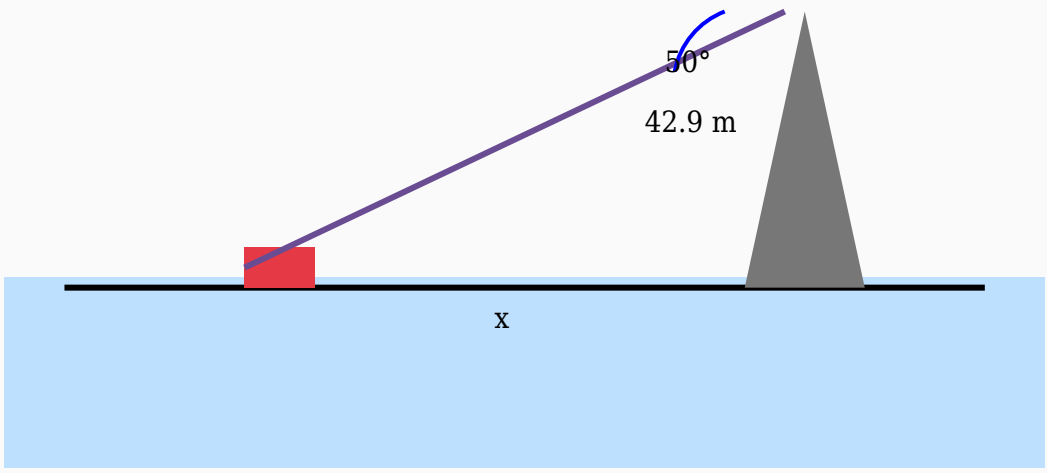
Angle of Depression Solved Worksheet

Question 1

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = 42.9 / Distance

1.19 = 42.9 / Distance

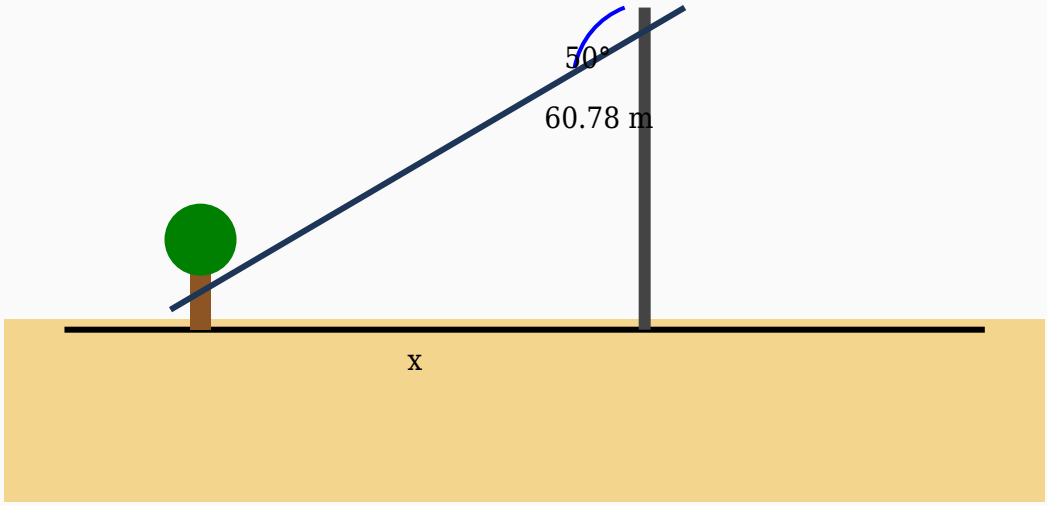
Distance = 42.9 / 1.19

Distance = 36.05 m

Answer: 36.05 m

Question 2

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = 60.78 / Distance

1.19 = 60.78 / Distance

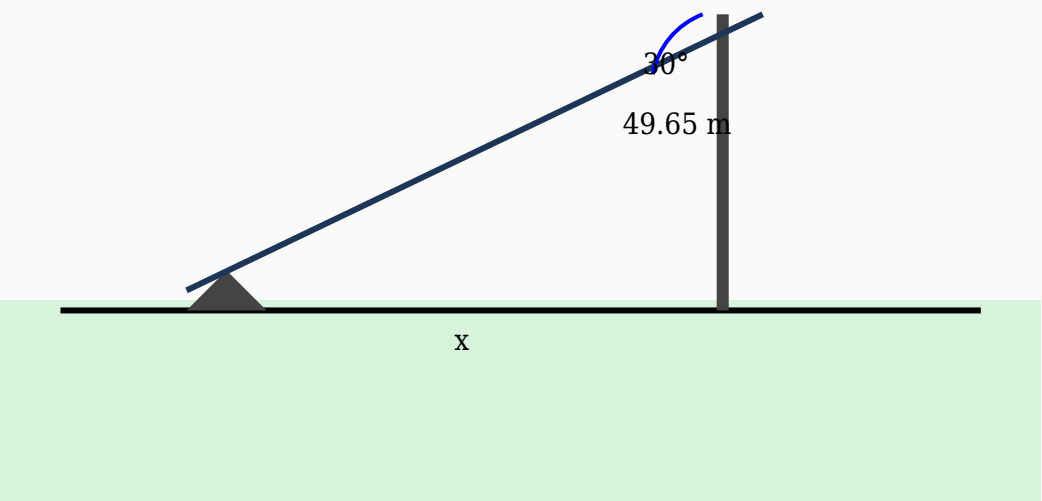
Distance = 60.78 / 1.19

Distance = 51.08 m

Answer: 51.08 m

Question 3

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 49.65 / Distance

0.58 = 49.65 / Distance

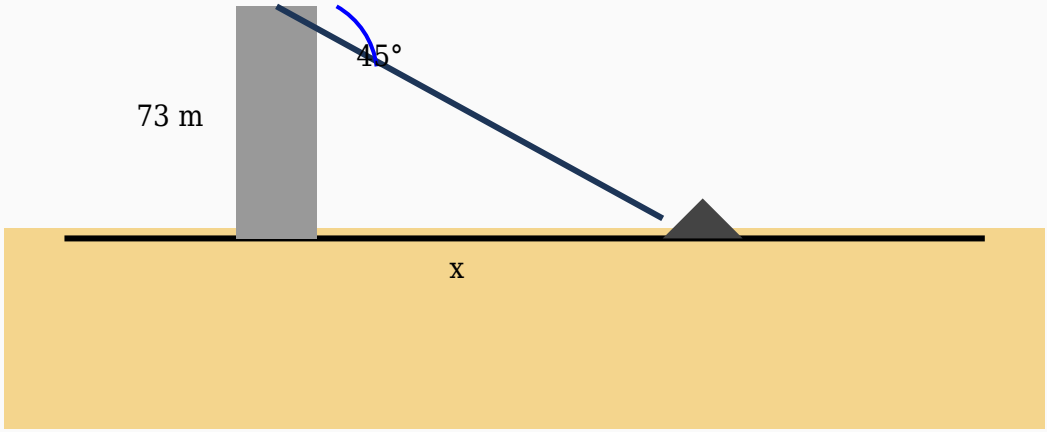
Distance = 49.65 / 0.58

Distance = 85.6 m

Answer: 85.6 m

Question 4

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = 73 / Distance

1 = 73 / Distance

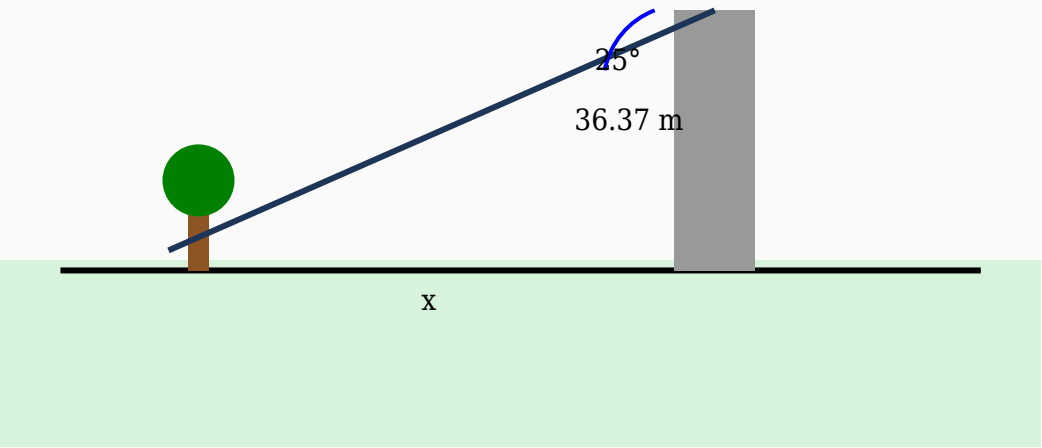
Distance = 73 / 1

Distance = 73 m

Answer: 73 m

Question 5

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 36.37 / Distance

0.47 = 36.37 / Distance

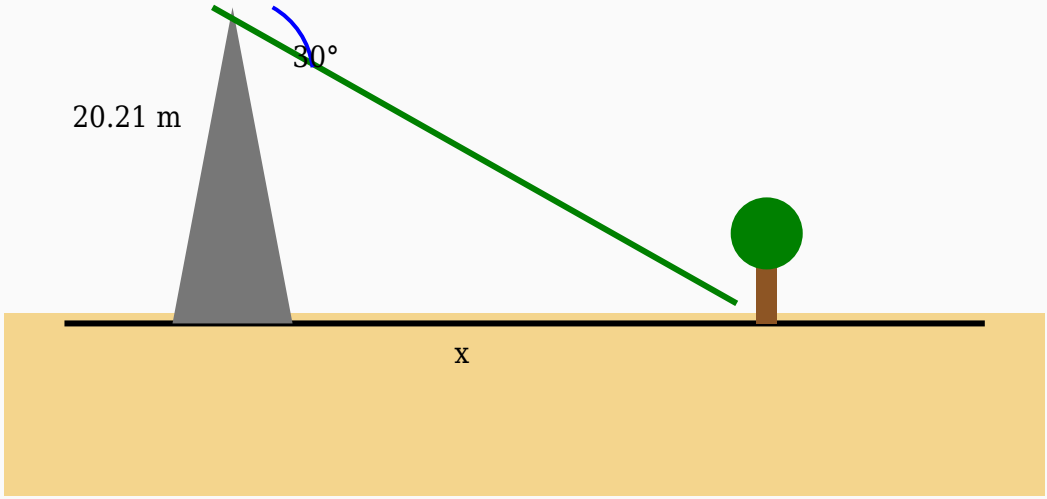
Distance = 36.37 / 0.47

Distance = 77.38 m

Answer: 77.38 m

Question 6

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 20.21 / Distance

0.58 = 20.21 / Distance

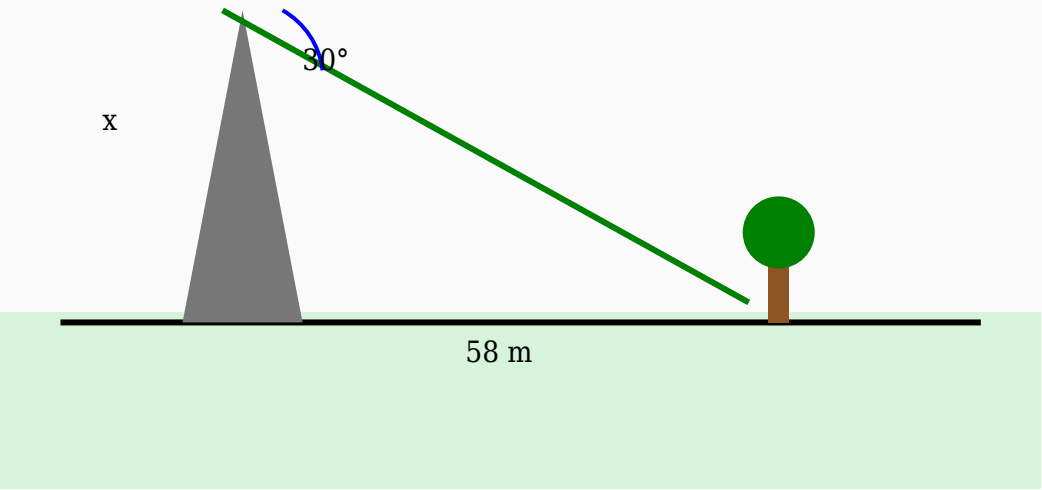
Distance = 20.21 / 0.58

Distance = 34.84 m

Answer: 34.84 m

Question 7

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = Height / 58

0.58 = Height / 58

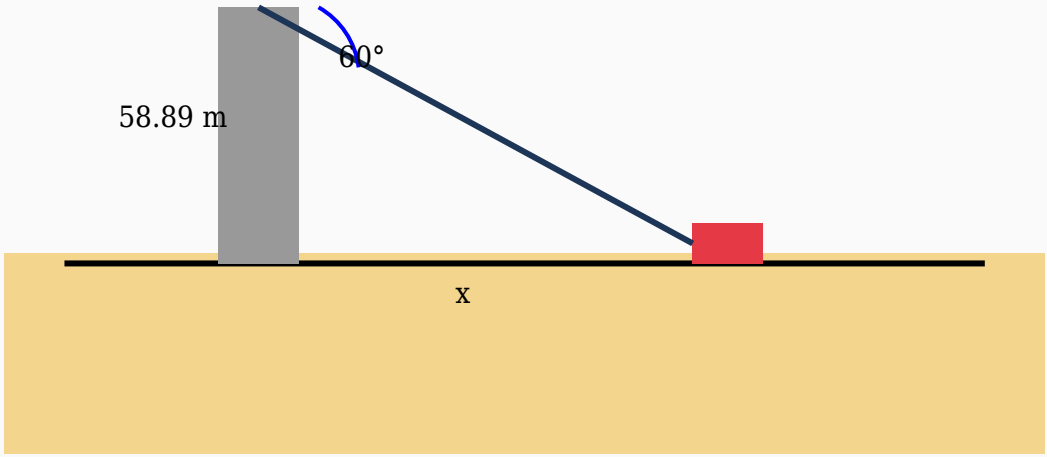
Height = 58 × 0.58

Height = 33.49 m

Answer: 33.49 m

Question 8

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 58.89 / Distance

1.73 = 58.89 / Distance

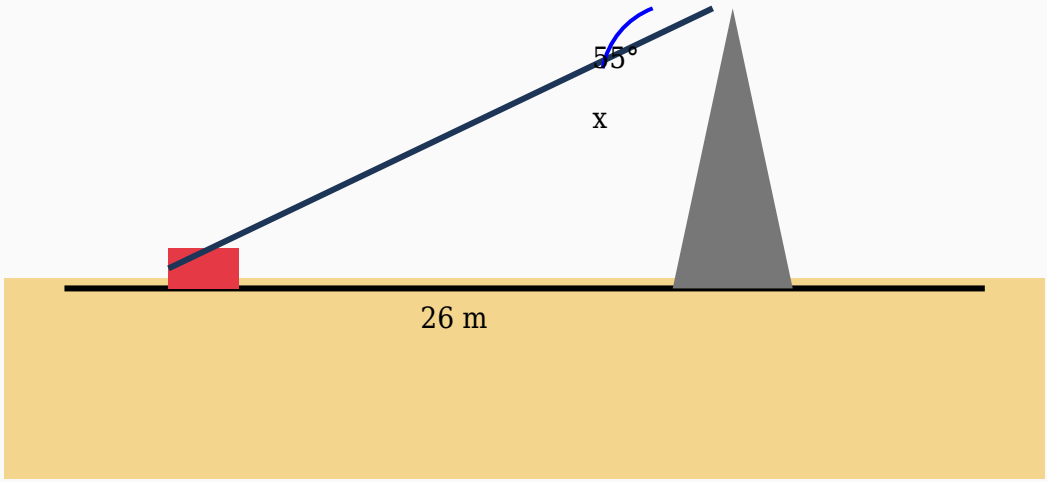
Distance = 58.89 / 1.73

Distance = 34.04 m

Answer: 34.04 m

Question 9

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 26

1.43 = Height / 26

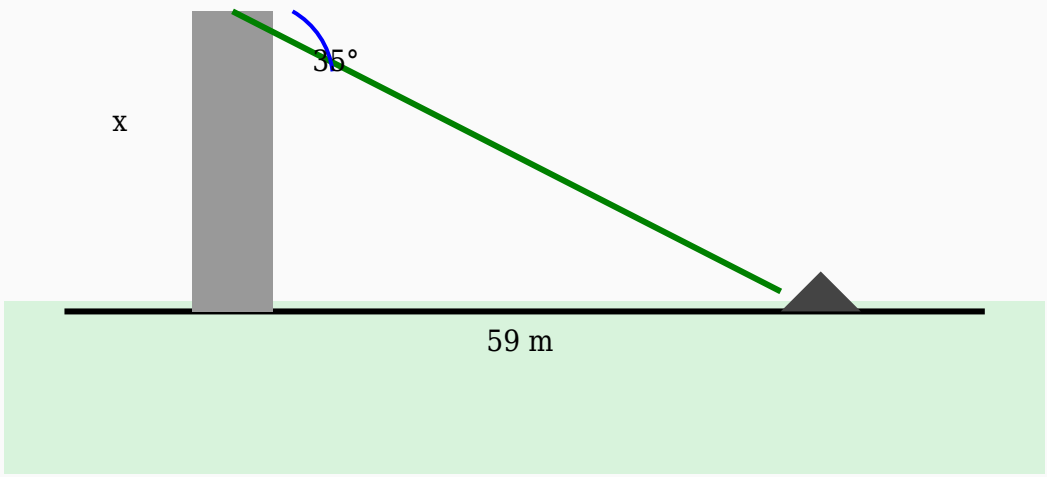
Height = 26 × 1.43

Height = 37.13 m

Answer: 37.13 m

Question 10

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 59

0.7 = Height / 59

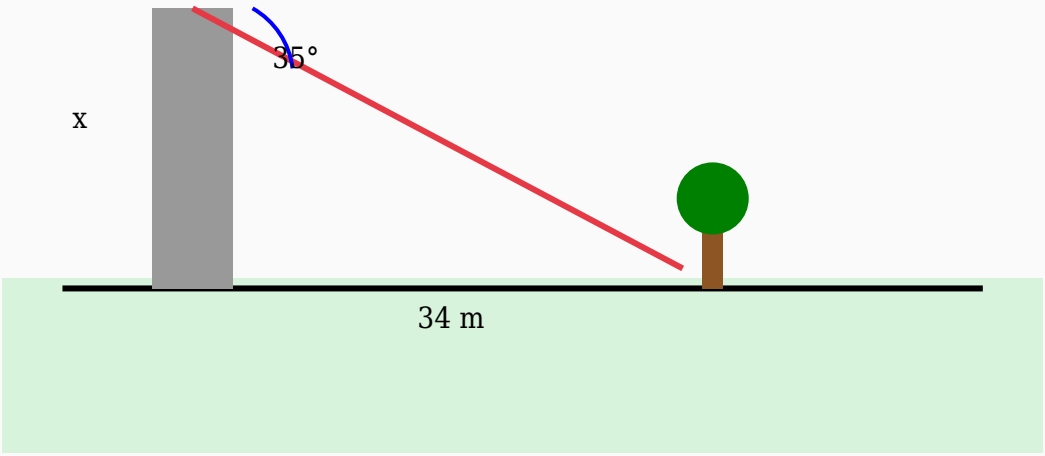
Height = 59 × 0.7

Height = 41.31 m

Answer: 41.31 m

Question 11

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 34

0.7 = Height / 34

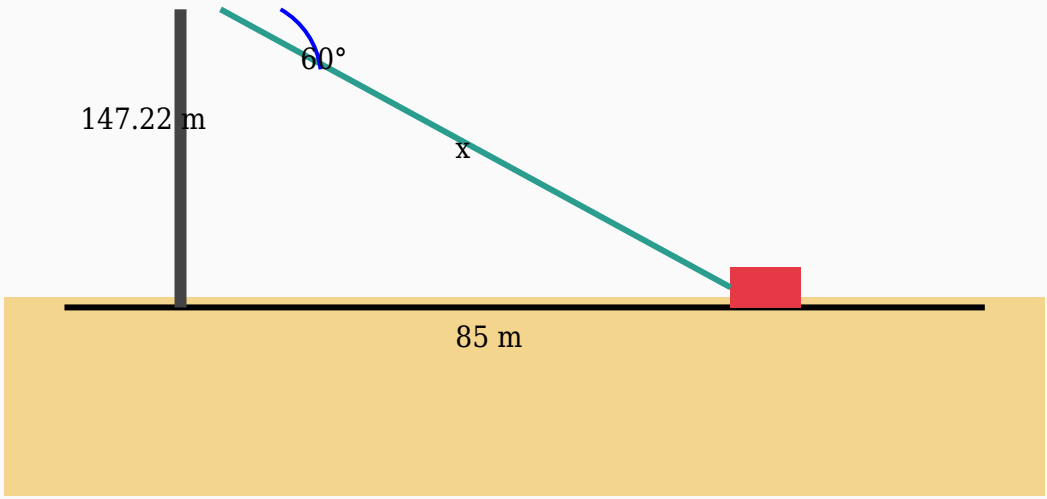
Height = 34 × 0.7

Height = 23.81 m

Answer: 23.81 m

Question 12

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 85 / Hypotenuse

0.5 = 85 / Hypotenuse

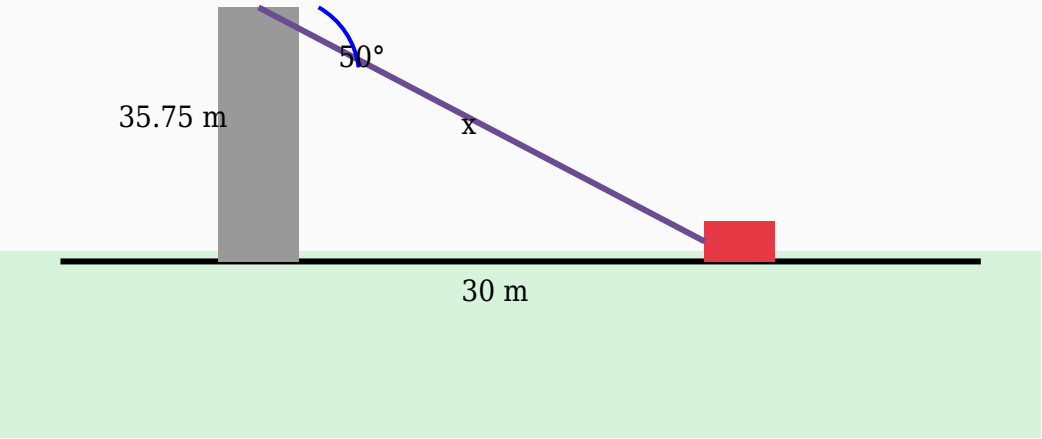
Hypotenuse = 85 / 0.5

Hypotenuse = 170 m

Answer: 170 m

Question 13

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 50° = 30 / Hypotenuse

0.64 = 30 / Hypotenuse

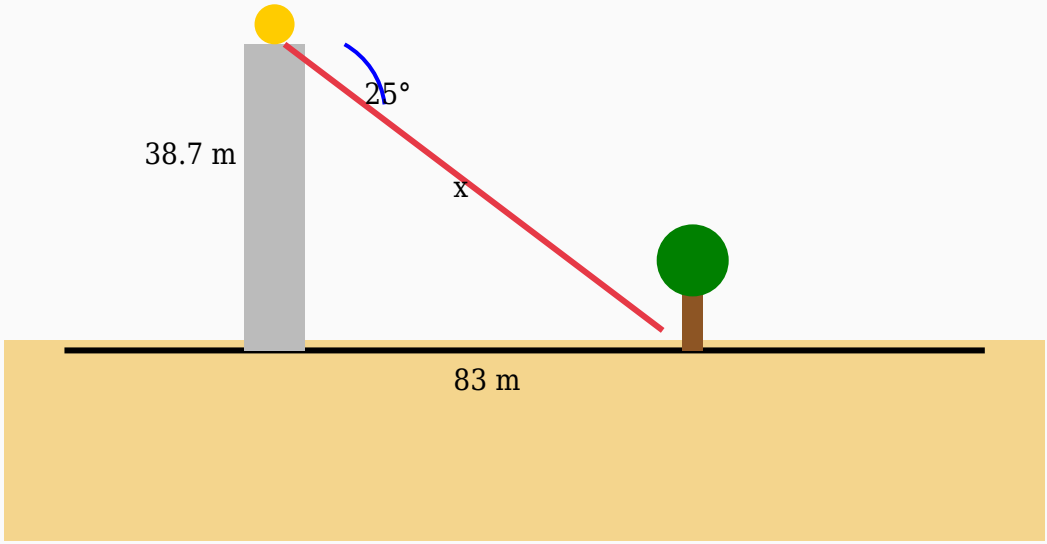
Hypotenuse = 30 / 0.64

Hypotenuse = 46.88 m

Answer: 46.88 m

Question 14

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 25° = 83 / Hypotenuse

0.91 = 83 / Hypotenuse

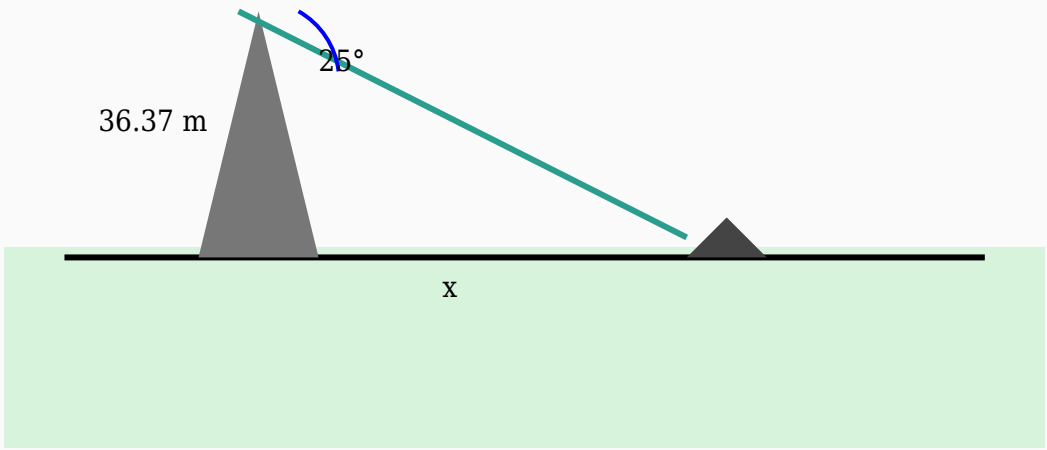
Hypotenuse = 83 / 0.91

Hypotenuse = 91.21 m

Answer: 91.21 m

Question 15

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 36.37 / Distance

0.47 = 36.37 / Distance

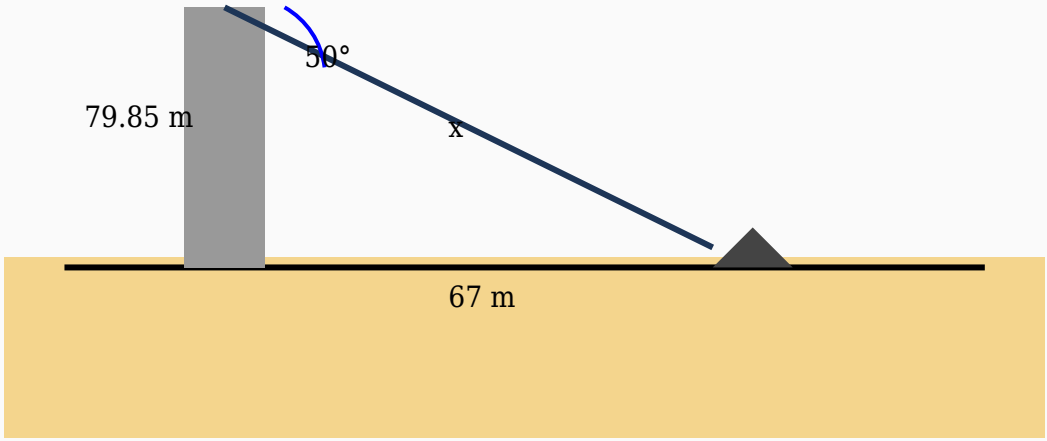
Distance = 36.37 / 0.47

Distance = 77.38 m

Answer: 77.38 m

Question 16

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 50° = 67 / Hypotenuse

0.64 = 67 / Hypotenuse

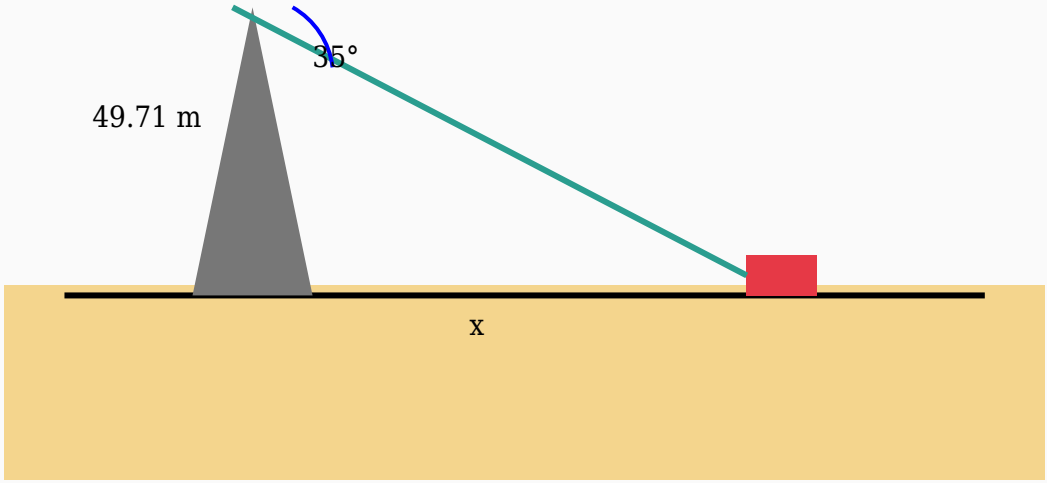
Hypotenuse = 67 / 0.64

Hypotenuse = 104.69 m

Answer: 104.69 m

Question 17

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = 49.71 / Distance

0.7 = 49.71 / Distance

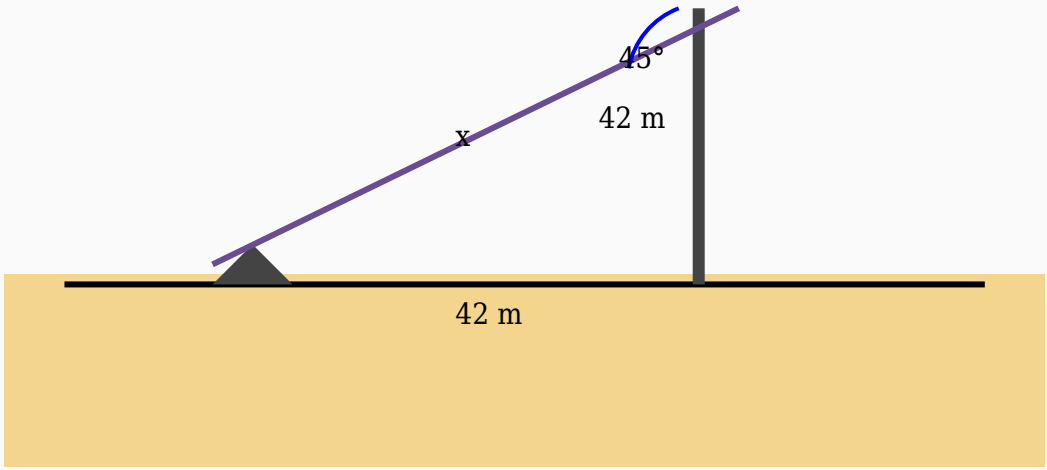
Distance = 49.71 / 0.7

Distance = 71.01 m

Answer: 71.01 m

Question 18

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 45° = 42 / Hypotenuse

0.71 = 42 / Hypotenuse

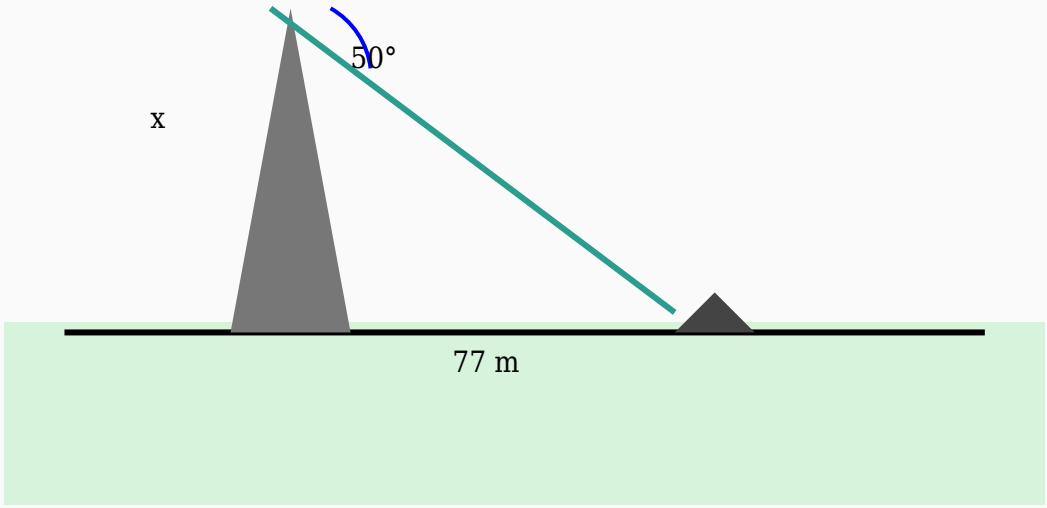
Hypotenuse = 42 / 0.71

Hypotenuse = 59.15 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°. Determine the height of the mountain if the horizontal distance is 77 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = Height / 77

1.19 = Height / 77

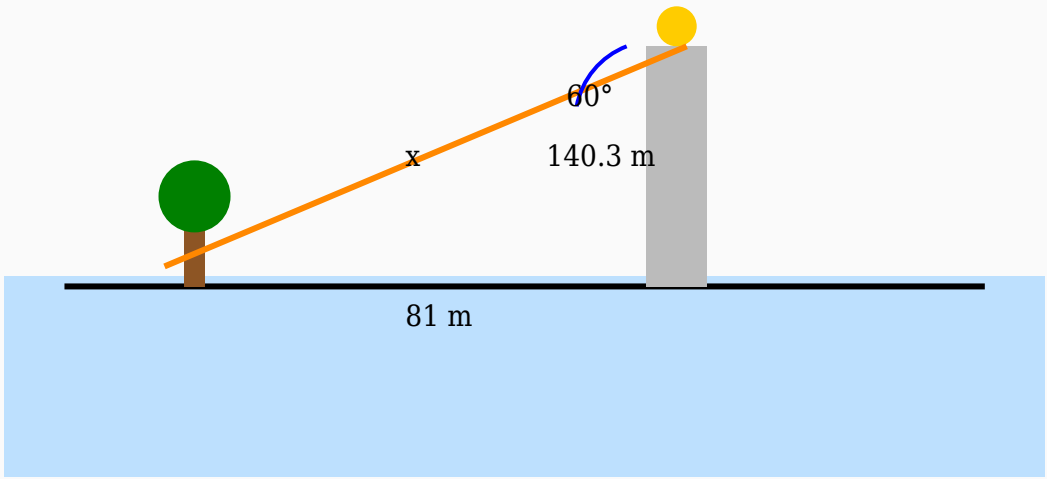
Height = 77 × 1.19

Height = 91.77 m

Answer: 91.77 m

Question 20

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



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 81 / Hypotenuse

0.5 = 81 / Hypotenuse

Hypotenuse = 81 / 0.5

Hypotenuse = 162 m

Answer: 162 m