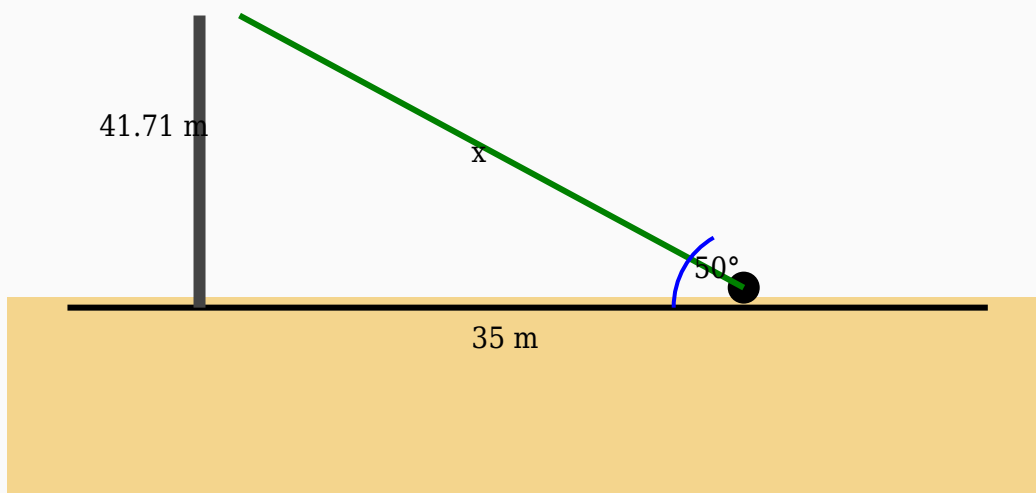


Angle of Elevation Solved Worksheet

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 50^\circ = 35 / \text{Hypotenuse}$$

$$0.64 = 35 / \text{Hypotenuse}$$

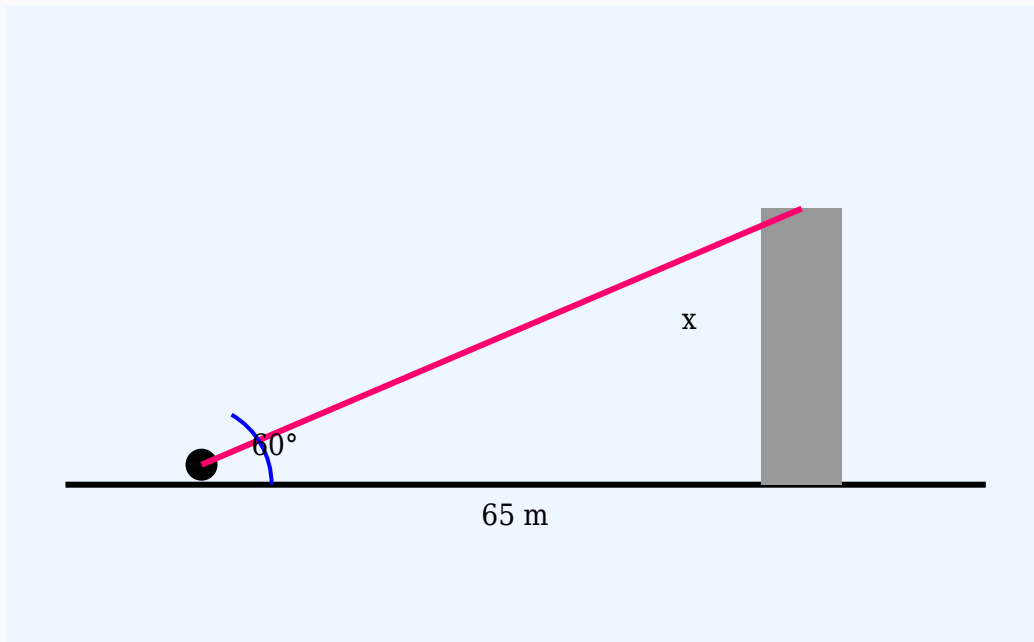
$$\text{Hypotenuse} = 35 / 0.64$$

$$\text{Hypotenuse} = 54.69 \text{ m}$$

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:

$$\tan \theta = \text{Opposite} / \text{Adjacent}$$

$$\tan 60^\circ = \text{Height} / 65$$

$$1.73 = \text{Height} / 65$$

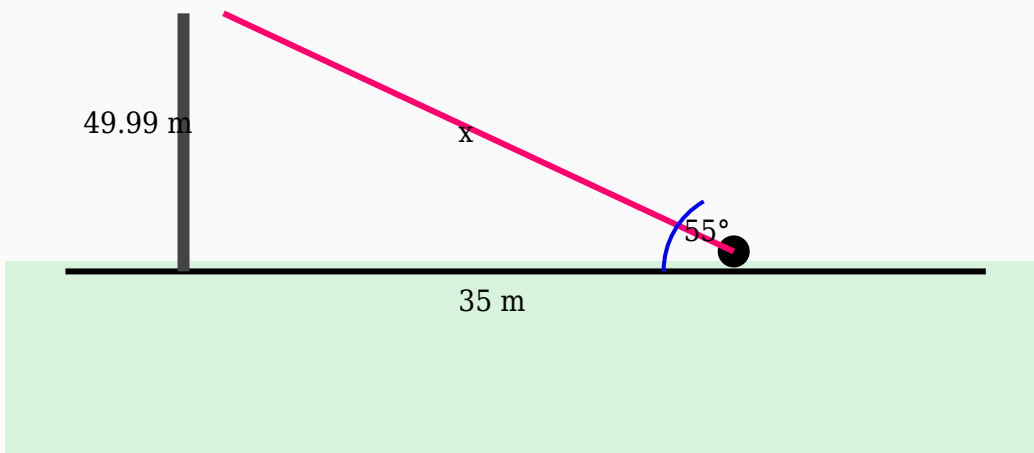
$$\text{Height} = 65 \times 1.73$$

$$\text{Height} = 112.58 \text{ m}$$

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 55^\circ = 35 / \text{Hypotenuse}$$

$$0.57 = 35 / \text{Hypotenuse}$$

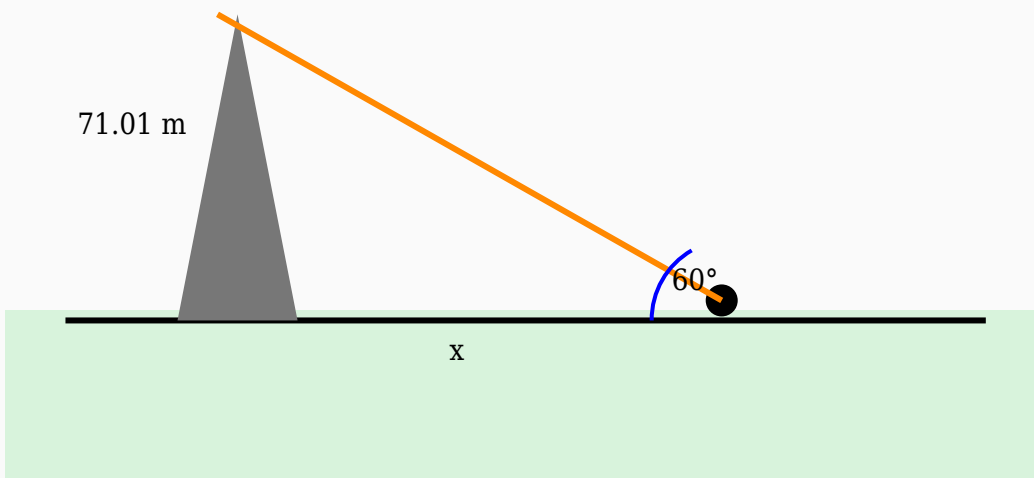
$$\text{Hypotenuse} = 35 / 0.57$$

$$\text{Hypotenuse} = 61.4 \text{ m}$$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 60^\circ = 71.01 / \text{Distance}$

$1.73 = 71.01 / \text{Distance}$

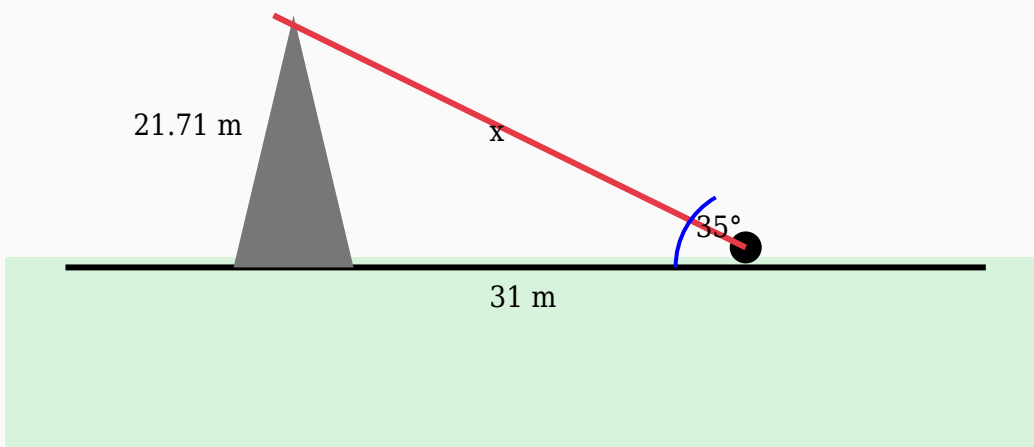
$\text{Distance} = 71.01 / 1.73$

$\text{Distance} = 41.05 \text{ m}$

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 35^\circ = 31 / \text{Hypotenuse}$$

$$0.82 = 31 / \text{Hypotenuse}$$

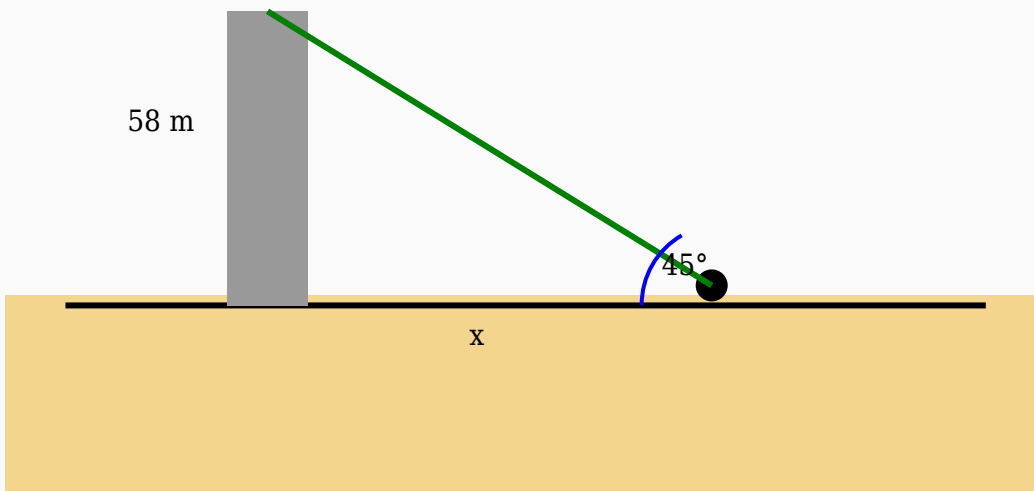
$$\text{Hypotenuse} = 31 / 0.82$$

$$\text{Hypotenuse} = 37.8 \text{ m}$$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 45^\circ = 58 / \text{Distance}$

$1 = 58 / \text{Distance}$

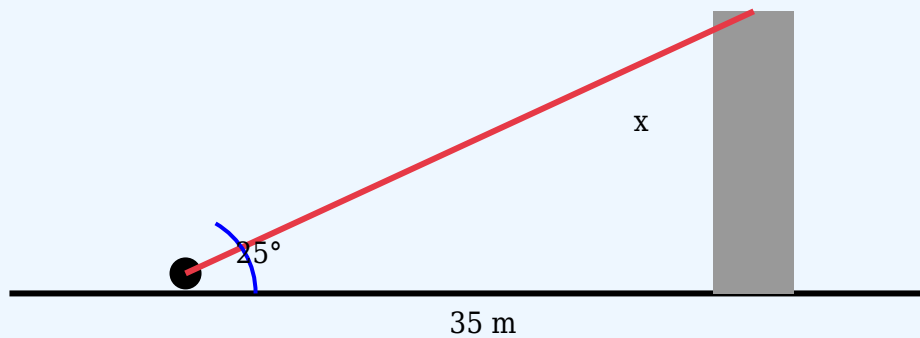
$\text{Distance} = 58 / 1$

$\text{Distance} = 58 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 25^\circ = \text{Height} / 35$

$0.47 = \text{Height} / 35$

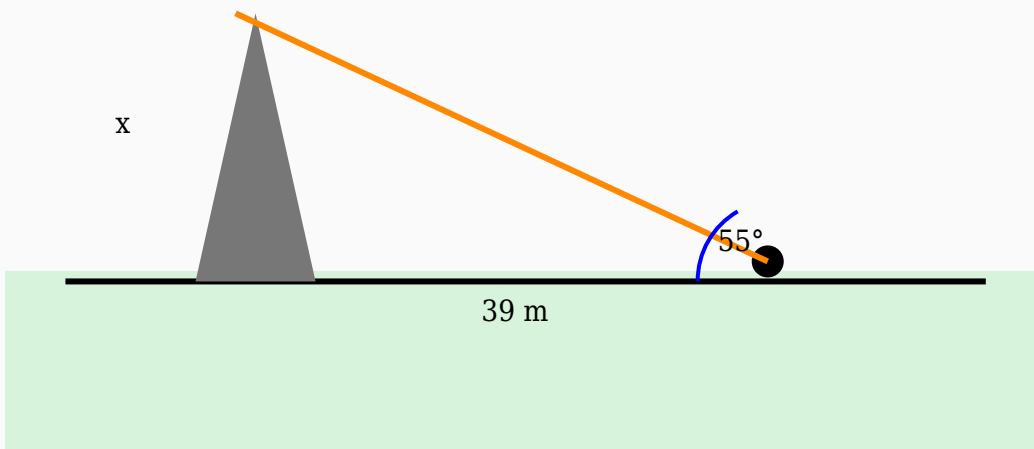
$\text{Height} = 35 \times 0.47$

$\text{Height} = 16.32 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 55^\circ = \text{Height} / 39$

$1.43 = \text{Height} / 39$

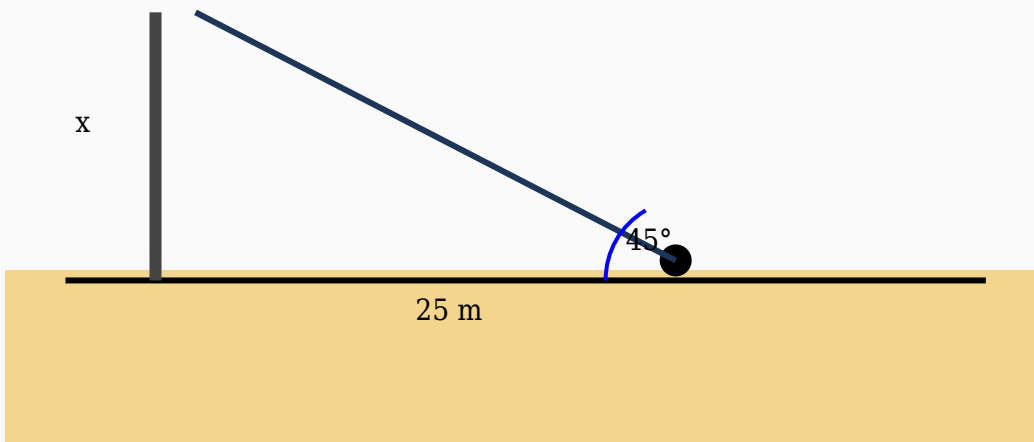
$\text{Height} = 39 \times 1.43$

$\text{Height} = 55.7 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 45^\circ = \text{Height} / 25$

$1 = \text{Height} / 25$

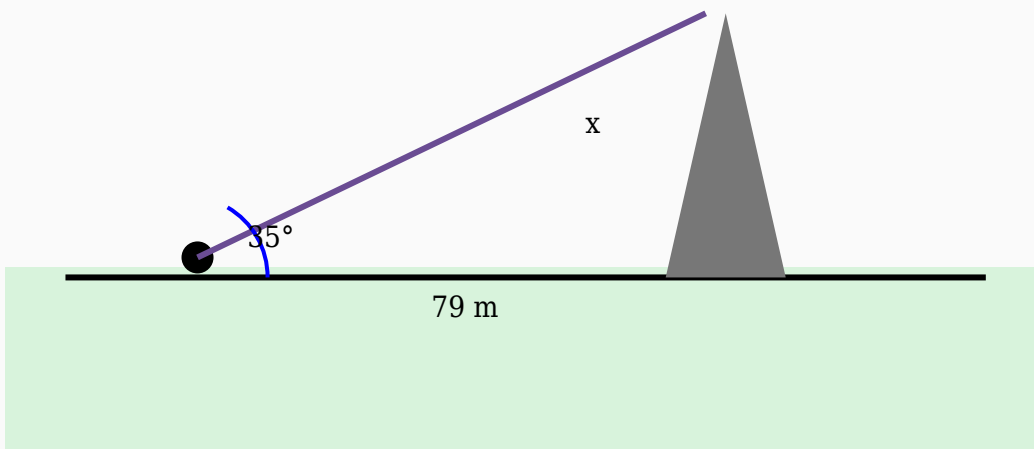
$\text{Height} = 25 \times 1$

$\text{Height} = 25 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 35^\circ = \text{Height} / 79$

$0.7 = \text{Height} / 79$

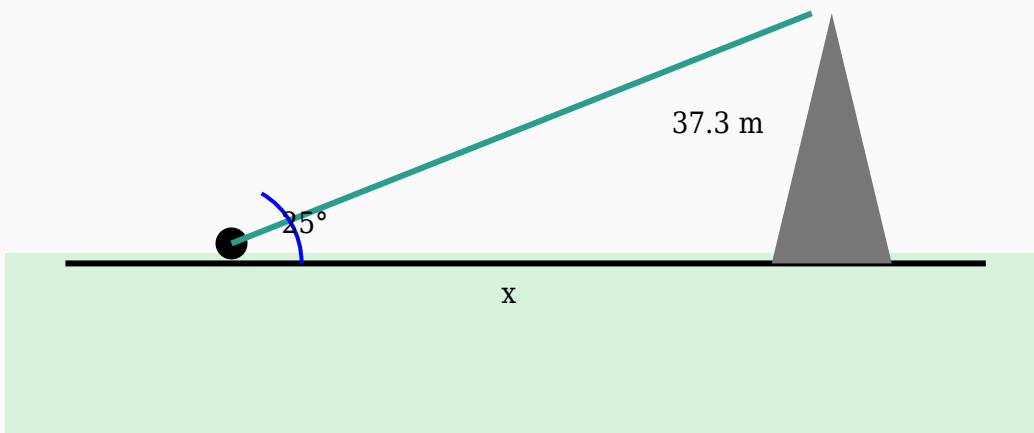
$\text{Height} = 79 \times 0.7$

$\text{Height} = 55.32 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 25^\circ = 37.3 / \text{Distance}$

$0.47 = 37.3 / \text{Distance}$

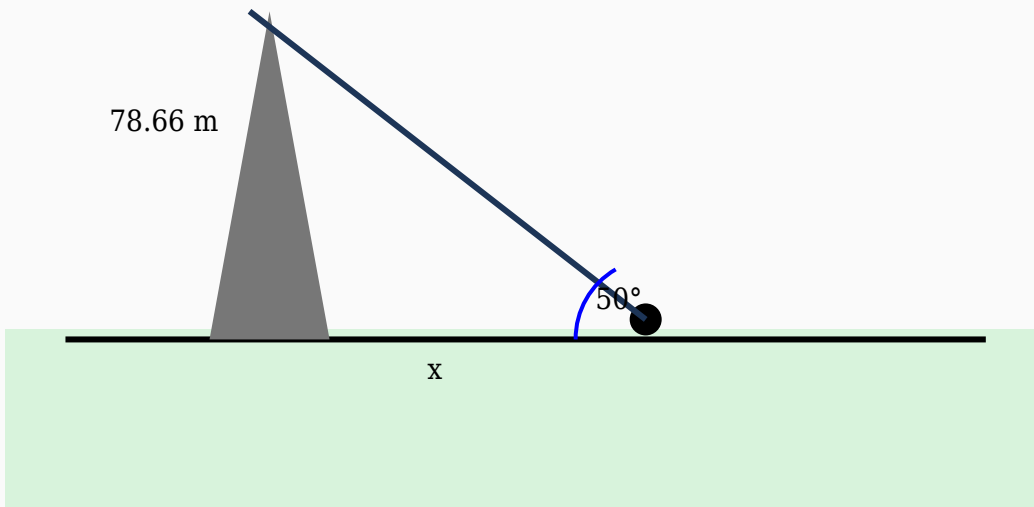
$\text{Distance} = 37.3 / 0.47$

$\text{Distance} = 79.36 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 50^\circ = 78.66 / \text{Distance}$

$1.19 = 78.66 / \text{Distance}$

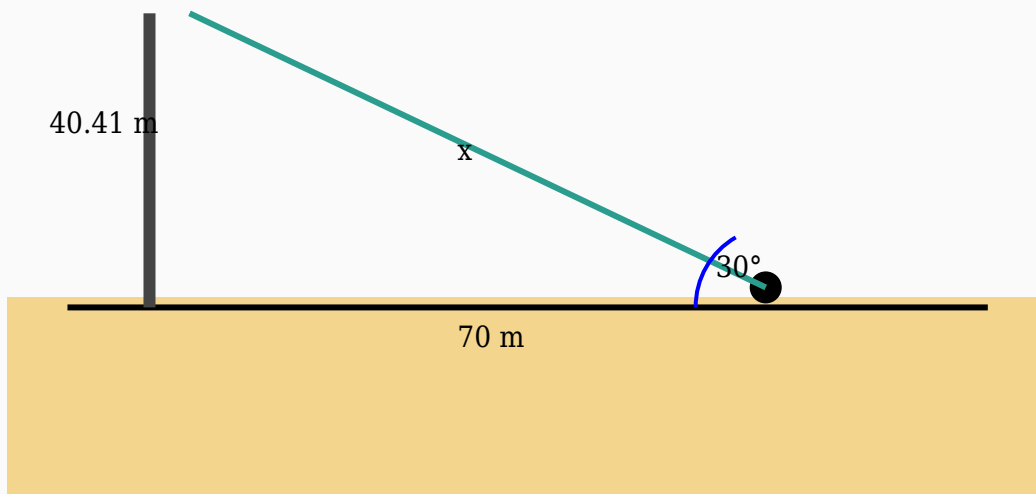
$\text{Distance} = 78.66 / 1.19$

$\text{Distance} = 66.1 \text{ m}$

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 30^\circ = 70 / \text{Hypotenuse}$$

$$0.87 = 70 / \text{Hypotenuse}$$

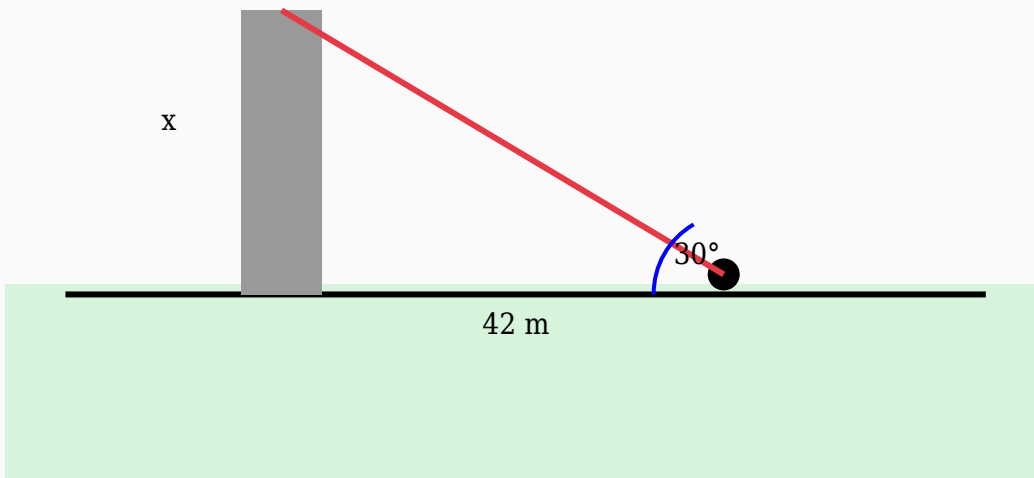
$$\text{Hypotenuse} = 70 / 0.87$$

$$\text{Hypotenuse} = 80.46 \text{ m}$$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 30^\circ = \text{Height} / 42$

$0.58 = \text{Height} / 42$

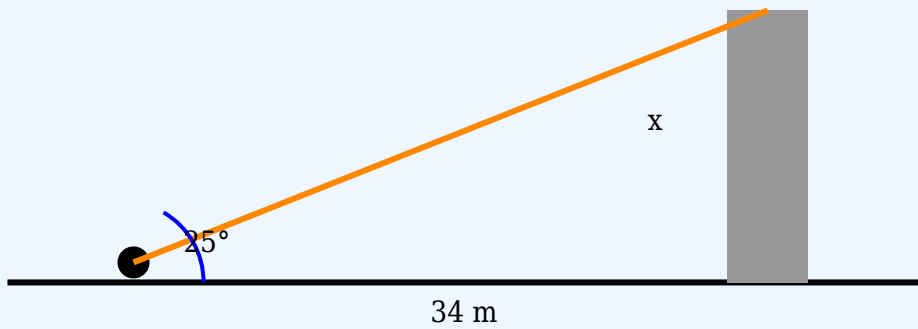
$\text{Height} = 42 \times 0.58$

$\text{Height} = 24.25 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 25^\circ = \text{Height} / 34$

$0.47 = \text{Height} / 34$

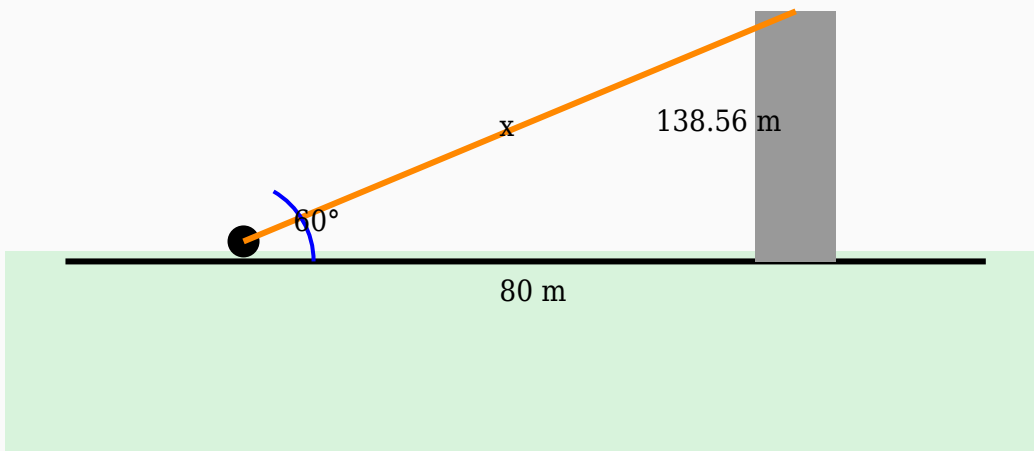
$\text{Height} = 34 \times 0.47$

$\text{Height} = 15.85 \text{ m}$

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 60^\circ = 80 / \text{Hypotenuse}$$

$$0.5 = 80 / \text{Hypotenuse}$$

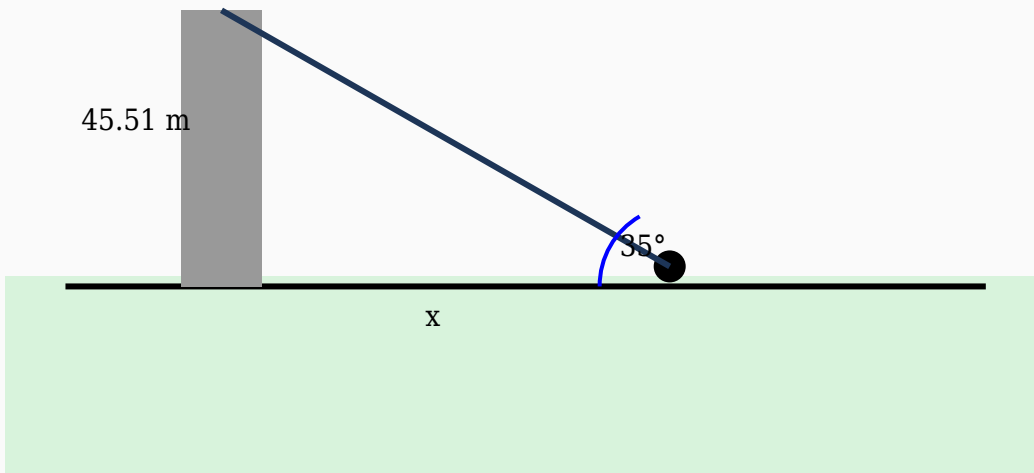
$$\text{Hypotenuse} = 80 / 0.5$$

$$\text{Hypotenuse} = 160 \text{ m}$$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 35^\circ = 45.51 / \text{Distance}$

$0.7 = 45.51 / \text{Distance}$

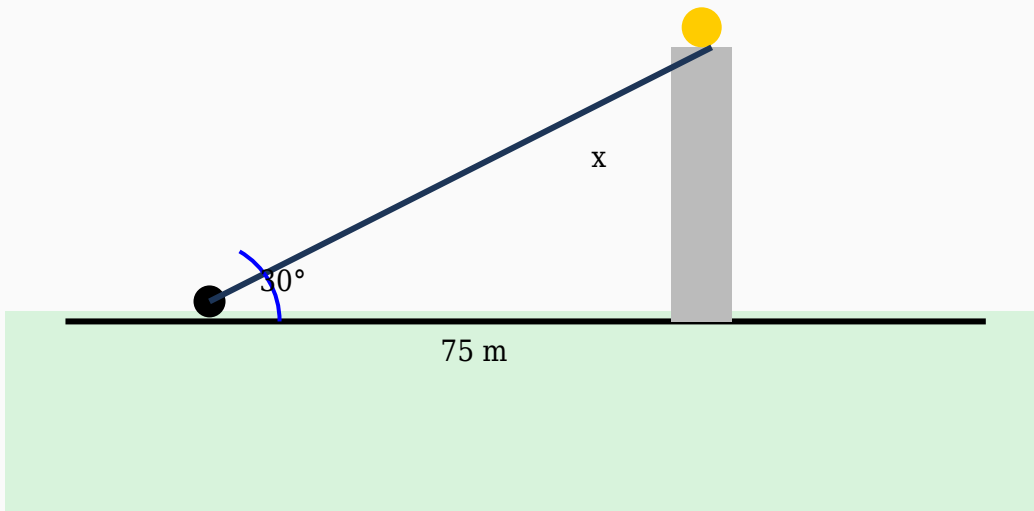
$\text{Distance} = 45.51 / 0.7$

$\text{Distance} = 65.01 \text{ m}$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 30^\circ = \text{Height} / 75$

$0.58 = \text{Height} / 75$

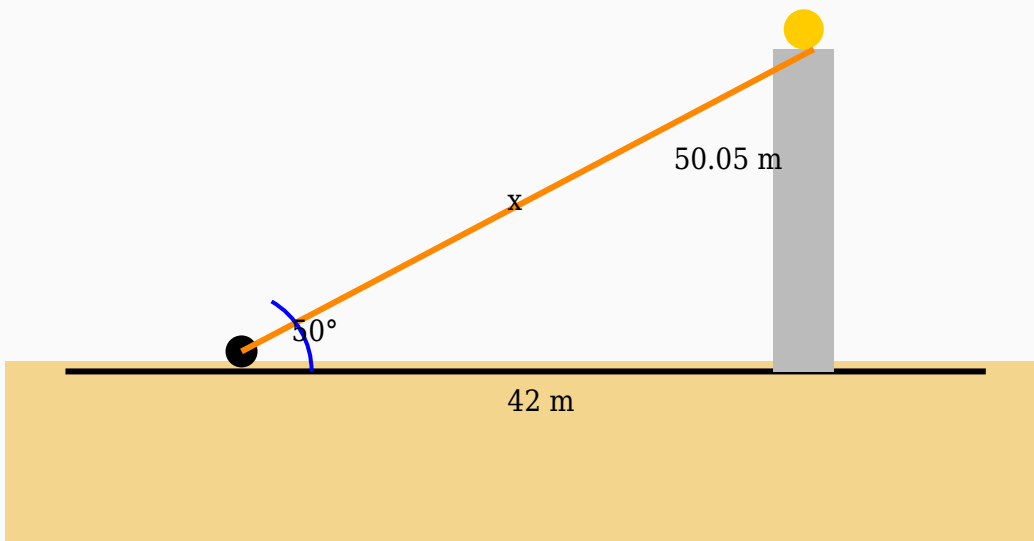
$\text{Height} = 75 \times 0.58$

$\text{Height} = 43.3 \text{ m}$

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:

$$\cos \theta = \text{Adjacent} / \text{Hypotenuse}$$

$$\cos 50^\circ = 42 / \text{Hypotenuse}$$

$$0.64 = 42 / \text{Hypotenuse}$$

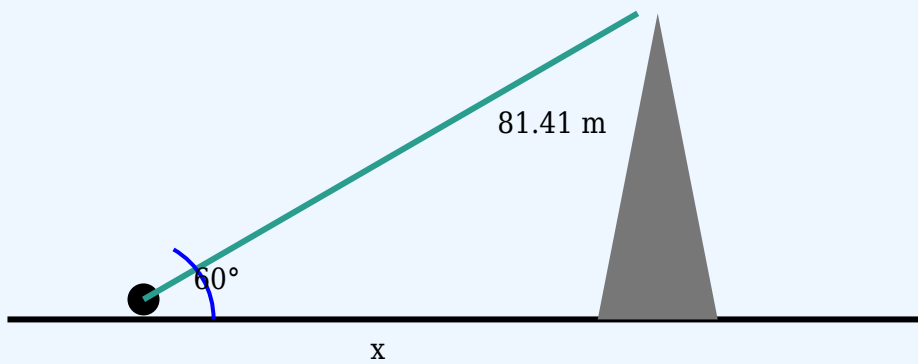
$$\text{Hypotenuse} = 42 / 0.64$$

$$\text{Hypotenuse} = 65.63 \text{ m}$$

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:

$\tan \theta = \text{Opposite} / \text{Adjacent}$

$\tan 60^\circ = 81.41 / \text{Distance}$

$1.73 = 81.41 / \text{Distance}$

$\text{Distance} = 81.41 / 1.73$

$\text{Distance} = 47.06 \text{ m}$

Answer: 47.06 m