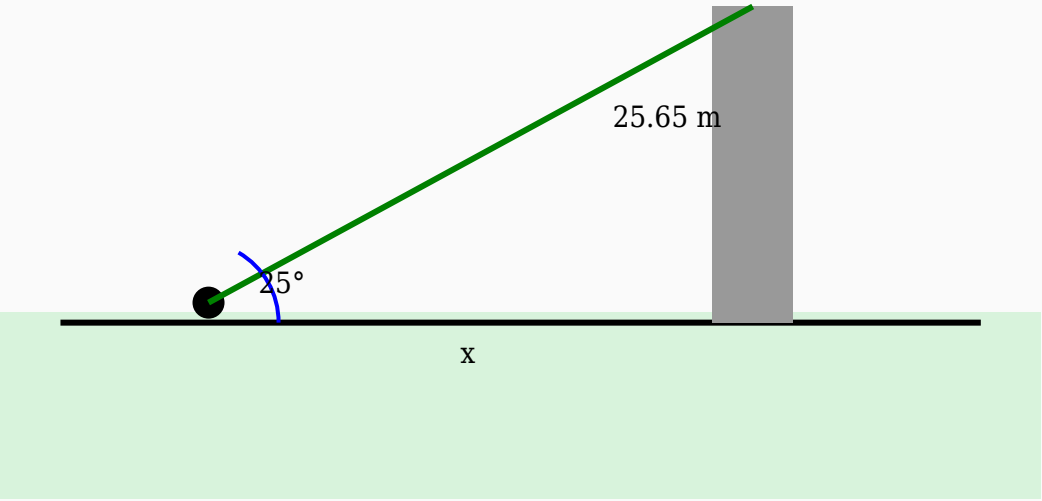
Angle of Elevation Solved Worksheet

Question 1

A surveyor notices the top of a flagpole at an angle of elevation of 25°. Determine the horizontal distance if the height of the flagpole is 25.65 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 25.65 / Distance

0.47 = 25.65 / Distance

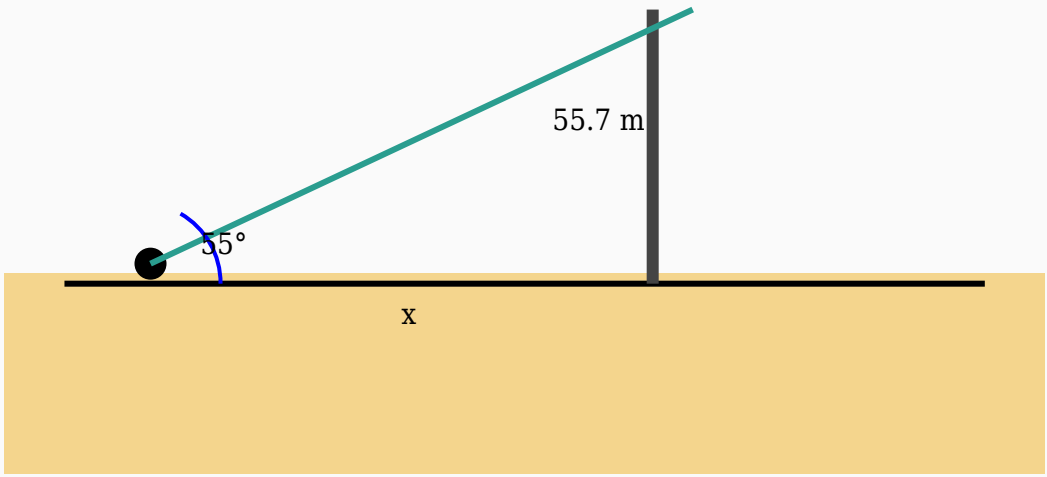
Distance = 25.65 / 0.47

Distance = 54.57 m

Answer: 54.57 m

Question 2

A tourist observes the top of a mountain at an angle of elevation of 55°. If the height of the mountain is 55.7 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 55.7 / Distance

1.43 = 55.7 / Distance

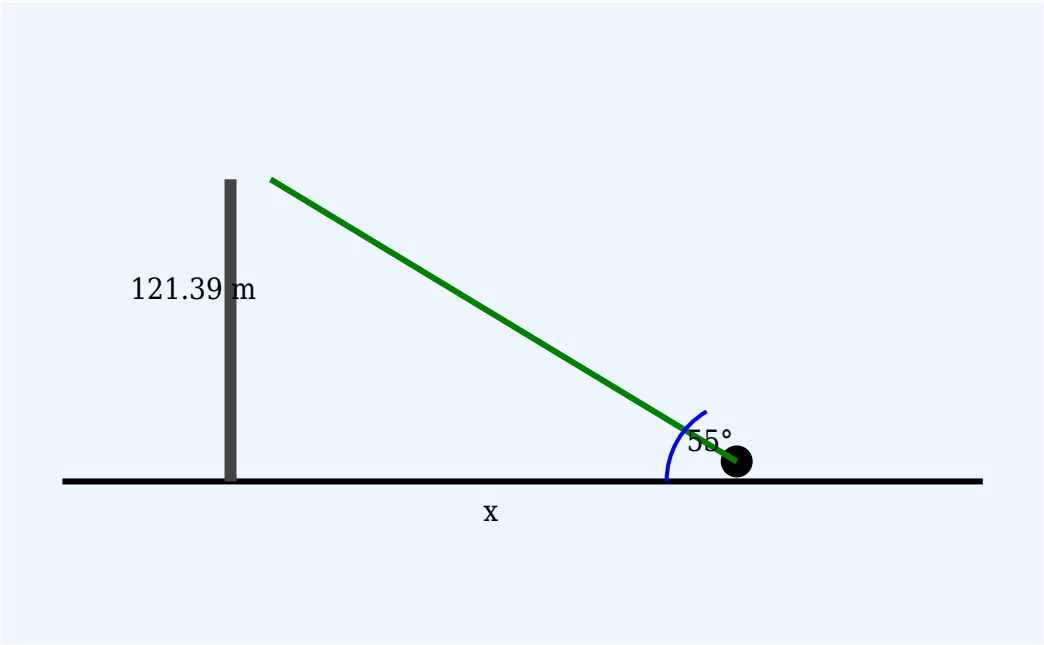
Distance = 55.7 / 1.43

Distance = 38.95 m

Answer: 38.95 m

Question 3

The height of a tower is 121.39 m. If the angle of elevation from a point on the ground is 55°, calculate the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 121.39 / Distance

1.43 = 121.39 / Distance

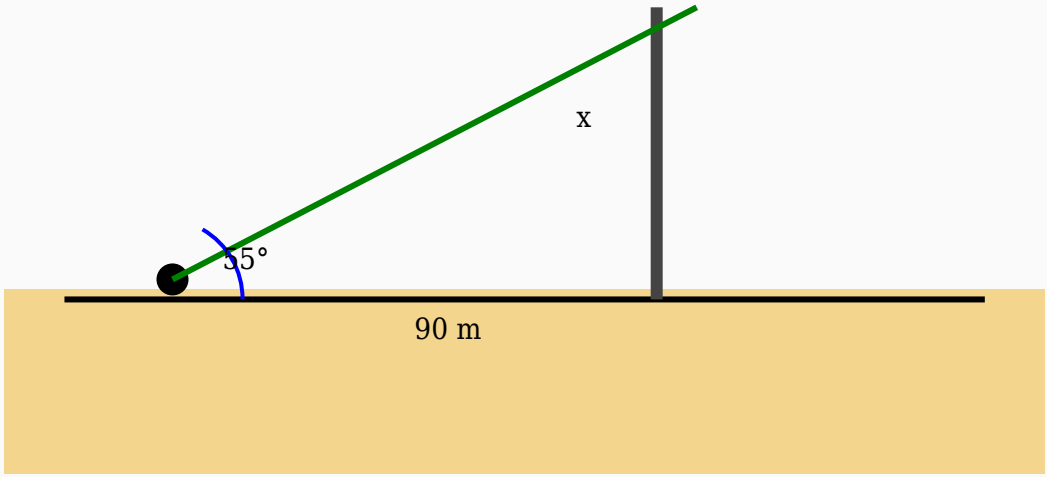
Distance = 121.39 / 1.43

Distance = 84.89 m

Answer: 84.89 m

Question 4

An observer looks at the top of a crane at an angle of elevation of 55°. Find the height of the crane if the distance from the base is 90 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 90

1.43 = Height / 90

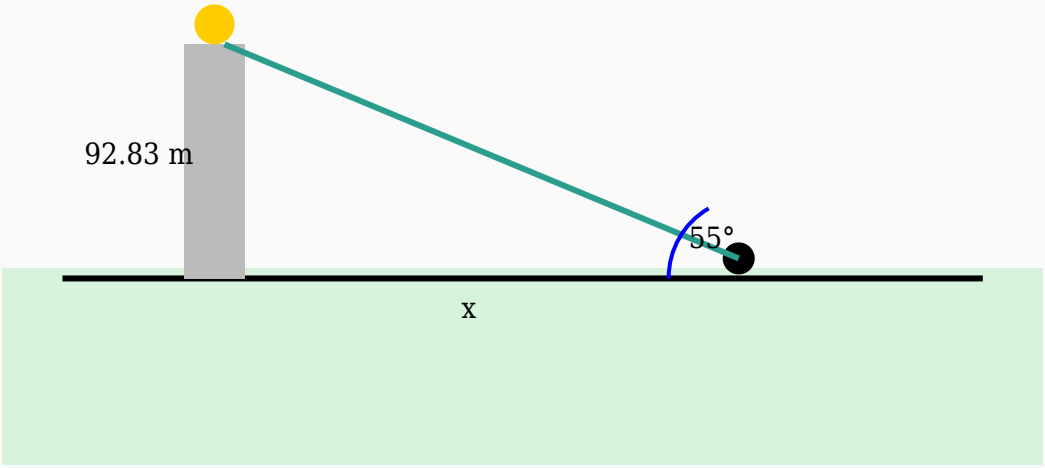
Height = 90 × 1.43

Height = 128.53 m

Answer: 128.53 m

Question 5

A girl observes the top of a hill at an angle of elevation of 55°. If the height of the hill is 92.83 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 92.83 / Distance

1.43 = 92.83 / Distance

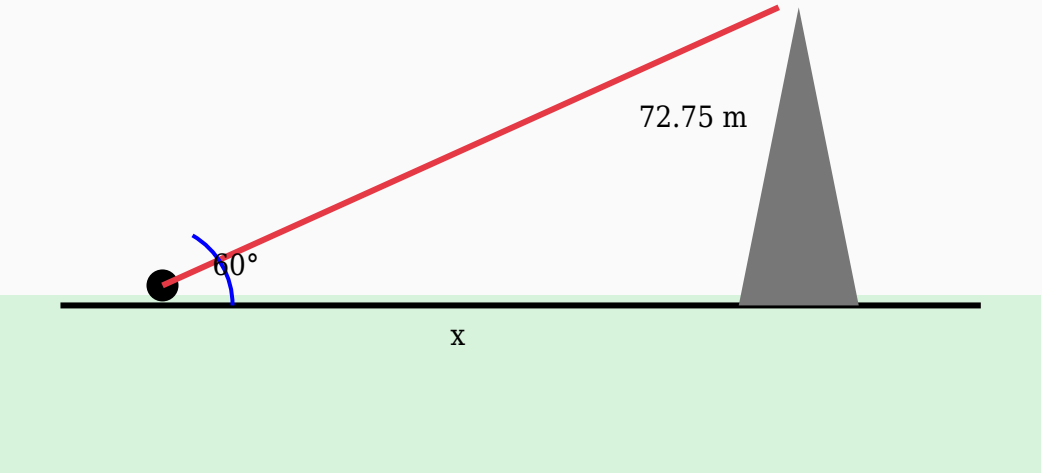
Distance = 92.83 / 1.43

Distance = 64.92 m

Answer: 64.92 m

Question 6

The height of a mountain is 72.75 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° = 72.75 / Distance

1.73 = 72.75 / Distance

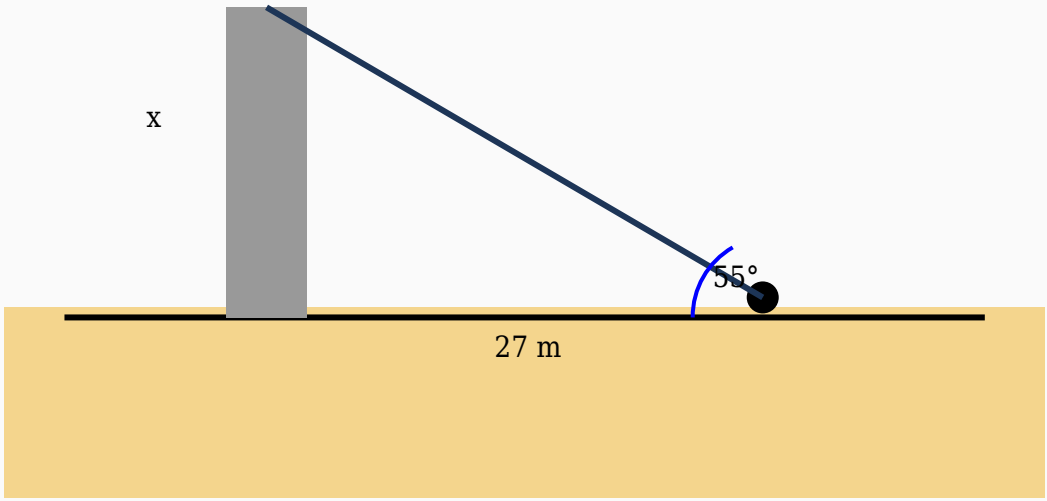
Distance = 72.75 / 1.73

Distance = 42.05 m

Answer: 42.05 m

Question 7

A woman looks at the top of a building at an angle of elevation of 55°. Find the height of the building if the distance from the base is 27 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = Height / 27

1.43 = Height / 27

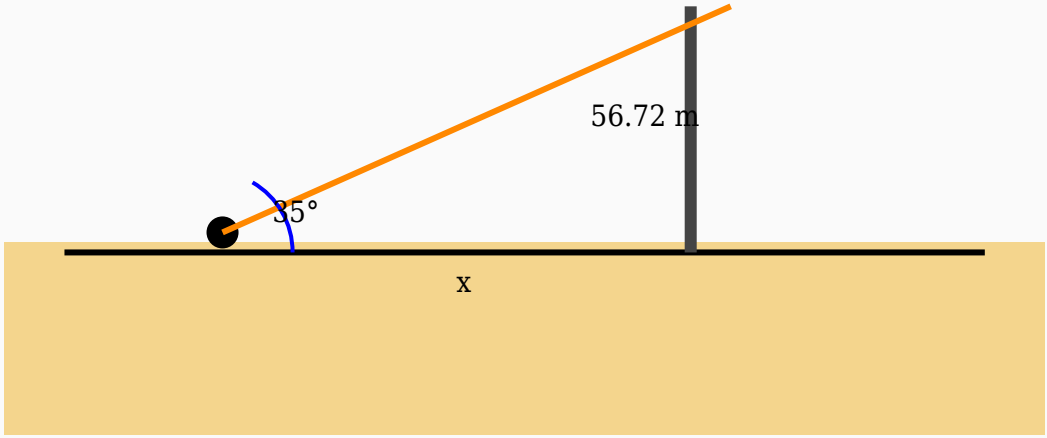
Height = 27 × 1.43

Height = 38.56 m

Answer: 38.56 m

Question 8

The height of a electric pole is 56.72 m. If the angle of elevation from a point on the ground is 35°, calculate the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = 56.72 / Distance

0.7 = 56.72 / Distance

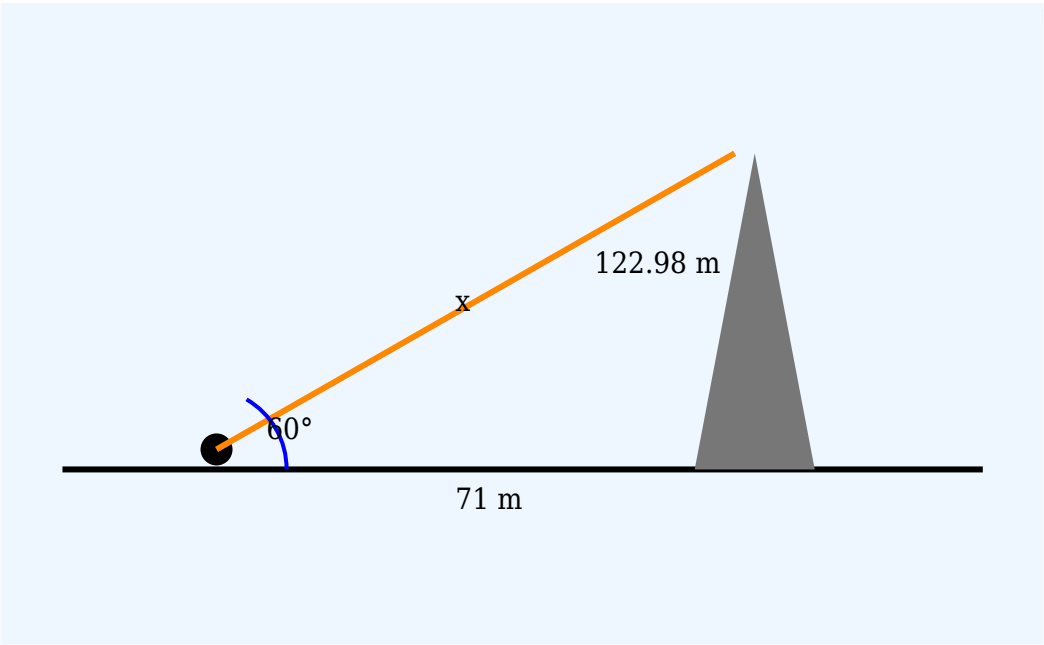
Distance = 56.72 / 0.7

Distance = 81.03 m

Answer: 81.03 m

Question 9

An observer looks at the top of a bridge making an angle of elevation of 60°. Determine the length of the line of sight if the horizontal distance is 71 m.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 60° = 71 / Hypotenuse

0.5 = 71 / Hypotenuse

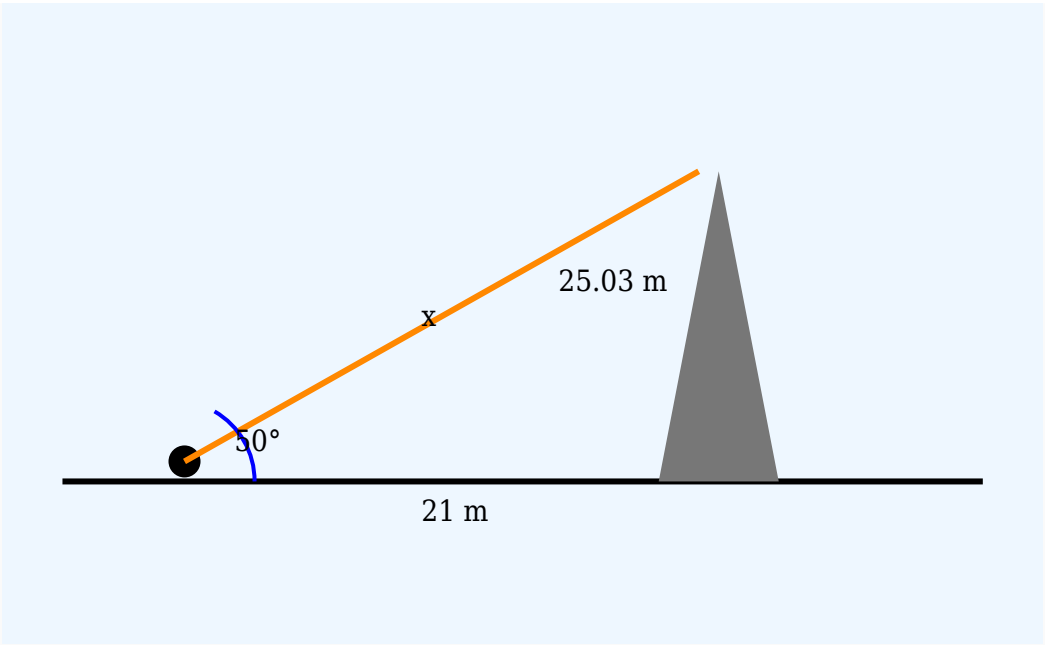
Hypotenuse = 71 / 0.5

Hypotenuse = 142 m

Answer: 142 m

Question 10

The angle of elevation to the top of a crane is 50°. If the observer is 21 m from the base, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 50° = 21 / Hypotenuse

0.64 = 21 / Hypotenuse

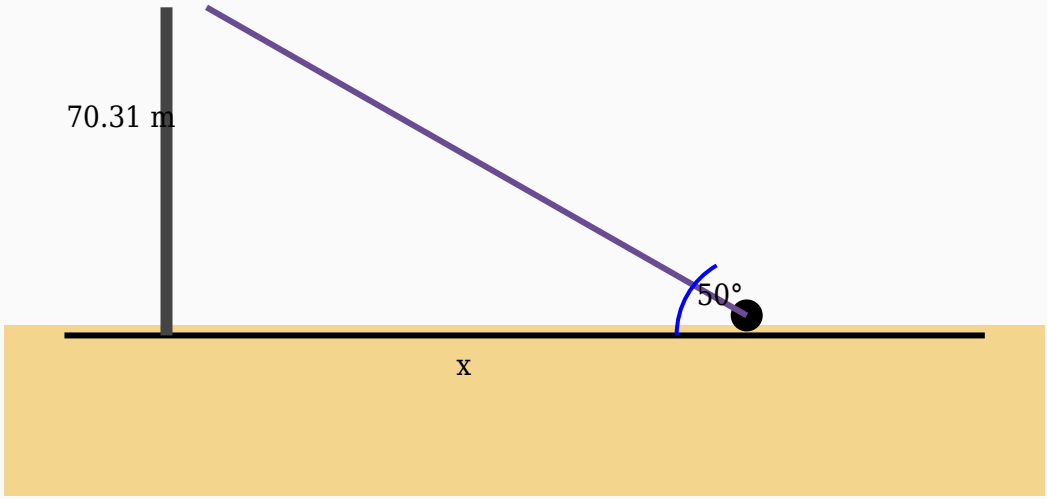
Hypotenuse = 21 / 0.64

Hypotenuse = 32.81 m

Answer: 32.81 m

Question 11

A student observes the top of a building at an angle of elevation of 50°. If the height of the building is 70.31 m, find the horizontal distance.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = 70.31 / Distance

1.19 = 70.31 / Distance

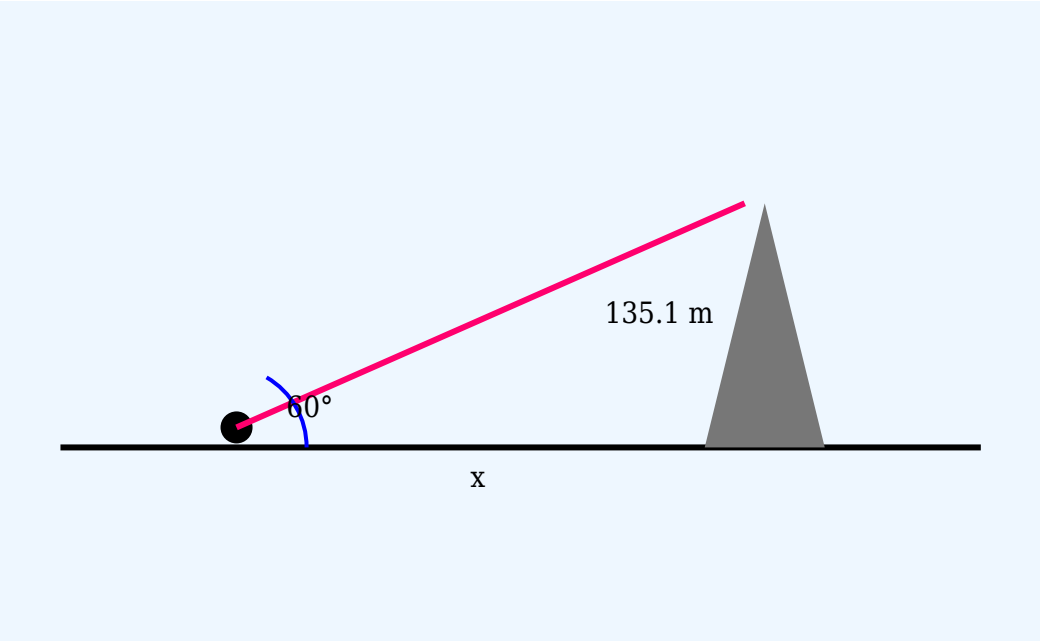
Distance = 70.31 / 1.19

Distance = 59.08 m

Answer: 59.08 m

Question 12

The height of a water tank is 135.1 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° = 135.1 / Distance

1.73 = 135.1 / Distance

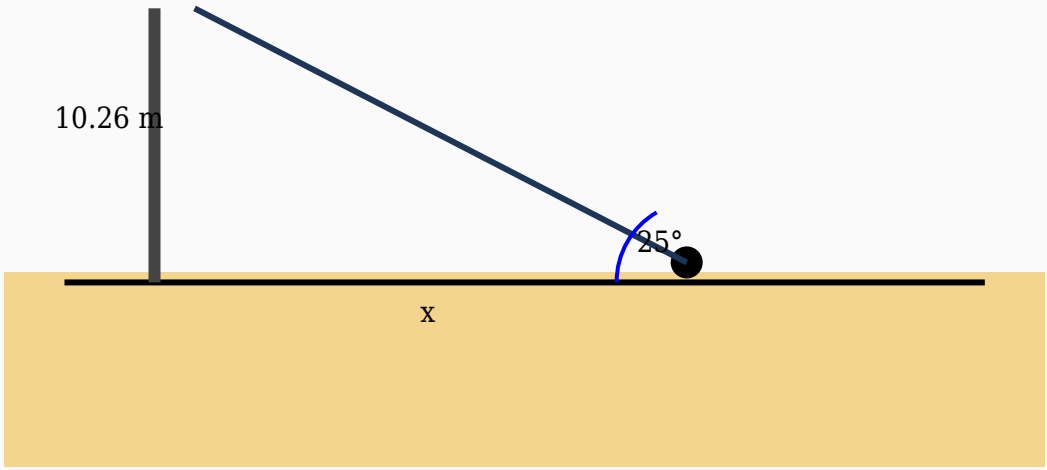
Distance = 135.1 / 1.73

Distance = 78.09 m

Answer: 78.09 m

Question 13

The angle of elevation to the top of a stadium light is 25°. Find the distance from the observer to the base if the height is 10.26 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 25° = 10.26 / Distance

0.47 = 10.26 / Distance

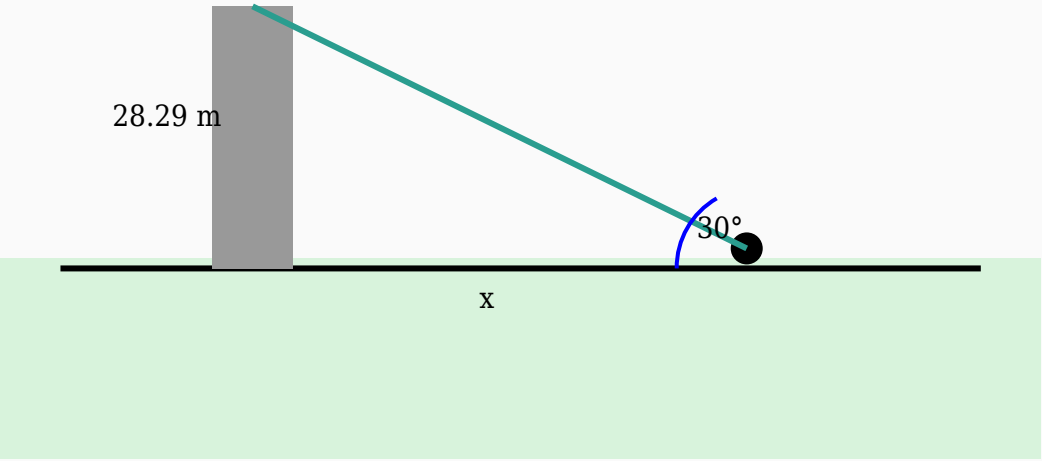
Distance = 10.26 / 0.47

Distance = 21.83 m

Answer: 21.83 m

Question 14

A surveyor notices the top of a mobile tower at an angle of elevation of 30°. Determine the horizontal distance if the height of the mobile tower is 28.29 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 28.29 / Distance

0.58 = 28.29 / Distance

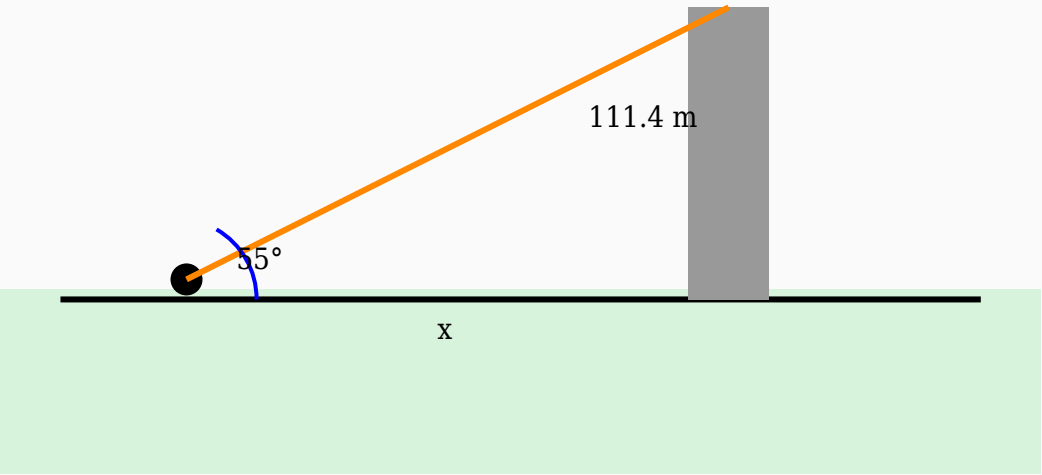
Distance = 28.29 / 0.58

Distance = 48.78 m

Answer: 48.78 m

Question 15

A surveyor notices the top of a mountain at an angle of elevation of 55°. Determine the horizontal distance if the height of the mountain is 111.4 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 55° = 111.4 / Distance

1.43 = 111.4 / Distance

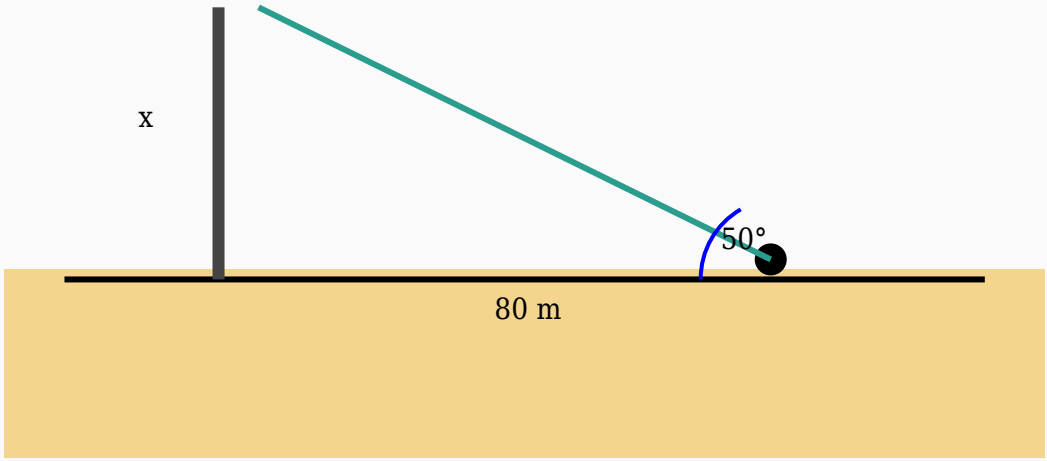
Distance = 111.4 / 1.43

Distance = 77.9 m

Answer: 77.9 m

Question 16

A man standing near a electric pole observes its top at an angle of elevation of 50°. If the horizontal distance is 80 m, find the height of the electric pole.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 50° = Height / 80

1.19 = Height / 80

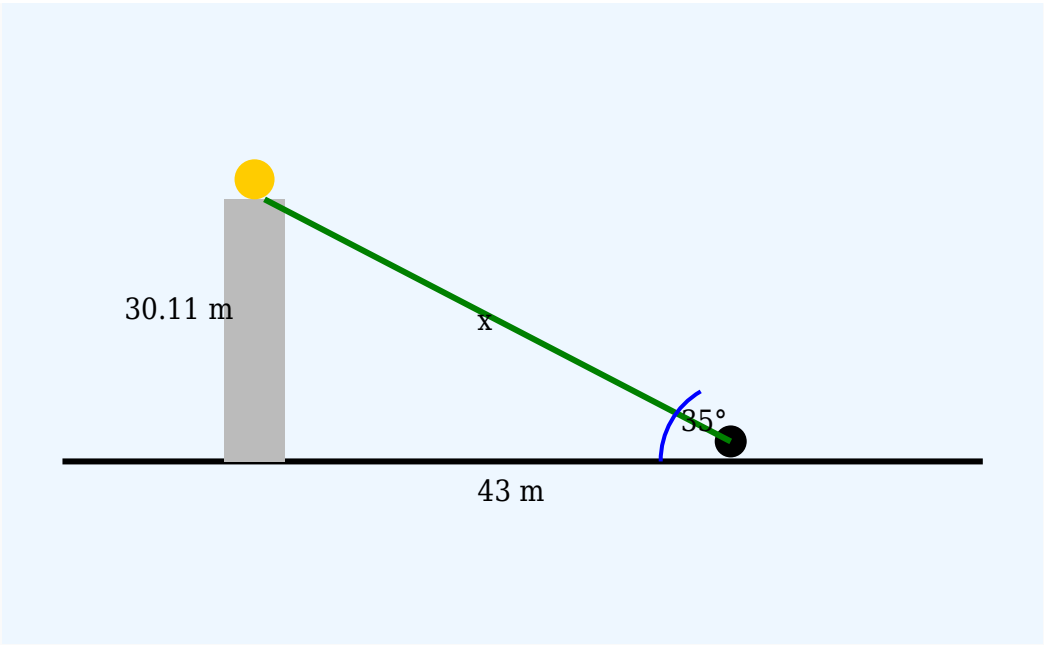
Height = 80 × 1.19

Height = 95.34 m

Answer: 95.34 m

Question 17

The angle of elevation to the top of a tower is 35°. If the observer is 43 m from the base, calculate the hypotenuse.



Solution:

Using:
cos θ = Adjacent / Hypotenuse

cos 35° = 43 / Hypotenuse

0.82 = 43 / Hypotenuse

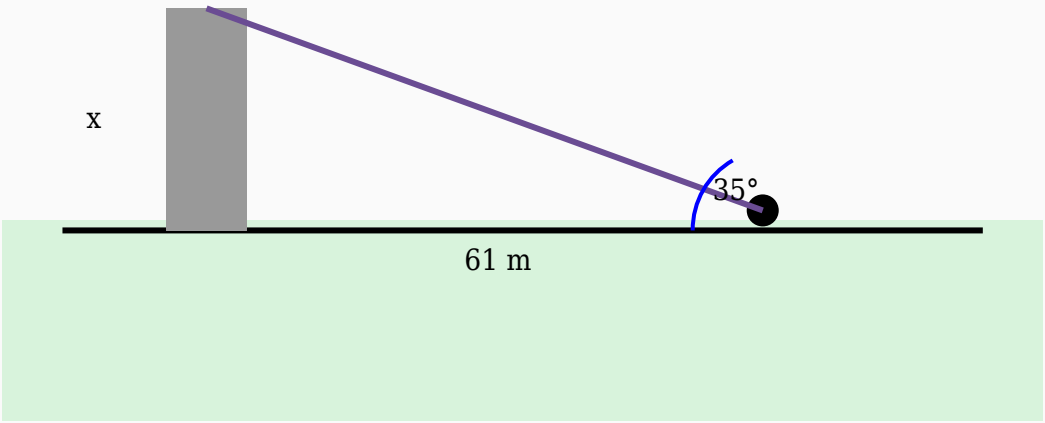
Hypotenuse = 43 / 0.82

Hypotenuse = 52.44 m

Answer: 52.44 m

Question 18

A student looks at the top of a mountain at an angle of elevation of 35°. Find the height of the mountain if the distance from the base is 61 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 35° = Height / 61

0.7 = Height / 61

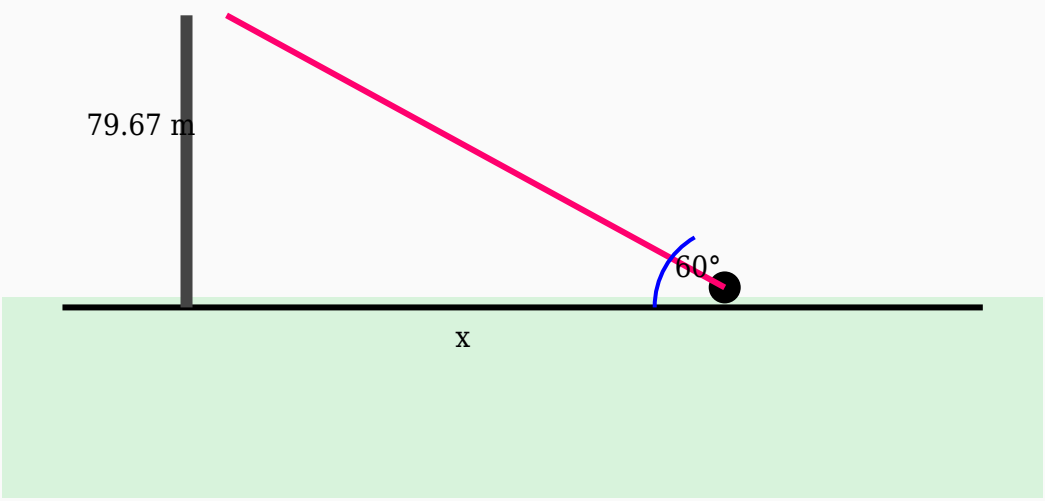
Height = 61 × 0.7

Height = 42.71 m

Answer: 42.71 m

Question 19

The angle of elevation to the top of a water tank is 60°. Find the distance from the observer to the base if the height is 79.67 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 60° = 79.67 / Distance

1.73 = 79.67 / Distance

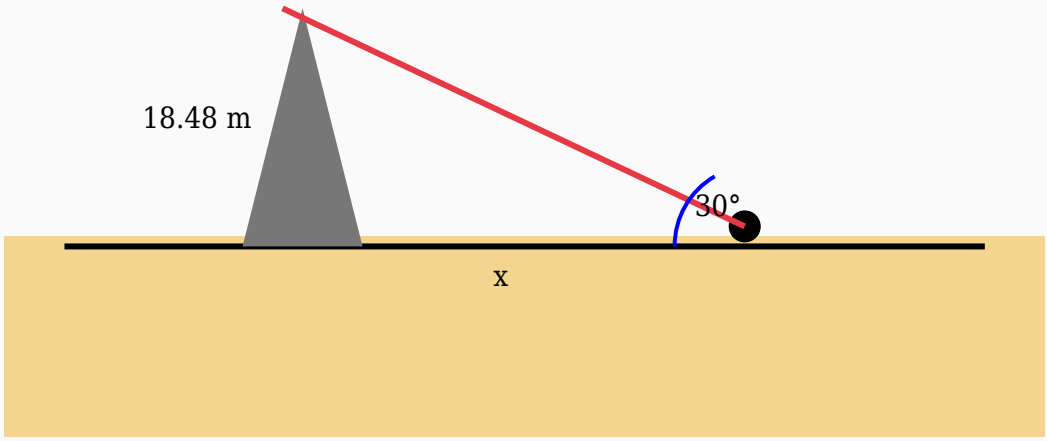
Distance = 79.67 / 1.73

Distance = 46.05 m

Answer: 46.05 m

Question 20

A surveyor notices the top of a building at an angle of elevation of 30°. Determine the horizontal distance if the height of the building is 18.48 m.



Solution:

Using:
tan θ = Opposite / Adjacent

tan 30° = 18.48 / Distance

0.58 = 18.48 / Distance

Distance = 18.48 / 0.58

Distance = 31.86 m

Answer: 31.86 m