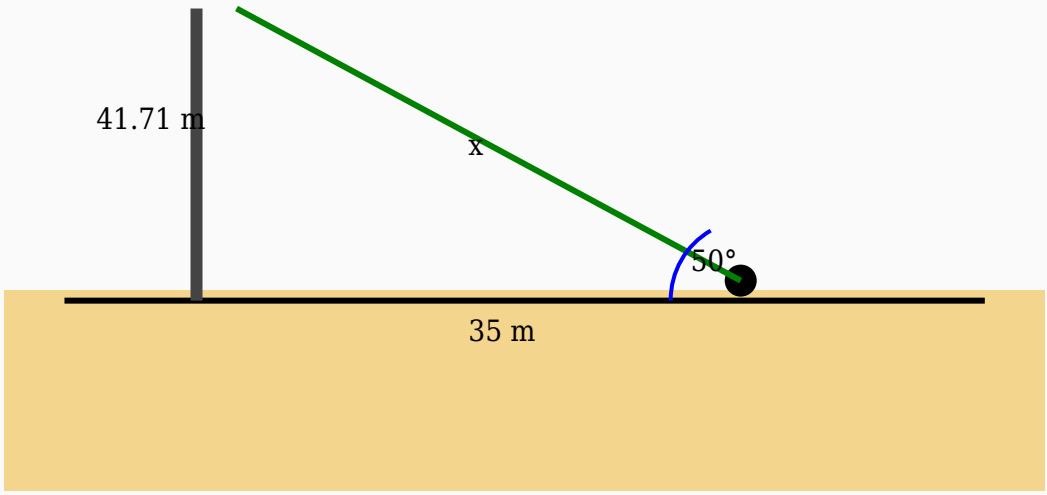
Angle of Elevation Solved Worksheet

Question 1

A person standing 35 m away from a flagpole observes its top at an angle of elevation of 50°. Find the line of sight.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 50° = 35 / Hypotenuse

0.64 = 35 / Hypotenuse

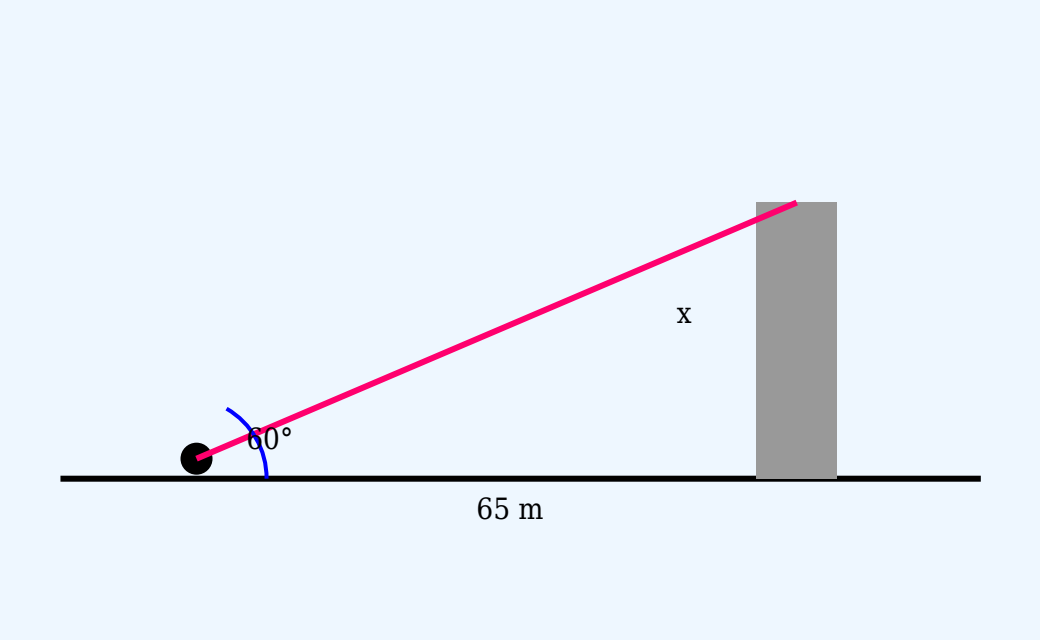
Hypotenuse = 35 / 0.64

Hypotenuse = 54.69 m

Answer: 54.69 m

Question 2

The angle of elevation of the top of a electric pole from a point on the ground is 60°. If the observer is 65 m away from the electric pole, calculate its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = Height / 65

1.73 = Height / 65

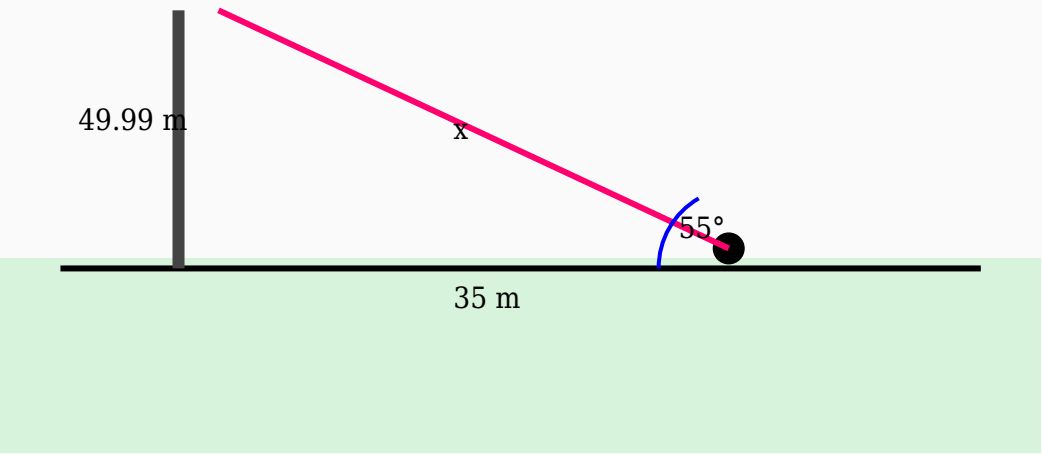
Height = 65 × 1.73

Height = 112.58 m

Answer: 112.58 m

Question 3

The angle of elevation to the top of a flagpole is 55°. If the observer is 35 m from the base, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 55° = 35 / Hypotenuse

0.57 = 35 / Hypotenuse

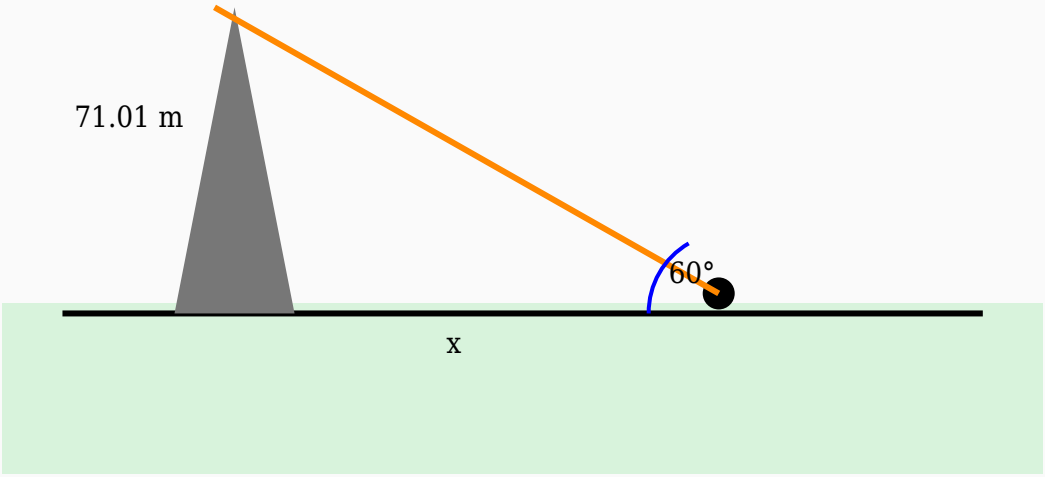
Hypotenuse = 35 / 0.57

Hypotenuse = 61.4 m

Answer: 61.4 m

Question 4

An observer observes the top of a lighthouse at an angle of elevation of 60°. If the height of the lighthouse is 71.01 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 71.01 / Distance

1.73 = 71.01 / Distance

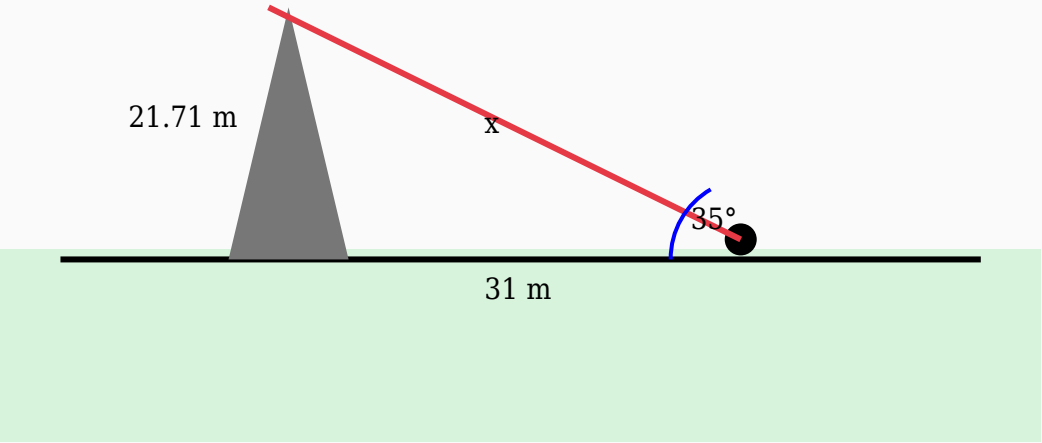
Distance = 71.01 / 1.73

Distance = 41.05 m

Answer: 41.05 m

Question 5

The angle of elevation to the top of a bridge is 35°. If the observer is 31 m from the base, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 35° = 31 / Hypotenuse

0.82 = 31 / Hypotenuse

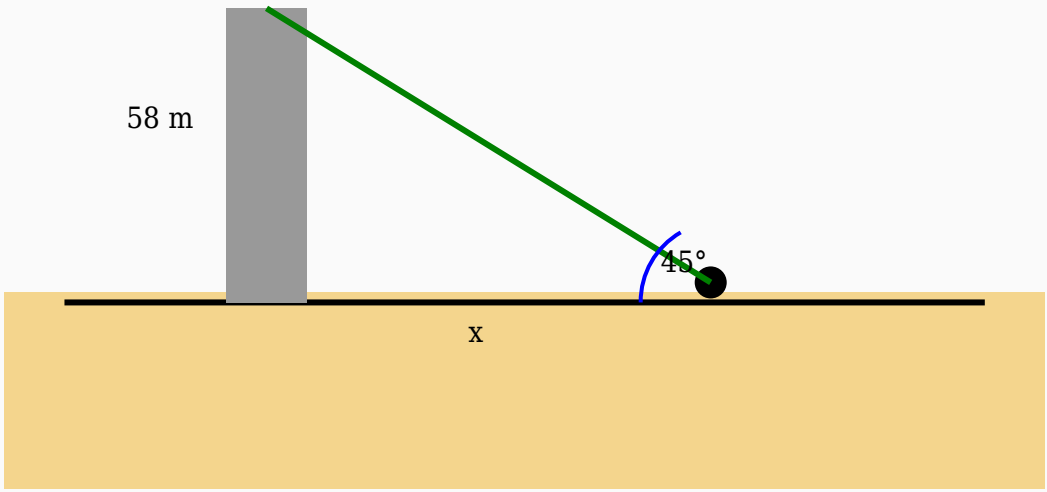
Hypotenuse = 31 / 0.82

Hypotenuse = 37.8 m

Answer: 37.8 m

Question 6

The height of a tree is 58 m. If the angle of elevation from a point on the ground is 45°, calculate the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = 58 / Distance

1 = 58 / Distance

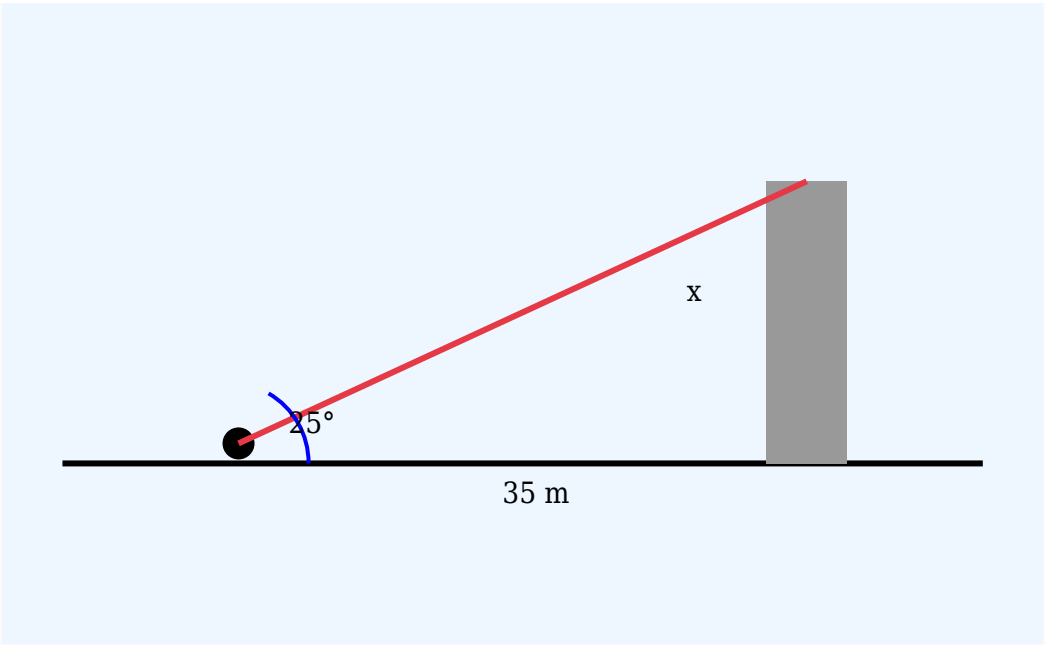
Distance = 58 / 1

Distance = 58 m

Answer: 58 m

Question 7

The angle of elevation of the top of a hill from a point on the ground is 25°. If the observer is 35 m away from the hill, calculate its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = Height / 35

0.47 = Height / 35

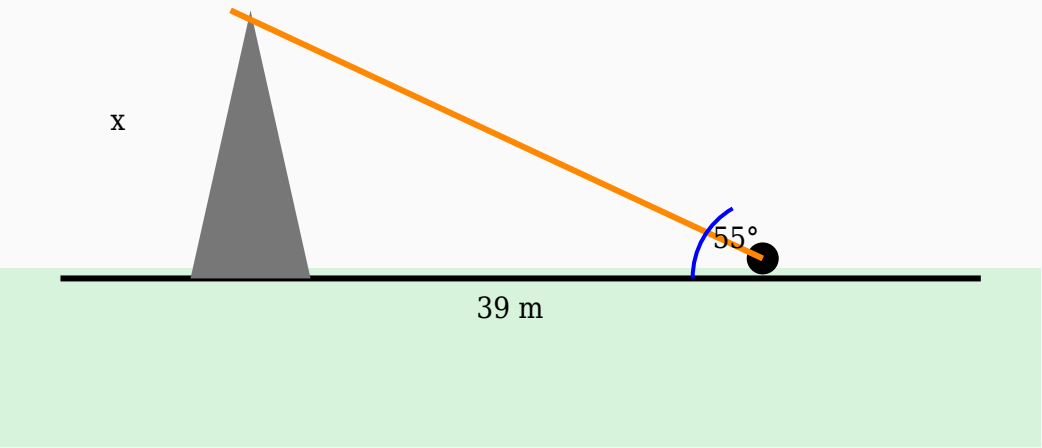
Height = 35 × 0.47

Height = 16.32 m

Answer: 16.32 m

Question 8

The angle of elevation of the top of a mobile tower from a point on the ground is 55°. If the observer is 39 m away from the mobile tower, calculate its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 39

1.43 = Height / 39

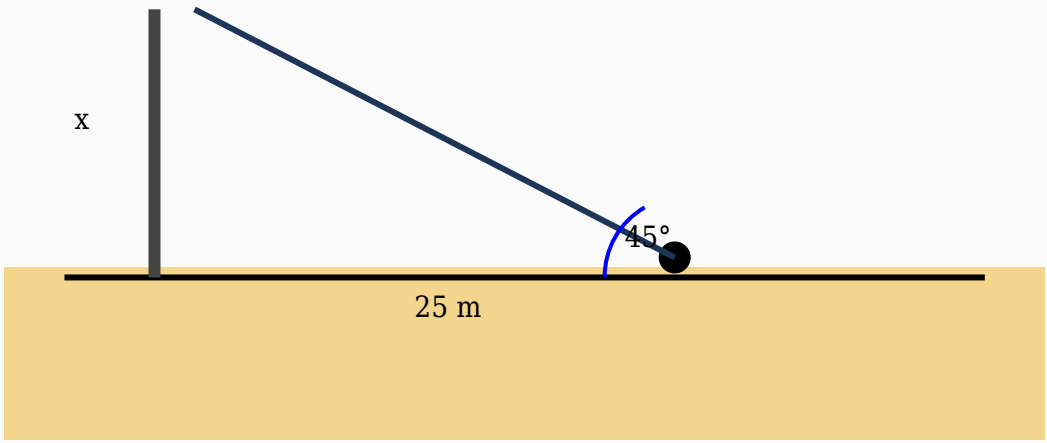
Height = 39 × 1.43

Height = 55.7 m

Answer: 55.7 m

Question 9

A person measures the angle of elevation to the top of a mobile tower as 45°. If the distance from the mobile tower is 25 m, determine its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 45° = Height / 25

1 = Height / 25

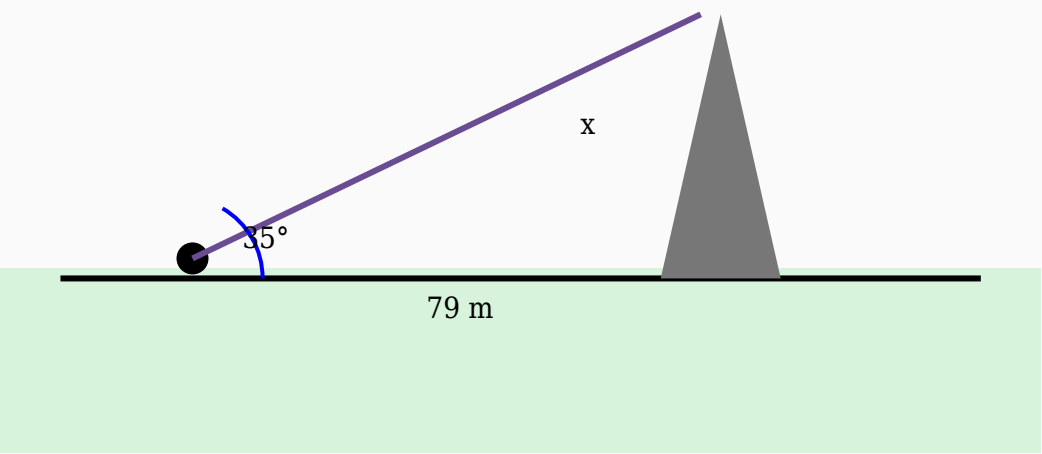
Height = 25 × 1

Height = 25 m

Answer: 25 m

Question 10

A person measures the angle of elevation to the top of a electric pole as 35°. If the distance from the electric pole is 79 m, determine its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 79

0.7 = Height / 79

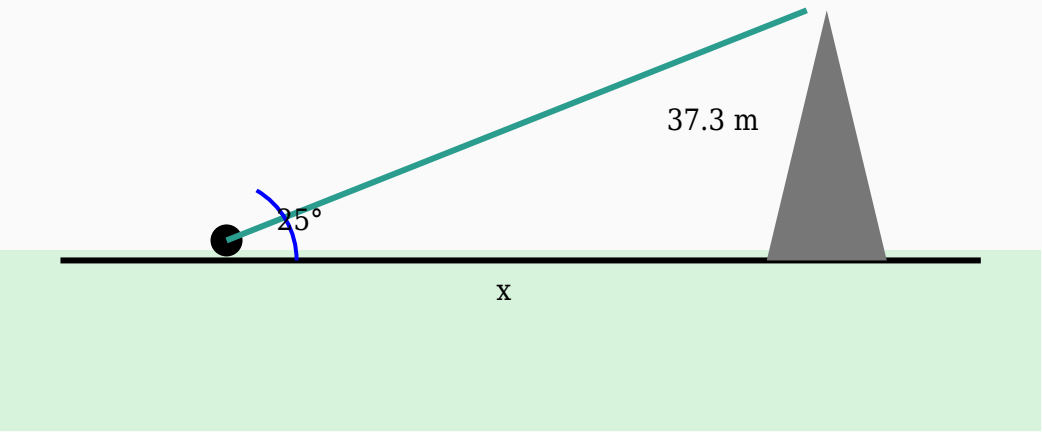
Height = 79 × 0.7

Height = 55.32 m

Answer: 55.32 m

Question 11

An observer observes the top of a building at an angle of elevation of 25°. If the height of the building is 37.3 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 37.3 / Distance

0.47 = 37.3 / Distance

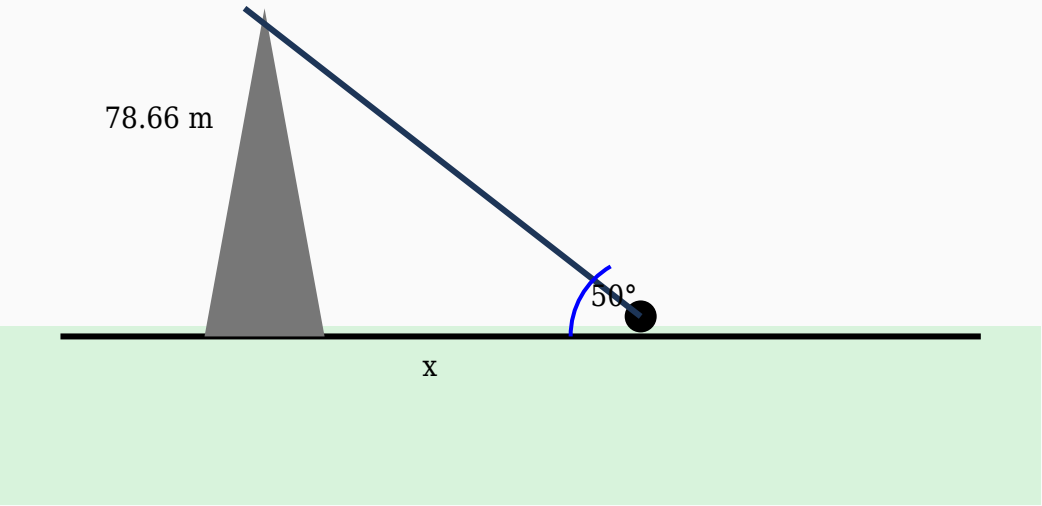
Distance = 37.3 / 0.47

Distance = 79.36 m

Answer: 79.36 m

Question 12

A surveyor notices the top of a mountain at an angle of elevation of 50°. Determine the horizontal distance if the height of the mountain is 78.66 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = 78.66 / Distance

1.19 = 78.66 / Distance

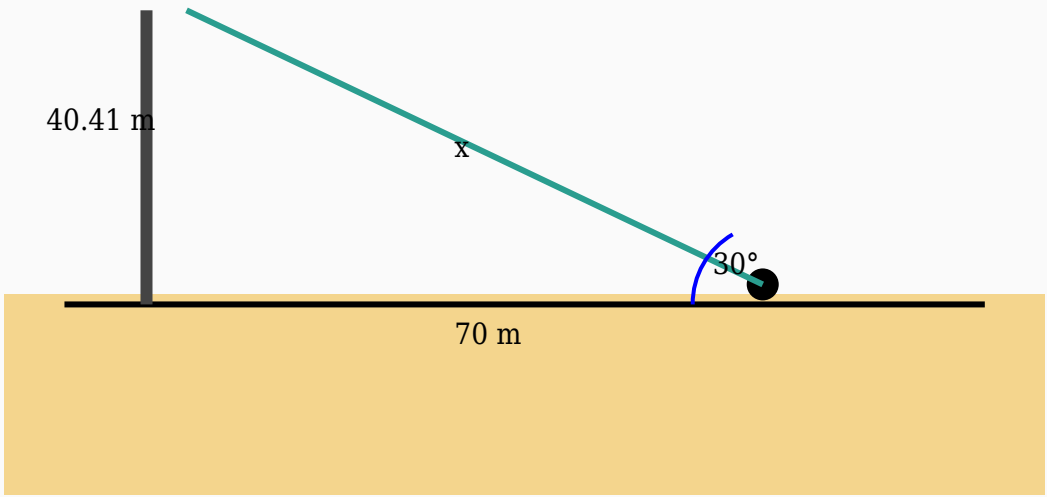
Distance = 78.66 / 1.19

Distance = 66.1 m

Answer: 66.1 m

Question 13

A person standing 70 m away from a mobile tower observes its top at an angle of elevation of 30°. Find the line of sight.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 30° = 70 / Hypotenuse

0.87 = 70 / Hypotenuse

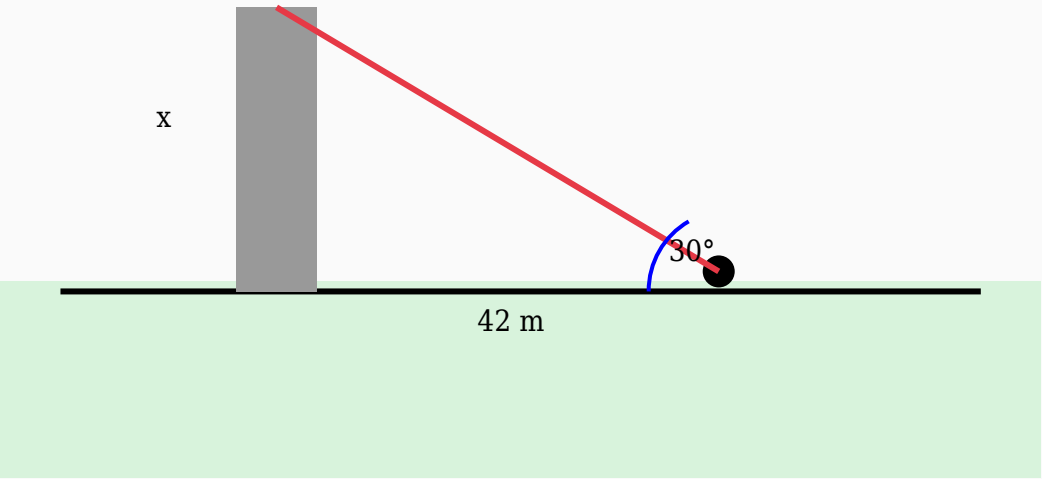
Hypotenuse = 70 / 0.87

Hypotenuse = 80.46 m

Answer: 80.46 m

Question 14

A woman looks at the top of a crane at an angle of elevation of 30°. Find the height of the crane if the distance from the base is 42 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = Height / 42

0.58 = Height / 42

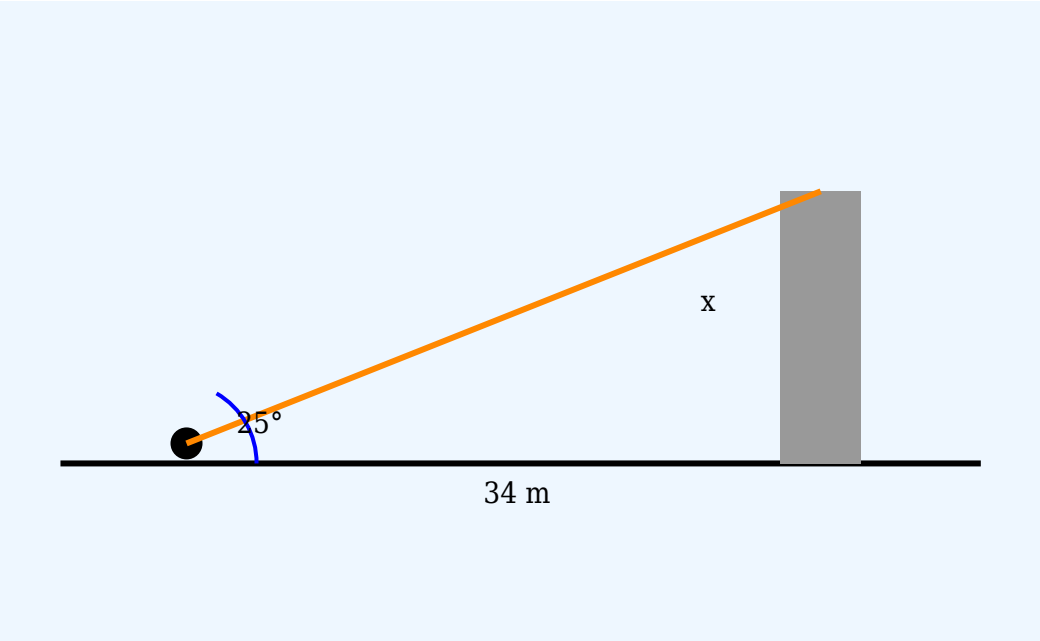
Height = 42 × 0.58

Height = 24.25 m

Answer: 24.25 m

Question 15

A person measures the angle of elevation to the top of a stadium light as 25°. If the distance from the stadium light is 34 m, determine its height.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = Height / 34

0.47 = Height / 34

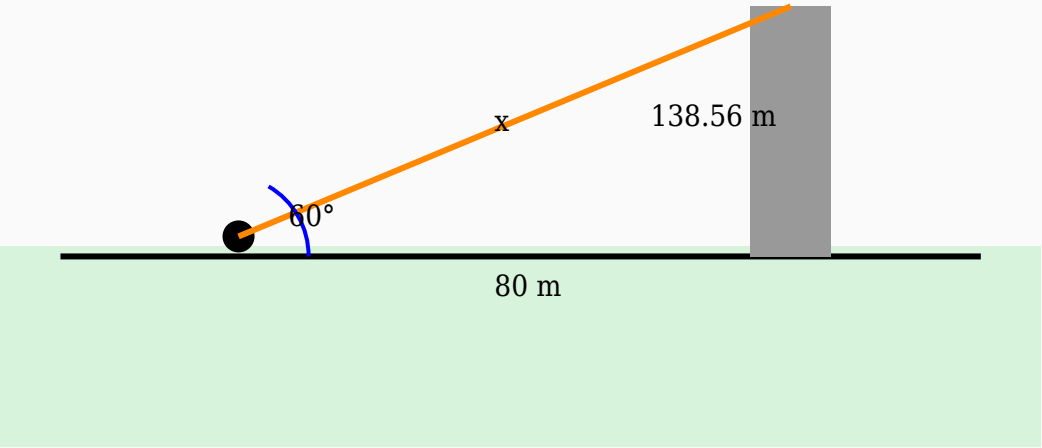
Height = 34 × 0.47

Height = 15.85 m

Answer: 15.85 m

Question 16

A person standing 80 m away from a building observes its top at an angle of elevation of 60°. Find the line of sight.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 80 / Hypotenuse

0.5 = 80 / Hypotenuse

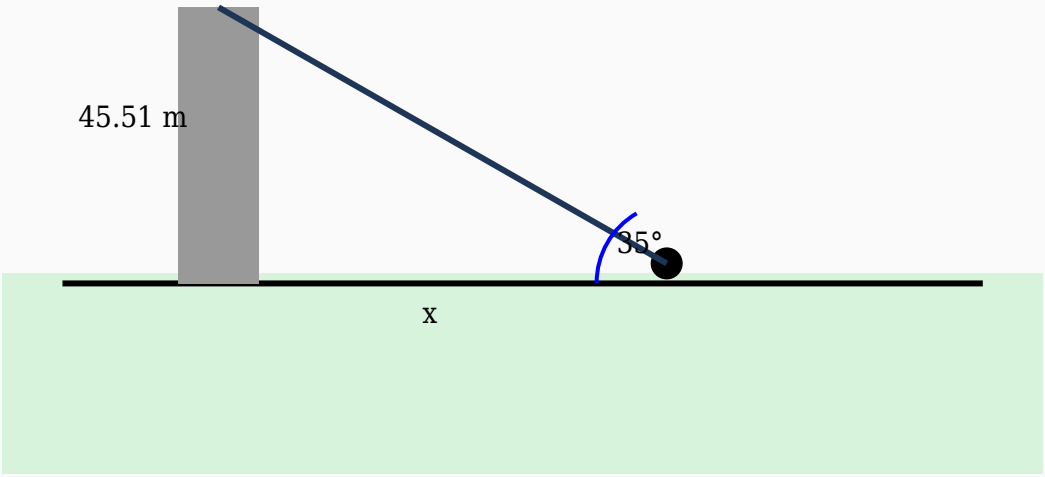
Hypotenuse = 80 / 0.5

Hypotenuse = 160 m

Answer: 160 m

Question 17

A surveyor notices the top of a building at an angle of elevation of 35°. Determine the horizontal distance if the height of the building is 45.51 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = 45.51 / Distance

0.7 = 45.51 / Distance

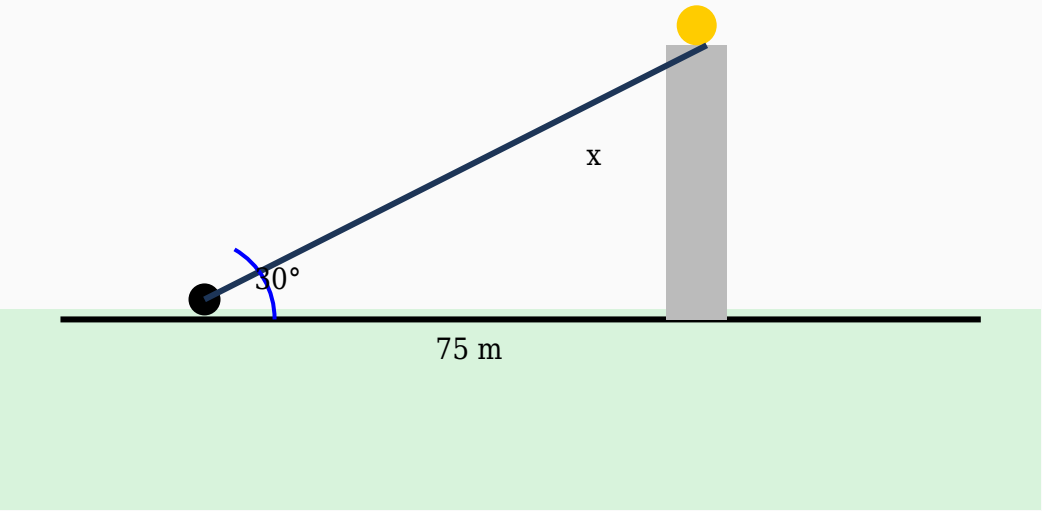
Distance = 45.51 / 0.7

Distance = 65.01 m

Answer: 65.01 m

Question 18

A girl looks at the top of a mobile tower at an angle of elevation of 30°. Find the height of the mobile tower if the distance from the base is 75 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = Height / 75

0.58 = Height / 75

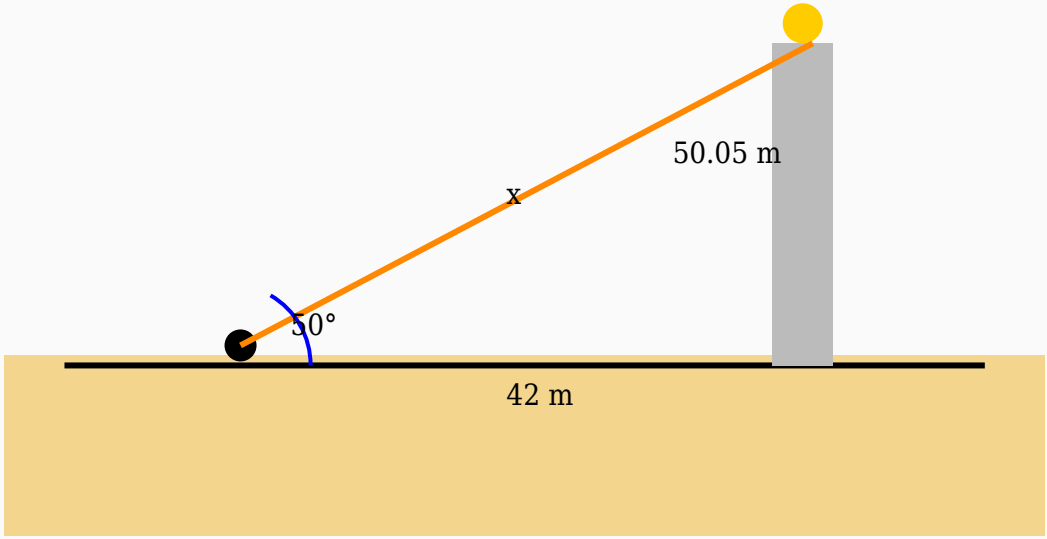
Height = 75 × 0.58

Height = 43.3 m

Answer: 43.3 m

Question 19

A person standing 42 m away from a hill observes its top at an angle of elevation of 50°. Find the line of sight.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 50° = 42 / Hypotenuse

0.64 = 42 / Hypotenuse

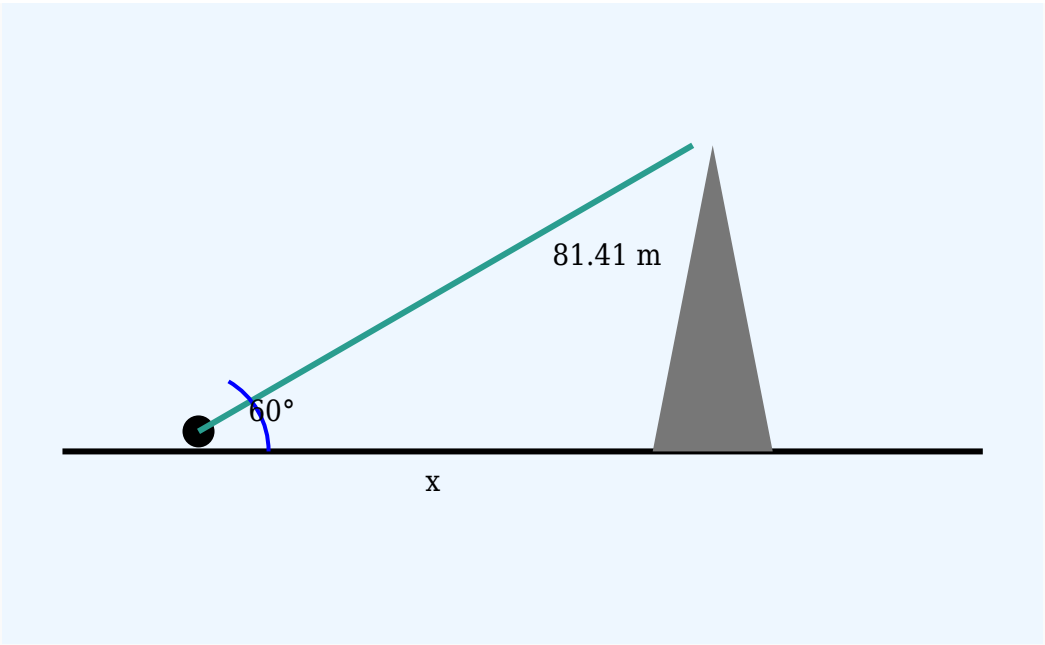
Hypotenuse = 42 / 0.64

Hypotenuse = 65.63 m

Answer: 65.63 m

Question 20

The height of a watch tower is 81.41 m. If the angle of elevation from a point on the ground is 60°, calculate the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 81.41 / Distance

1.73 = 81.41 / Distance

Distance = 81.41 / 1.73

Distance = 47.06 m

Answer: 47.06 m