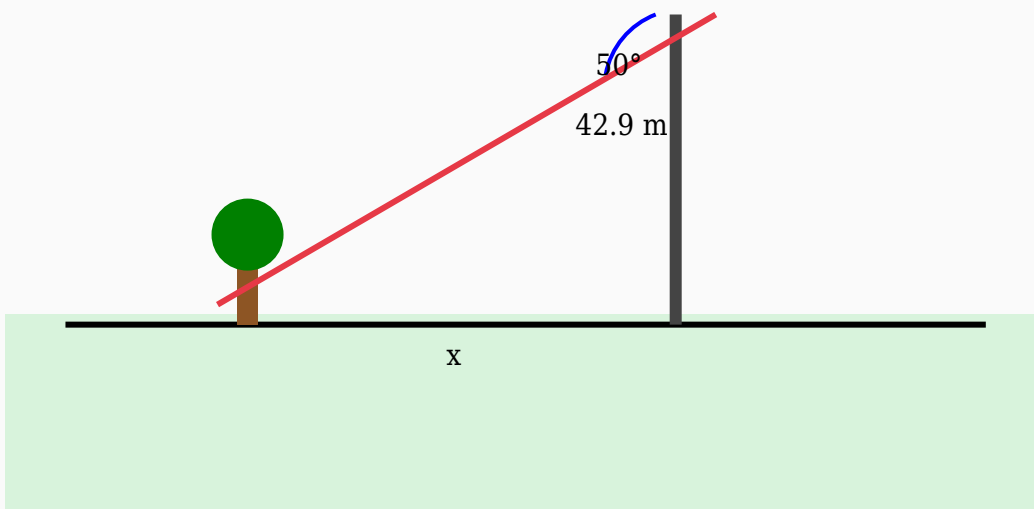


Angle of Depression Solved Worksheet

Question 1

A surveyor standing on a tower observes a car at an angle of depression of 50° . If the height of the tower is 42.9 m, find the horizontal distance.



Solution:

Using:

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

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

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

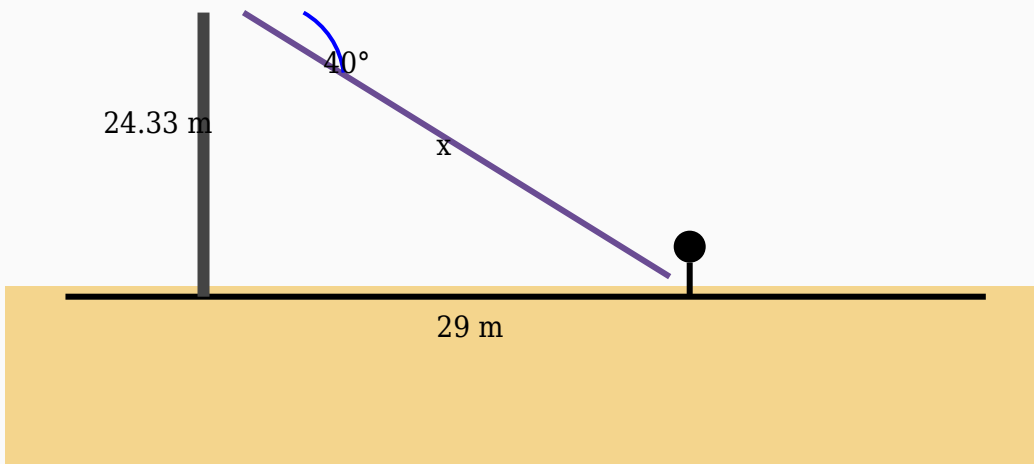
$$\text{Distance} = 42.9 / 1.19$$

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

Answer: 36.05 m

Question 2

The angle of depression from a watch tower to a car is 40° . If the car is 29 m away horizontally, calculate the hypotenuse.



Solution:

Using:

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

$$\cos 40^\circ = 29 / \text{Hypotenuse}$$

$$0.77 = 29 / \text{Hypotenuse}$$

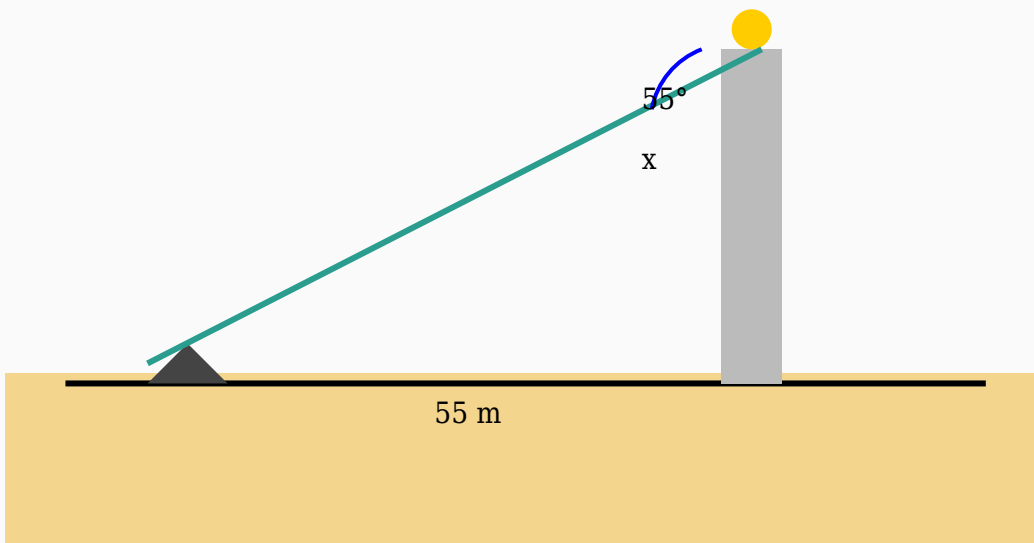
$$\text{Hypotenuse} = 29 / 0.77$$

$$\text{Hypotenuse} = 37.66 \text{ m}$$

Answer: 37.66 m

Question 3

The angle of depression from the top of a watch tower to a road is 55° . If the road is 55 m away horizontally, calculate the height of the watch tower.



Solution:

Using:

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

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

$1.43 = \text{Height} / 55$

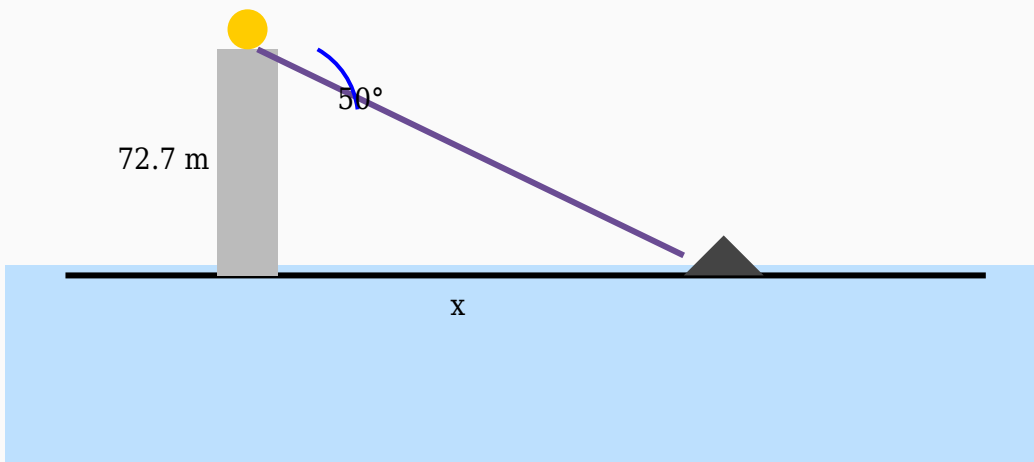
$\text{Height} = 55 \times 1.43$

$\text{Height} = 78.55 \text{ m}$

Answer: 78.55 m

Question 4

A man standing on a balcony observes a person at an angle of depression of 50° . If the height of the balcony is 72.7 m, find the horizontal distance.



Solution:

Using:

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

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

$1.19 = 72.7 / \text{Distance}$

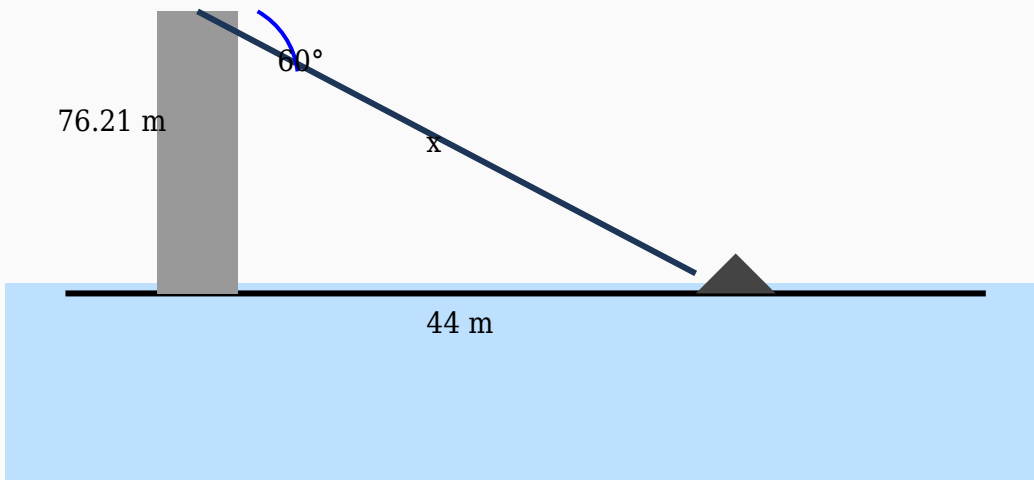
$\text{Distance} = 72.7 / 1.19$

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

Answer: 61.09 m

Question 5

A boat is viewed from the top of a hill at an angle of depression of 60° . Find the line of sight if the horizontal distance is 44 m.



Solution:

Using:

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

$$\cos 60^\circ = 44 / \text{Hypotenuse}$$

$$0.5 = 44 / \text{Hypotenuse}$$

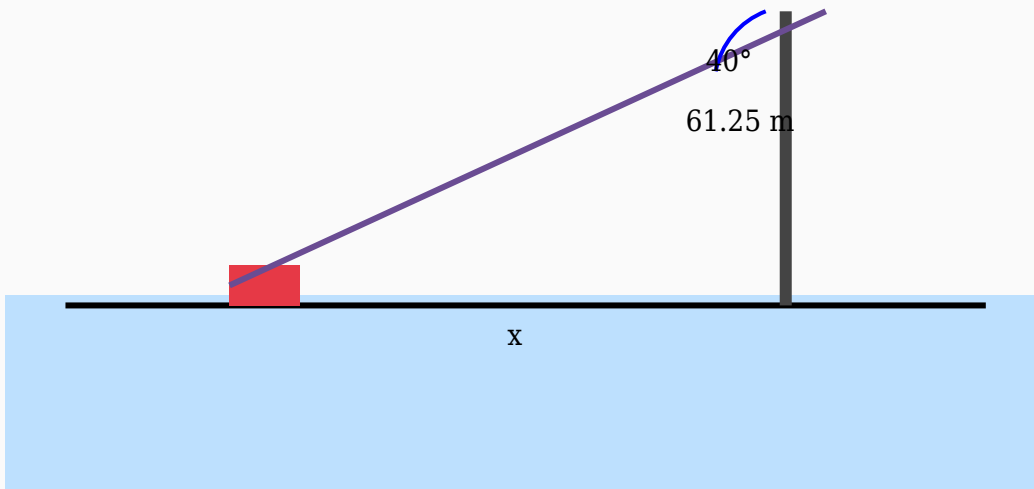
$$\text{Hypotenuse} = 44 / 0.5$$

$$\text{Hypotenuse} = 88 \text{ m}$$

Answer: 88 m

Question 6

The angle of depression from a bridge to a person is 40° . Calculate the horizontal distance if the height of the bridge is 61.25 m.



Solution:

Using:

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

$\tan 40^\circ = 61.25 / \text{Distance}$

$0.84 = 61.25 / \text{Distance}$

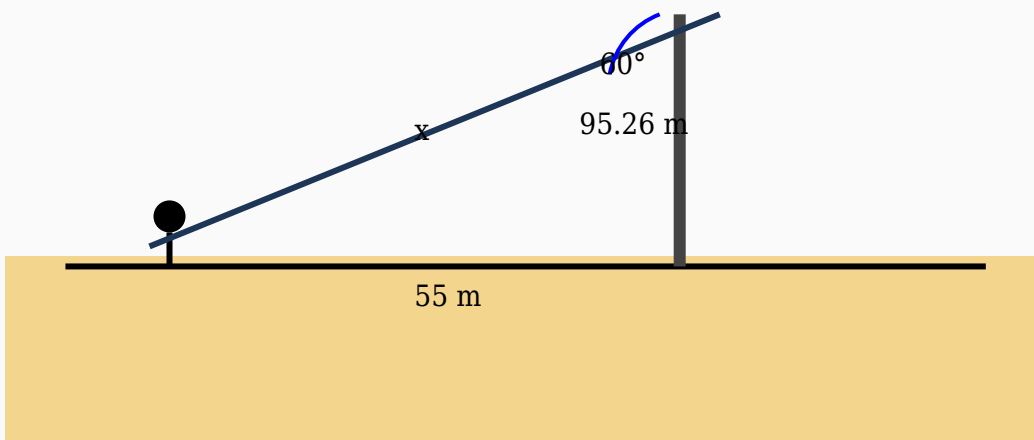
$\text{Distance} = 61.25 / 0.84$

$\text{Distance} = 72.92 \text{ m}$

Answer: 72.92 m

Question 7

A sailor standing on a mountain observes a truck at an angle of depression of 60° . If the horizontal distance is 55 m, find the line of sight distance.



Solution:

Using:

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

$$\cos 60^\circ = 55 / \text{Hypotenuse}$$

$$0.5 = 55 / \text{Hypotenuse}$$

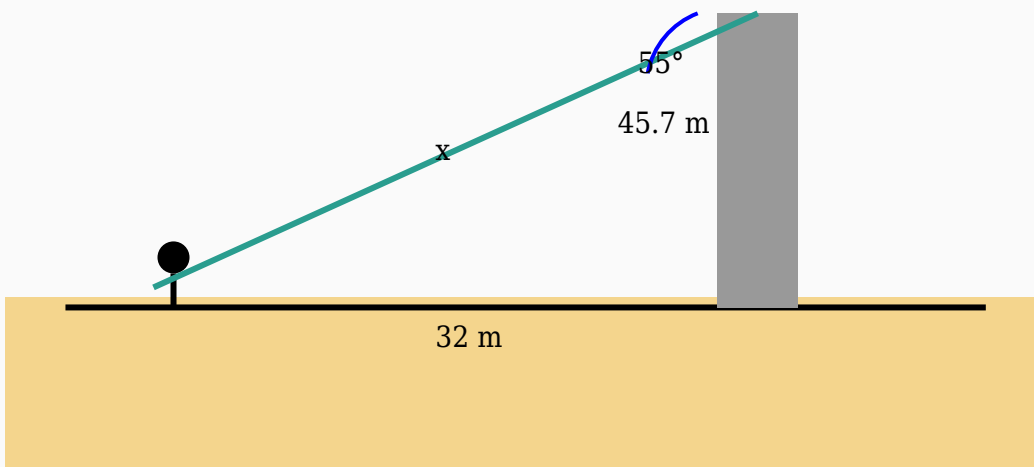
$$\text{Hypotenuse} = 55 / 0.5$$

$$\text{Hypotenuse} = 110 \text{ m}$$

Answer: 110 m

Question 8

A person is viewed from the top of a balcony at an angle of depression of 55° . Find the line of sight if the horizontal distance is 32 m.



Solution:

Using:

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

$$\cos 55^\circ = 32 / \text{Hypotenuse}$$

$$0.57 = 32 / \text{Hypotenuse}$$

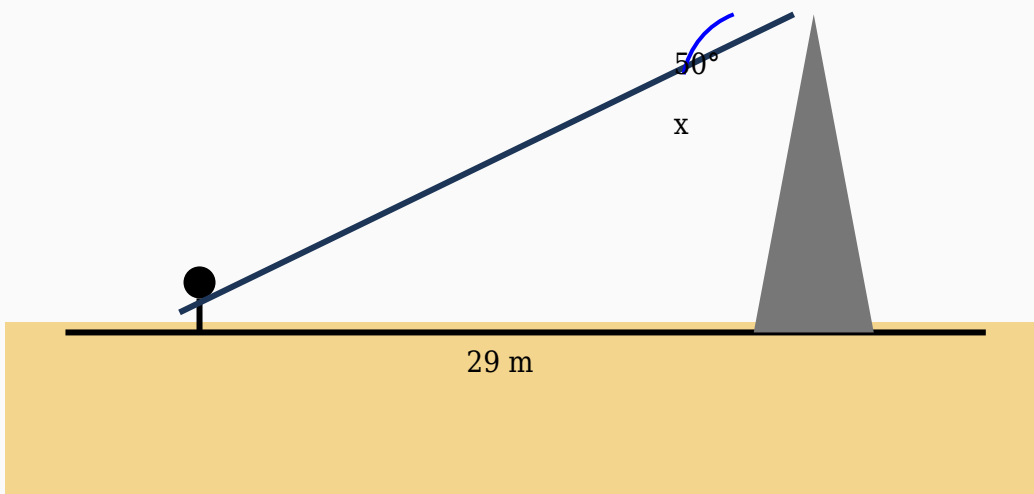
$$\text{Hypotenuse} = 32 / 0.57$$

$$\text{Hypotenuse} = 56.14 \text{ m}$$

Answer: 56.14 m

Question 9

A tourist looks down from a mountain and notices a ship at an angle of depression of 50° . Determine the height of the mountain if the horizontal distance is 29 m.



Solution:

Using:

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

$\tan 50^\circ = \text{Height} / 29$

$1.19 = \text{Height} / 29$

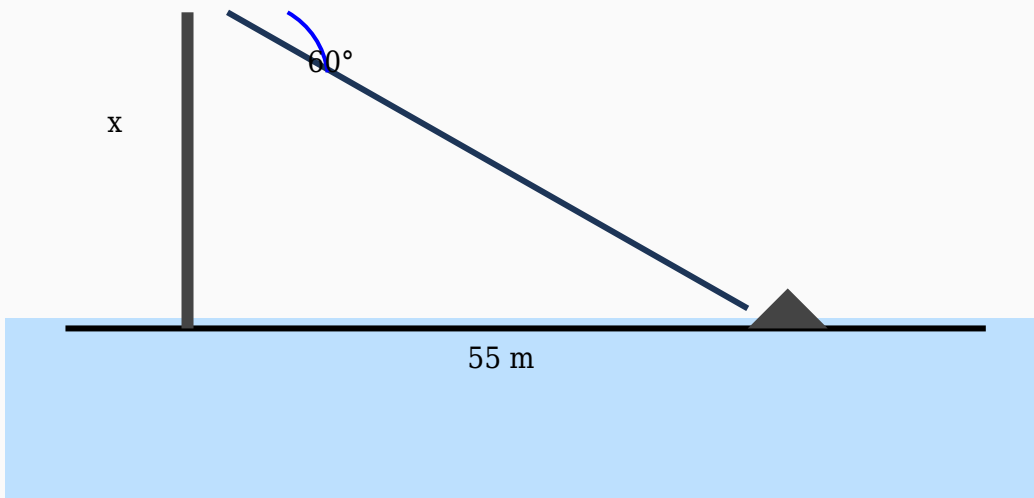
$\text{Height} = 29 \times 1.19$

$\text{Height} = 34.56 \text{ m}$

Answer: 34.56 m

Question 10

A student looks down from a hill and notices a bus at an angle of depression of 60° . Determine the height of the hill if the horizontal distance is 55 m.



Solution:

Using:

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

$\tan 60^\circ = \text{Height} / 55$

$1.73 = \text{Height} / 55$

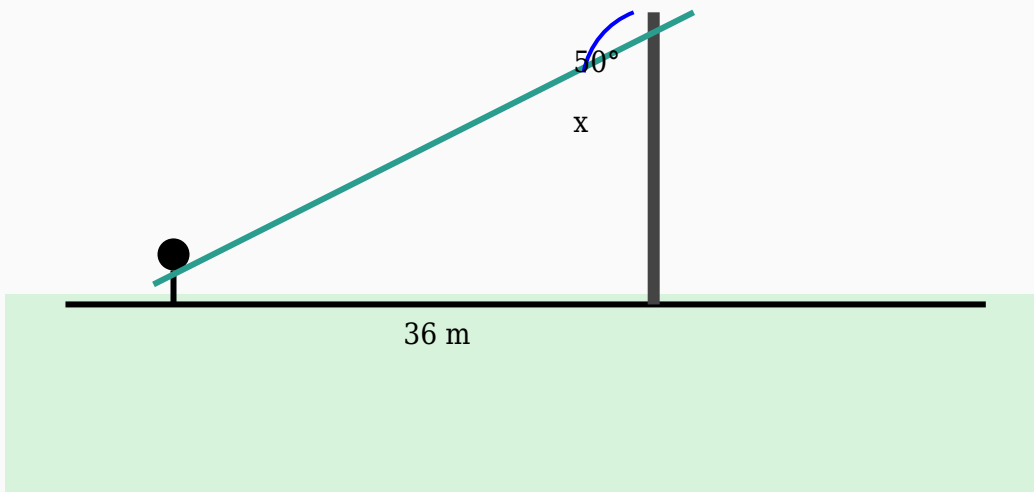
$\text{Height} = 55 \times 1.73$

$\text{Height} = 95.26 \text{ m}$

Answer: 95.26 m

Question 11

An observer looks down from a tower and notices a bus at an angle of depression of 50° . Determine the height of the tower if the horizontal distance is 36 m.



Solution:

Using:

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

$\tan 50^\circ = \text{Height} / 36$

$1.19 = \text{Height} / 36$

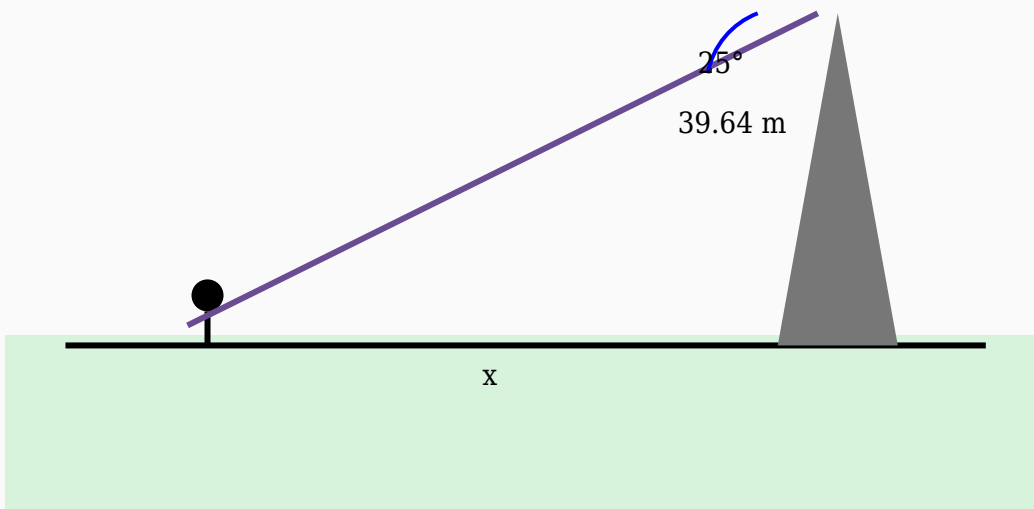
$\text{Height} = 36 \times 1.19$

$\text{Height} = 42.9 \text{ m}$

Answer: 42.9 m

Question 12

An observer standing on a lighthouse observes a car at an angle of depression of 25° . If the height of the lighthouse is 39.64 m, find the horizontal distance.



Solution:

Using:

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

$\tan 25^\circ = 39.64 / \text{Distance}$

$0.47 = 39.64 / \text{Distance}$

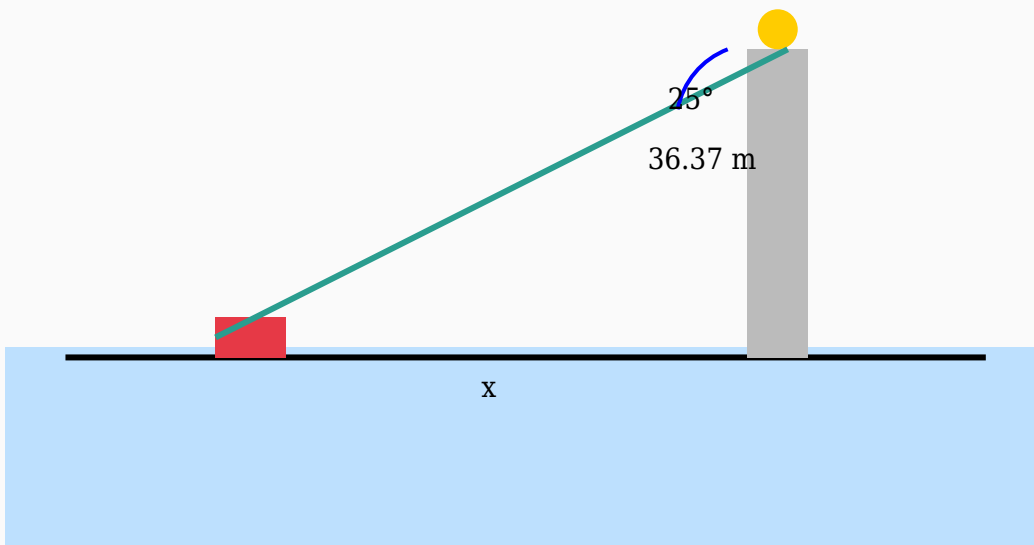
$\text{Distance} = 39.64 / 0.47$

$\text{Distance} = 84.34 \text{ m}$

Answer: 84.34 m

Question 13

The angle of depression from a mountain to a house is 25° . Calculate the horizontal distance if the height of the mountain is 36.37 m.



Solution:

Using:

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

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

$0.47 = 36.37 / \text{Distance}$

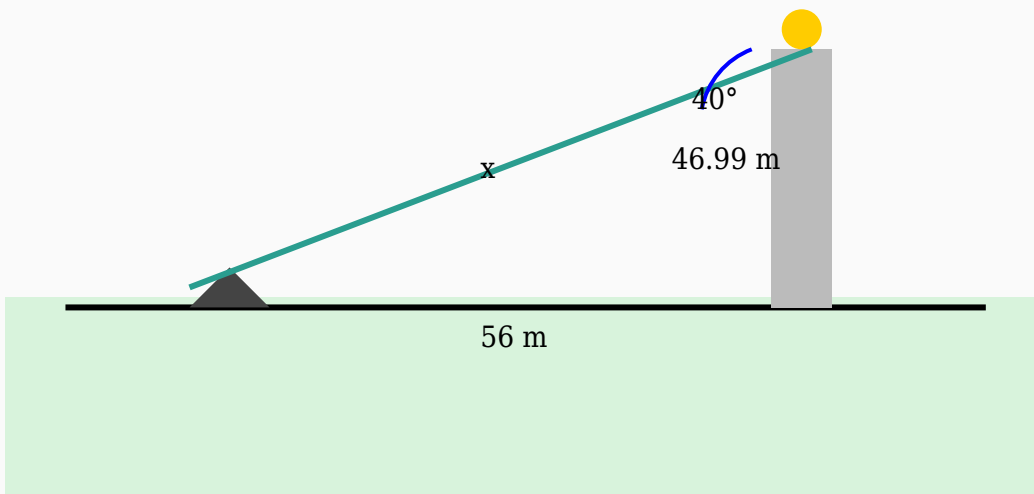
$\text{Distance} = 36.37 / 0.47$

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

Answer: 77.38 m

Question 14

A surveyor standing on a balcony observes a person at an angle of depression of 40° . If the horizontal distance is 56 m, find the line of sight distance.



Solution:

Using:

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

$$\cos 40^\circ = 56 / \text{Hypotenuse}$$

$$0.77 = 56 / \text{Hypotenuse}$$

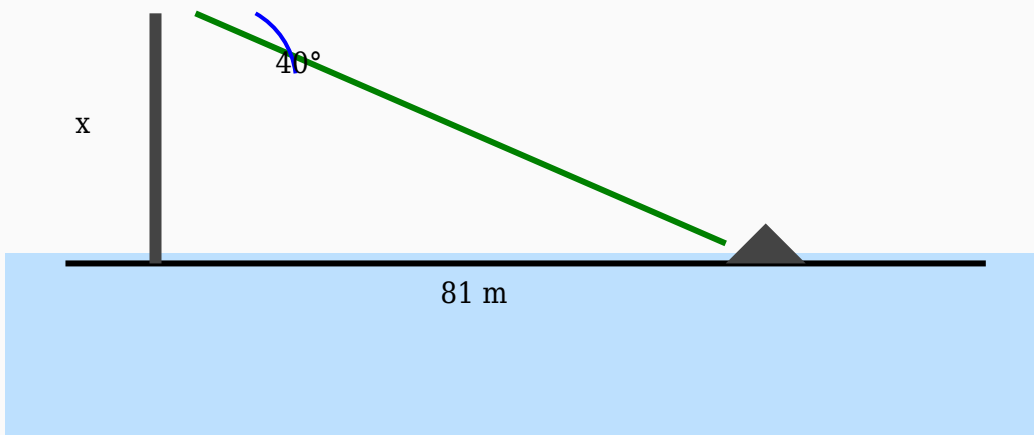
$$\text{Hypotenuse} = 56 / 0.77$$

$$\text{Hypotenuse} = 72.73 \text{ m}$$

Answer: 72.73 m

Question 15

A surveyor looks down from a watch tower and notices a boat at an angle of depression of 40° . Determine the height of the watch tower if the horizontal distance is 81 m.



Solution:

Using:

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

$\tan 40^\circ = \text{Height} / 81$

$0.84 = \text{Height} / 81$

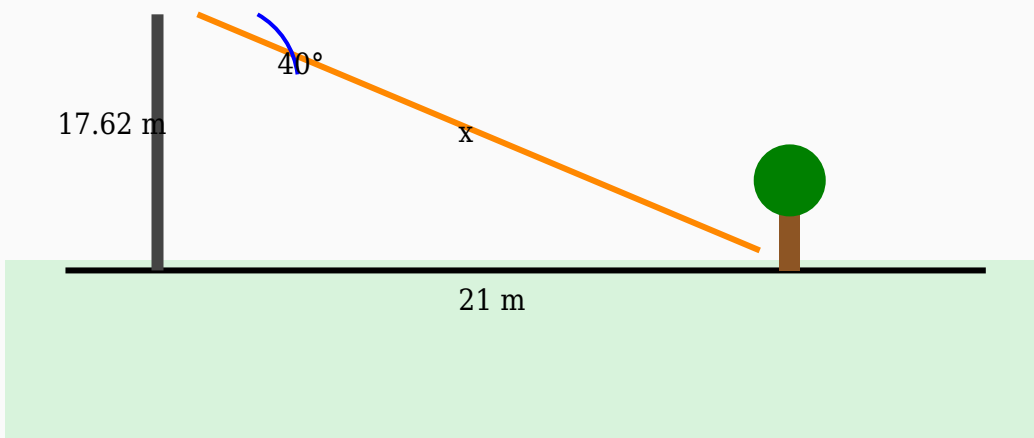
$\text{Height} = 81 \times 0.84$

$\text{Height} = 67.97 \text{ m}$

Answer: 67.97 m

Question 16

A man standing on a tower observes a house at an angle of depression of 40° . If the horizontal distance is 21 m, find the line of sight distance.



Solution:

Using:

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

$$\cos 40^\circ = 21 / \text{Hypotenuse}$$

$$0.77 = 21 / \text{Hypotenuse}$$

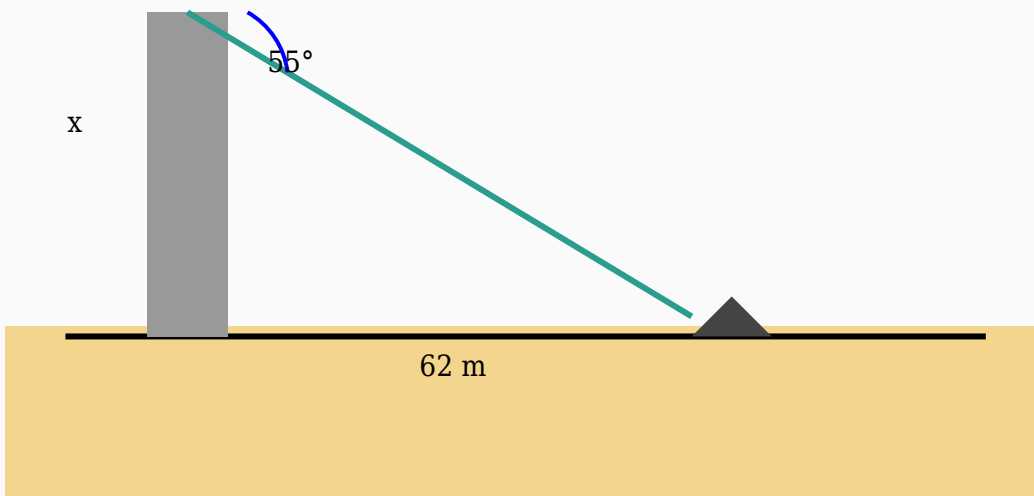
$$\text{Hypotenuse} = 21 / 0.77$$

$$\text{Hypotenuse} = 27.27 \text{ m}$$

Answer: 27.27 m

Question 17

A man looks down from a mountain and notices a river at an angle of depression of 55° . Determine the height of the mountain if the horizontal distance is 62 m.



Solution:

Using:

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

$\tan 55^\circ = \text{Height} / 62$

$1.43 = \text{Height} / 62$

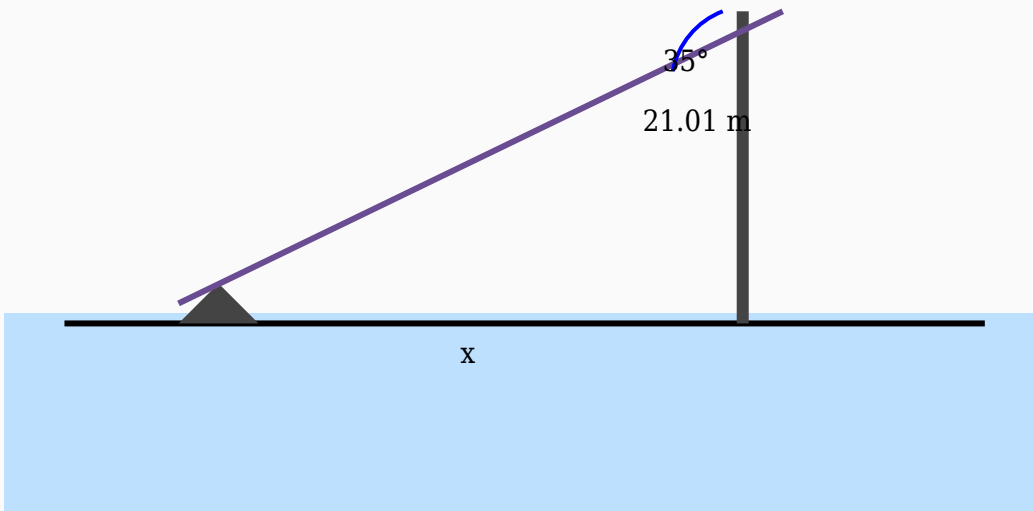
$\text{Height} = 62 \times 1.43$

$\text{Height} = 88.55\text{ m}$

Answer: 88.55 m

Question 18

A boat is seen from the top of a cliff at an angle of depression of 35° . Determine the distance between the boat and the base if the height is 21.01 m .



Solution:

Using:

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

$$\tan 35^\circ = 21.01 / \text{Distance}$$

$$0.7 = 21.01 / \text{Distance}$$

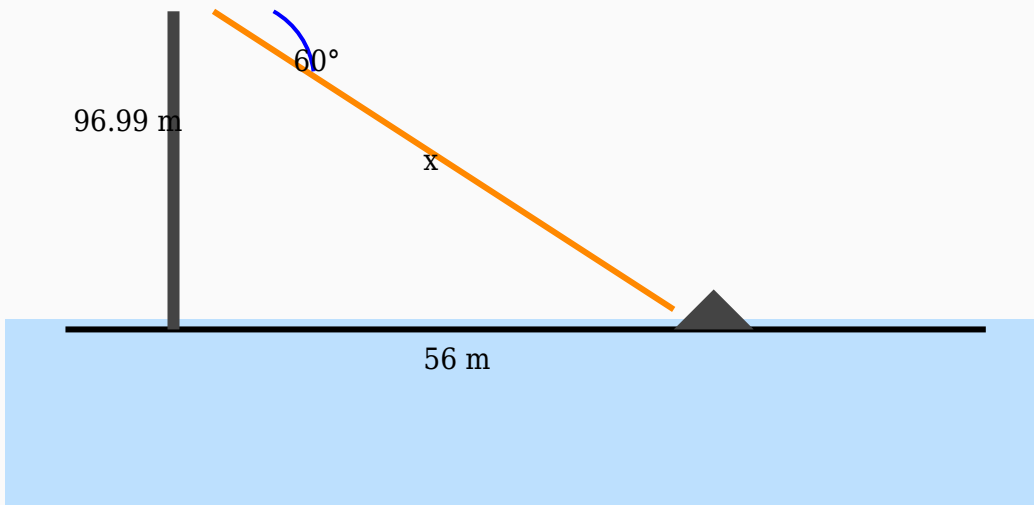
$$\text{Distance} = 21.01 / 0.7$$

$$\text{Distance} = 30.01 \text{ m}$$

Answer: 30.01 m

Question 19

The angle of depression from a stadium to a ship is 60° . If the ship is 56 m away horizontally, calculate the hypotenuse.



Solution:

Using:

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

$$\cos 60^\circ = 56 / \text{Hypotenuse}$$

$$0.5 = 56 / \text{Hypotenuse}$$

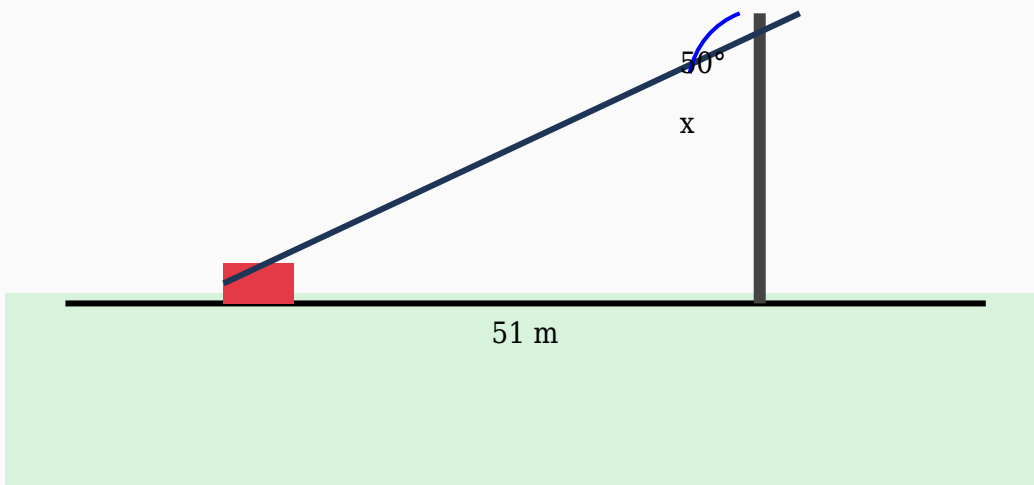
$$\text{Hypotenuse} = 56 / 0.5$$

$$\text{Hypotenuse} = 112 \text{ m}$$

Answer: 112 m

Question 20

A surveyor looks down from a building and notices a ship at an angle of depression of 50° . Determine the height of the building if the horizontal distance is 51 m.



Solution:

Using:

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

$\tan 50^\circ = \text{Height} / 51$

$1.19 = \text{Height} / 51$

$\text{Height} = 51 \times 1.19$

$\text{Height} = 60.78 \text{ m}$

Answer: 60.78 m