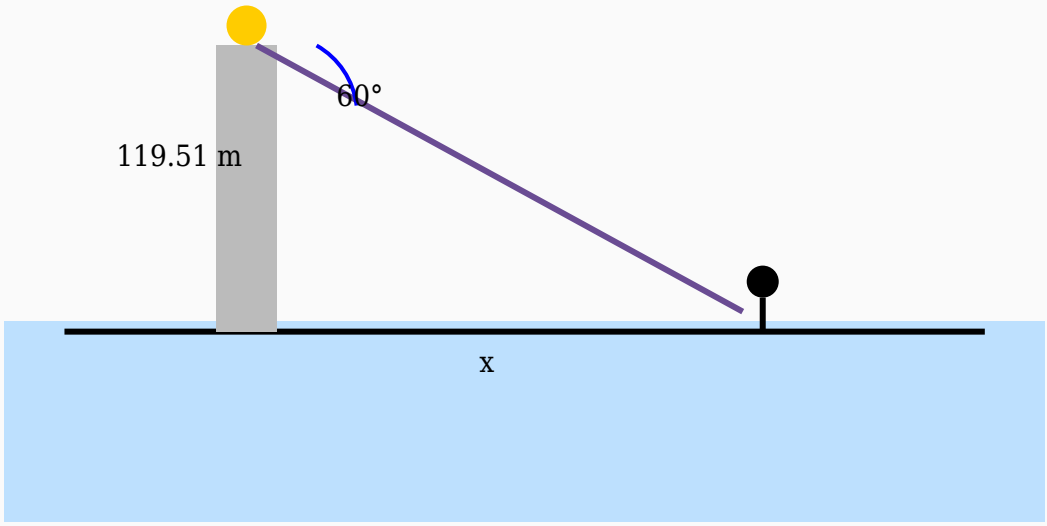
Angle of Depression Solved Worksheet

Question 1

The angle of depression from a bridge to a truck is 60°. Calculate the horizontal distance if the height of the bridge is 119.51 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 119.51 / Distance

1.73 = 119.51 / Distance

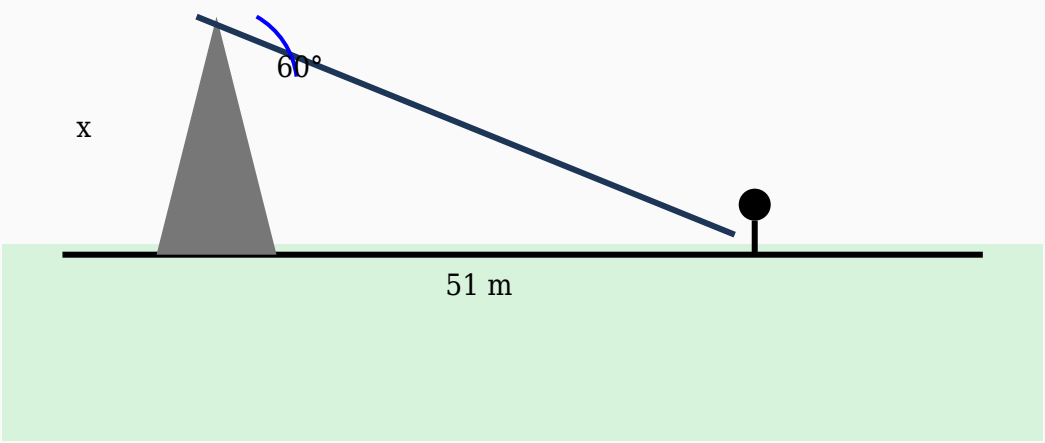
Distance = 119.51 / 1.73

Distance = 69.08 m

Answer: 69.08 m

Question 2

A tourist looks down from a lighthouse and notices a boat at an angle of depression of 60°. Determine the height of the lighthouse if the horizontal distance is 51 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = Height / 51

1.73 = Height / 51

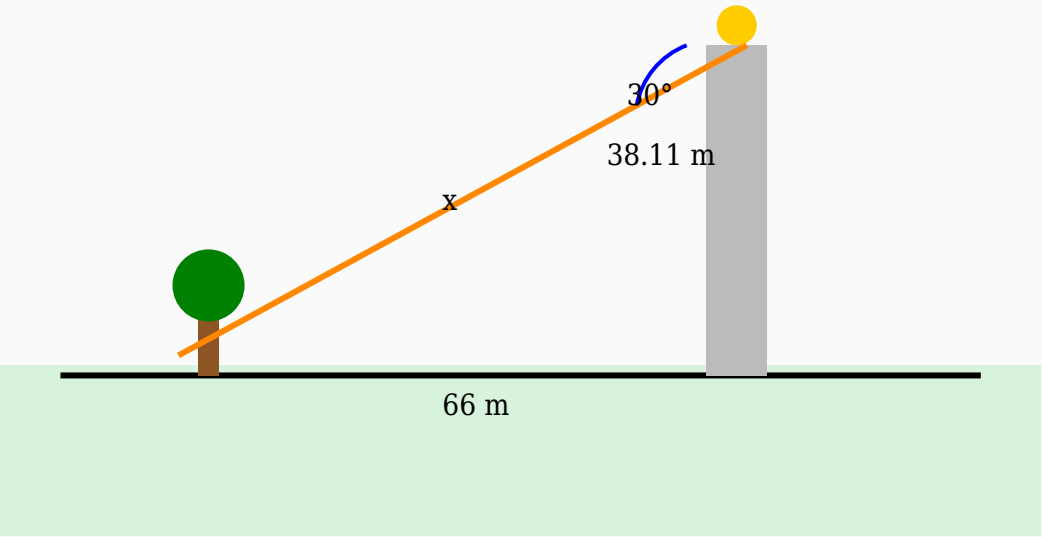
Height = 51 × 1.73

Height = 88.33 m

Answer: 88.33 m

Question 3

A photographer standing on a balcony observes a river at an angle of depression of 30°. If the horizontal distance is 66 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 30° = 66 / Hypotenuse

0.87 = 66 / Hypotenuse

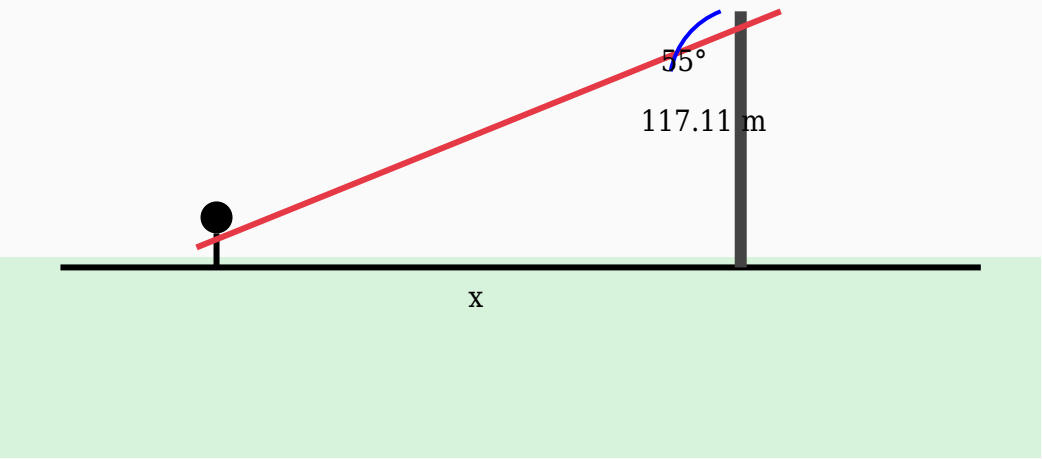
Hypotenuse = 66 / 0.87

Hypotenuse = 75.86 m

Answer: 75.86 m

Question 4

A car is seen from the top of a balcony at an angle of depression of 55°. Determine the distance between the car and the base if the height is 117.11 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 117.11 / Distance

1.43 = 117.11 / Distance

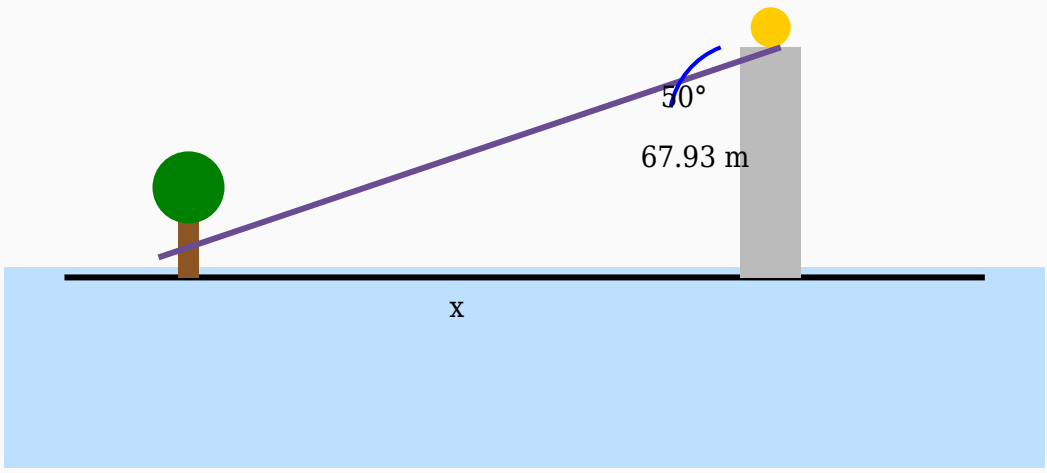
Distance = 117.11 / 1.43

Distance = 81.9 m

Answer: 81.9 m

Question 5

A tourist standing on a hill observes a boat at an angle of depression of 50°. If the height of the hill is 67.93 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = 67.93 / Distance

1.19 = 67.93 / Distance

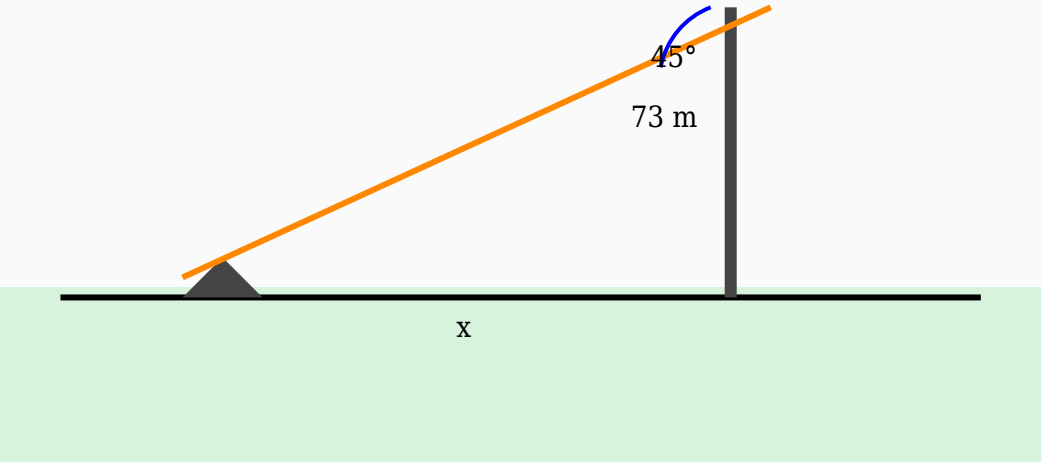
Distance = 67.93 / 1.19

Distance = 57.08 m

Answer: 57.08 m

Question 6

A photographer standing on a tower observes a truck 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

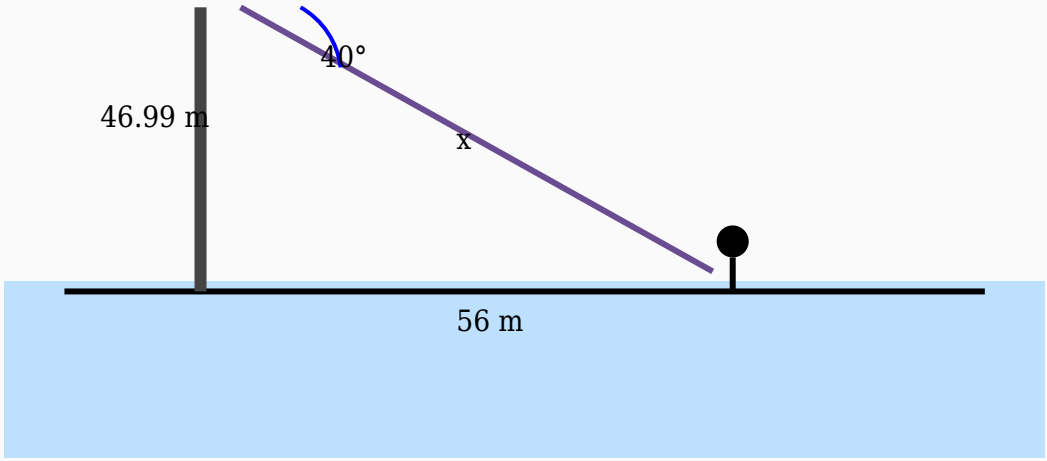
Distance = 73 / 1

Distance = 73 m

Answer: 73 m

Question 7

A surveyor standing on a lighthouse observes a river 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

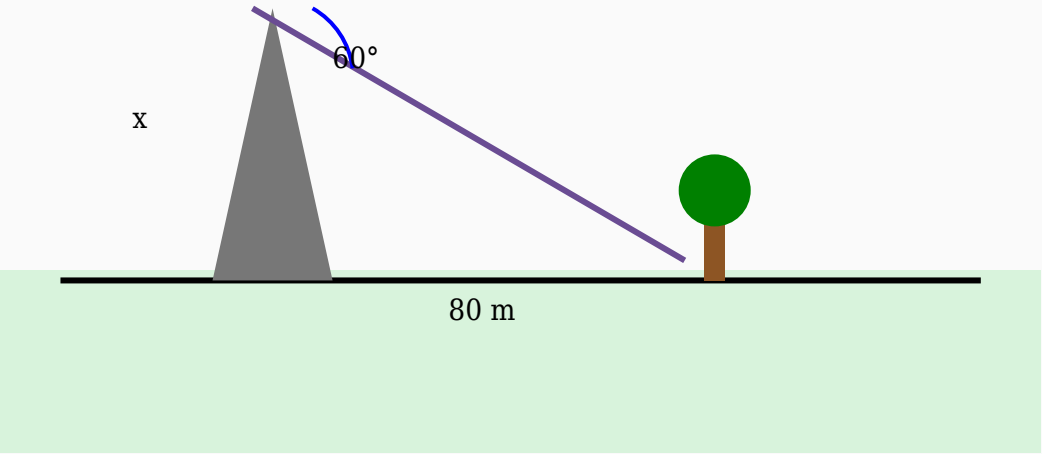
Hypotenuse = 56 / 0.77

Hypotenuse = 72.73 m

Answer: 72.73 m

Question 8

A girl looks down from a tower and notices a house at an angle of depression of 60°. Determine the height of the tower if the horizontal distance is 80 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = Height / 80

1.73 = Height / 80

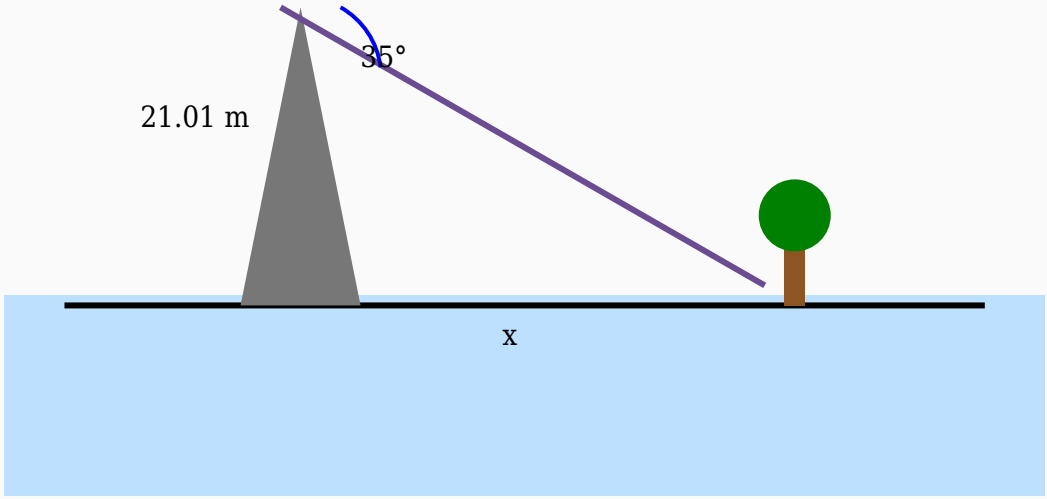
Height = 80 × 1.73

Height = 138.56 m

Answer: 138.56 m

Question 9

A sailor standing on a hill observes a road at an angle of depression of 35°. If the height of the hill is 21.01 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = 21.01 / Distance

0.7 = 21.01 / Distance

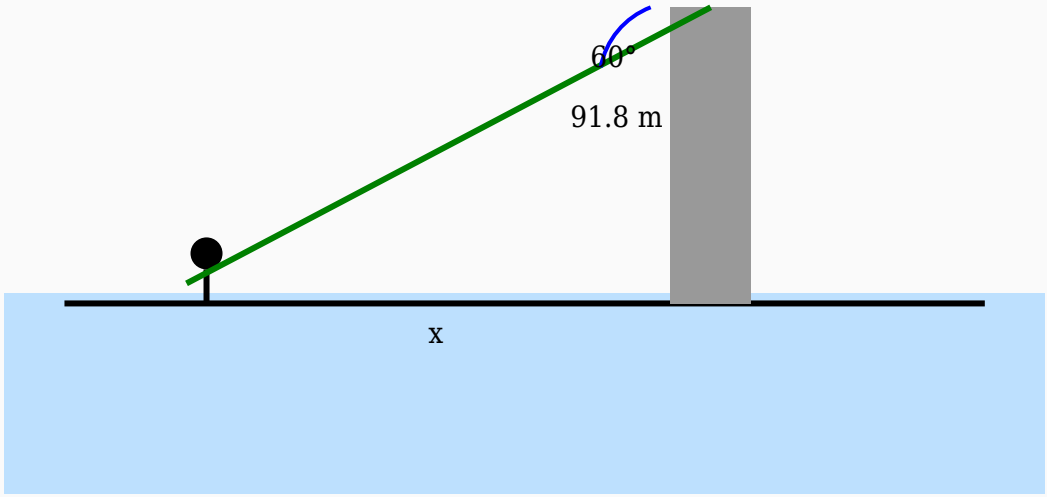
Distance = 21.01 / 0.7

Distance = 30.01 m

Answer: 30.01 m

Question 10

A surveyor standing on a hill observes a bus at an angle of depression of 60°. If the height of the hill is 91.8 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 91.8 / Distance

1.73 = 91.8 / Distance

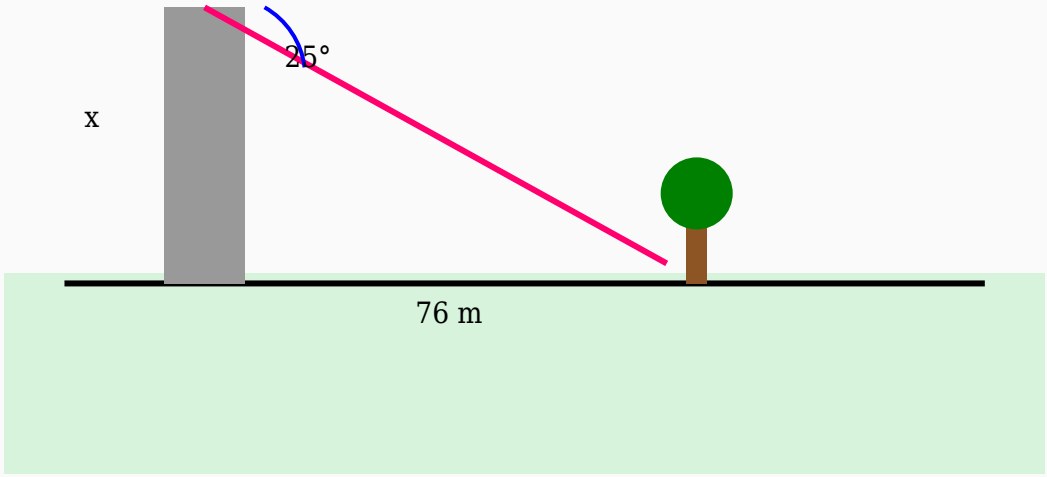
Distance = 91.8 / 1.73

Distance = 53.06 m

Answer: 53.06 m

Question 11

A student standing on a building observes a ship at an angle of depression of 25°. If the horizontal distance is 76 m, find the height of the building.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = Height / 76

0.47 = Height / 76

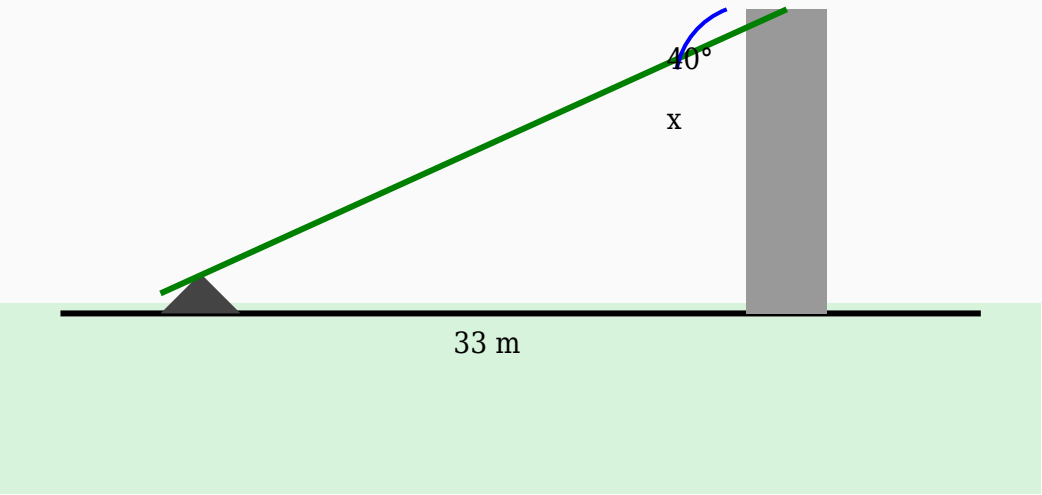
Height = 76 × 0.47

Height = 35.44 m

Answer: 35.44 m

Question 12

The angle of depression from the top of a bridge to a road is 40°. If the road is 33 m away horizontally, calculate the height of the bridge.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 40° = Height / 33

0.84 = Height / 33

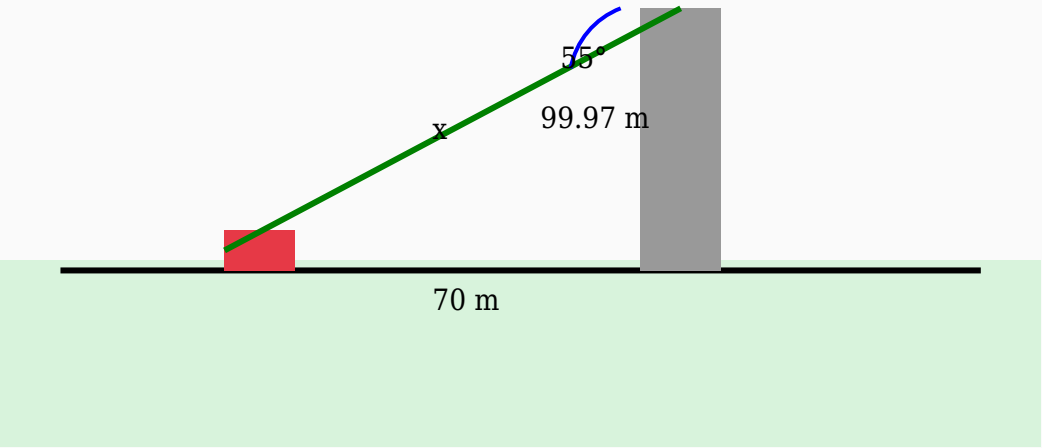
Height = 33 × 0.84

Height = 27.69 m

Answer: 27.69 m

Question 13

A river is viewed from the top of a bridge at an angle of depression of 55°. Find the line of sight if the horizontal distance is 70 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 55° = 70 / Hypotenuse

0.57 = 70 / Hypotenuse

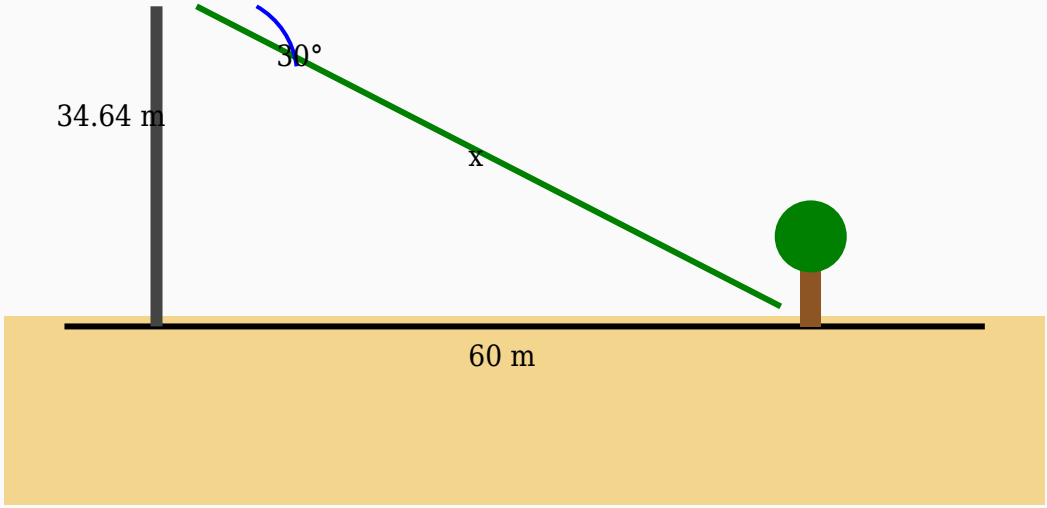
Hypotenuse = 70 / 0.57

Hypotenuse = 122.81 m

Answer: 122.81 m

Question 14

An observer standing on a balcony observes a road at an angle of depression of 30°. If the horizontal distance is 60 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 30° = 60 / Hypotenuse

0.87 = 60 / Hypotenuse

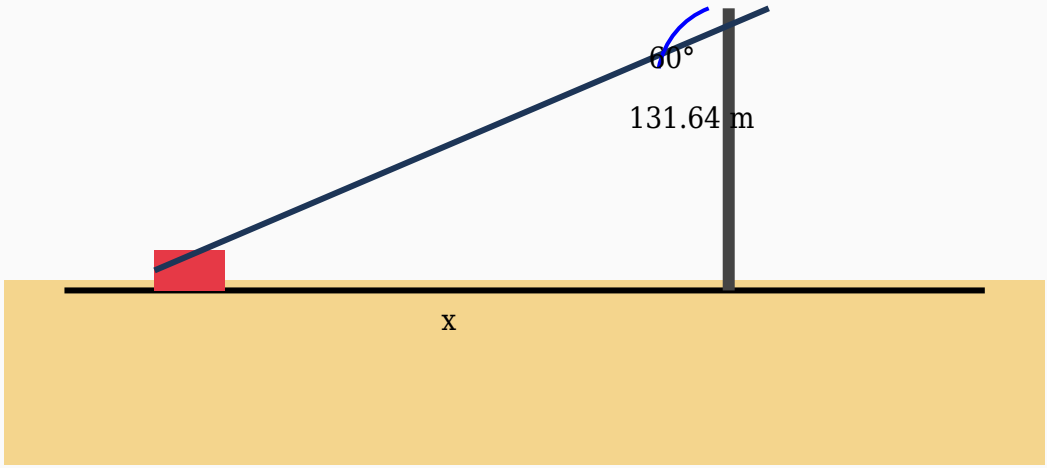
Hypotenuse = 60 / 0.87

Hypotenuse = 68.97 m

Answer: 68.97 m

Question 15

A student standing on a balcony observes a house at an angle of depression of 60°. If the height of the balcony is 131.64 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 131.64 / Distance

1.73 = 131.64 / Distance

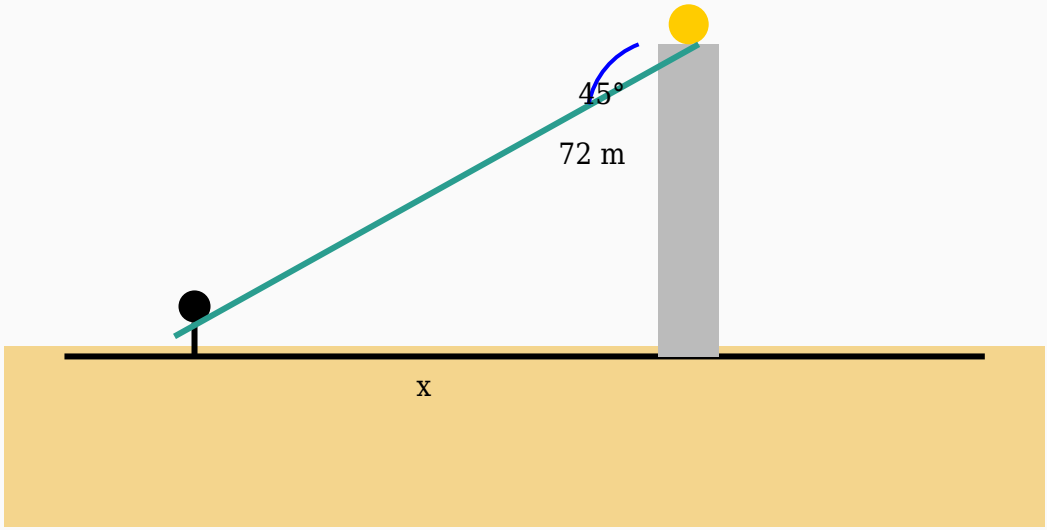
Distance = 131.64 / 1.73

Distance = 76.09 m

Answer: 76.09 m

Question 16

A man standing on a lighthouse observes a tree at an angle of depression of 45°. If the height of the lighthouse is 72 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = 72 / Distance

1 = 72 / Distance

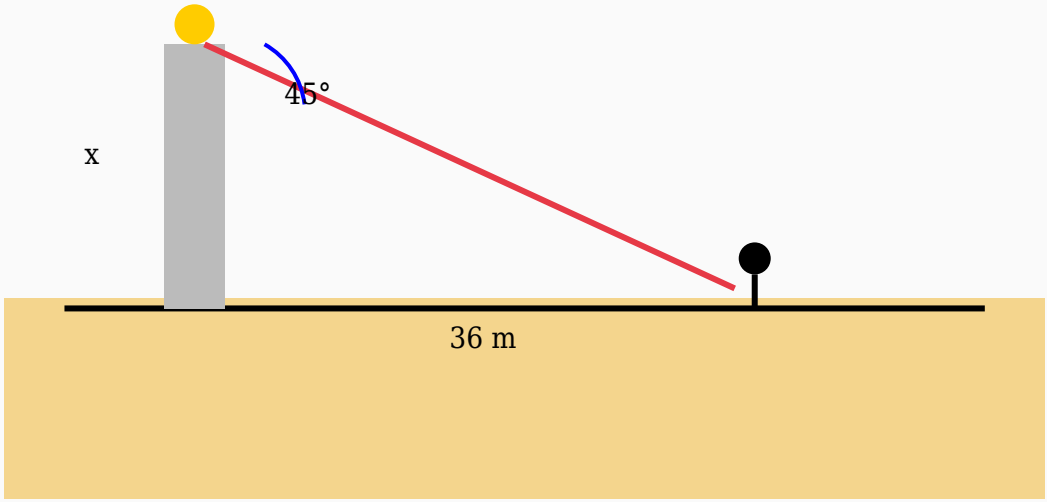
Distance = 72 / 1

Distance = 72 m

Answer: 72 m

Question 17

A surveyor standing on a hill observes a person at an angle of depression of 45°. If the horizontal distance is 36 m, find the height of the hill.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = Height / 36

1 = Height / 36

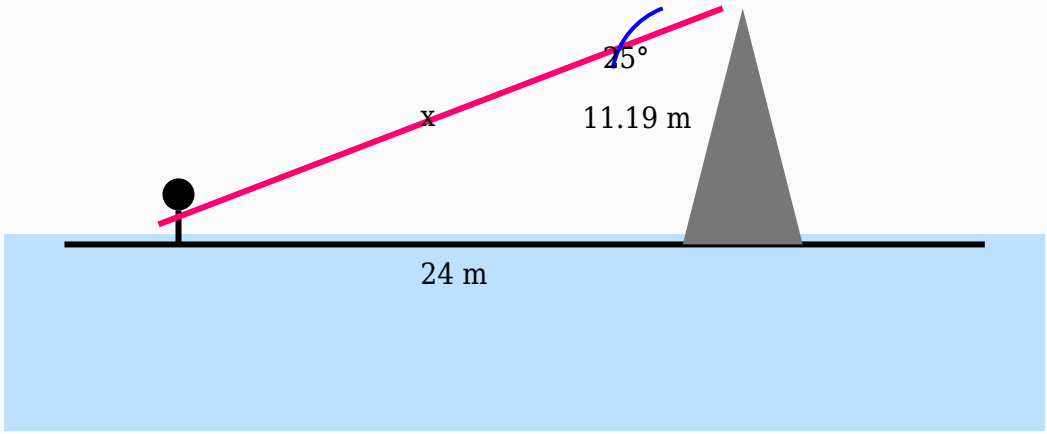
Height = 36 × 1

Height = 36 m

Answer: 36 m

Question 18

A sailor standing on a lighthouse observes a ship at an angle of depression of 25°. If the horizontal distance is 24 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 25° = 24 / Hypotenuse

0.91 = 24 / Hypotenuse

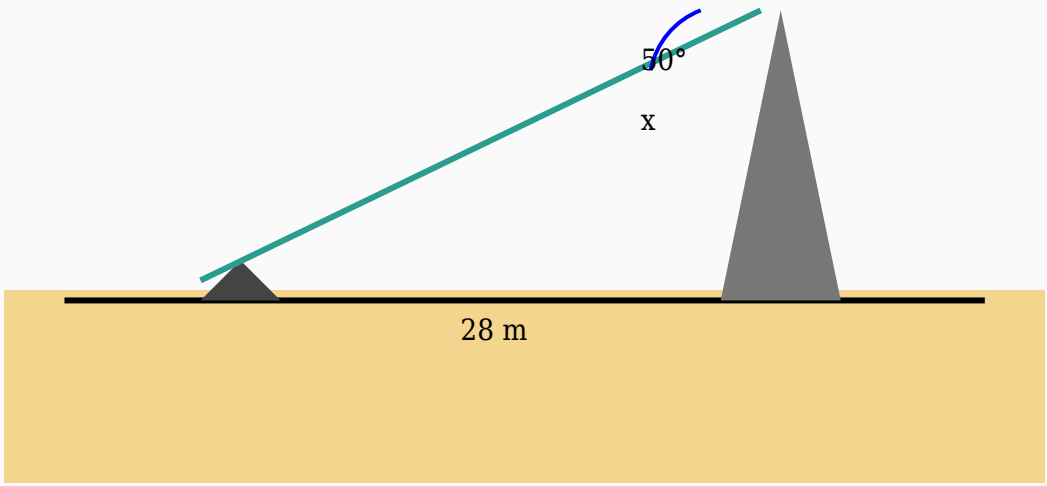
Hypotenuse = 24 / 0.91

Hypotenuse = 26.37 m

Answer: 26.37 m

Question 19

The angle of depression from the top of a lighthouse to a tree is 50°. If the tree is 28 m away horizontally, calculate the height of the lighthouse.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = Height / 28

1.19 = Height / 28

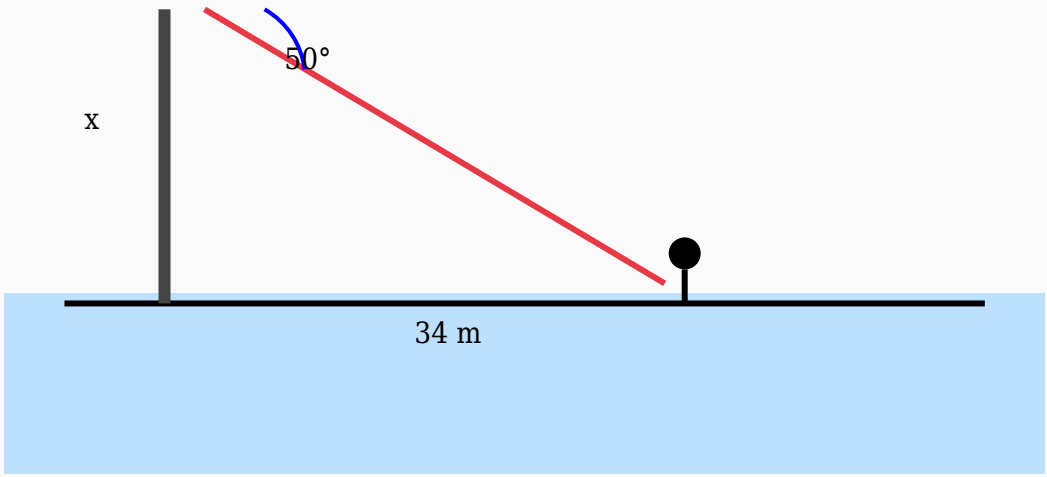
Height = 28 × 1.19

Height = 33.37 m

Answer: 33.37 m

Question 20

A tourist standing on a bridge observes a bus at an angle of depression of 50°. If the horizontal distance is 34 m, find the height of the bridge.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = Height / 34

1.19 = Height / 34

Height = 34 × 1.19

Height = 40.52 m

Answer: 40.52 m