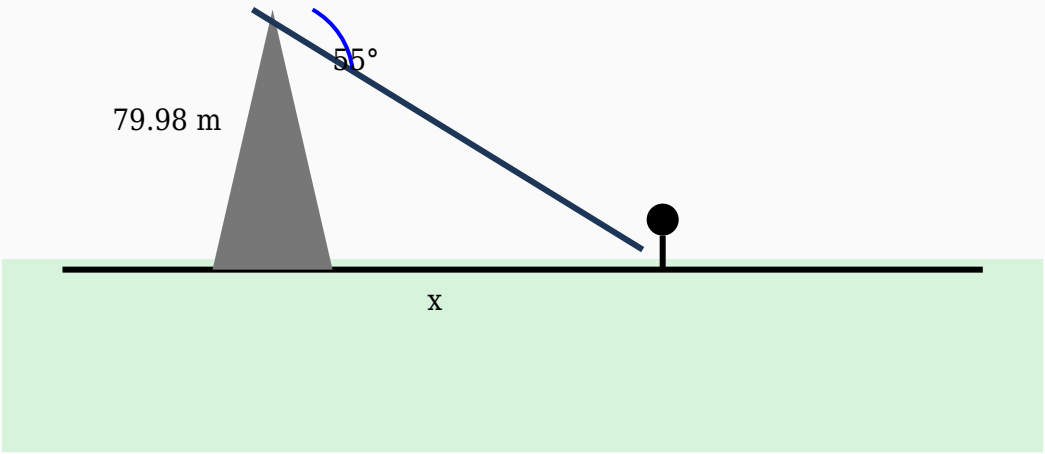
Angle of Depression Solved Worksheet

Question 1

The angle of depression from a cliff to a ship is 55°. Calculate the horizontal distance if the height of the cliff is 79.98 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 79.98 / Distance

1.43 = 79.98 / Distance

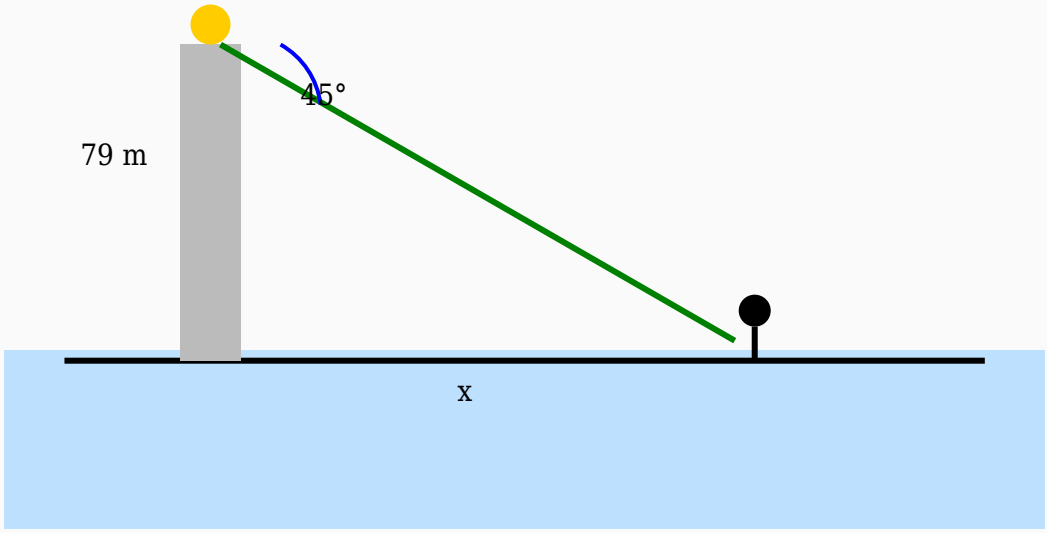
Distance = 79.98 / 1.43

Distance = 55.93 m

Answer: 55.93 m

Question 2

The angle of depression from a hill to a river is 45°. Calculate the horizontal distance if the height of the hill is 79 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = 79 / Distance

1 = 79 / Distance

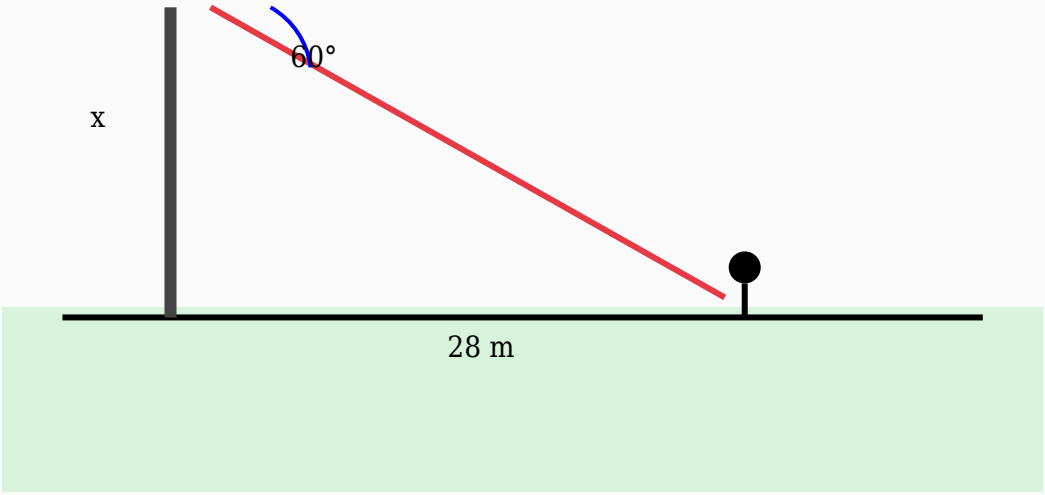
Distance = 79 / 1

Distance = 79 m

Answer: 79 m

Question 3

The angle of depression from the top of a lighthouse to a truck is 60°. If the truck is 28 m away horizontally, calculate the height of the lighthouse.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = Height / 28

1.73 = Height / 28

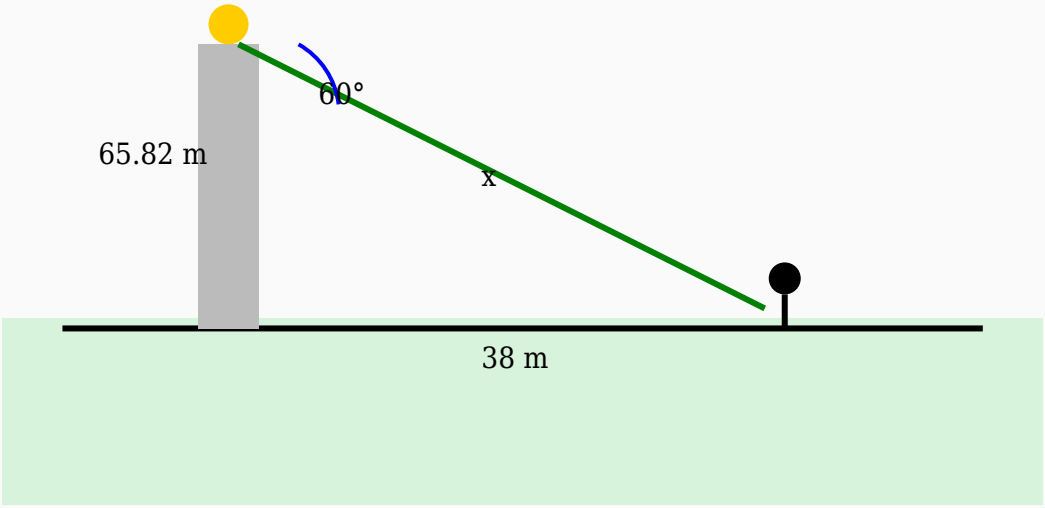
Height = 28 × 1.73

Height = 48.5 m

Answer: 48.5 m

Question 4

A person is viewed from the top of a watch tower at an angle of depression of 60°. Find the line of sight if the horizontal distance is 38 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 38 / Hypotenuse

0.5 = 38 / Hypotenuse

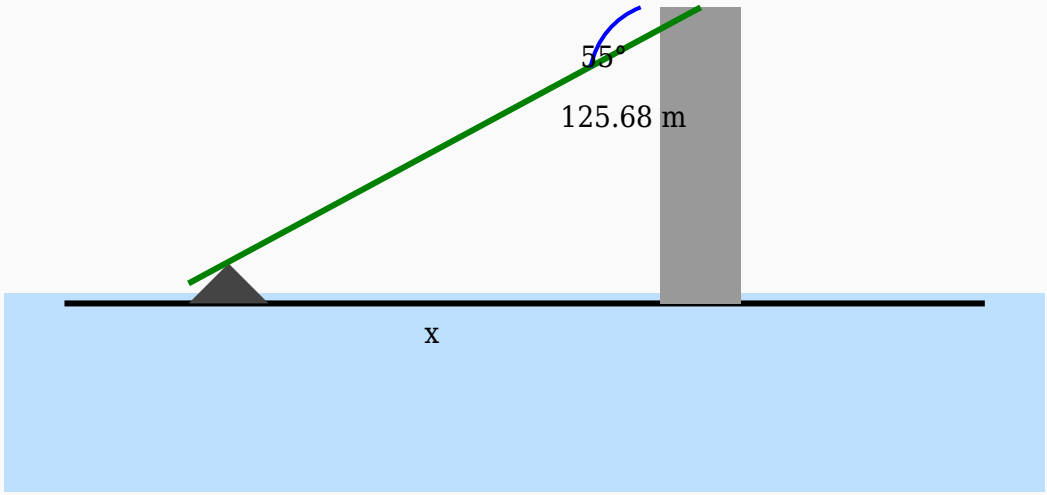
Hypotenuse = 38 / 0.5

Hypotenuse = 76 m

Answer: 76 m

Question 5

The angle of depression from a mountain to a person is 55°. Calculate the horizontal distance if the height of the mountain is 125.68 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 125.68 / Distance

1.43 = 125.68 / Distance

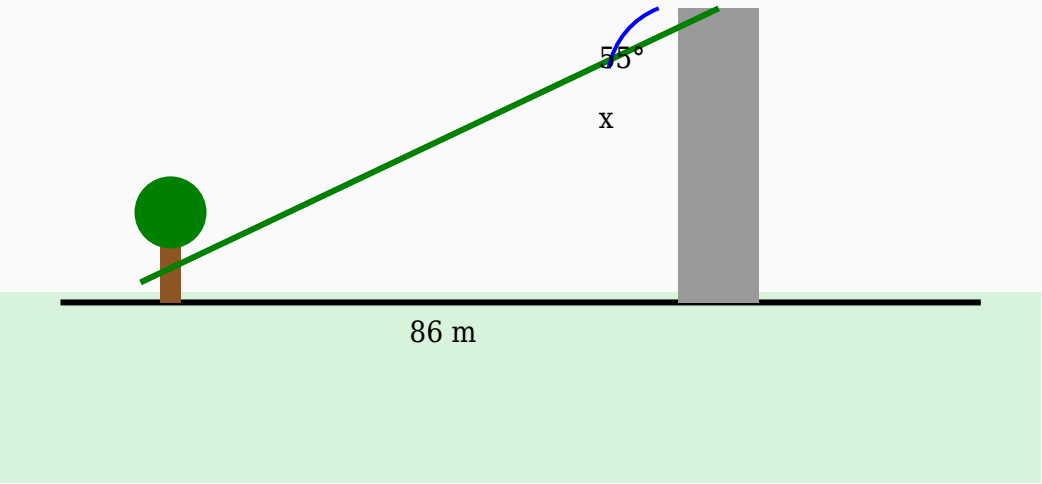
Distance = 125.68 / 1.43

Distance = 87.89 m

Answer: 87.89 m

Question 6

A surveyor looks down from a tower and notices a tree at an angle of depression of 55°. Determine the height of the tower if the horizontal distance is 86 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 86

1.43 = Height / 86

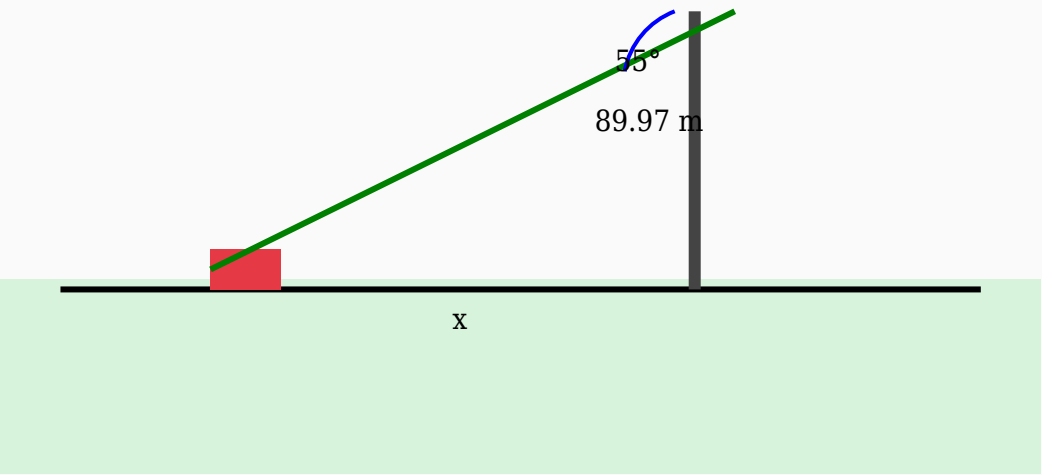
Height = 86 × 1.43

Height = 122.82 m

Answer: 122.82 m

Question 7

The angle of depression from a balcony to a road is 55°. Calculate the horizontal distance if the height of the balcony is 89.97 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 89.97 / Distance

1.43 = 89.97 / Distance

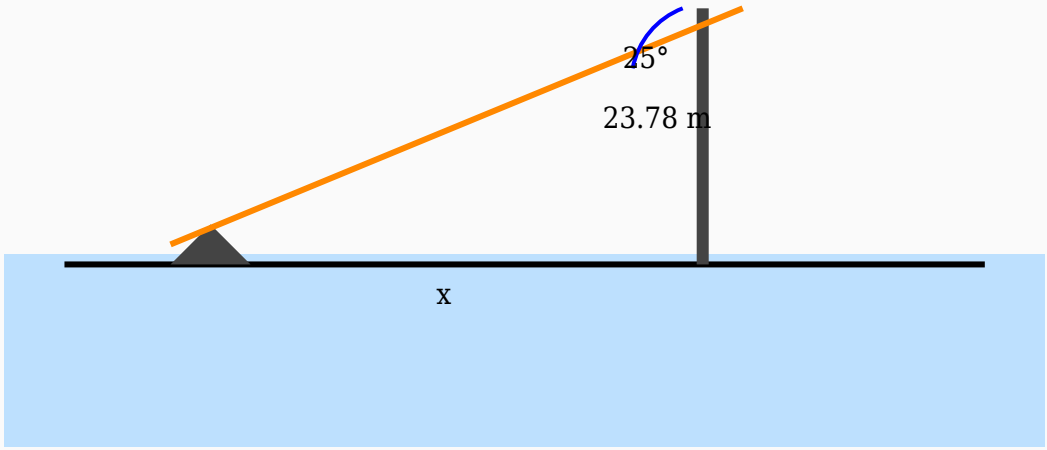
Distance = 89.97 / 1.43

Distance = 62.92 m

Answer: 62.92 m

Question 8

A river is seen from the top of a watch tower at an angle of depression of 25°. Determine the distance between the river and the base if the height is 23.78 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 23.78 / Distance

0.47 = 23.78 / Distance

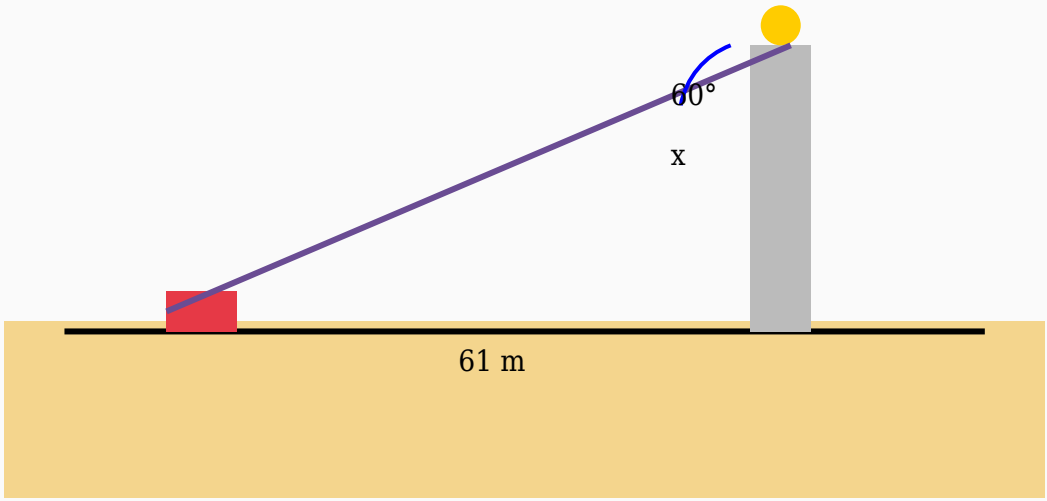
Distance = 23.78 / 0.47

Distance = 50.6 m

Answer: 50.6 m

Question 9

The angle of depression from the top of a bridge to a ship is 60°. If the ship is 61 m away horizontally, calculate the height of the bridge.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = Height / 61

1.73 = Height / 61

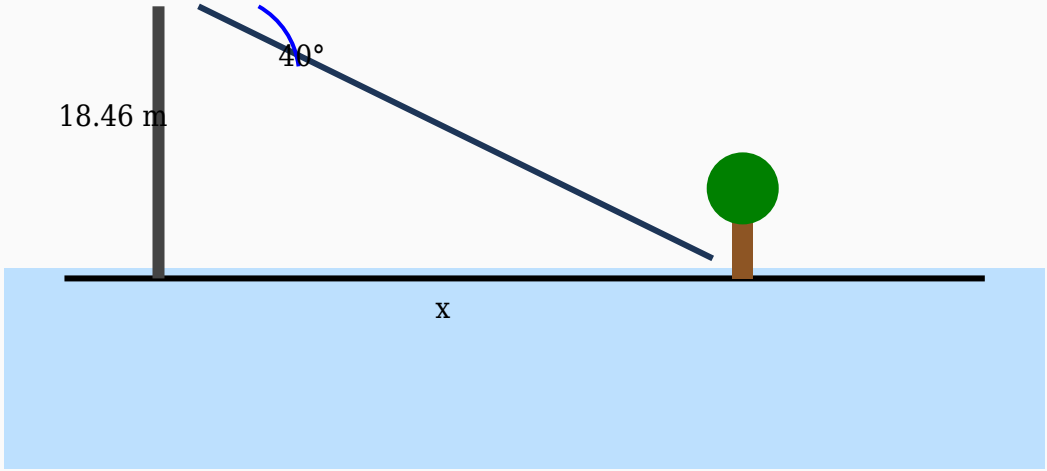
Height = 61 × 1.73

Height = 105.66 m

Answer: 105.66 m

Question 10

The angle of depression from a stadium to a car is 40°. Calculate the horizontal distance if the height of the stadium is 18.46 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 40° = 18.46 / Distance

0.84 = 18.46 / Distance

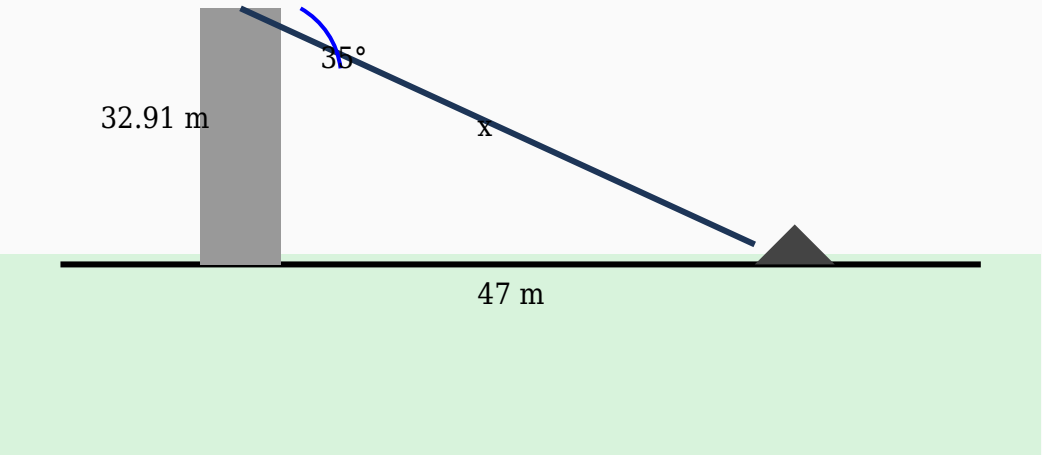
Distance = 18.46 / 0.84

Distance = 21.98 m

Answer: 21.98 m

Question 11

A sailor standing on a stadium observes a car at an angle of depression of 35°. If the horizontal distance is 47 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 35° = 47 / Hypotenuse

0.82 = 47 / Hypotenuse

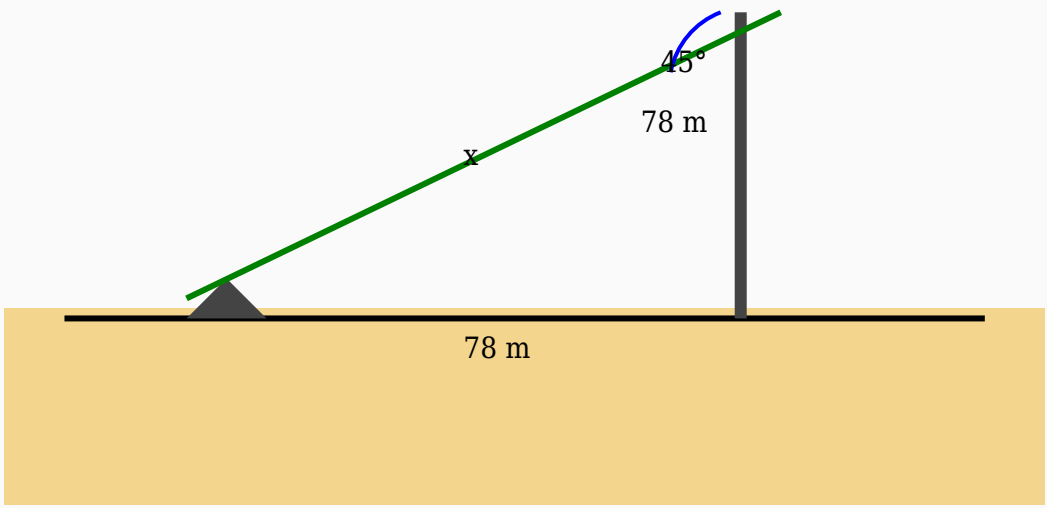
Hypotenuse = 47 / 0.82

Hypotenuse = 57.32 m

Answer: 57.32 m

Question 12

A tree is viewed from the top of a hill at an angle of depression of 45°. Find the line of sight if the horizontal distance is 78 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 45° = 78 / Hypotenuse

0.71 = 78 / Hypotenuse

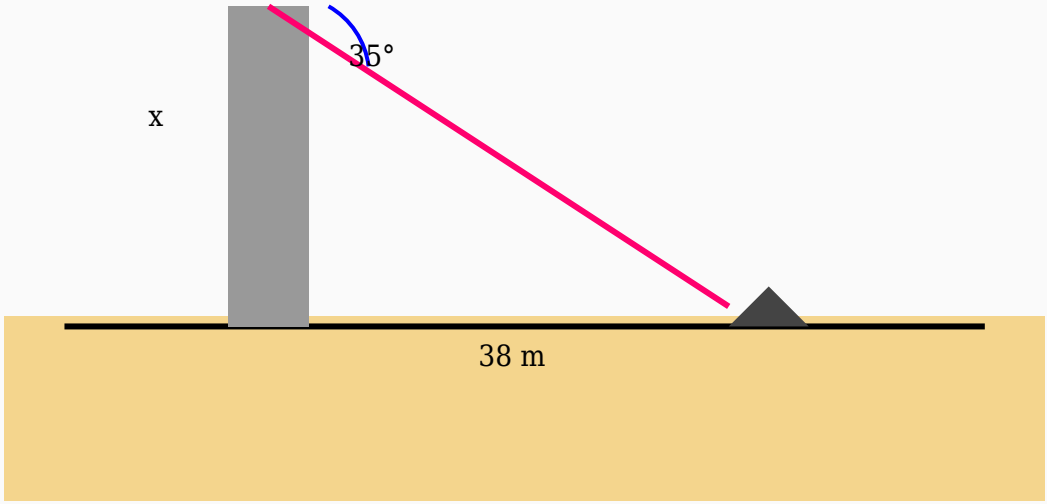
Hypotenuse = 78 / 0.71

Hypotenuse = 109.86 m

Answer: 109.86 m

Question 13

The angle of depression from the top of a watch tower to a house is 35°. If the house is 38 m away horizontally, calculate the height of the watch tower.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 38

0.7 = Height / 38

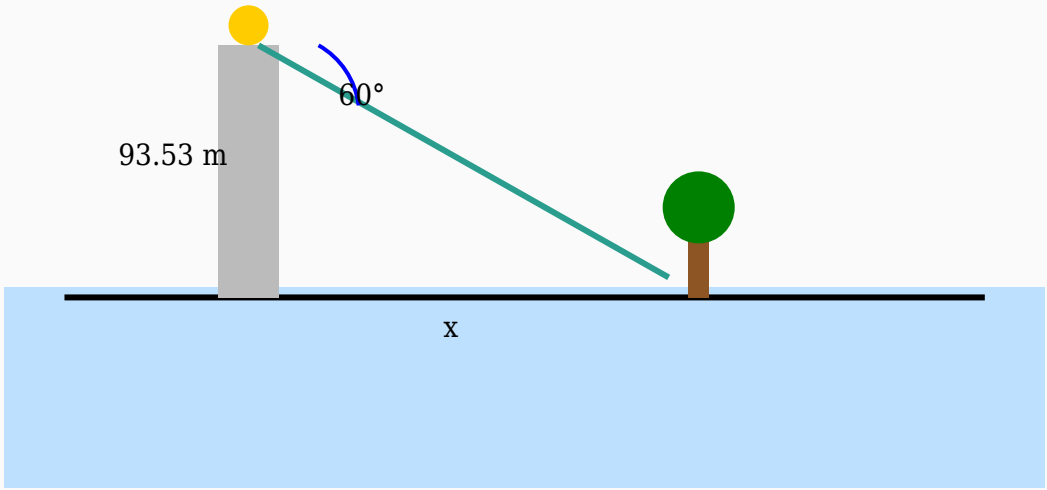
Height = 38 × 0.7

Height = 26.61 m

Answer: 26.61 m

Question 14

A student standing on a hill observes a bus at an angle of depression of 60°. If the height of the hill is 93.53 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 93.53 / Distance

1.73 = 93.53 / Distance

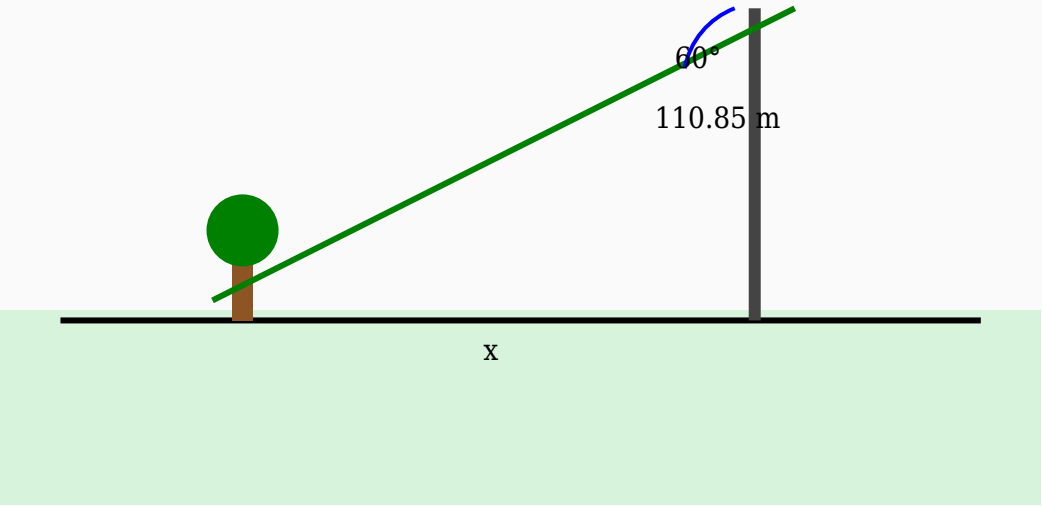
Distance = 93.53 / 1.73

Distance = 54.06 m

Answer: 54.06 m

Question 15

The angle of depression from a watch tower to a house is 60°. Calculate the horizontal distance if the height of the watch tower is 110.85 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 110.85 / Distance

1.73 = 110.85 / Distance

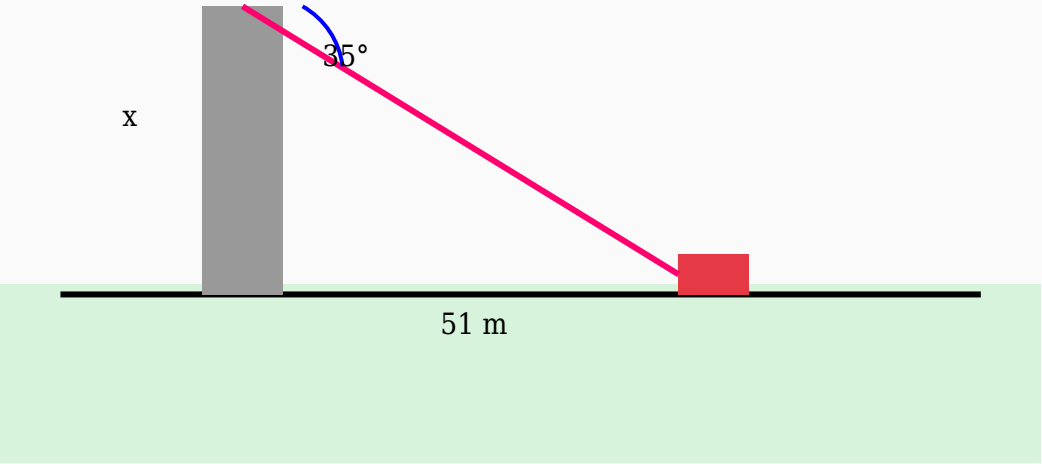
Distance = 110.85 / 1.73

Distance = 64.08 m

Answer: 64.08 m

Question 16

A tourist looks down from a hill and notices a river at an angle of depression of 35°. Determine the height of the hill if the horizontal distance is 51 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 51

0.7 = Height / 51

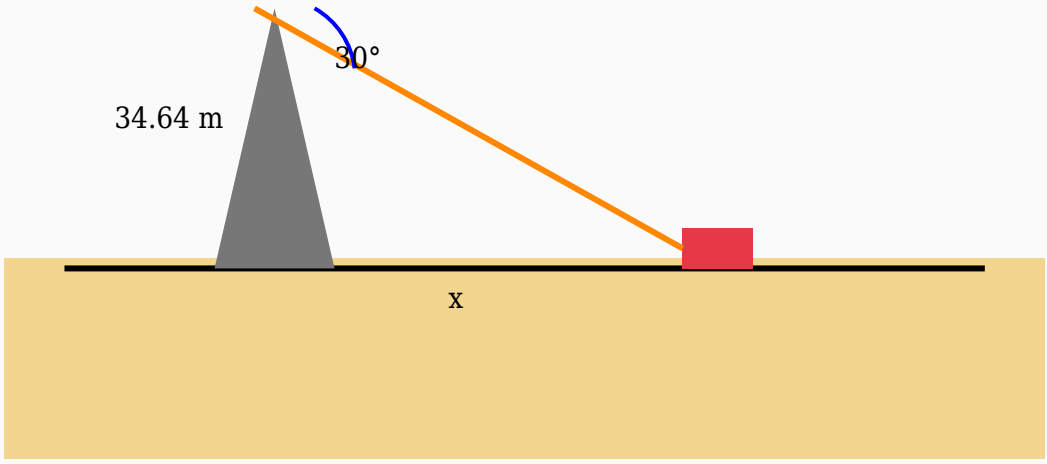
Height = 51 × 0.7

Height = 35.71 m

Answer: 35.71 m

Question 17

The angle of depression from a cliff to a house is 30°. Calculate the horizontal distance if the height of the cliff is 34.64 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 34.64 / Distance

0.58 = 34.64 / Distance

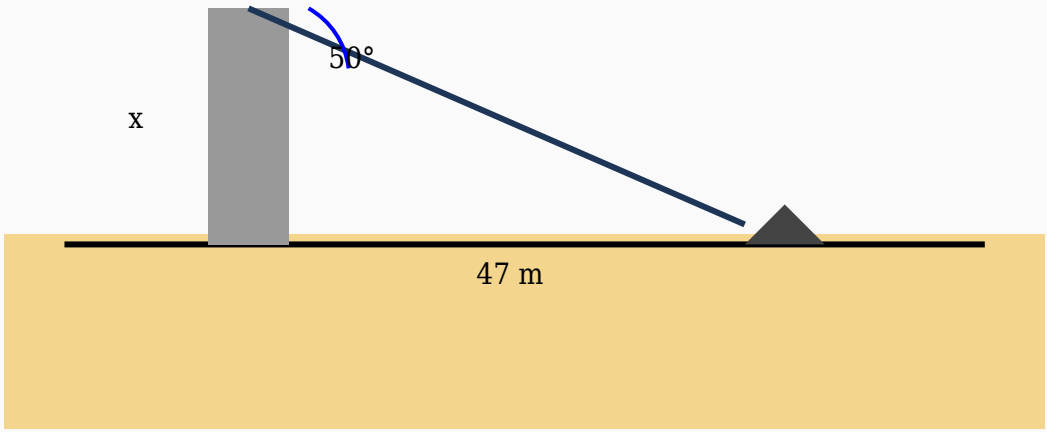
Distance = 34.64 / 0.58

Distance = 59.72 m

Answer: 59.72 m

Question 18

The angle of depression from the top of a lighthouse to a river is 50°. If the river is 47 m away horizontally, calculate the height of the lighthouse.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = Height / 47

1.19 = Height / 47

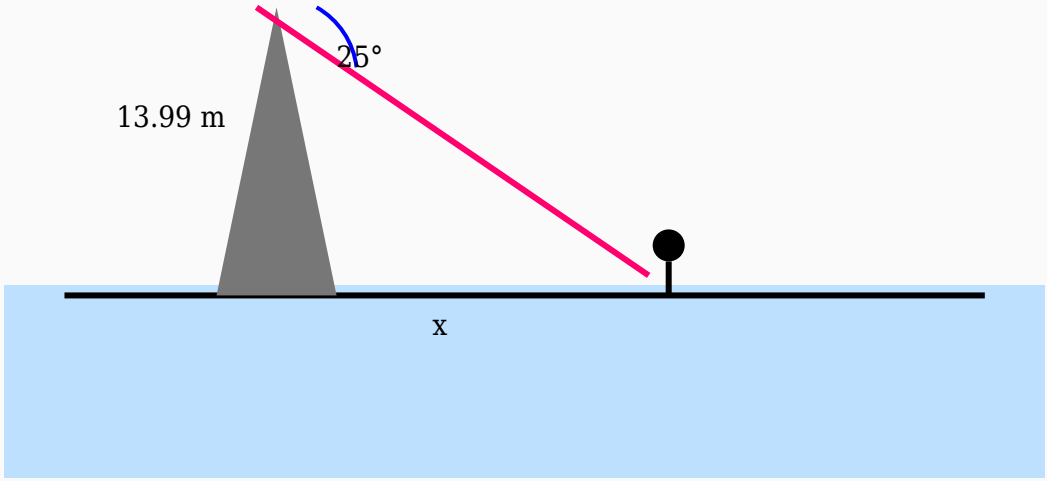
Height = 47 × 1.19

Height = 56.01 m

Answer: 56.01 m

Question 19

A sailor standing on a balcony observes a person at an angle of depression of 25°. If the height of the balcony is 13.99 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 13.99 / Distance

0.47 = 13.99 / Distance

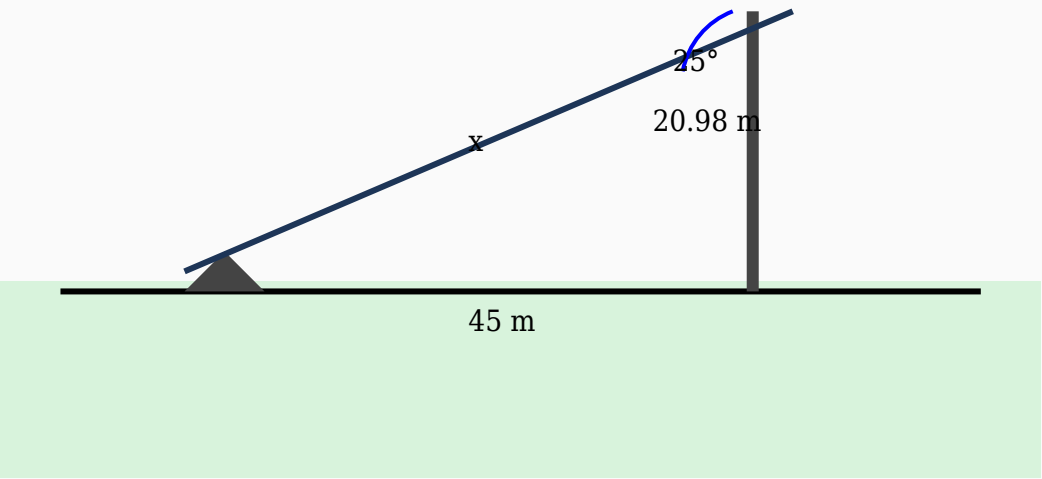
Distance = 13.99 / 0.47

Distance = 29.77 m

Answer: 29.77 m

Question 20

The angle of depression from a mountain to a person is 25°. If the person is 45 m away horizontally, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 25° = 45 / Hypotenuse

0.91 = 45 / Hypotenuse

Hypotenuse = 45 / 0.91

Hypotenuse = 49.45 m

Answer: 49.45 m