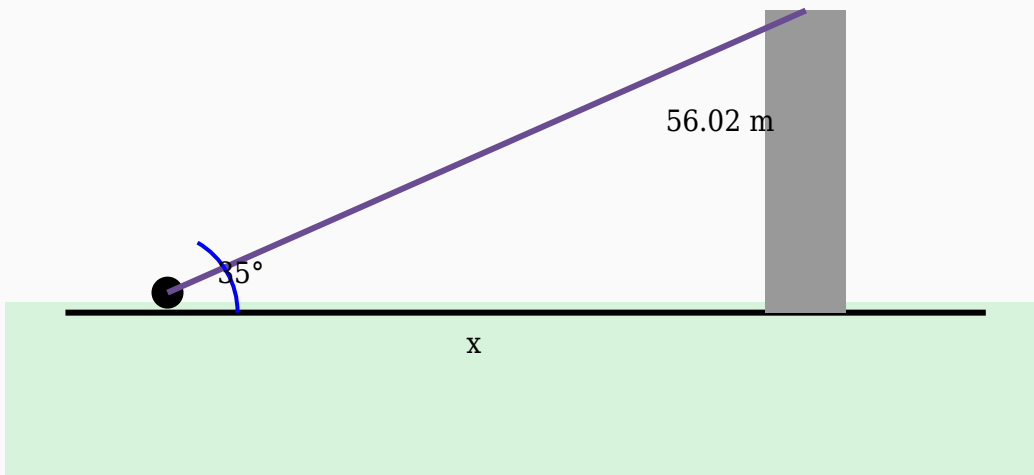


Angle of Elevation Solved Worksheet

Question 1

A surveyor notices the top of a tower at an angle of elevation of 35° . Determine the horizontal distance if the height of the tower is 56.02 m.



Solution:

Using:

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

$$\tan 35^\circ = 56.02 / \text{Distance}$$

$$0.7 = 56.02 / \text{Distance}$$

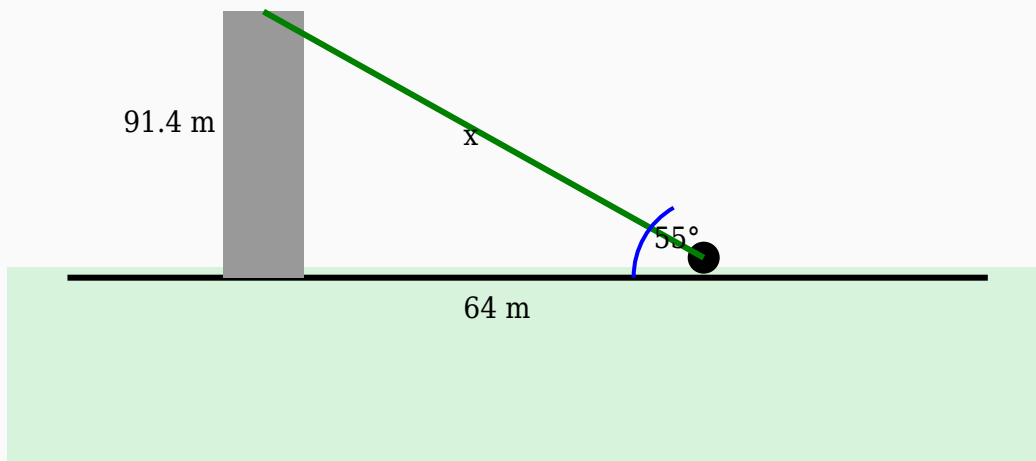
$$\text{Distance} = 56.02 / 0.7$$

$$\text{Distance} = 80.03 \text{ m}$$

Answer: 80.03 m

Question 2

The angle of elevation to the top of a bridge is 55° . If the observer is 64 m from the base, calculate the hypotenuse.



Solution:

Using:

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

$$\cos 55^\circ = 64 / \text{Hypotenuse}$$

$$0.57 = 64 / \text{Hypotenuse}$$

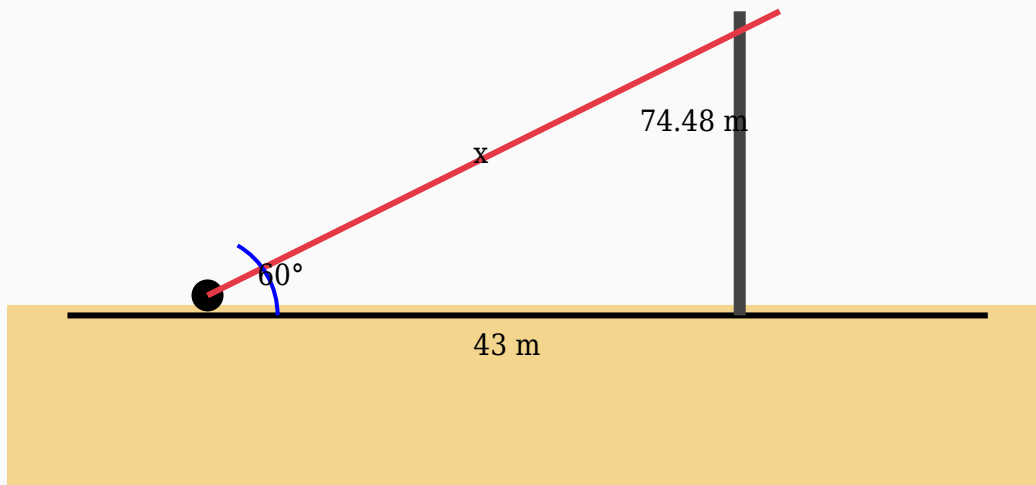
$$\text{Hypotenuse} = 64 / 0.57$$

$$\text{Hypotenuse} = 112.28 \text{ m}$$

Answer: 112.28 m

Question 3

A traveller observes the top of a stadium light at an angle of elevation of 60° . If the horizontal distance is 43 m, find the line of sight distance.



Solution:

Using:

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

$\cos 60^\circ = 43 / \text{Hypotenuse}$

$0.5 = 43 / \text{Hypotenuse}$

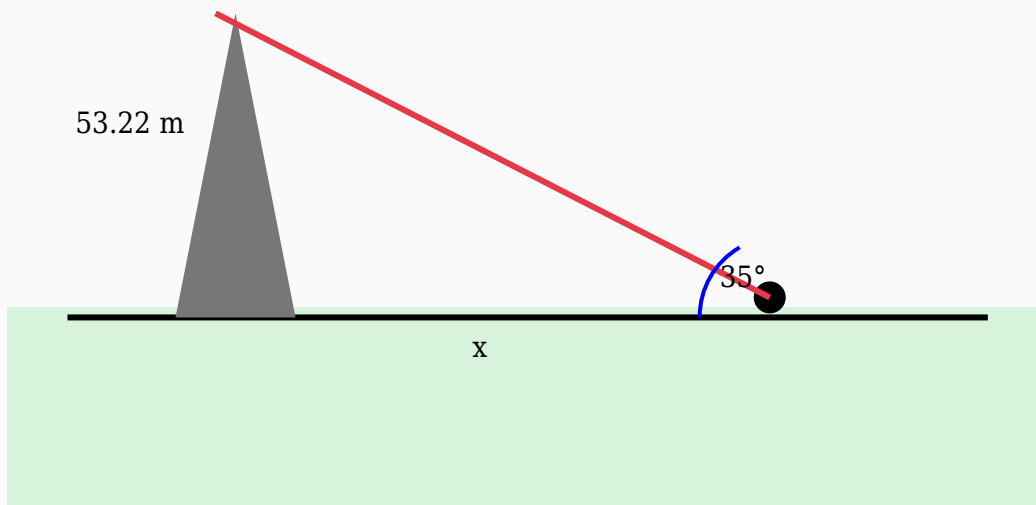
$\text{Hypotenuse} = 43 / 0.5$

$\text{Hypotenuse} = 86 \text{ m}$

Answer: 86 m

Question 4

The angle of elevation to the top of a mountain is 35° . Find the distance from the observer to the base if the height is 53.22 m.



Solution:

Using:

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

$\tan 35^\circ = 53.22 / \text{Distance}$

$0.7 = 53.22 / \text{Distance}$

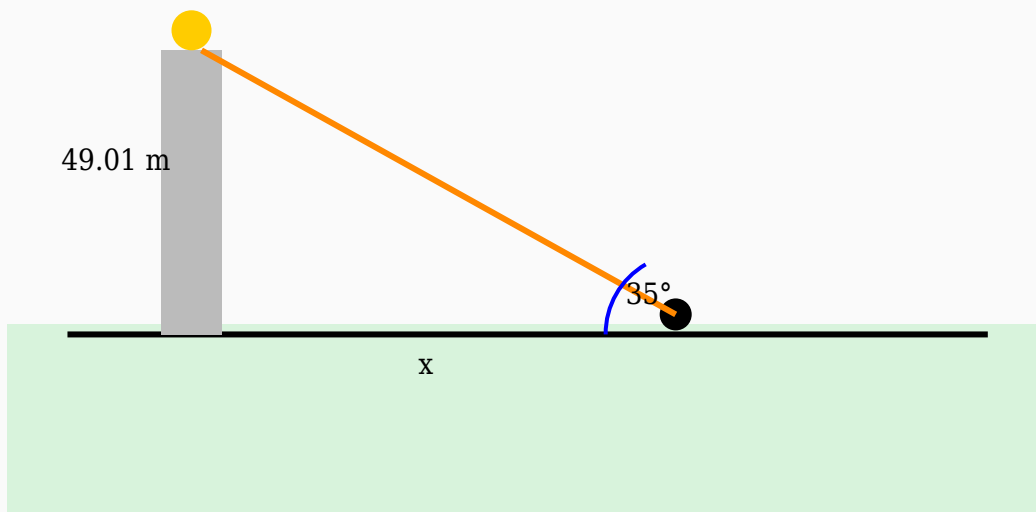
$\text{Distance} = 53.22 / 0.7$

$\text{Distance} = 76.03 \text{ m}$

Answer: 76.03 m

Question 5

The height of a electric pole is 49.01 m. If the angle of elevation from a point on the ground is 35° , calculate the horizontal distance.



Solution:

Using:

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

$\tan 35^\circ = 49.01 / \text{Distance}$

$0.7 = 49.01 / \text{Distance}$

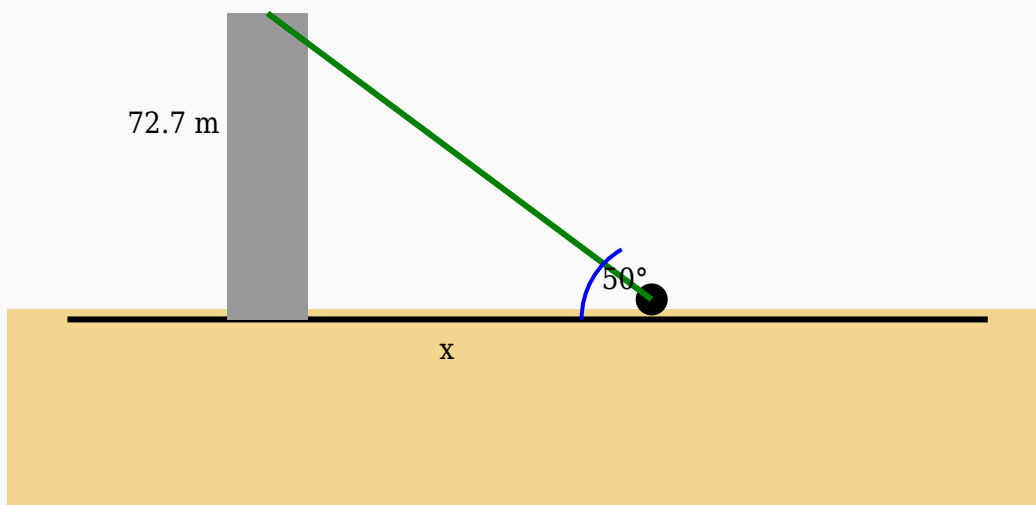
$\text{Distance} = 49.01 / 0.7$

$\text{Distance} = 70.01 \text{ m}$

Answer: 70.01 m

Question 6

The height of a mountain is 72.7 m. If the angle of elevation from a point on the ground is 50° , calculate the horizontal distance.



Solution:

Using:

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

$\tan 50^\circ = 72.7 / \text{Distance}$

$1.19 = 72.7 / \text{Distance}$

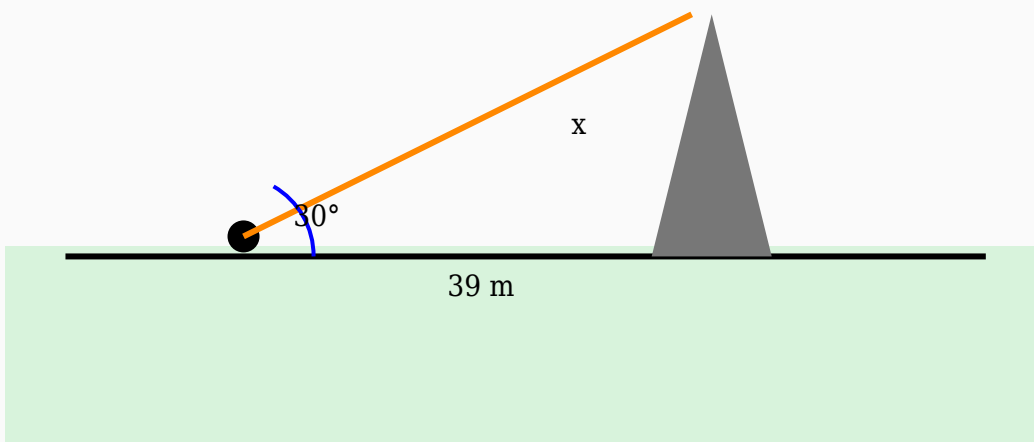
$\text{Distance} = 72.7 / 1.19$

$\text{Distance} = 61.09 \text{ m}$

Answer: 61.09 m

Question 7

A girl standing near a hill observes its top at an angle of elevation of 30° . If the horizontal distance is 39 m, find the height of the hill.



Solution:

Using:

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

$\tan 30^\circ = \text{Height} / 39$

$0.58 = \text{Height} / 39$

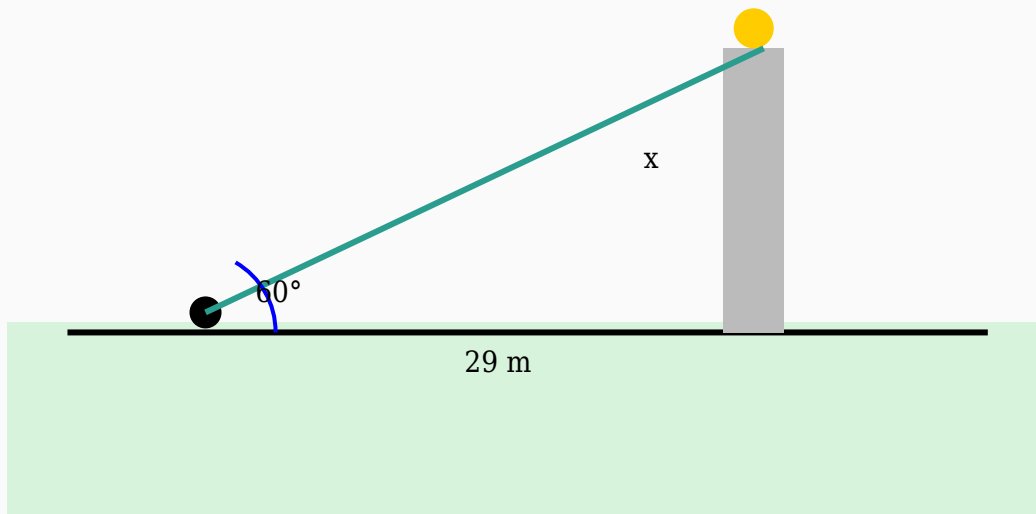
$\text{Height} = 39 \times 0.58$

$\text{Height} = 22.52 \text{ m}$

Answer: 22.52 m

Question 8

A person measures the angle of elevation to the top of a building as 60° . If the distance from the building is 29 m, determine its height.



Solution:

Using:

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

$\tan 60^\circ = \text{Height} / 29$

$1.73 = \text{Height} / 29$

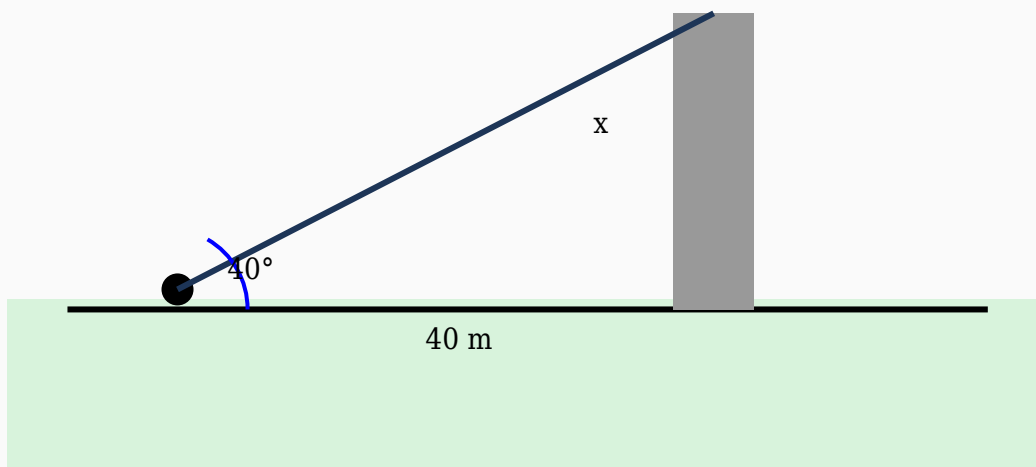
$\text{Height} = 29 \times 1.73$

$\text{Height} = 50.23 \text{ m}$

Answer: 50.23 m

Question 9

A girl looks at the top of a building at an angle of elevation of 40° . Find the height of the building if the distance from the base is 40 m.



Solution:

Using:

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

$\tan 40^\circ = \text{Height} / 40$

$0.84 = \text{Height} / 40$

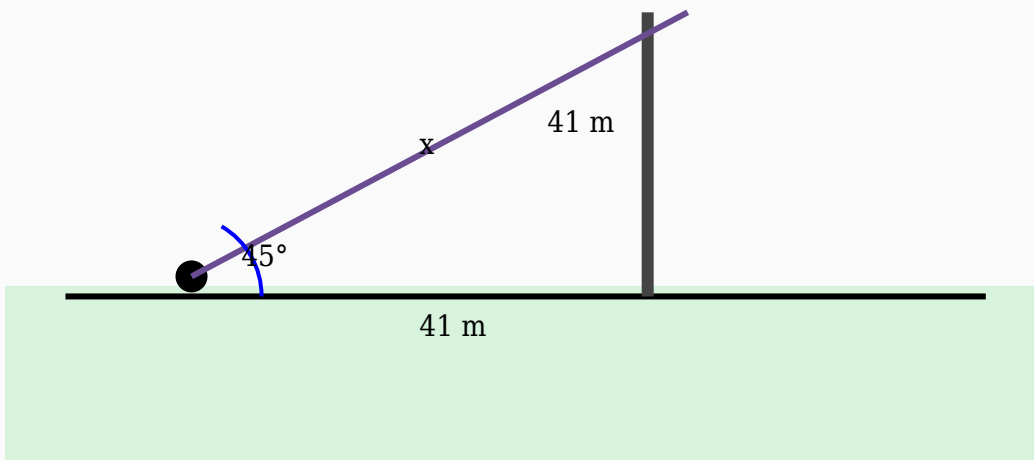
$\text{Height} = 40 \times 0.84$

$\text{Height} = 33.56 \text{ m}$

Answer: 33.56 m

Question 10

The angle of elevation to the top of a lighthouse is 45° . If the observer is 41 m from the base, calculate the hypotenuse.



Solution:

Using:

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

$$\cos 45^\circ = 41 / \text{Hypotenuse}$$

$$0.71 = 41 / \text{Hypotenuse}$$

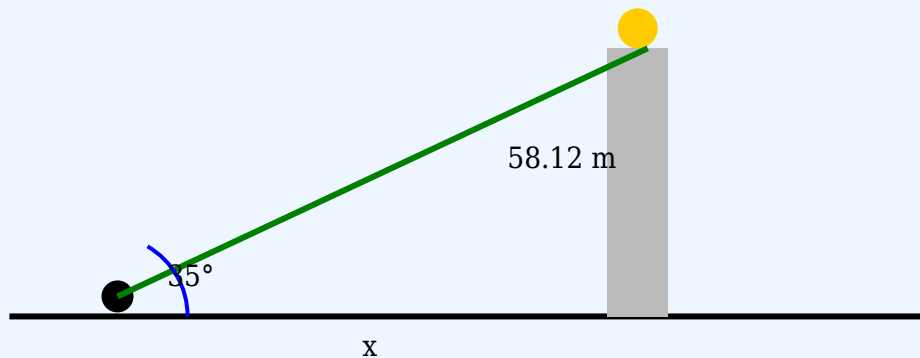
$$\text{Hypotenuse} = 41 / 0.71$$

$$\text{Hypotenuse} = 57.75 \text{ m}$$

Answer: 57.75 m

Question 11

The angle of elevation to the top of a lighthouse is 35° . Find the distance from the observer to the base if the height is 58.12 m.



Solution:

Using:

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

$\tan 35^\circ = 58.12 / \text{Distance}$

$0.7 = 58.12 / \text{Distance}$

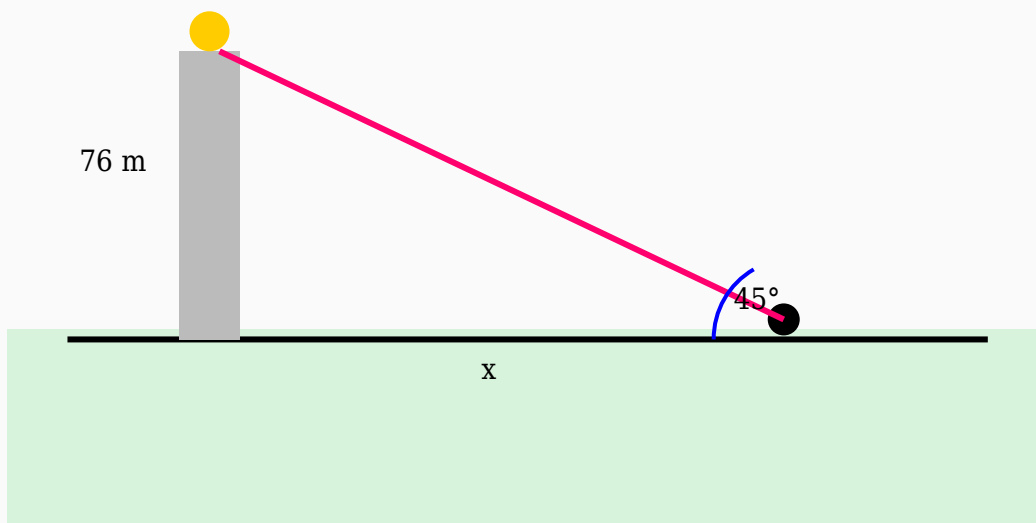
$\text{Distance} = 58.12 / 0.7$

$\text{Distance} = 83.03 \text{ m}$

Answer: 83.03 m

Question 12

A woman observes the top of a water tank at an angle of elevation of 45° . If the height of the water tank is 76 m, find the horizontal distance.



Solution:

Using:

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

$\tan 45^\circ = 76 / \text{Distance}$

$1 = 76 / \text{Distance}$

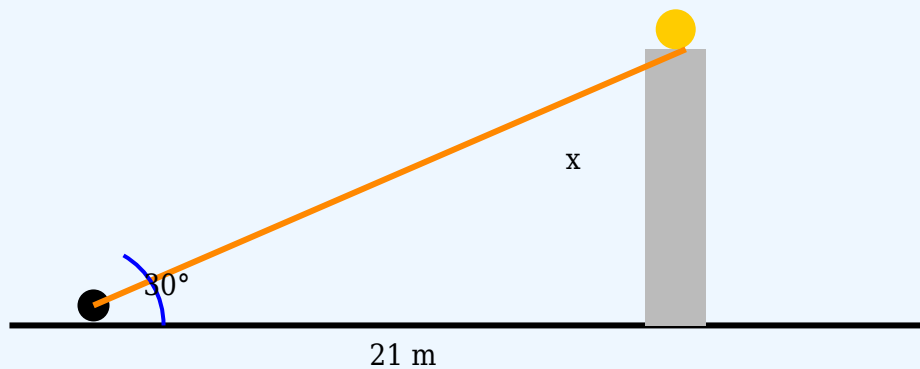
$\text{Distance} = 76 / 1$

$\text{Distance} = 76 \text{ m}$

Answer: 76 m

Question 13

A person measures the angle of elevation to the top of a stadium light as 30° . If the distance from the stadium light is 21 m, determine its height.



Solution:

Using:

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

$\tan 30^\circ = \text{Height} / 21$

$0.58 = \text{Height} / 21$

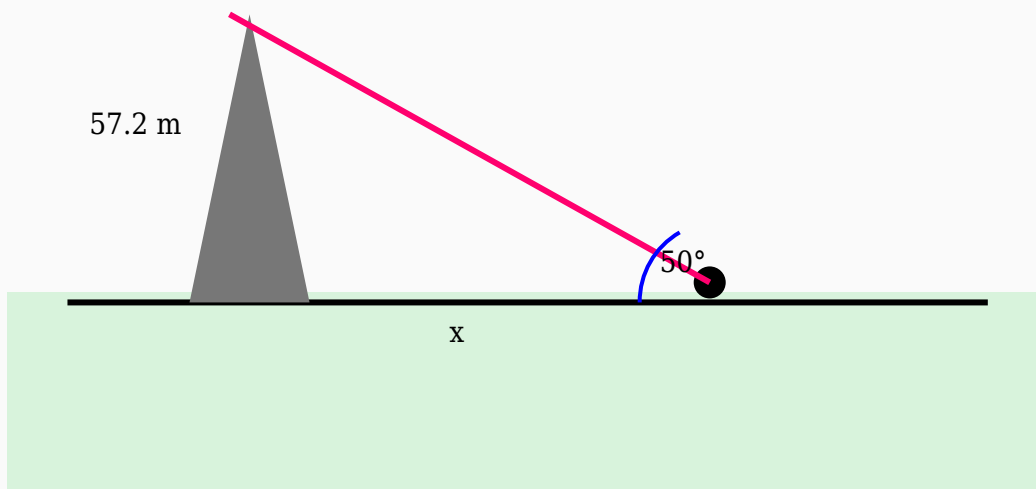
$\text{Height} = 21 \times 0.58$

$\text{Height} = 12.12 \text{ m}$

Answer: 12.12 m

Question 14

The height of a mountain is 57.2 m. If the angle of elevation from a point on the ground is 50° , calculate the horizontal distance.



Solution:

Using:

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

$\tan 50^\circ = 57.2 / \text{Distance}$

$1.19 = 57.2 / \text{Distance}$

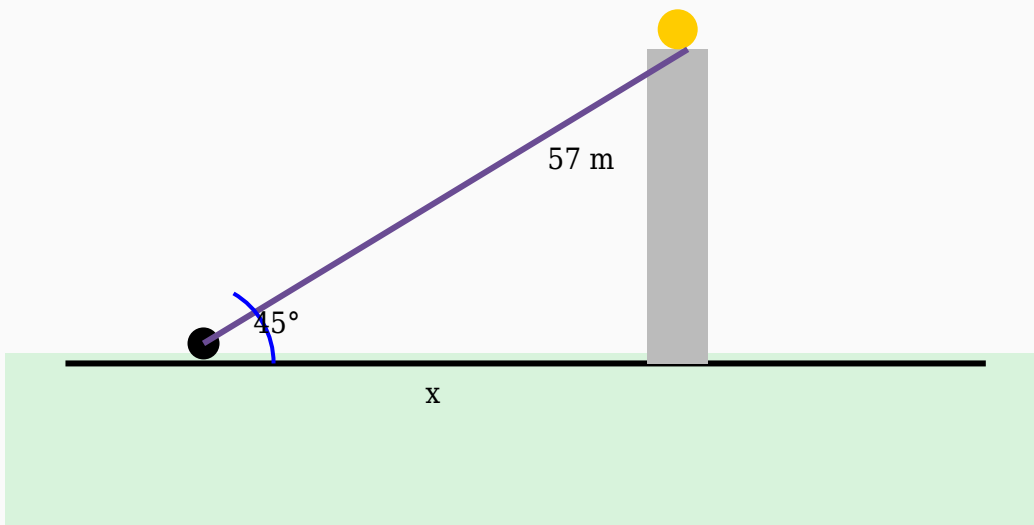
$\text{Distance} = 57.2 / 1.19$

$\text{Distance} = 48.07 \text{ m}$

Answer: 48.07 m

Question 15

A photographer observes the top of a tower at an angle of elevation of 45° . If the height of the tower is 57 m, find the horizontal distance.



Solution:

Using:

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

$\tan 45^\circ = 57 / \text{Distance}$

$1 = 57 / \text{Distance}$

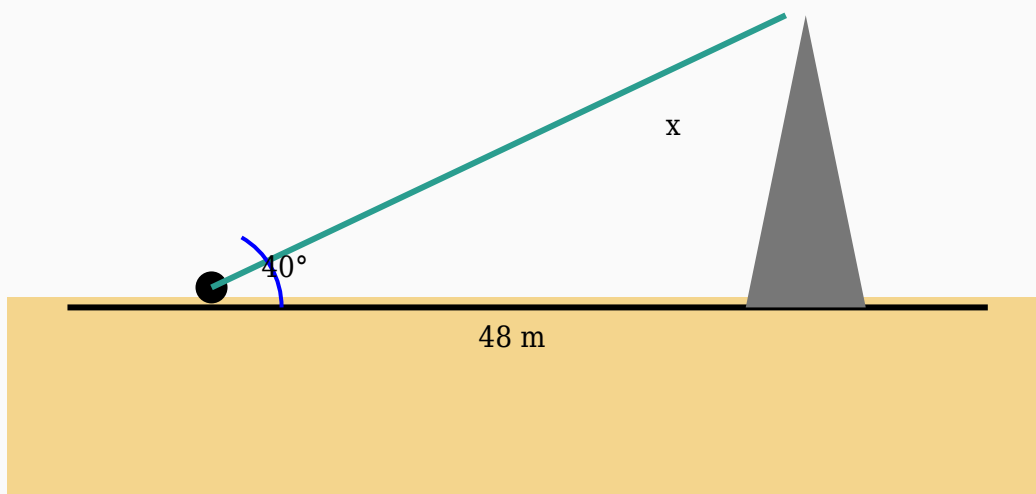
$\text{Distance} = 57 / 1$

$\text{Distance} = 57 \text{ m}$

Answer: 57 m

Question 16

A person measures the angle of elevation to the top of a tree as 40° . If the distance from the tree is 48 m, determine its height.



Solution:

Using:

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

$\tan 40^\circ = \text{Height} / 48$

$0.84 = \text{Height} / 48$

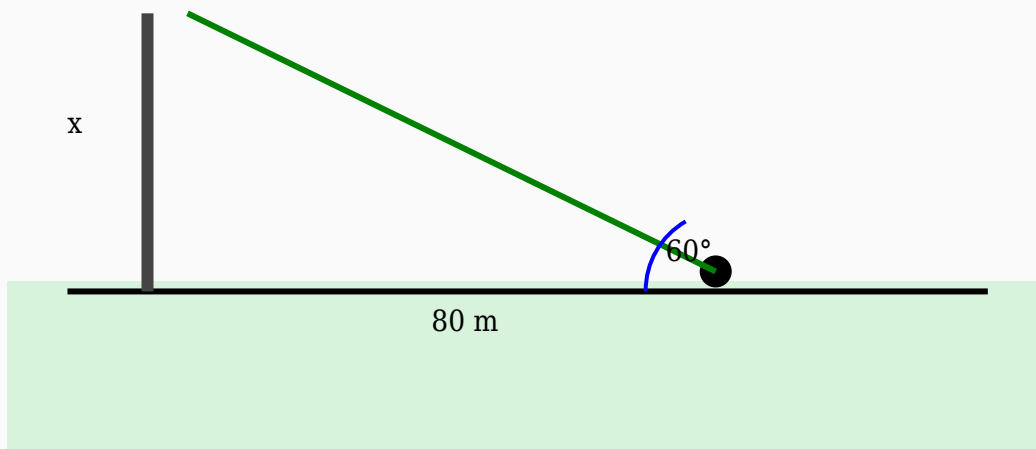
$\text{Height} = 48 \times 0.84$

$\text{Height} = 40.28 \text{ m}$

Answer: 40.28 m

Question 17

A tourist standing near a lighthouse observes its top at an angle of elevation of 60° . If the horizontal distance is 80 m, find the height of the lighthouse.



Solution:

Using:

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

$\tan 60^\circ = \text{Height} / 80$

$1.73 = \text{Height} / 80$

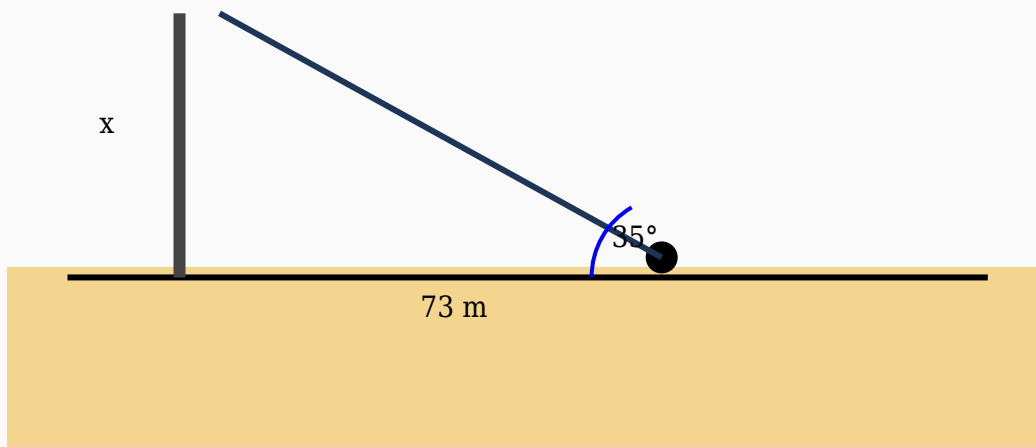
$\text{Height} = 80 \times 1.73$

$\text{Height} = 138.56 \text{ m}$

Answer: 138.56 m

Question 18

A person measures the angle of elevation to the top of a tree as 35° . If the distance from the tree is 73 m, determine its height.



Solution:

Using:

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

$\tan 35^\circ = \text{Height} / 73$

$0.7 = \text{Height} / 73$

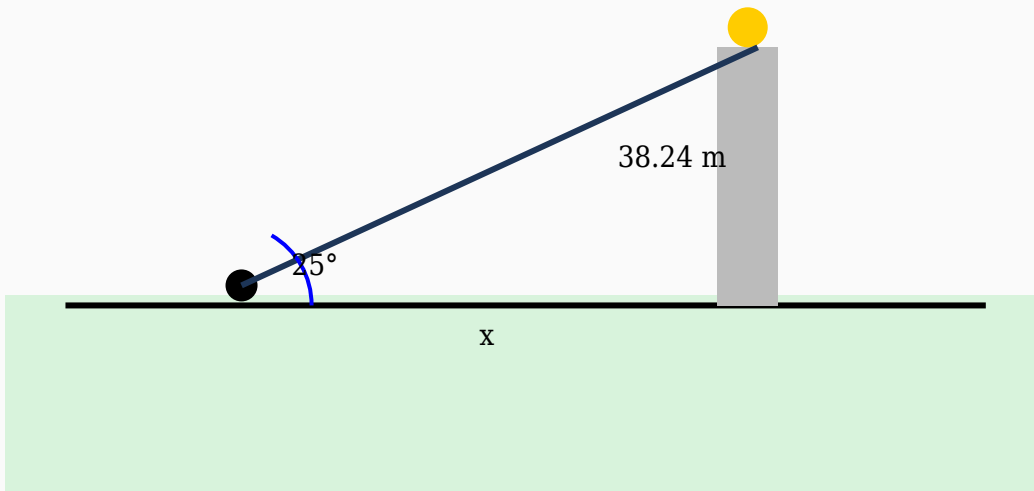
$\text{Height} = 73 \times 0.7$

$\text{Height} = 51.12 \text{ m}$

Answer: 51.12 m

Question 19

The height of a crane is 38.24 m. If the angle of elevation from a point on the ground is 25° , calculate the horizontal distance.



Solution:

Using:

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

$\tan 25^\circ = 38.24 / \text{Distance}$

$0.47 = 38.24 / \text{Distance}$

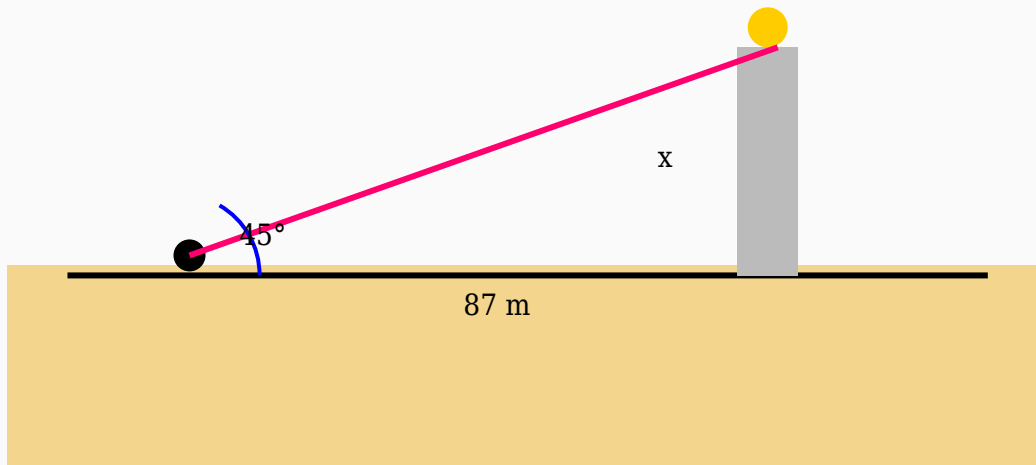
$\text{Distance} = 38.24 / 0.47$

$\text{Distance} = 81.36 \text{ m}$

Answer: 81.36 m

Question 20

A person measures the angle of elevation to the top of a hill as 45° . If the distance from the hill is 87 m, determine its height.



Solution:

Using:

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

$\tan 45^\circ = \text{Height} / 87$

$1 = \text{Height} / 87$

$\text{Height} = 87 \times 1$

$\text{Height} = 87 \text{ m}$

Answer: 87 m