Height} = 27 \times 1.43$

$\text{Height} = 38.56 \text{ m}$

**Answer:** 38.56 m

## Question 8

The height of a electric pole is 56.72 m. If the angle of elevation from a point on the ground is  $35^\circ$ , calculate the horizontal distance.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 35^\circ = 56.72 / \text{Distance}$

$0.7 = 56.72 / \text{Distance}$

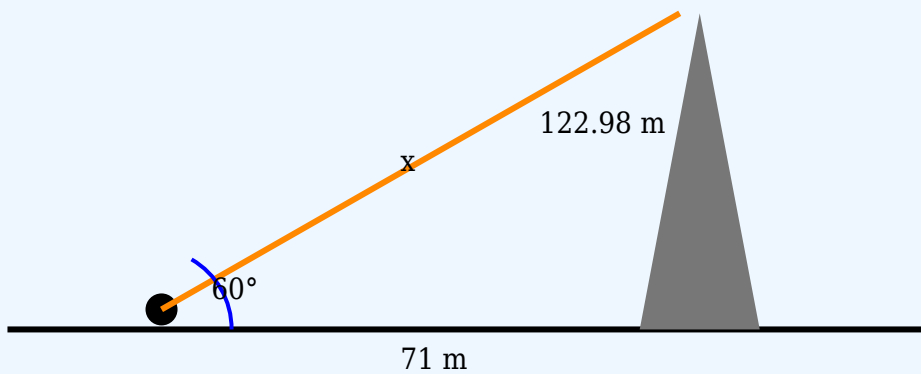
$\text{Distance} = 56.72 / 0.7$

$\text{Distance} = 81.03 \text{ m}$

**Answer:** 81.03 m

## Question 9

An observer looks at the top of a bridge making an angle of elevation of  $60^\circ$ . Determine the length of the line of sight if the horizontal distance is 71 m.



**Solution:**

**Using:**

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 60^\circ = 71 / \text{Hypotenuse}$$

$$0.5 = 71 / \text{Hypotenuse}$$

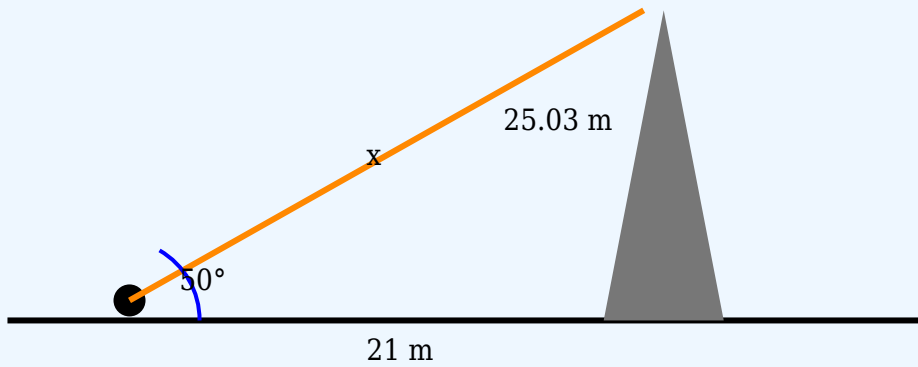
$$\text{Hypotenuse} = 71 / 0.5$$

$$\text{Hypotenuse} = 142 \text{ m}$$

**Answer:** 142 m

## Question 10

The angle of elevation to the top of a crane is  $50^\circ$ . If the observer is 21 m from the base, calculate the hypotenuse.



**Solution:**

**Using:**

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 50^\circ = 21 / \text{Hypotenuse}$$

$$0.64 = 21 / \text{Hypotenuse}$$

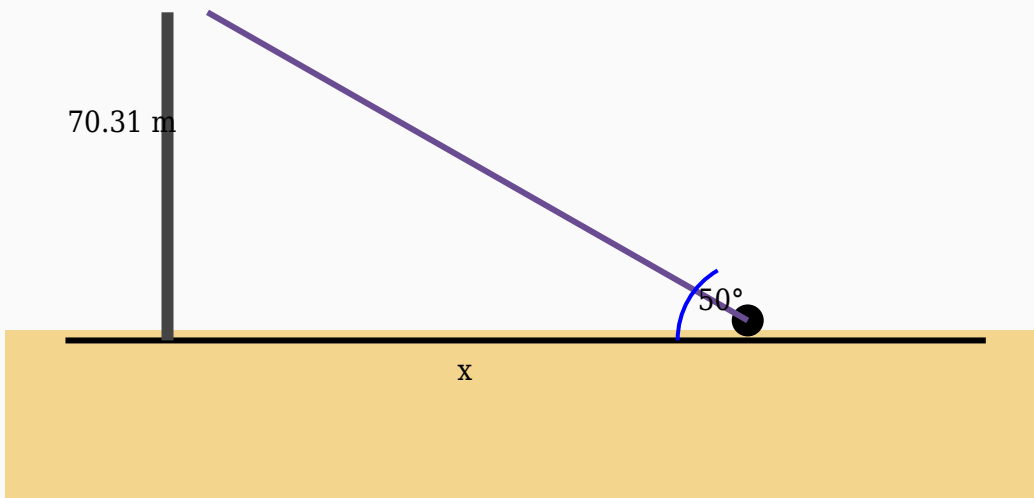
$$\text{Hypotenuse} = 21 / 0.64$$

$$\text{Hypotenuse} = 32.81 \text{ m}$$

**Answer:** 32.81 m

## Question 11

A student observes the top of a building at an angle of elevation of  $50^\circ$ . If the height of the building is 70.31 m, find the horizontal distance.



**Solution:**

**Using:**

$$\tan \theta = \text{Opposite} / \text{Adjacent}$$

$$\tan 50^\circ = 70.31 / \text{Distance}$$

$$1.19 = 70.31 / \text{Distance}$$

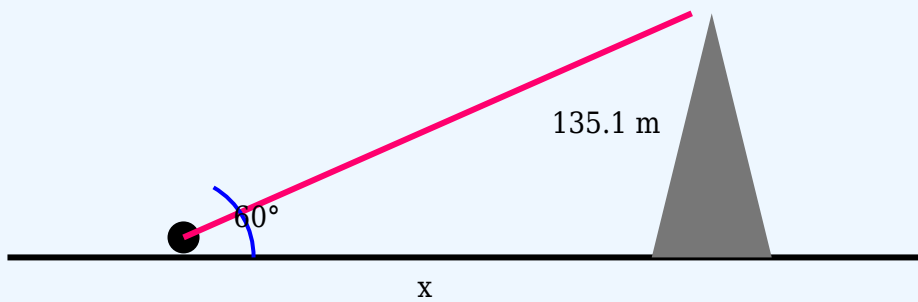
$$\text{Distance} = 70.31 / 1.19$$

$$\text{Distance} = 59.08 \text{ m}$$

**Answer:** 59.08 m

## Question 12

The height of a water tank is 135.1 m. If the angle of elevation from a point on the ground is  $60^\circ$ , calculate the horizontal distance.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 60^\circ = 135.1 / \text{Distance}$

$1.73 = 135.1 / \text{Distance}$

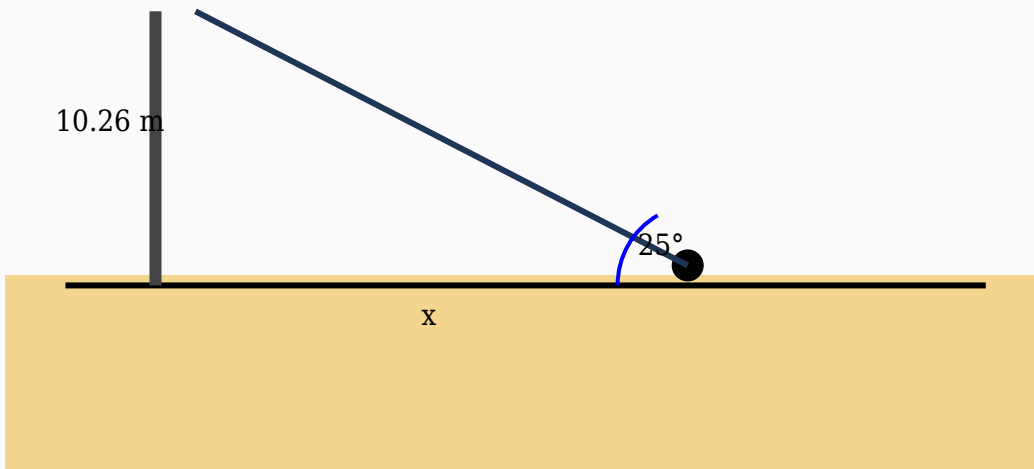
$\text{Distance} = 135.1 / 1.73$

$\text{Distance} = 78.09 \text{ m}$

**Answer:** 78.09 m

### Question 13

The angle of elevation to the top of a stadium light is  $25^\circ$ . Find the distance from the observer to the base if the height is 10.26 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 25^\circ = 10.26 / \text{Distance}$

$0.47 = 10.26 / \text{Distance}$

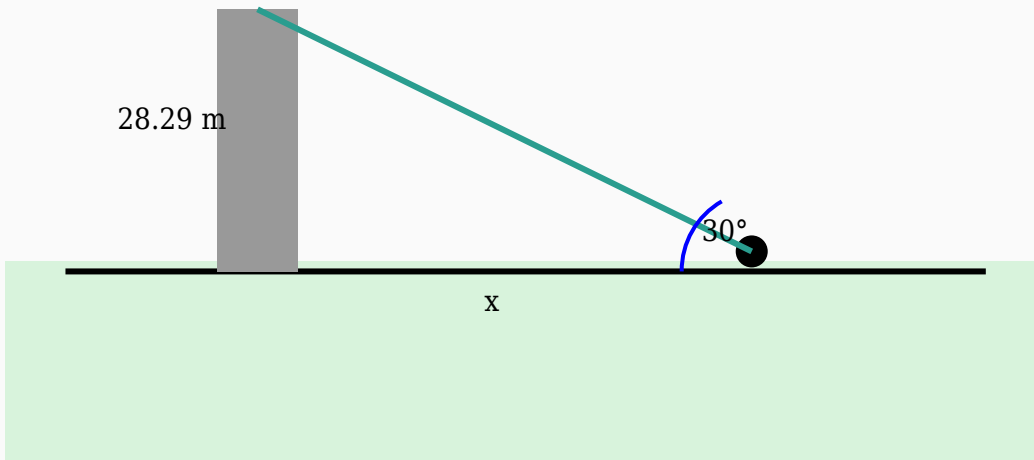
$\text{Distance} = 10.26 / 0.47$

$\text{Distance} = 21.83 \text{ m}$

**Answer:** 21.83 m

## Question 14

A surveyor notices the top of a mobile tower at an angle of elevation of  $30^\circ$ . Determine the horizontal distance if the height of the mobile tower is 28.29 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 30^\circ = 28.29 / \text{Distance}$

$0.58 = 28.29 / \text{Distance}$

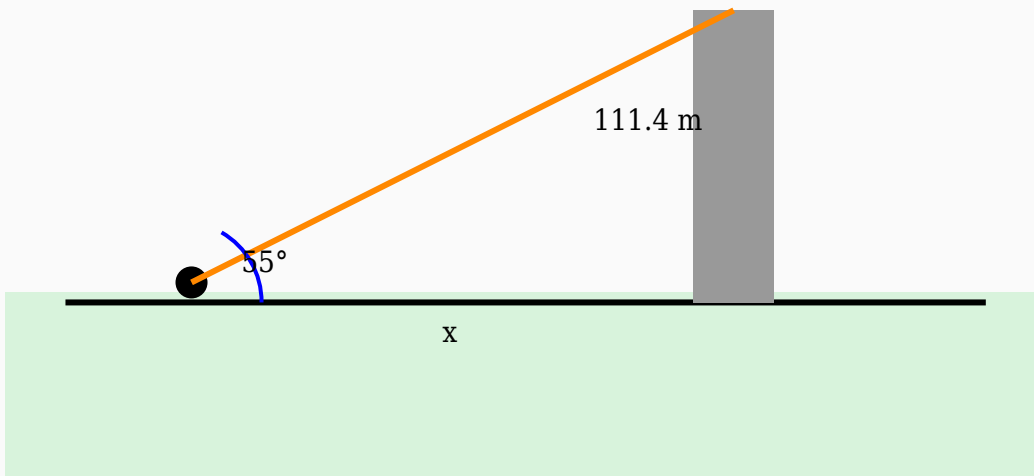
$\text{Distance} = 28.29 / 0.58$

$\text{Distance} = 48.78 \text{ m}$

**Answer:** 48.78 m

## Question 15

A surveyor notices the top of a mountain at an angle of elevation of  $55^\circ$ . Determine the horizontal distance if the height of the mountain is 111.4 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = 111.4 / \text{Distance}$

$1.43 = 111.4 / \text{Distance}$

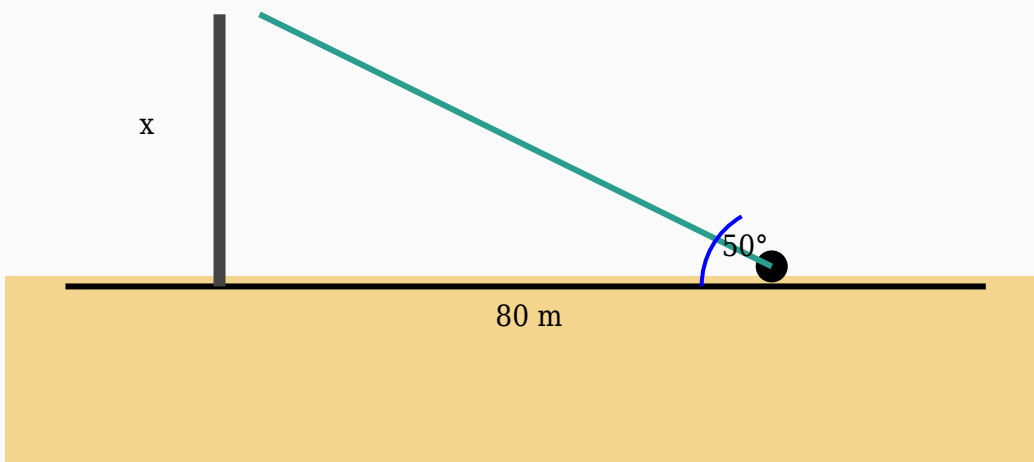
$\text{Distance} = 111.4 / 1.43$

$\text{Distance} = 77.9 \text{ m}$

**Answer:** 77.9 m

## Question 16

A man standing near a electric pole observes its top at an angle of elevation of  $50^\circ$ . If the horizontal distance is 80 m, find the height of the electric pole.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 50^\circ = \text{Height} / 80$

$1.19 = \text{Height} / 80$

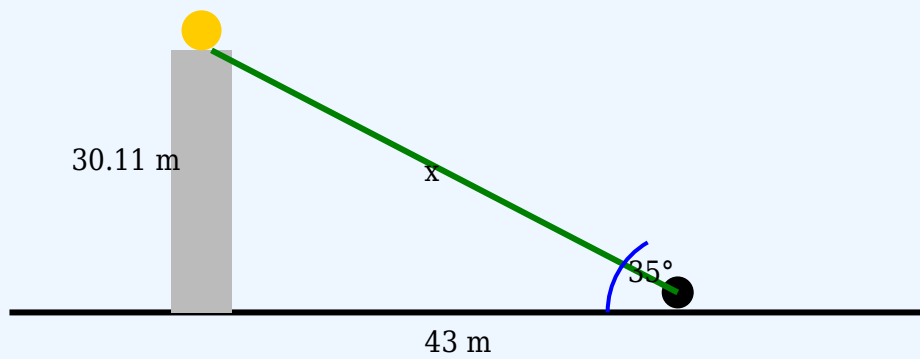
$\text{Height} = 80 \times 1.19$

$\text{Height} = 95.34 \text{ m}$

**Answer:** 95.34 m

## Question 17

The angle of elevation to the top of a tower is  $35^\circ$ . If the observer is 43 m from the base, calculate the hypotenuse.



**Solution:**

**Using:**

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 35^\circ = 43 / \text{Hypotenuse}$$

$$0.82 = 43 / \text{Hypotenuse}$$

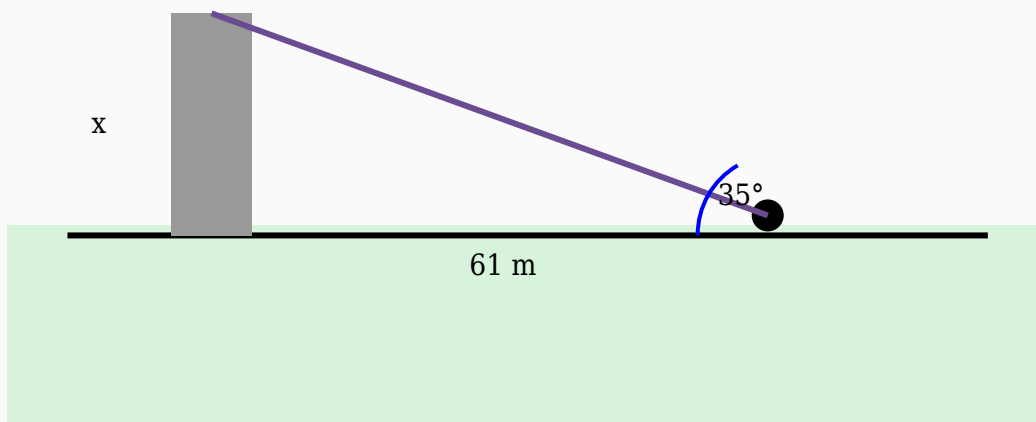
$$\text{Hypotenuse} = 43 / 0.82$$

$$\text{Hypotenuse} = 52.44 \text{ m}$$

**Answer:** 52.44 m

## Question 18

A student looks at the top of a mountain at an angle of elevation of  $35^\circ$ . Find the height of the mountain if the distance from the base is 61 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 35^\circ = \text{Height} / 61$

$0.7 = \text{Height} / 61$

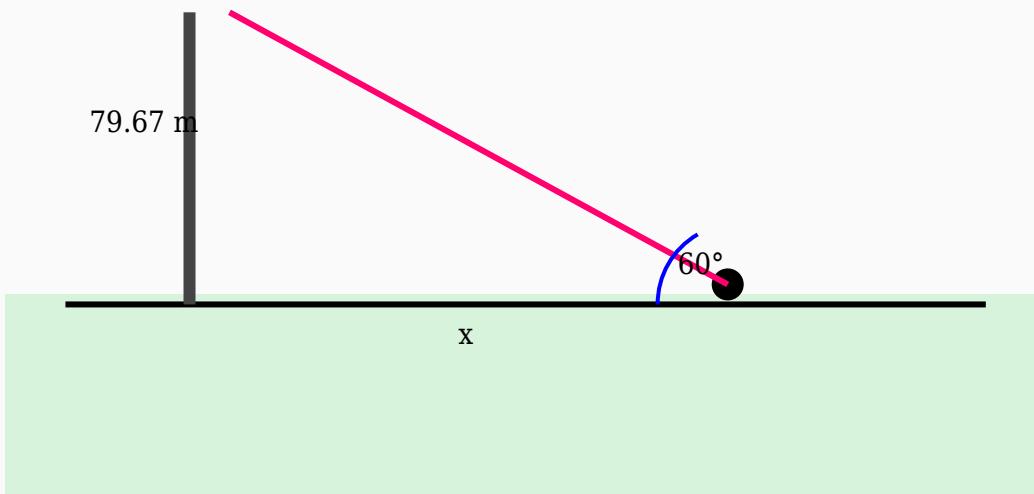
$\text{Height} = 61 \times 0.7$

$\text{Height} = 42.71 \text{ m}$

**Answer:** 42.71 m

## Question 19

The angle of elevation to the top of a water tank is  $60^\circ$ . Find the distance from the observer to the base if the height is 79.67 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 60^\circ = 79.67 / \text{Distance}$

$1.73 = 79.67 / \text{Distance}$

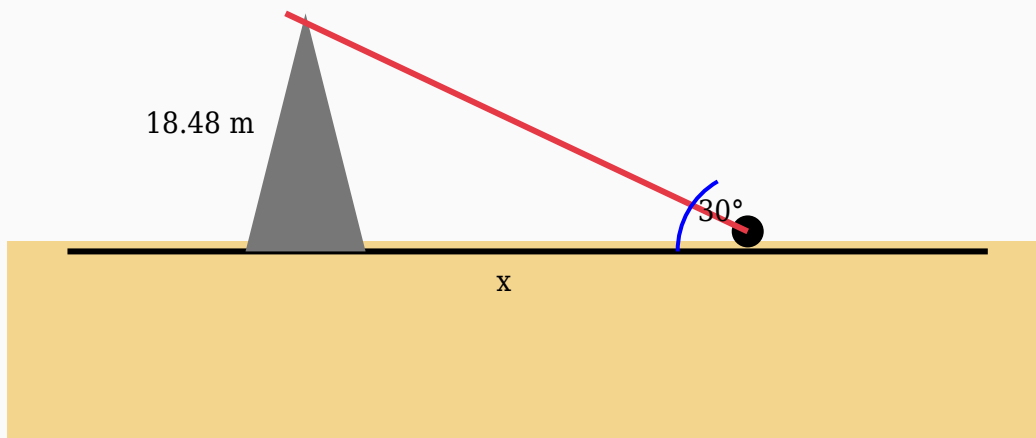
$\text{Distance} = 79.67 / 1.73$

$\text{Distance} = 46.05 \text{ m}$

**Answer:** 46.05 m

## Question 20

A surveyor notices the top of a building at an angle of elevation of  $30^\circ$ . Determine the horizontal distance if the height of the building is 18.48 m.



**Solution:**

**Using:**

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 30^\circ = 18.48 / \text{Distance}$

$0.58 = 18.48 / \text{Distance}$

$\text{Distance} = 18.48 / 0.58$

$\text{Distance} = 31.86 \text{ m}$

**Answer:** 31.86 m