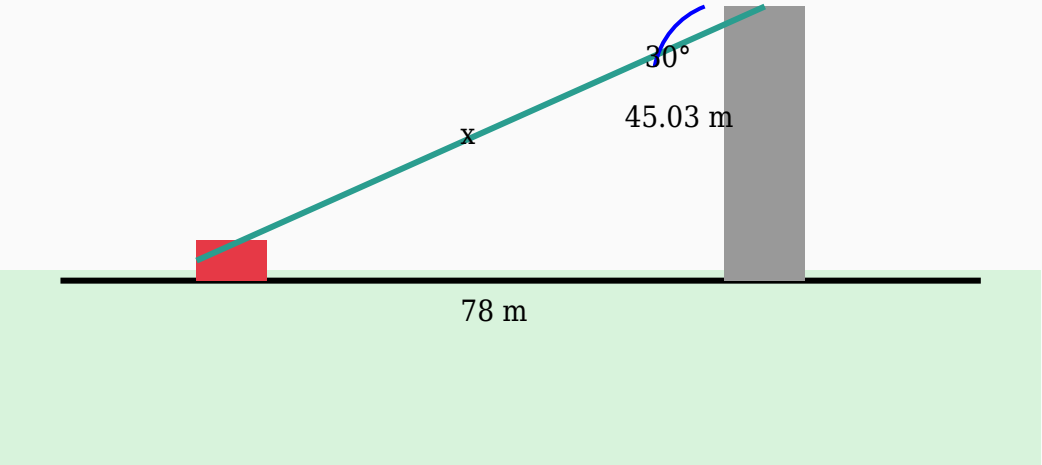
Angle of Depression Solved Worksheet

Question 1

The angle of depression from a stadium to a ship is 30°. If the ship is 78 m away horizontally, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 30° = 78 / Hypotenuse

0.87 = 78 / Hypotenuse

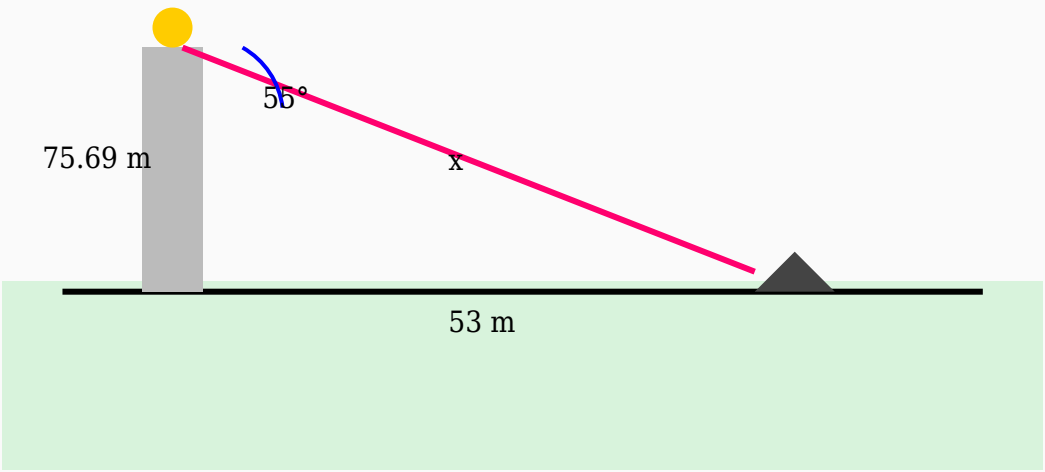
Hypotenuse = 78 / 0.87

Hypotenuse = 89.66 m

Answer: 89.66 m

Question 2

A photographer standing on a bridge observes a river at an angle of depression of 55°. If the horizontal distance is 53 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 55° = 53 / Hypotenuse

0.57 = 53 / Hypotenuse

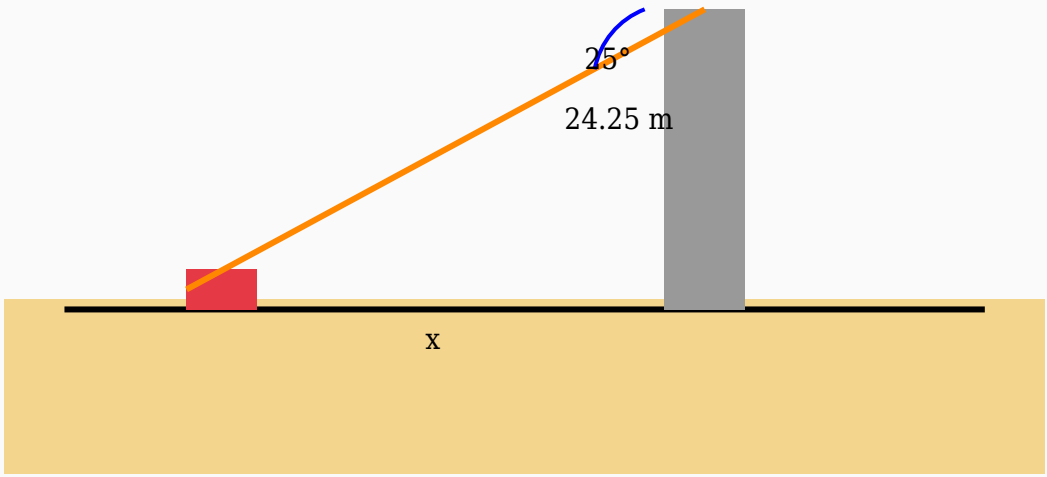
Hypotenuse = 53 / 0.57

Hypotenuse = 92.98 m

Answer: 92.98 m

Question 3

The angle of depression from a hill to a truck is 25°. Calculate the horizontal distance if the height of the hill is 24.25 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 24.25 / Distance

0.47 = 24.25 / Distance

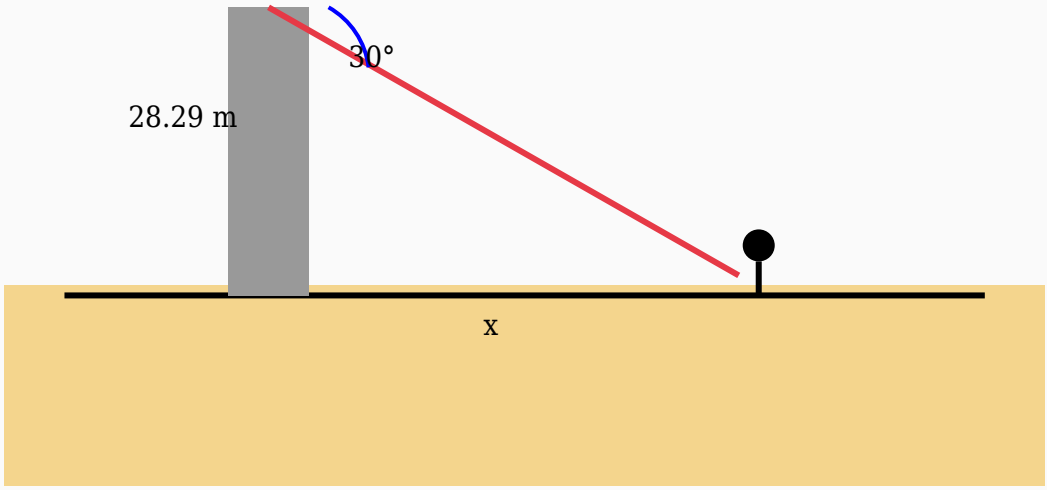
Distance = 24.25 / 0.47

Distance = 51.6 m

Answer: 51.6 m

Question 4

The angle of depression from a tower to a truck is 30°. Calculate the horizontal distance if the height of the tower is 28.29 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 28.29 / Distance

0.58 = 28.29 / Distance

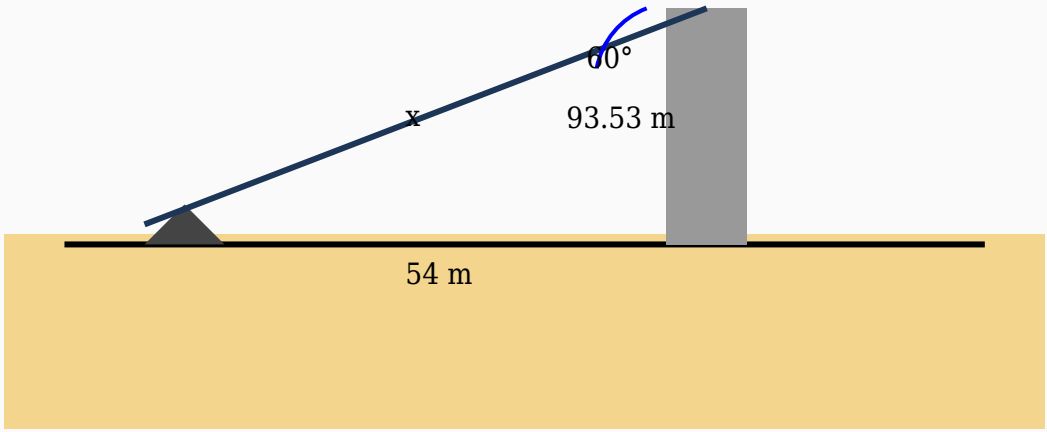
Distance = 28.29 / 0.58

Distance = 48.78 m

Answer: 48.78 m

Question 5

A sailor standing on a stadium observes a person at an angle of depression of 60°. If the horizontal distance is 54 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 54 / Hypotenuse

0.5 = 54 / Hypotenuse

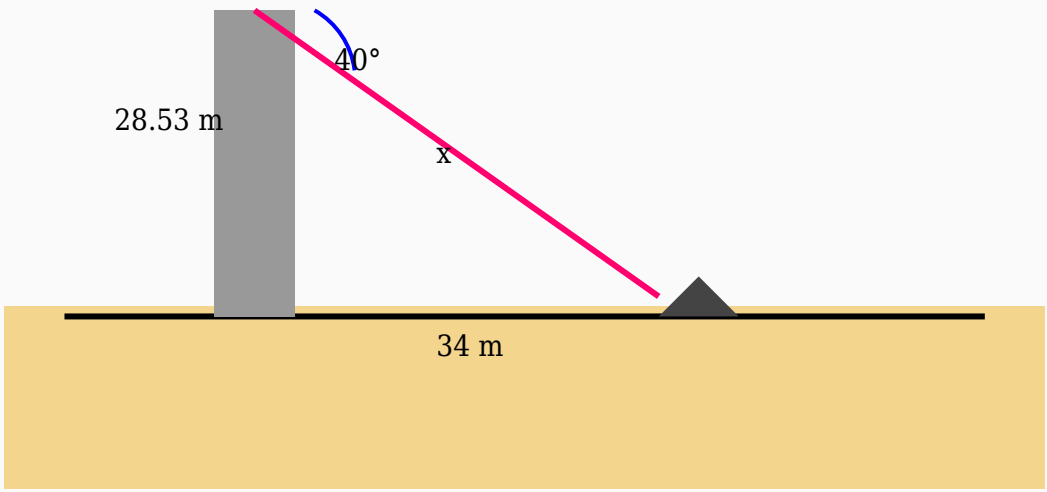
Hypotenuse = 54 / 0.5

Hypotenuse = 108 m

Answer: 108 m

Question 6

A man standing on a mountain observes a bus at an angle of depression of 40°. If the horizontal distance is 34 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 40° = 34 / Hypotenuse

0.77 = 34 / Hypotenuse

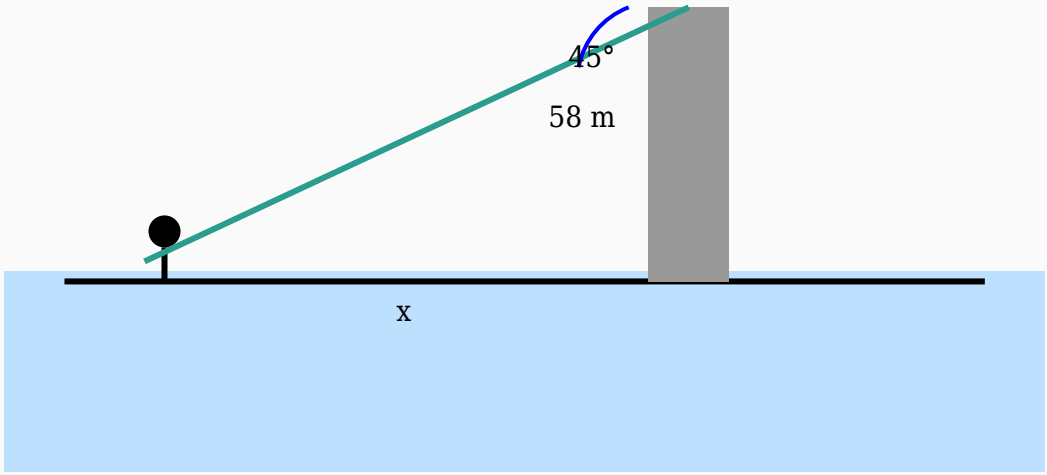
Hypotenuse = 34 / 0.77

Hypotenuse = 44.16 m

Answer: 44.16 m

Question 7

A truck is seen from the top of a stadium at an angle of depression of 45°. Determine the distance between the truck and the base if the height is 58 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = 58 / Distance

1 = 58 / Distance

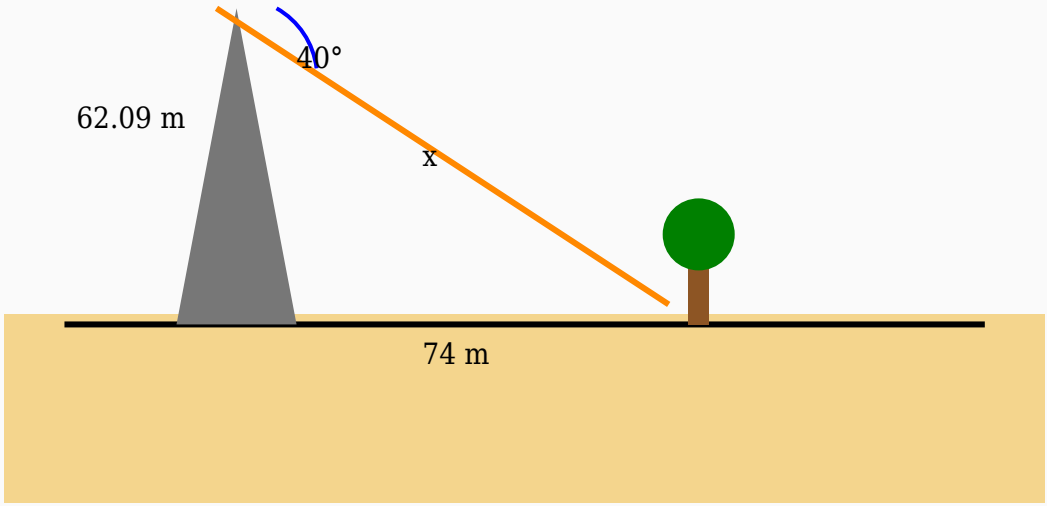
Distance = 58 / 1

Distance = 58 m

Answer: 58 m

Question 8

A road is viewed from the top of a watch tower at an angle of depression of 40°. Find the line of sight if the horizontal distance is 74 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 40° = 74 / Hypotenuse

0.77 = 74 / Hypotenuse

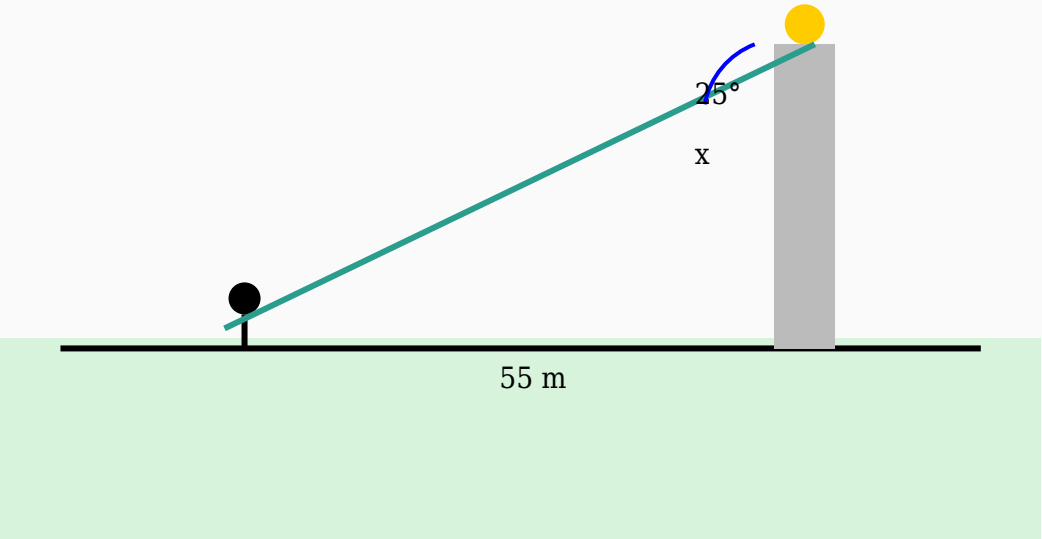
Hypotenuse = 74 / 0.77

Hypotenuse = 96.1 m

Answer: 96.1 m

Question 9

The angle of depression from the top of a stadium to a truck is 25°. If the truck is 55 m away horizontally, calculate the height of the stadium.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = Height / 55

0.47 = Height / 55

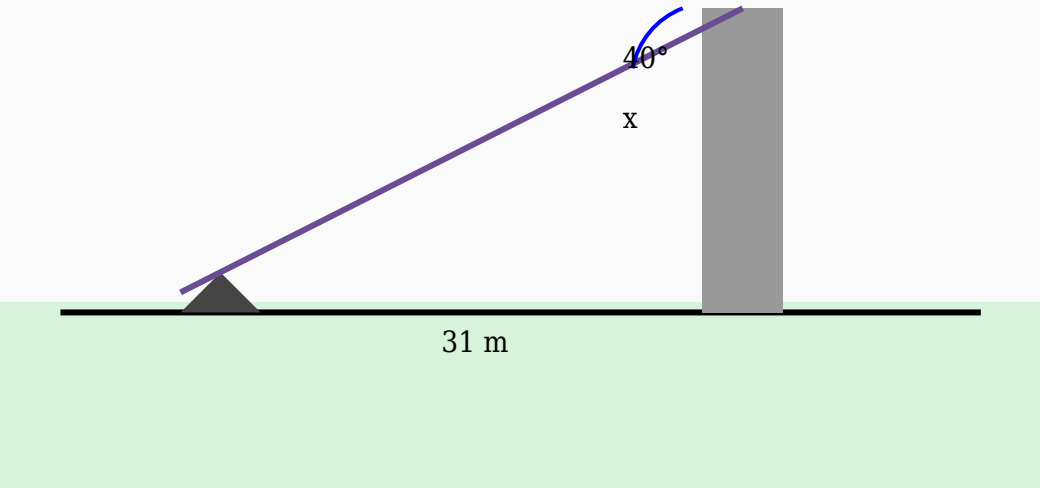
Height = 55 × 0.47

Height = 25.65 m

Answer: 25.65 m

Question 10

The angle of depression from the top of a lighthouse to a person is 40°. If the person is 31 m away horizontally, calculate the height of the lighthouse.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 40° = Height / 31

0.84 = Height / 31

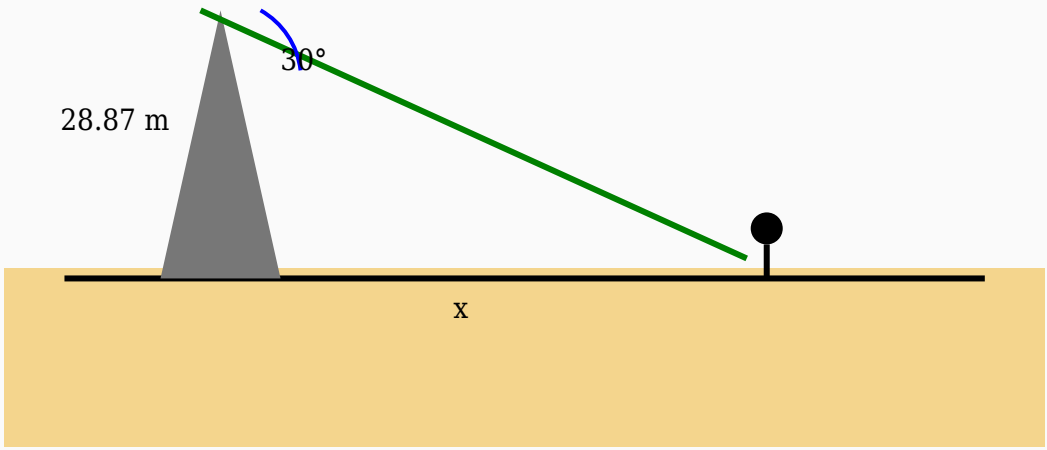
Height = 31 × 0.84

Height = 26.01 m

Answer: 26.01 m

Question 11

The angle of depression from a balcony to a person is 30°. Calculate the horizontal distance if the height of the balcony is 28.87 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 28.87 / Distance

0.58 = 28.87 / Distance

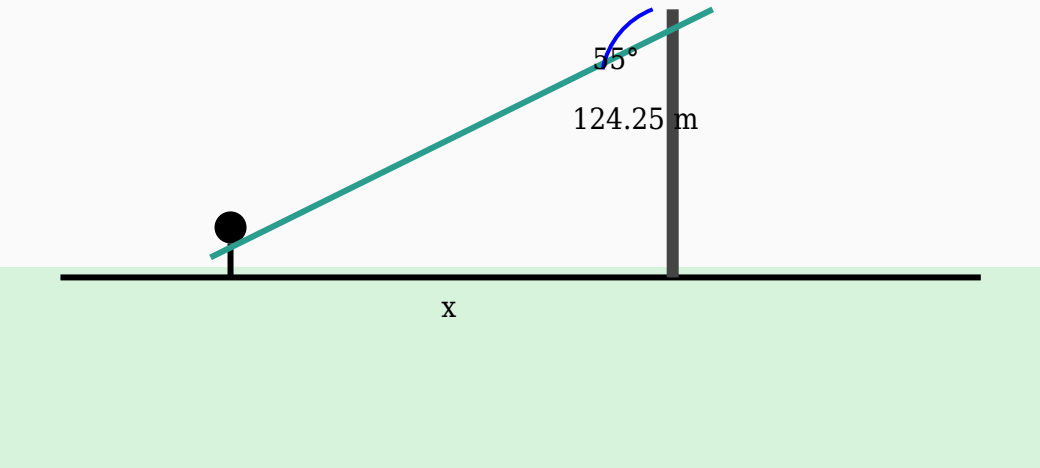
Distance = 28.87 / 0.58

Distance = 49.78 m

Answer: 49.78 m

Question 12

A tourist standing on a bridge observes a bus at an angle of depression of 55°. If the height of the bridge is 124.25 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 124.25 / Distance

1.43 = 124.25 / Distance

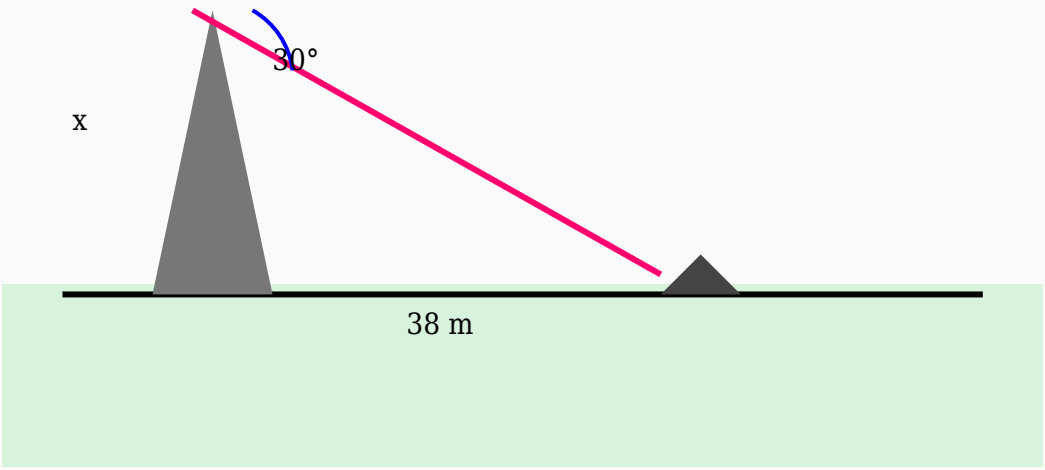
Distance = 124.25 / 1.43

Distance = 86.89 m

Answer: 86.89 m

Question 13

The angle of depression from the top of a hill to a ship is 30°. If the ship is 38 m away horizontally, calculate the height of the hill.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = Height / 38

0.58 = Height / 38

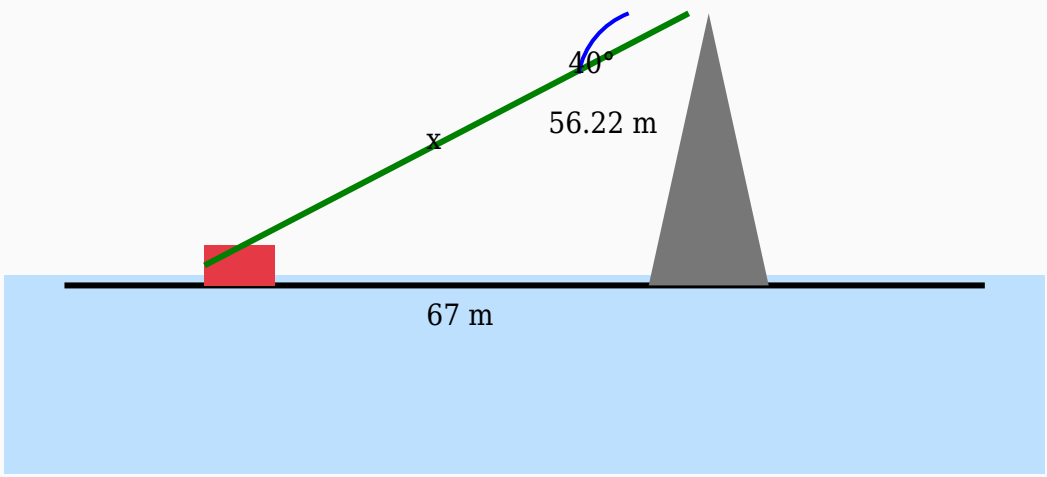
Height = 38 × 0.58

Height = 21.94 m

Answer: 21.94 m

Question 14

A road is viewed from the top of a mountain at an angle of depression of 40°. Find the line of sight if the horizontal distance is 67 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 40° = 67 / Hypotenuse

0.77 = 67 / Hypotenuse

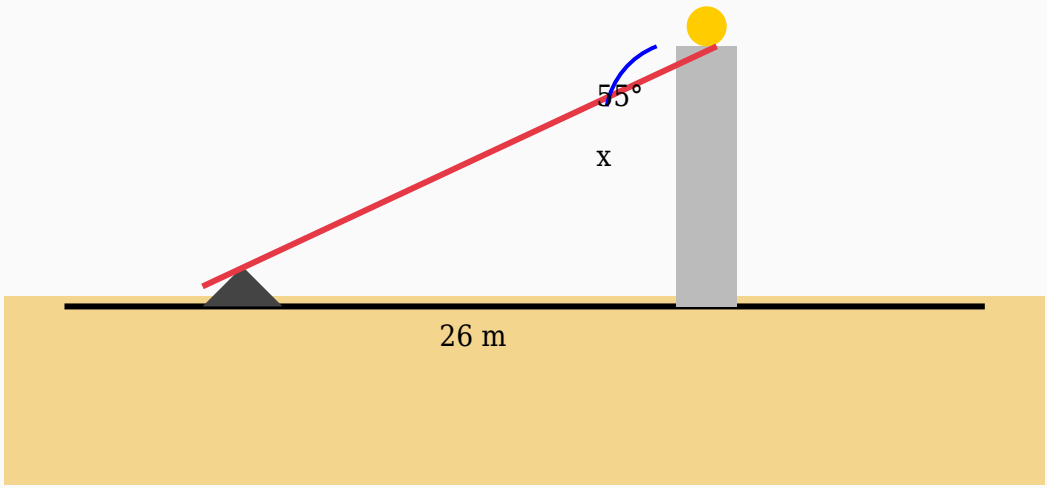
Hypotenuse = 67 / 0.77

Hypotenuse = 87.01 m

Answer: 87.01 m

Question 15

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



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 26

1.43 = Height / 26

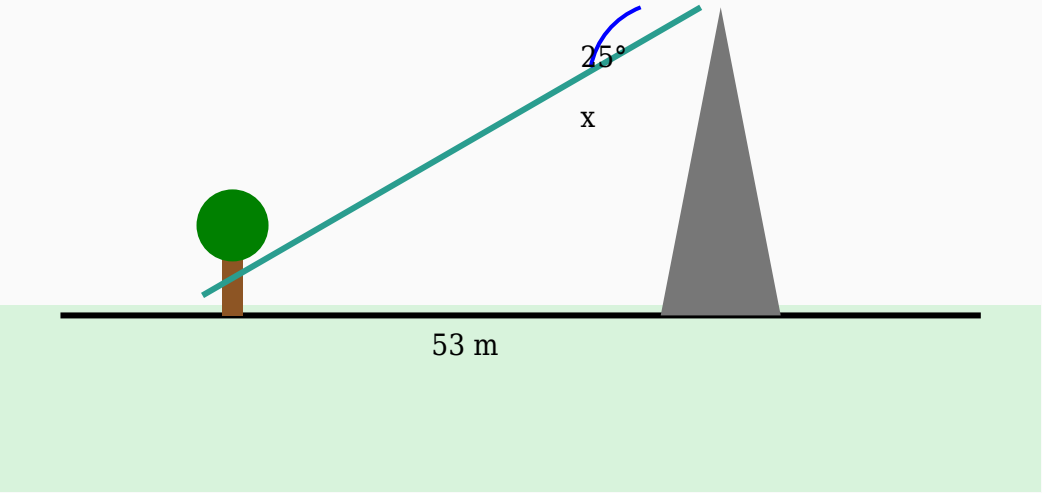
Height = 26 × 1.43

Height = 37.13 m

Answer: 37.13 m

Question 16

An observer looks down from a cliff and notices a truck at an angle of depression of 25°. Determine the height of the cliff if the horizontal distance is 53 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = Height / 53

0.47 = Height / 53

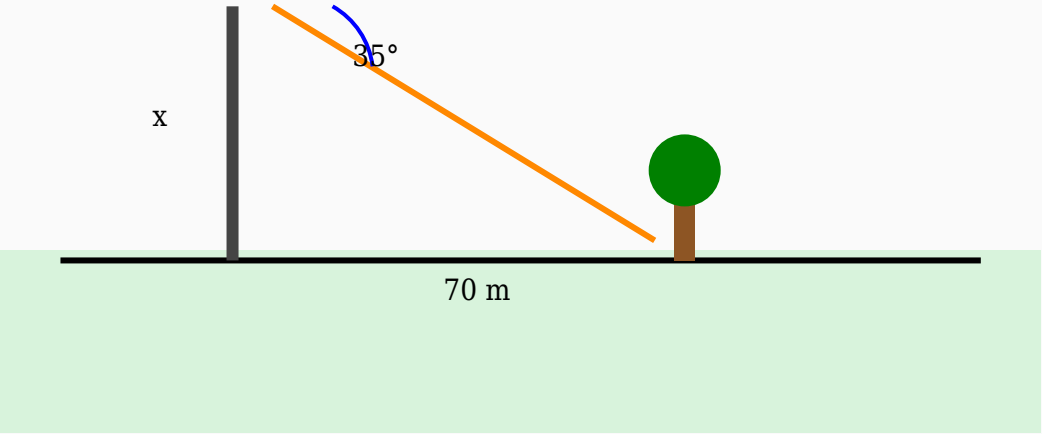
Height = 53 × 0.47

Height = 24.71 m

Answer: 24.71 m

Question 17

A tourist standing on a balcony observes a tree at an angle of depression of 35°. If the horizontal distance is 70 m, find the height of the balcony.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 70

0.7 = Height / 70

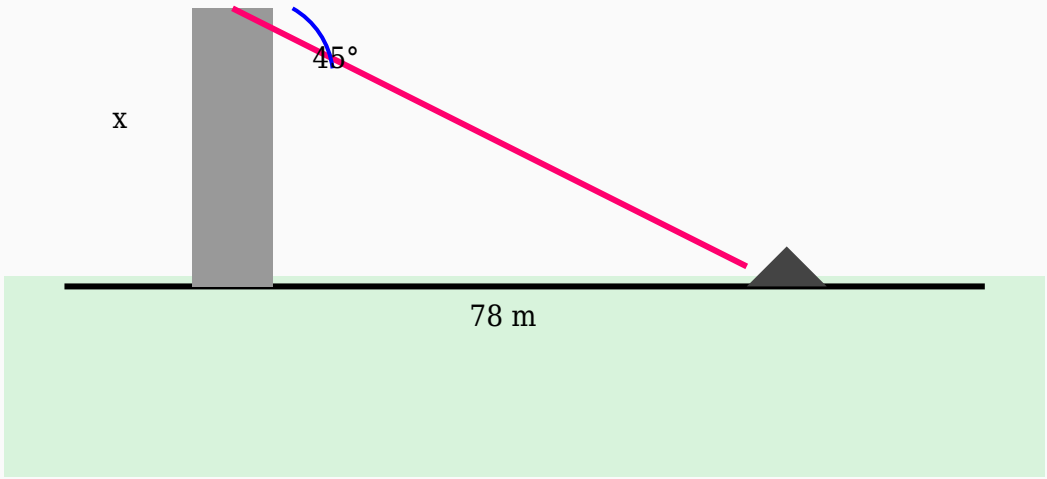
Height = 70 × 0.7

Height = 49.01 m

Answer: 49.01 m

Question 18

A student looks down from a bridge and notices a river at an angle of depression of 45°. Determine the height of the bridge if the horizontal distance is 78 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = Height / 78

1 = Height / 78

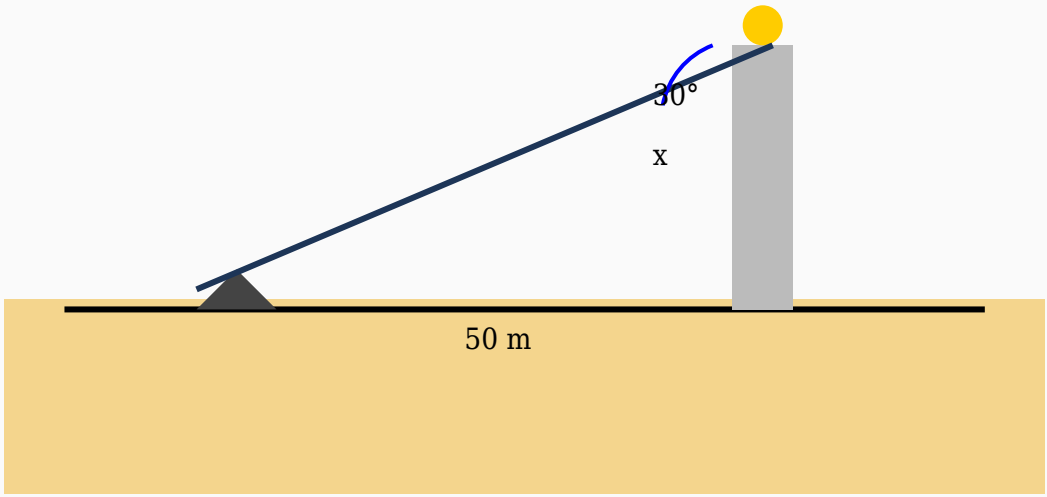
Height = 78 × 1

Height = 78 m

Answer: 78 m

Question 19

The angle of depression from the top of a cliff to a house is 30°. If the house is 50 m away horizontally, calculate the height of the cliff.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = Height / 50

0.58 = Height / 50

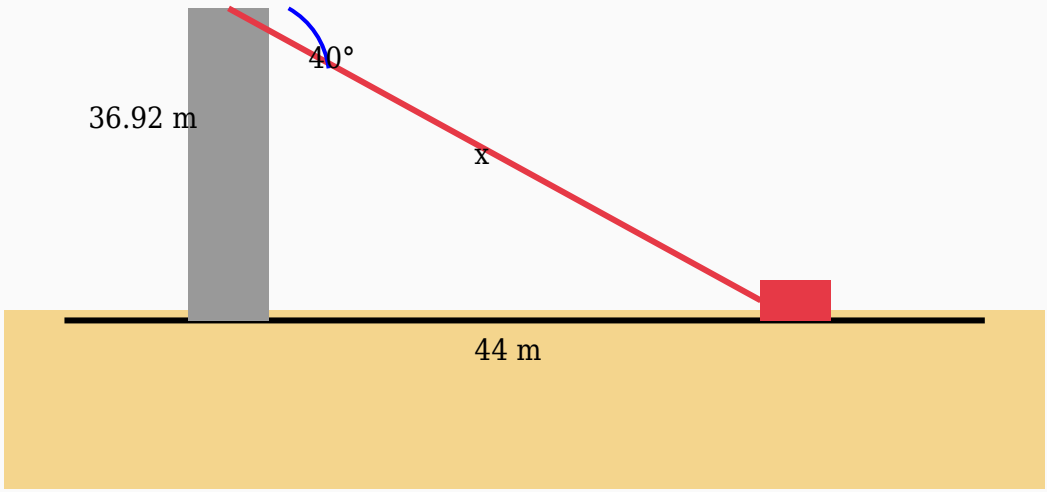
Height = 50 × 0.58

Height = 28.87 m

Answer: 28.87 m

Question 20

A girl standing on a watch tower observes a house at an angle of depression of 40°. If the horizontal distance is 44 m, find the line of sight distance.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 40° = 44 / Hypotenuse

0.77 = 44 / Hypotenuse

Hypotenuse = 44 / 0.77

Hypotenuse = 57.14 m

Answer: 57.14 m