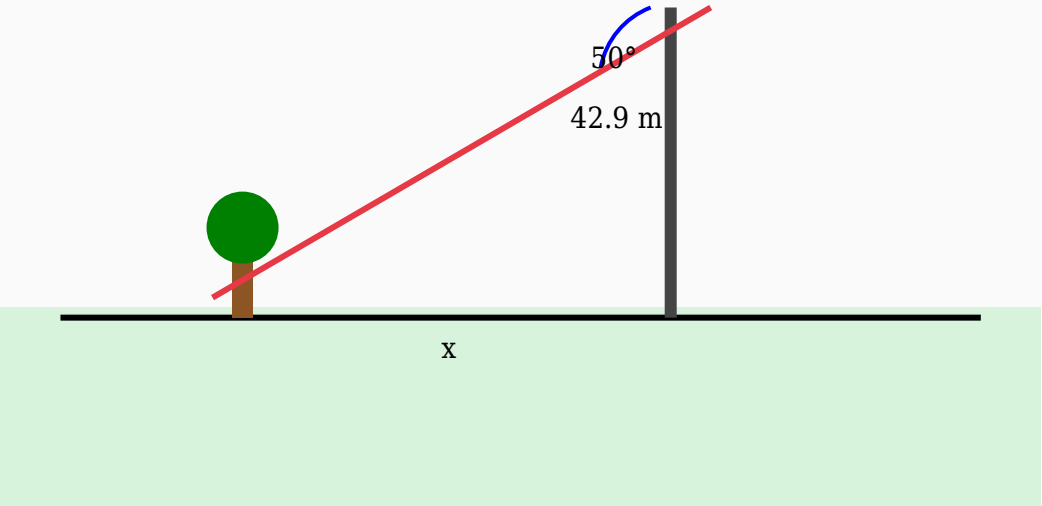
Angle of Depression Solved Worksheet

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 θ = Opposite / Adjacent

tan 50° = 42.9 / Distance

1.19 = 42.9 / Distance

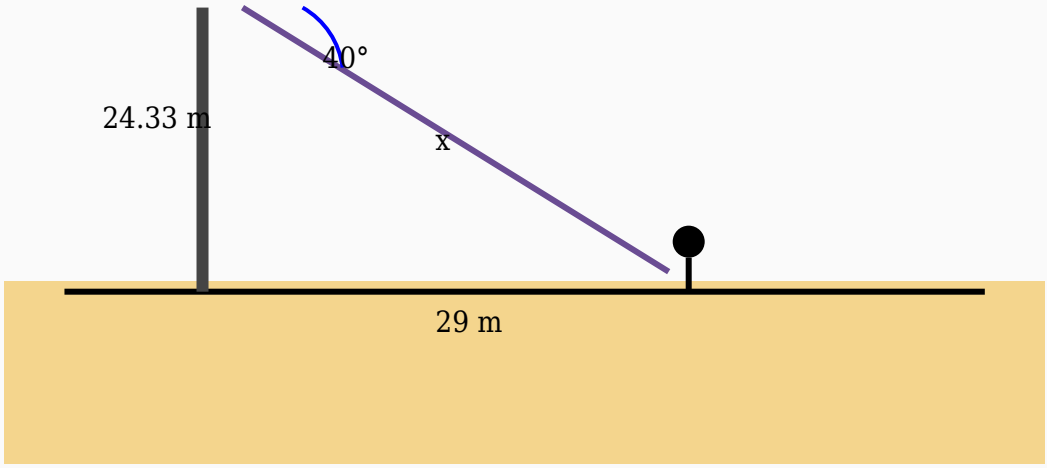
Distance = 42.9 / 1.19

Distance = 36.05 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 θ = Adjacent / Hypotenuse

cos 40° = 29 / Hypotenuse

0.77 = 29 / Hypotenuse

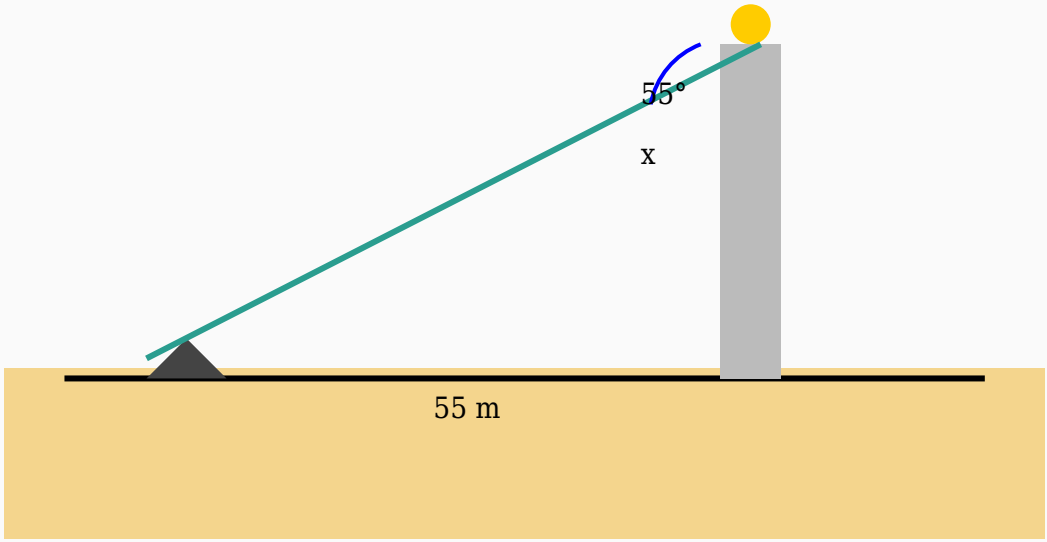
Hypotenuse = 29 / 0.77

Hypotenuse = 37.66 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 θ = Opposite / Adjacent

tan 55° = Height / 55

1.43 = Height / 55

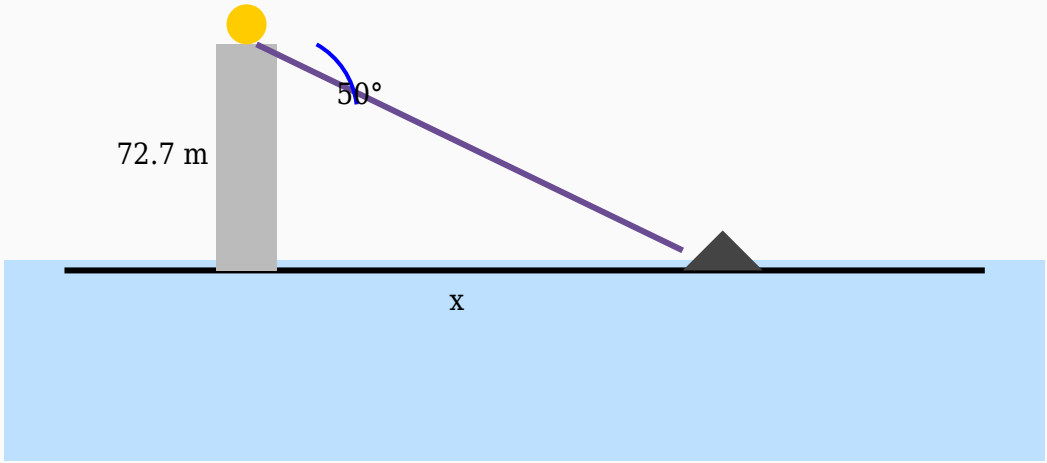
Height = 55 × 1.43

Height = 78.55 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 θ = Opposite / Adjacent

tan 50° = 72.7 / Distance

1.19 = 72.7 / Distance

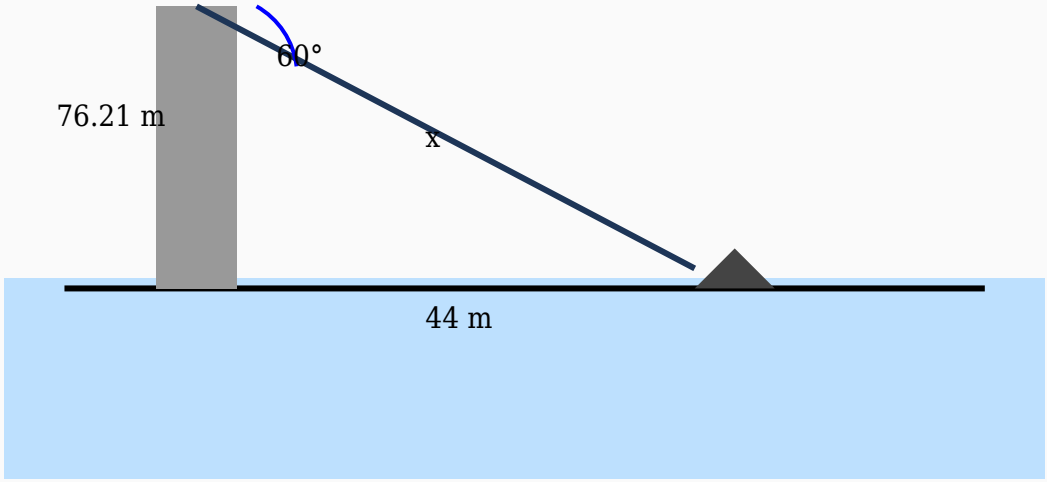
Distance = 72.7 / 1.19

Distance = 61.09 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 θ = Adjacent / Hypotenuse

cos 60° = 44 / Hypotenuse

0.5 = 44 / Hypotenuse

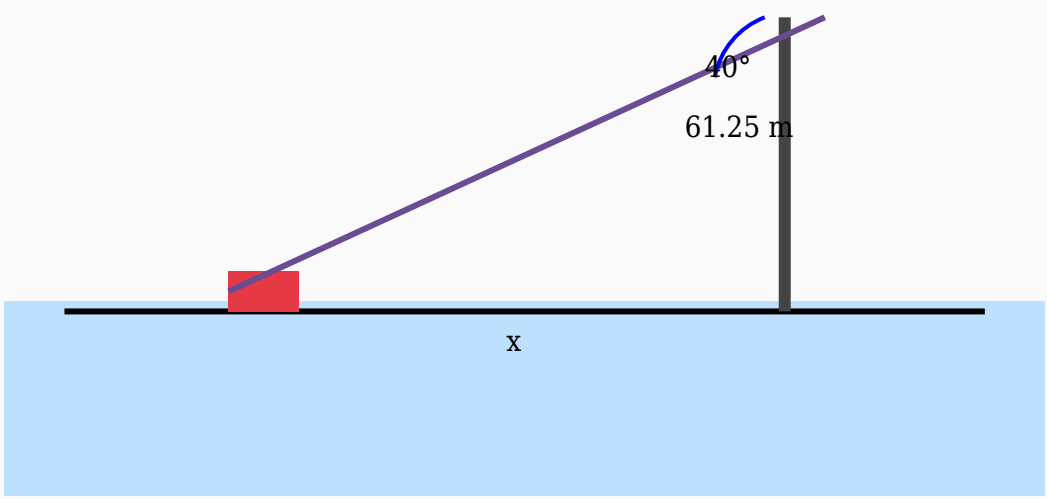
Hypotenuse = 44 / 0.5

Hypotenuse = 88 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 θ = Opposite / Adjacent

tan 40° = 61.25 / Distance

0.84 = 61.25 / Distance

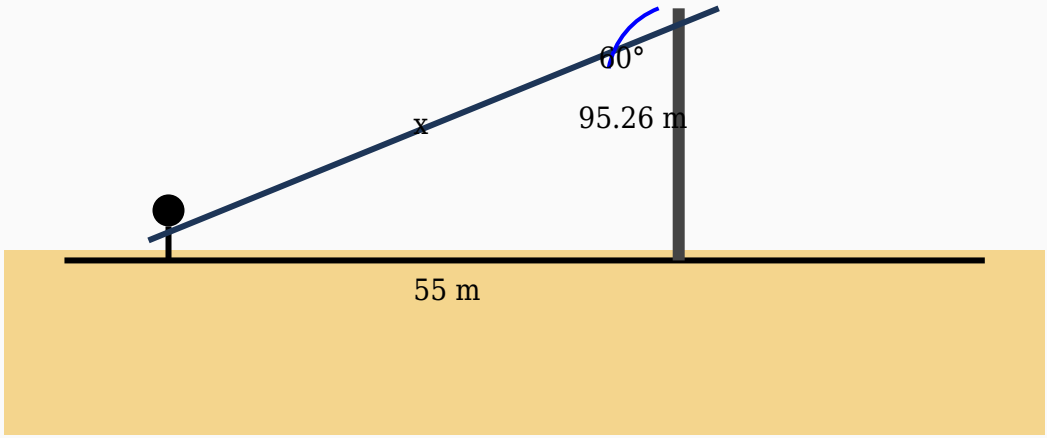
Distance = 61.25 / 0.84

Distance = 72.92 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 θ = Adjacent / Hypotenuse

cos 60° = 55 / Hypotenuse

0.5 = 55 / Hypotenuse

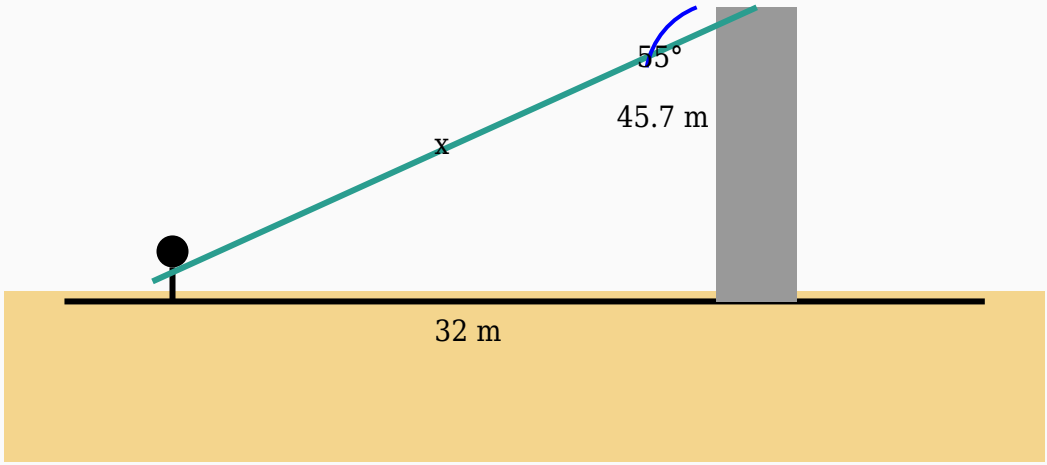
Hypotenuse = 55 / 0.5

Hypotenuse = 110 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 θ = Adjacent / Hypotenuse

cos 55° = 32 / Hypotenuse

0.57 = 32 / Hypotenuse

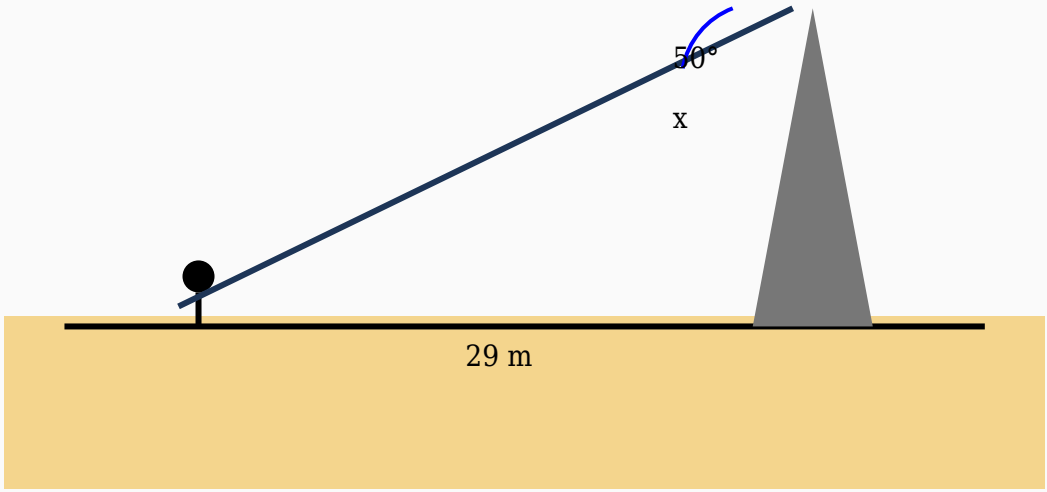
Hypotenuse = 32 / 0.57

Hypotenuse = 56.14 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 θ = Opposite / Adjacent

tan 50° = Height / 29

1.19 = Height / 29

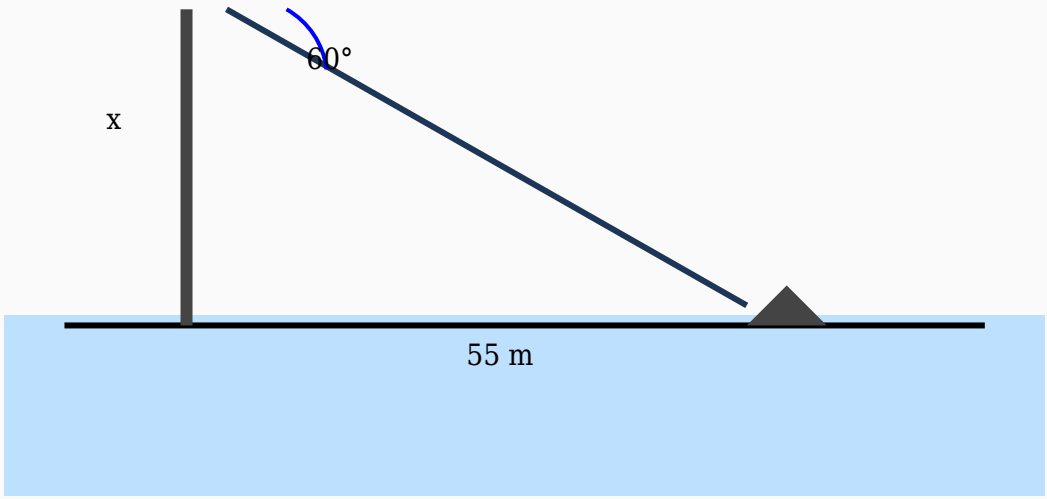
Height = 29 × 1.19

Height = 34.56 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 θ = Opposite / Adjacent

tan 60° = Height / 55

1.73 = Height / 55

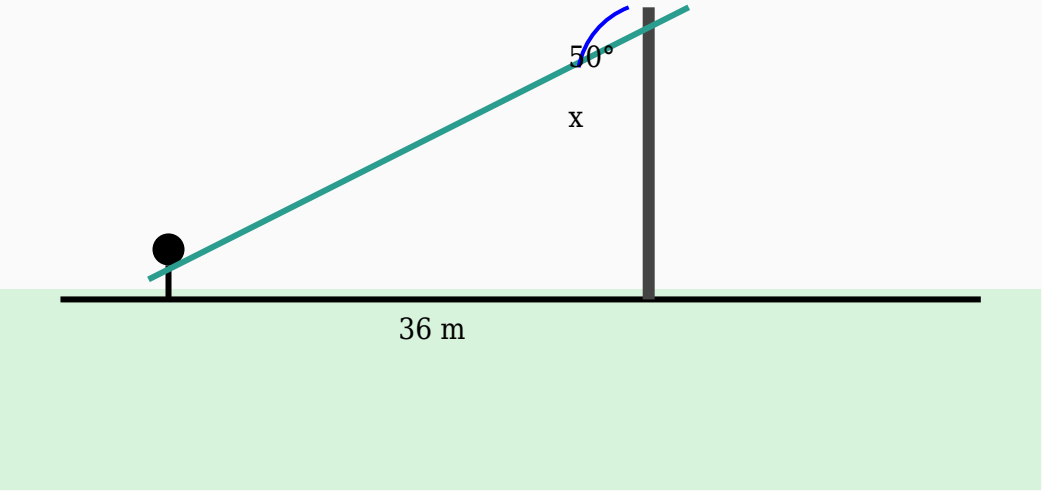
Height = 55 × 1.73

Height = 95.26 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 θ = Opposite / Adjacent

tan 50° = Height / 36

1.19 = Height / 36

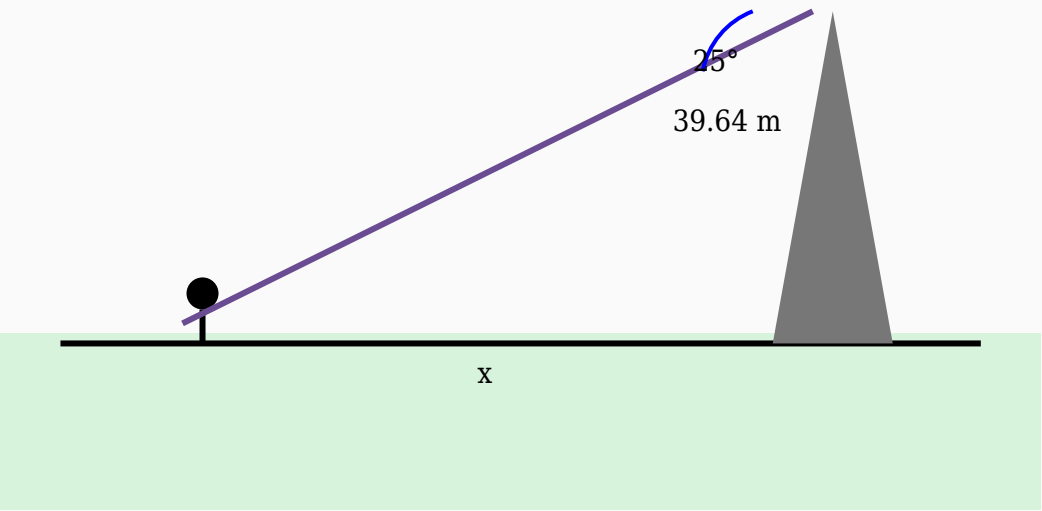
Height = 36 × 1.19

Height = 42.9 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 θ = Opposite / Adjacent

tan 25° = 39.64 / Distance

0.47 = 39.64 / Distance

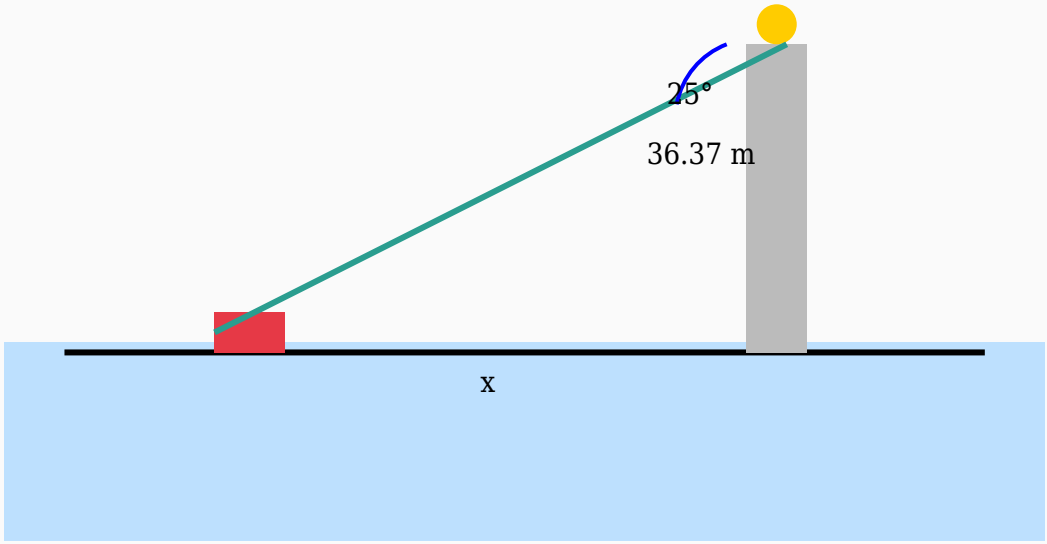
Distance = 39.64 / 0.47

Distance = 84.34 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 θ = Opposite / Adjacent

tan 25° = 36.37 / Distance

0.47 = 36.37 / Distance

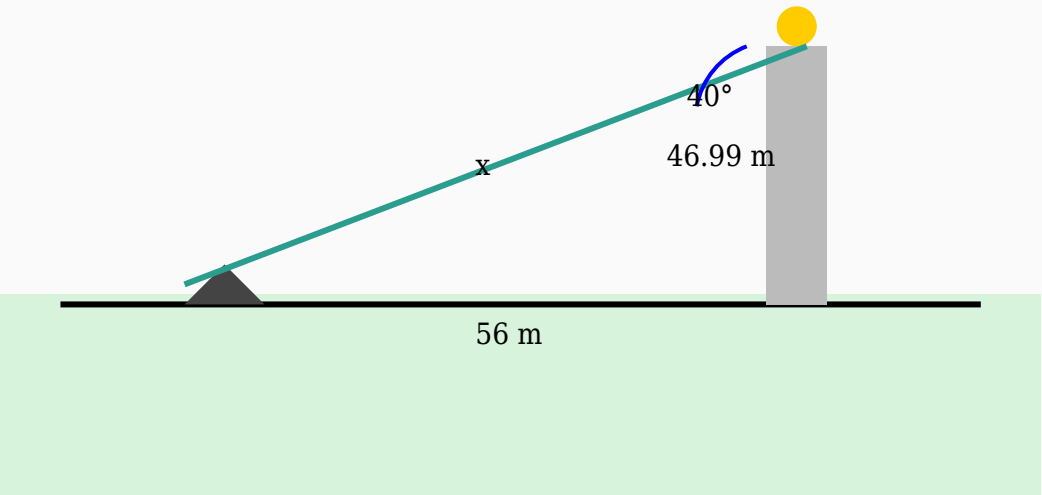
Distance = 36.37 / 0.47

Distance = 77.38 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 θ = Adjacent / Hypotenuse

cos 40° = 56 / Hypotenuse

0.77 = 56 / Hypotenuse

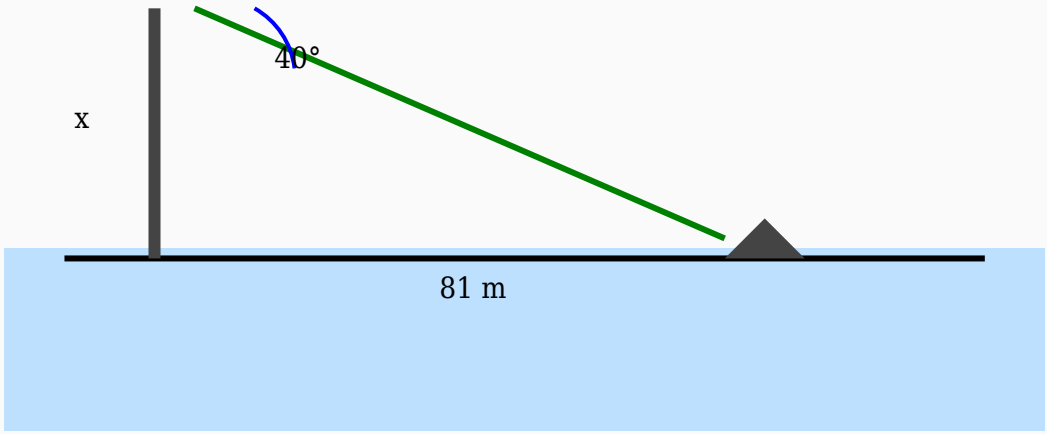
Hypotenuse = 56 / 0.77

Hypotenuse = 72.73 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 θ = Opposite / Adjacent

tan 40° = Height / 81

0.84 = Height / 81

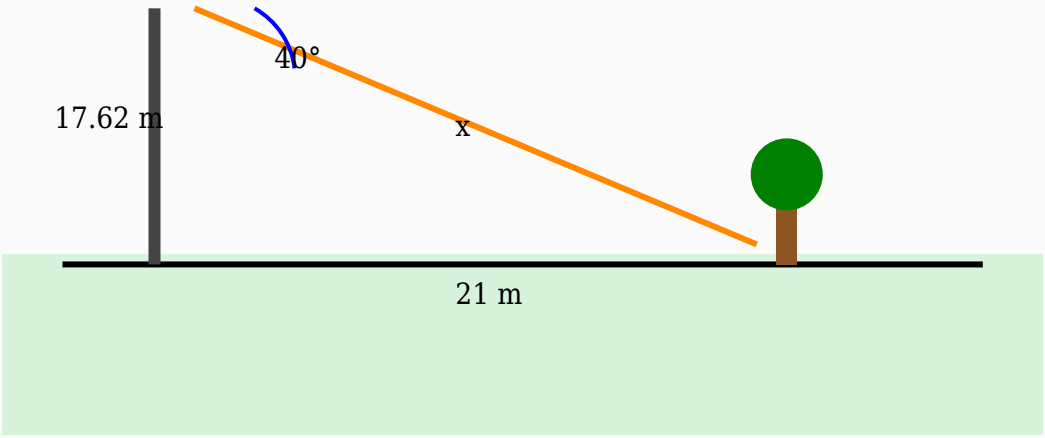
Height = 81 × 0.84

Height = 67.97 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 θ = Adjacent / Hypotenuse

cos 40° = 21 / Hypotenuse

0.77 = 21 / Hypotenuse

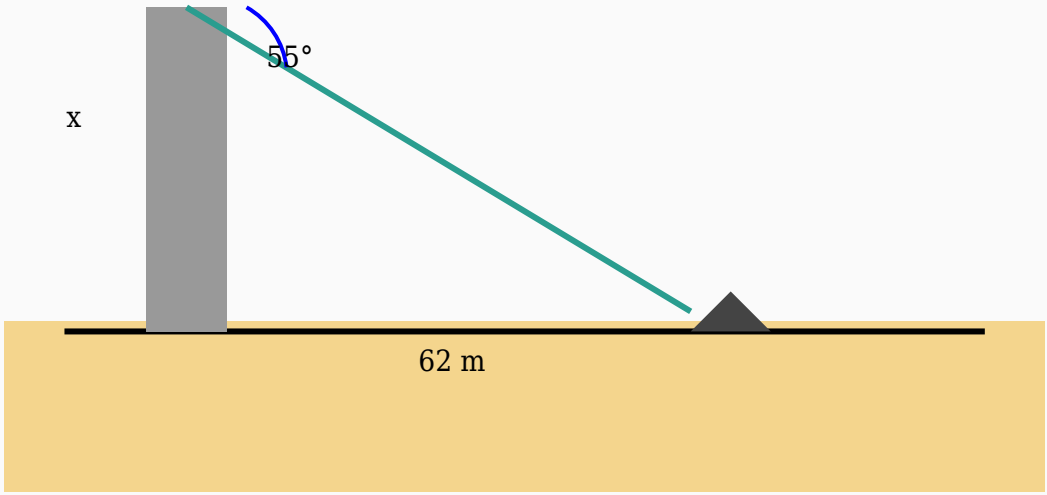
Hypotenuse = 21 / 0.77

Hypotenuse = 27.27 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 θ = Opposite / Adjacent

tan 55° = Height / 62

1.43 = Height / 62

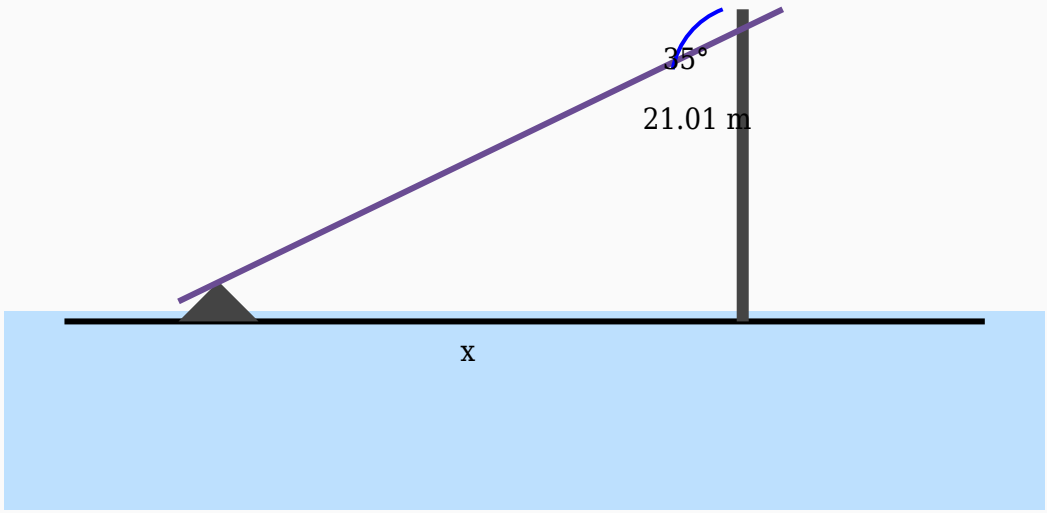
Height = 62 × 1.43

Height = 88.55 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 θ = Opposite / Adjacent

tan 35° = 21.01 / Distance

0.7 = 21.01 / Distance

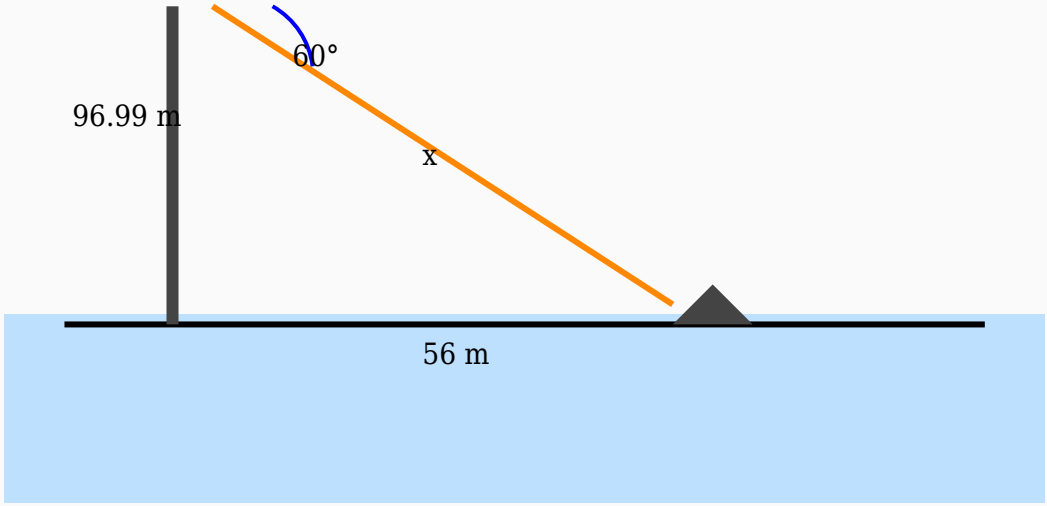
Distance = 21.01 / 0.7

Distance = 30.01 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 θ = Adjacent / Hypotenuse

cos 60° = 56 / Hypotenuse

0.5 = 56 / Hypotenuse

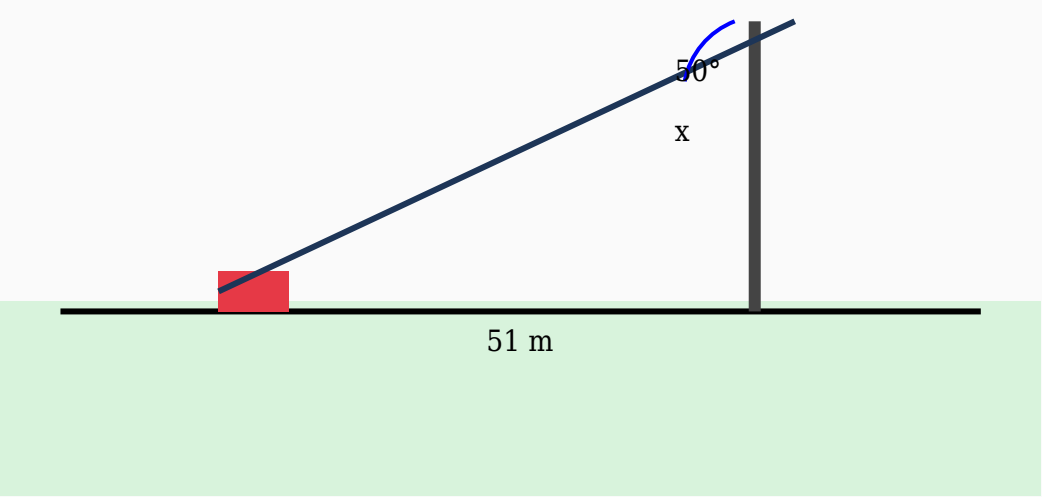
Hypotenuse = 56 / 0.5

Hypotenuse = 112 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 θ = Opposite / Adjacent

tan 50° = Height / 51

1.19 = Height / 51

Height = 51 × 1.19

Height = 60.78 m

Answer: 60.78 m