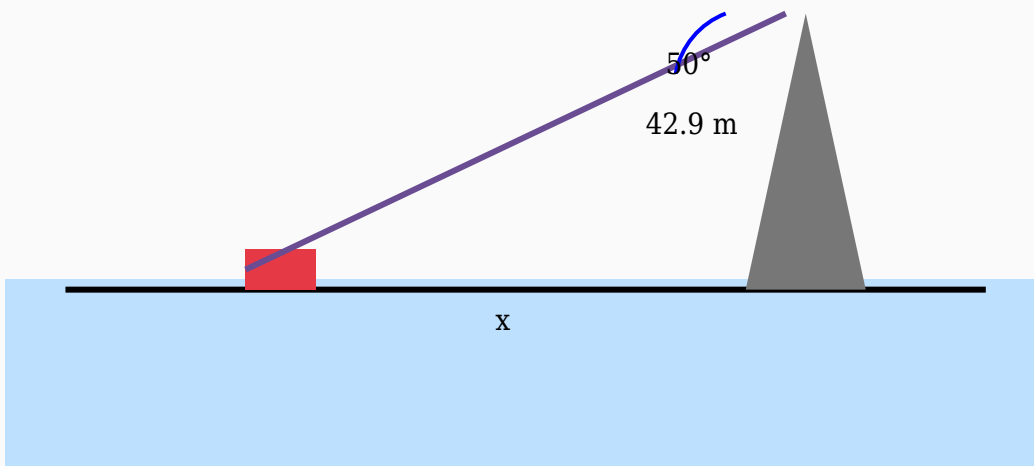


# Angle of Depression Solved Worksheet

## Question 1

The angle of depression from a lighthouse to a tree is  $50^\circ$ . Calculate the horizontal distance if the height of the lighthouse is 42.9 m.



**Solution:**

**Using:**

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

$$\tan 50^\circ = 42.9 / \text{Distance}$$

$$1.19 = 42.9 / \text{Distance}$$

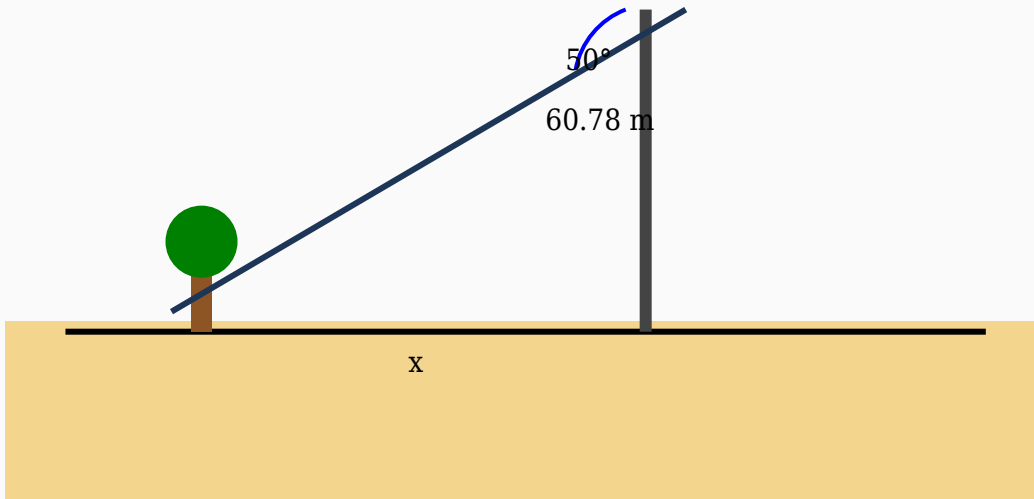
$$\text{Distance} = 42.9 / 1.19$$

$$\text{Distance} = 36.05 \text{ m}$$

**Answer:** 36.05 m

## Question 2

A car is seen from the top of a stadium at an angle of depression of  $50^\circ$ . Determine the distance between the car and the base if the height is 60.78 m.



**Solution:**

**Using:**

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

$$\tan 50^\circ = 60.78 / \text{Distance}$$

$$1.19 = 60.78 / \text{Distance}$$

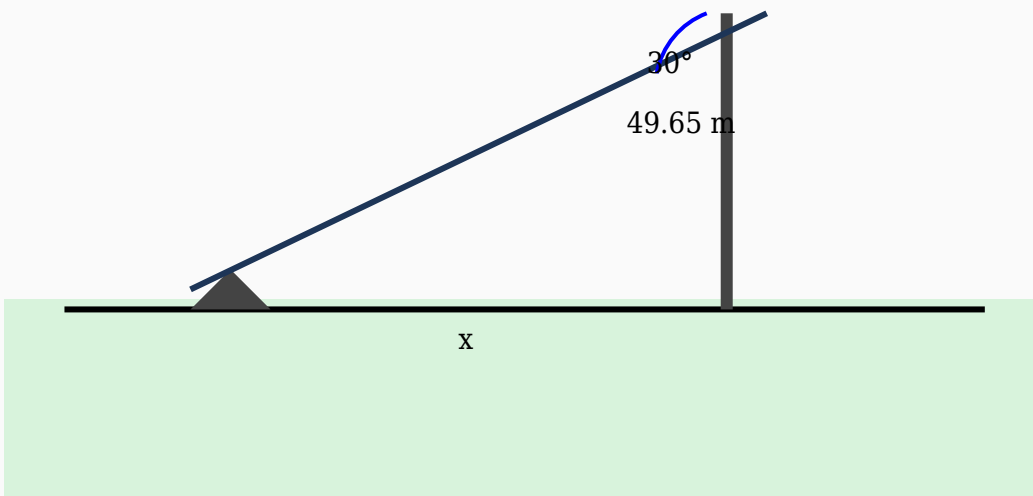
$$\text{Distance} = 60.78 / 1.19$$

$$\text{Distance} = 51.08 \text{ m}$$

**Answer:** 51.08 m

## Question 3

A student standing on a hill observes a car at an angle of depression of  $30^\circ$ . If the height of the hill is 49.65 m, find the horizontal distance.



**Solution:**

**Using:**

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

$\tan 30^\circ = 49.65 / \text{Distance}$

$0.58 = 49.65 / \text{Distance}$

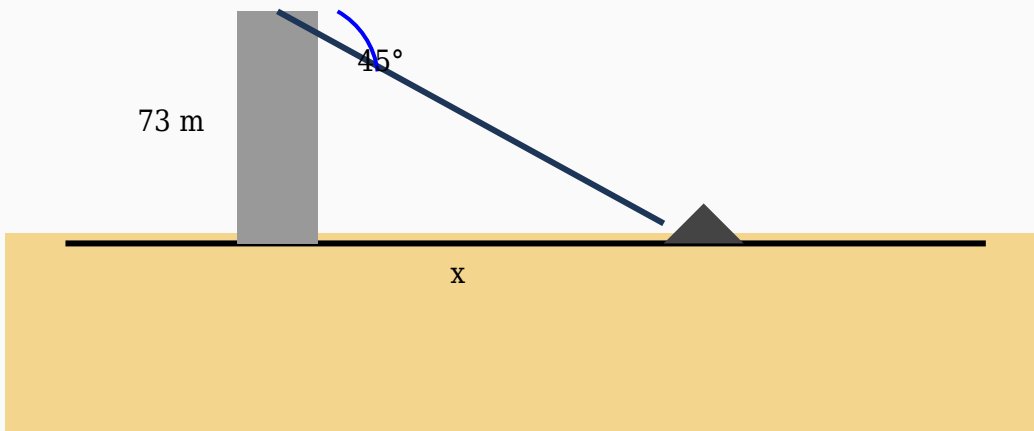
$\text{Distance} = 49.65 / 0.58$

$\text{Distance} = 85.6 \text{ m}$

**Answer:** 85.6 m

## Question 4

A tourist standing on a tower observes a car at an angle of depression of  $45^\circ$ . If the height of the tower is 73 m, find the horizontal distance.



**Solution:**

**Using:**

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

$\tan 45^\circ = 73 / \text{Distance}$

$1 = 73 / \text{Distance}$

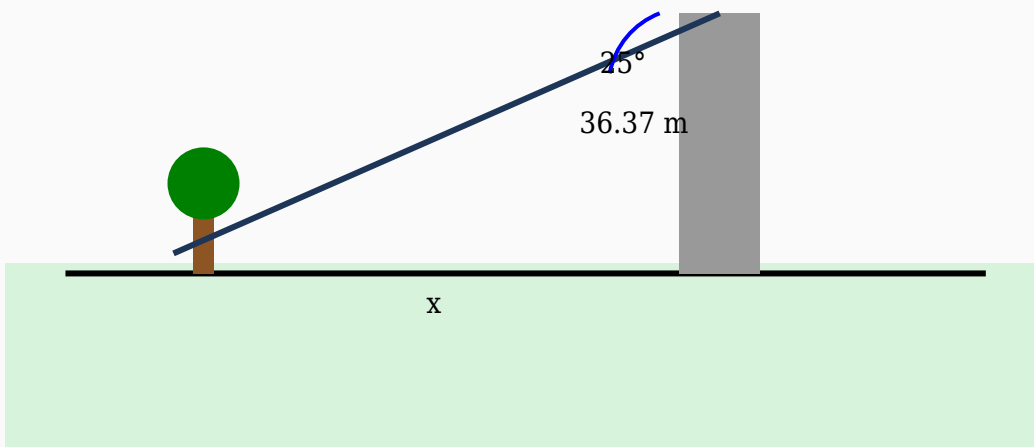
$\text{Distance} = 73 / 1$

$\text{Distance} = 73 \text{ m}$

**Answer:** 73 m

## Question 5

A person is seen from the top of a balcony at an angle of depression of  $25^\circ$ . Determine the distance between the person and the base if the height is 36.37 m.



**Solution:**

**Using:**

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

$\tan 25^\circ = 36.37 / \text{Distance}$

$0.47 = 36.37 / \text{Distance}$

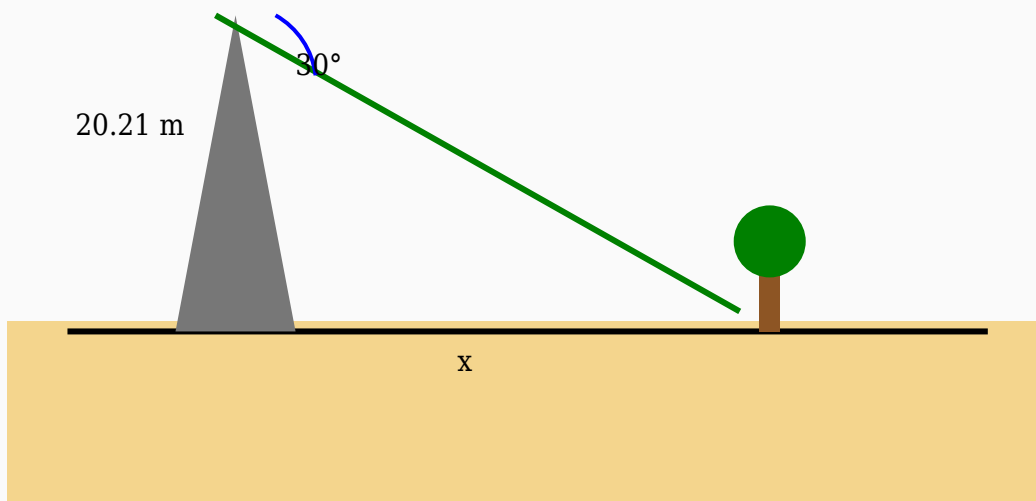
$\text{Distance} = 36.37 / 0.47$

$\text{Distance} = 77.38 \text{ m}$

**Answer:** 77.38 m

## Question 6

The angle of depression from a hill to a person is  $30^\circ$ . Calculate the horizontal distance if the height of the hill is 20.21 m.



**Solution:**

**Using:**

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

$\tan 30^\circ = 20.21 / \text{Distance}$

$0.58 = 20.21 / \text{Distance}$

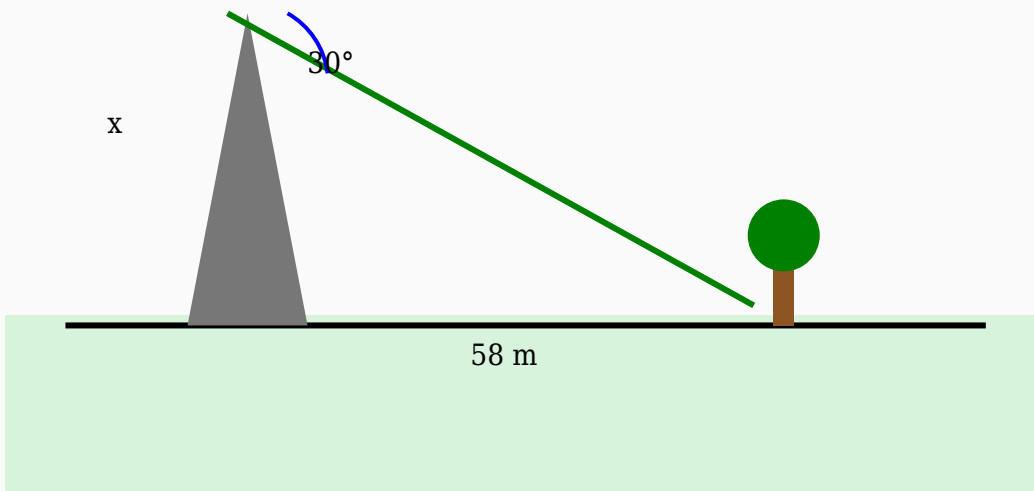
$\text{Distance} = 20.21 / 0.58$

$\text{Distance} = 34.84 \text{ m}$

**Answer:** 34.84 m

## Question 7

The angle of depression from the top of a bridge to a road is  $30^\circ$ . If the road is 58 m away horizontally, calculate the height of the bridge.



**Solution:**

**Using:**

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

$\tan 30^\circ = \text{Height} / 58$

$0.58 = \text{Height} / 58$

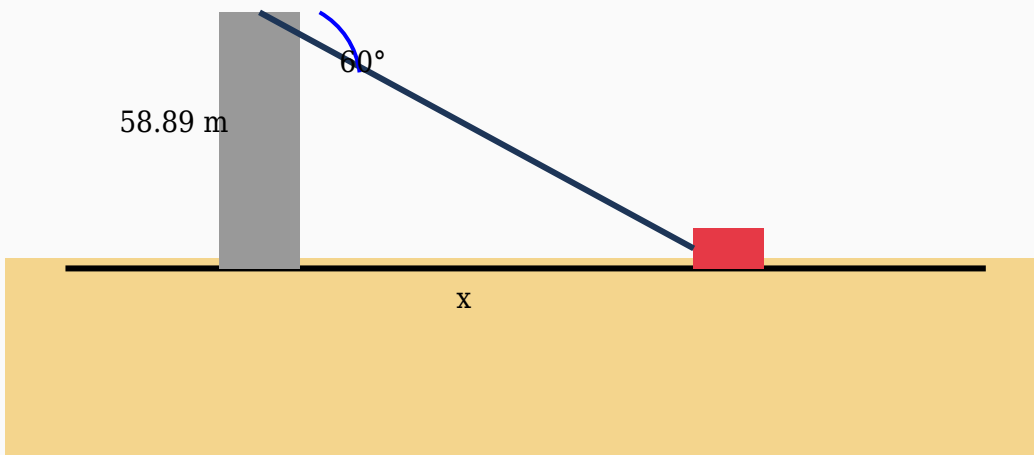
$\text{Height} = 58 \times 0.58$

$\text{Height} = 33.49 \text{ m}$

**Answer:** 33.49 m

## Question 8

The angle of depression from a mountain to a bus is  $60^\circ$ . Calculate the horizontal distance if the height of the mountain is 58.89 m.



**Solution:**

**Using:**

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

$\tan 60^\circ = 58.89 / \text{Distance}$

$1.73 = 58.89 / \text{Distance}$

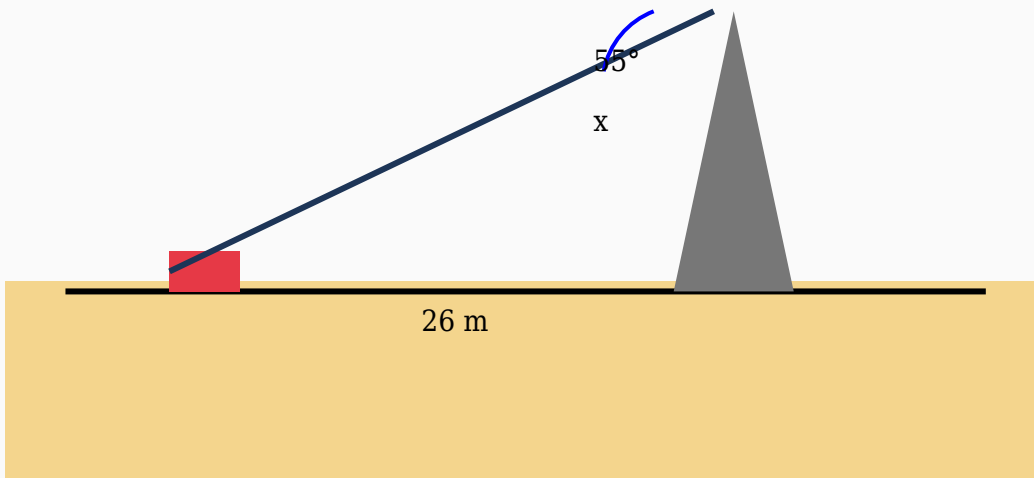
$\text{Distance} = 58.89 / 1.73$

$\text{Distance} = 34.04 \text{ m}$

**Answer:** 34.04 m

## Question 9

A surveyor standing on a building observes a truck at an angle of depression of  $55^\circ$ . If the horizontal distance is 26 m, find the height of the building.



**Solution:**

**Using:**

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

$\tan 55^\circ = \text{Height} / 26$

$1.43 = \text{Height} / 26$

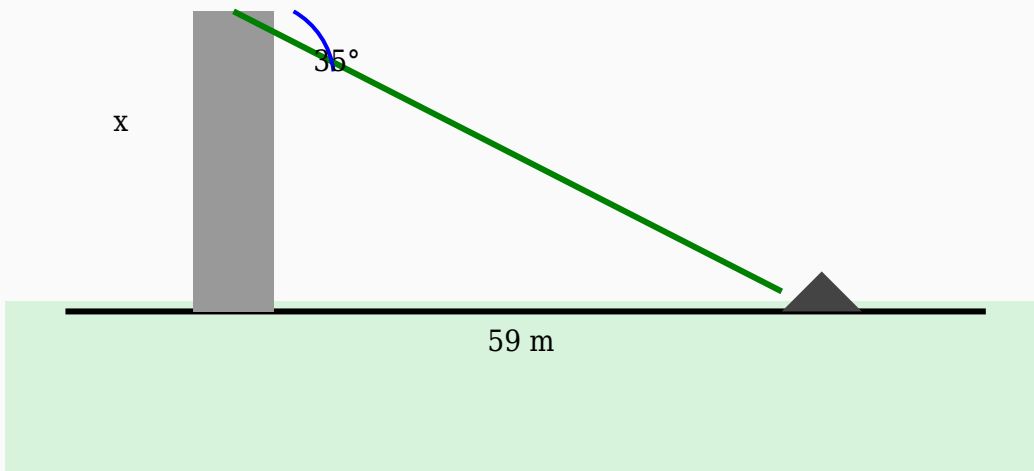
$\text{Height} = 26 \times 1.43$

$\text{Height} = 37.13 \text{ m}$

**Answer:** 37.13 m

## Question 10

A boy standing on a tower observes a road at an angle of depression of  $35^\circ$ . If the horizontal distance is 59 m, find the height of the tower.



**Solution:**

**Using:**

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

$\tan 35^\circ = \text{Height} / 59$

$0.7 = \text{Height} / 59$

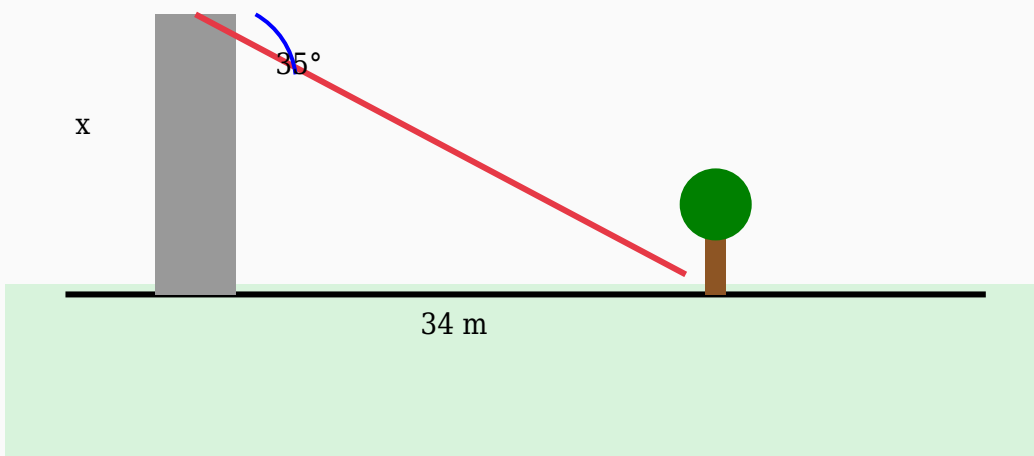
$\text{Height} = 59 \times 0.7$

$\text{Height} = 41.31 \text{ m}$

**Answer:** 41.31 m

## Question 11

A man standing on a lighthouse observes a bus at an angle of depression of  $35^\circ$ . If the horizontal distance is 34 m, find the height of the lighthouse.



**Solution:**

**Using:**

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

$\tan 35^\circ = \text{Height} / 34$

$0.7 = \text{Height} / 34$

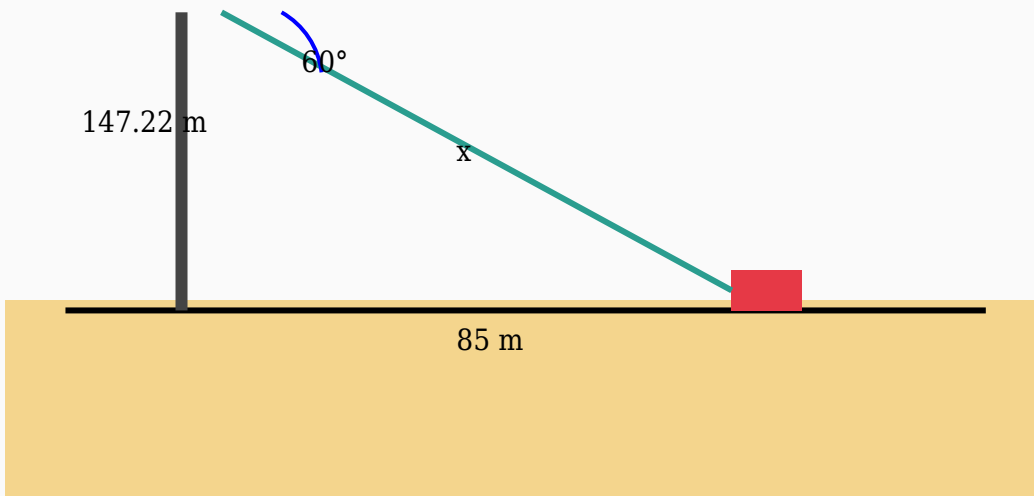
$\text{Height} = 34 \times 0.7$

$\text{Height} = 23.81 \text{ m}$

**Answer:** 23.81 m

## Question 12

The angle of depression from a balcony to a bus is  $60^\circ$ . If the bus is 85 m away horizontally, calculate the hypotenuse.



**Solution:**

**Using:**

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

$$\cos 60^\circ = 85 / \text{Hypotenuse}$$

$$0.5 = 85 / \text{Hypotenuse}$$

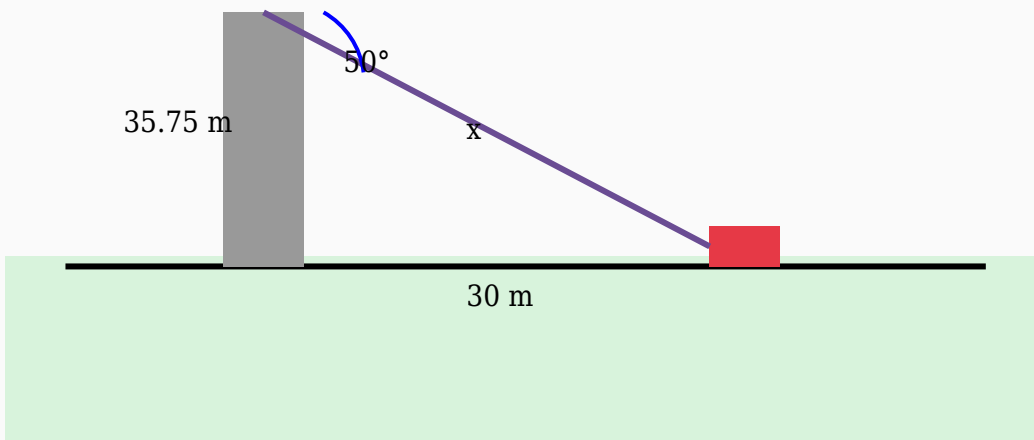
$$\text{Hypotenuse} = 85 / 0.5$$

$$\text{Hypotenuse} = 170 \text{ m}$$

**Answer:** 170 m

### Question 13

A girl standing on a tower observes a river at an angle of depression of  $50^\circ$ . If the horizontal distance is 30 m, find the line of sight distance.



**Solution:**

**Using:**

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

$\cos 50^\circ = 30 / \text{Hypotenuse}$

$0.64 = 30 / \text{Hypotenuse}$

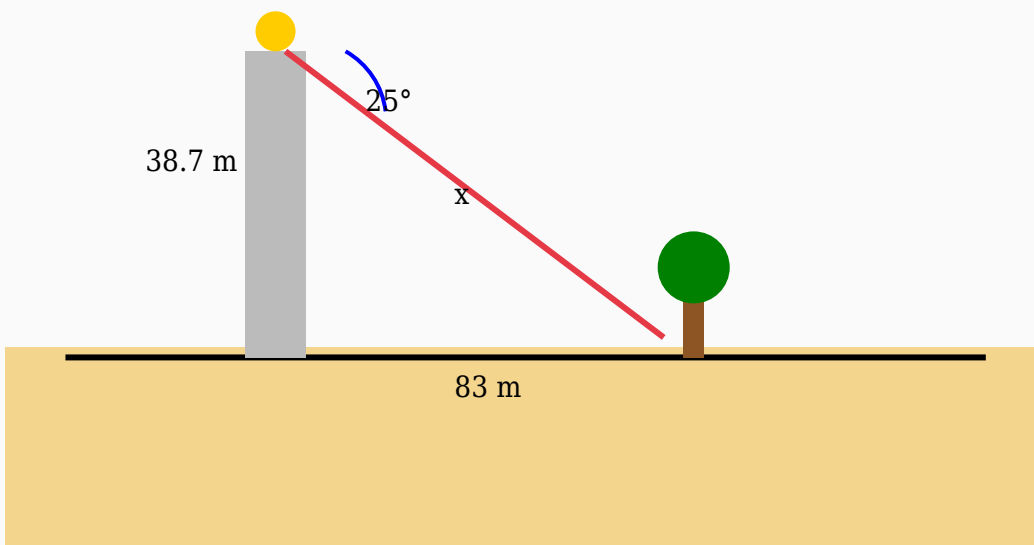
$\text{Hypotenuse} = 30 / 0.64$

$\text{Hypotenuse} = 46.88 \text{ m}$

**Answer:** 46.88 m

## Question 14

A car is viewed from the top of a stadium at an angle of depression of  $25^\circ$ . Find the line of sight if the horizontal distance is 83 m.



**Solution:**

**Using:**

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

$$\cos 25^\circ = 83 / \text{Hypotenuse}$$

$$0.91 = 83 / \text{Hypotenuse}$$

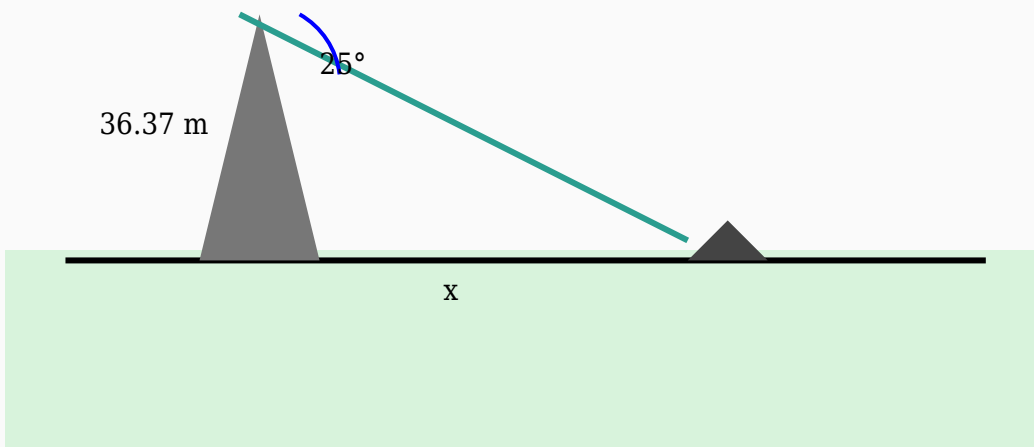
$$\text{Hypotenuse} = 83 / 0.91$$

$$\text{Hypotenuse} = 91.21 \text{ m}$$

**Answer:** 91.21 m

## Question 15

A person is seen from the top of a stadium at an angle of depression of  $25^\circ$ . Determine the distance between the person and the base if the height is 36.37 m.



**Solution:**

**Using:**

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

$\tan 25^\circ = 36.37 / \text{Distance}$

$0.47 = 36.37 / \text{Distance}$

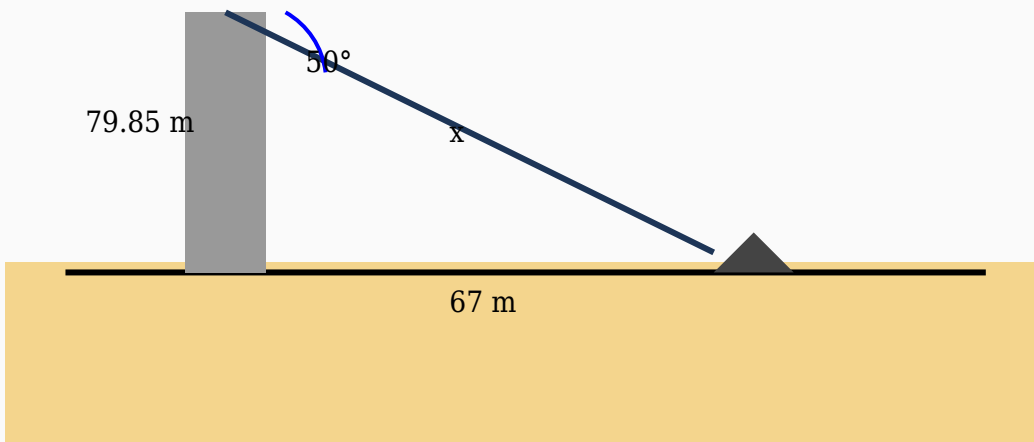
$\text{Distance} = 36.37 / 0.47$

$\text{Distance} = 77.38 \text{ m}$

**Answer:** 77.38 m

## Question 16

A boat is viewed from the top of a mountain at an angle of depression of  $50^\circ$ . Find the line of sight if the horizontal distance is 67 m.



**Solution:**

**Using:**

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

$$\cos 50^\circ = 67 / \text{Hypotenuse}$$

$$0.64 = 67 / \text{Hypotenuse}$$

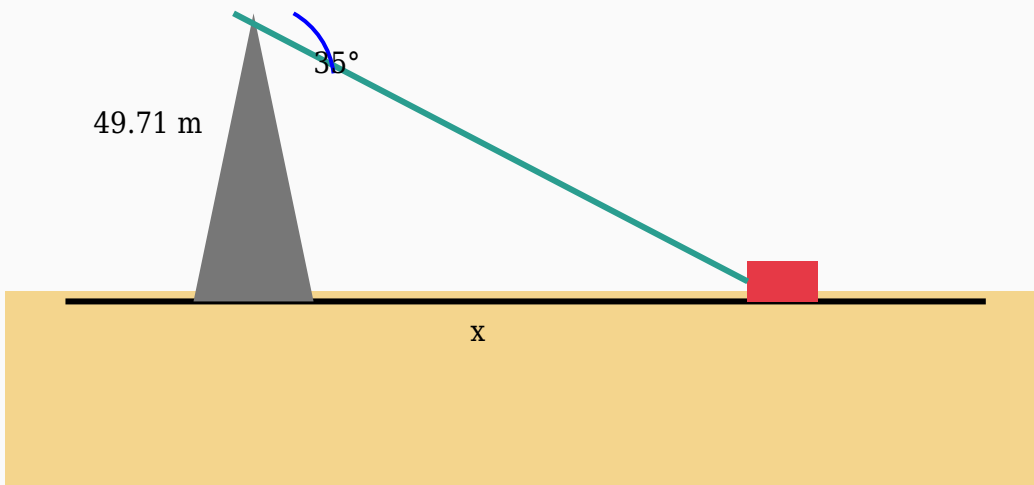
$$\text{Hypotenuse} = 67 / 0.64$$

$$\text{Hypotenuse} = 104.69 \text{ m}$$

**Answer:** 104.69 m

## Question 17

The angle of depression from a balcony to a road is  $35^\circ$ . Calculate the horizontal distance if the height of the balcony is 49.71 m.



**Solution:**

**Using:**

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

$\tan 35^\circ = 49.71 / \text{Distance}$

$0.7 = 49.71 / \text{Distance}$

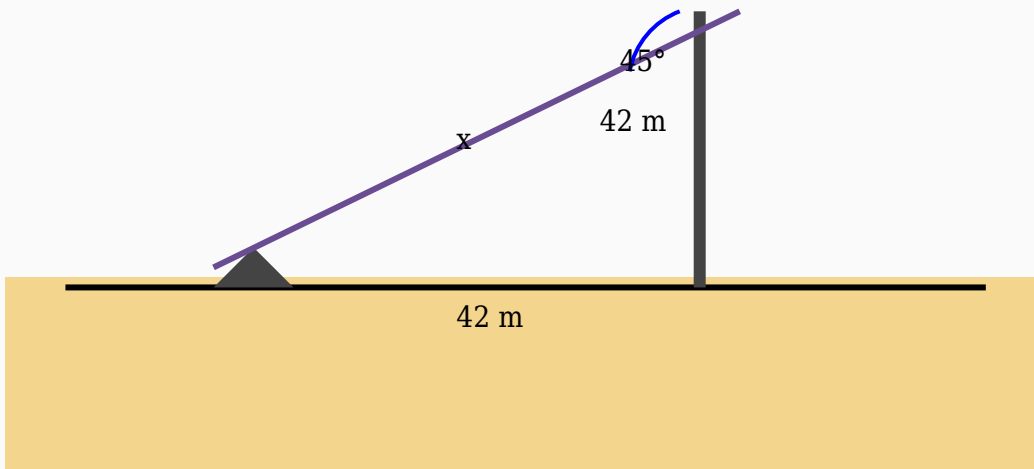
$\text{Distance} = 49.71 / 0.7$

$\text{Distance} = 71.01 \text{ m}$

**Answer:** 71.01 m

## Question 18

The angle of depression from a mountain to a tree is  $45^\circ$ . If the tree is 42 m away horizontally, calculate the hypotenuse.



**Solution:**

**Using:**

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

$$\cos 45^\circ = 42 / \text{Hypotenuse}$$

$$0.71 = 42 / \text{Hypotenuse}$$

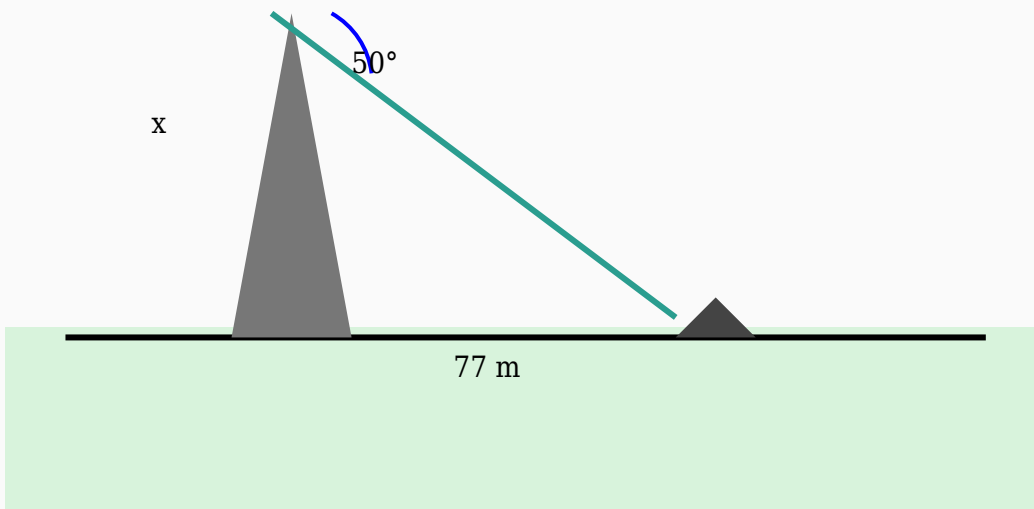
$$\text{Hypotenuse} = 42 / 0.71$$

$$\text{Hypotenuse} = 59.15 \text{ m}$$

**Answer:** 59.15 m

## Question 19

A photographer looks down from a mountain and notices a tree at an angle of depression of  $50^\circ$ . Determine the height of the mountain if the horizontal distance is 77 m.



**Solution:**

**Using:**

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

$\tan 50^\circ = \text{Height} / 77$

$1.19 = \text{Height} / 77$

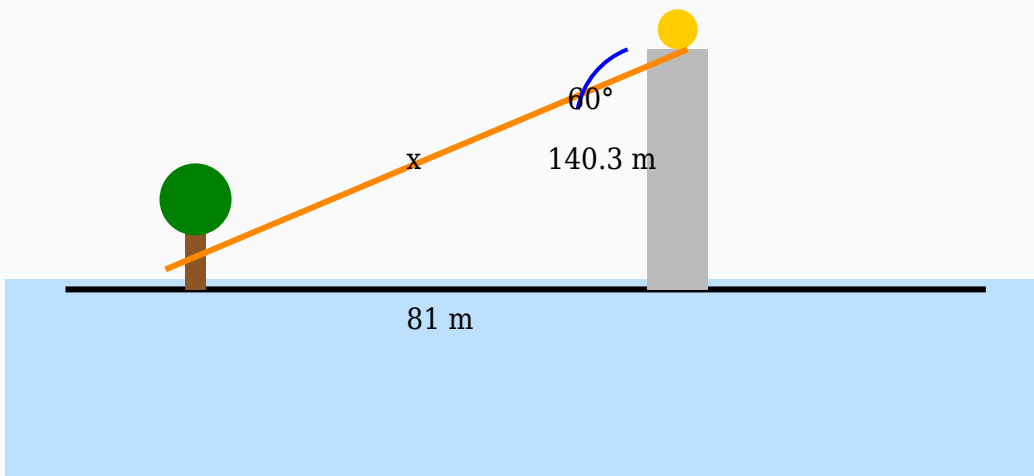
$\text{Height} = 77 \times 1.19$

$\text{Height} = 91.77 \text{ m}$

**Answer:** 91.77 m

## Question 20

An observer standing on a cliff observes a truck at an angle of depression of  $60^\circ$ . If the horizontal distance is 81 m, find the line of sight distance.



**Solution:**

**Using:**

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

$\cos 60^\circ = 81 / \text{Hypotenuse}$

$0.5 = 81 / \text{Hypotenuse}$

$\text{Hypotenuse} = 81 / 0.5$

$\text{Hypotenuse} = 162 \text{ m}$

**Answer:** 162 m