

Angle Of Elevation And Depression Worksheet

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Part 1: Building a Foundation

What is the angle of elevation?

Hint: Think about the direction you are looking in relation to the horizontal.

- A) The angle formed between the horizontal line and the line of sight when looking downward.
- B) The angle formed between the horizontal line and the line of sight when looking upward.
- C) The angle formed between two vertical lines.
- D) The angle formed between two horizontal lines.

Which trigonometric function is primarily used to calculate the angle of elevation or depression?

Hint: Consider the relationship between the opposite side and the adjacent side in a right triangle.

- A) Sine
- B) Cosine
- C) Tangent
- D) Secant

Which of the following statements are true about the angle of depression? (Select all that apply)

Hint: Think about how the angle is measured and its applications.

- A) It is measured from the horizontal line downward.
- B) It is used to calculate the height of an object.
- C) It is always greater than 90 degrees.
- D) It is the same as the angle of elevation in a right triangle.

Explain the relationship between the angle of elevation and the angle of depression in terms of their positions relative to the horizontal line.

Hint: Consider how both angles are measured from the horizontal.

List two real-world applications where angles of elevation and depression are used.

Hint: Think about fields like architecture, aviation, or navigation.

1. Application 1

2. Application 2

Part 2: Understanding and Interpretation

If a person is standing 50 meters away from a building and the angle of elevation to the top of the building is 30 degrees, which trigonometric function would you use to find the height of the building?

Hint: Consider the relationship between the height and the distance from the building.

- A) Sine
- B) Cosine
- C) Tangent
- D) Cotangent

Which of the following scenarios involve an angle of depression? (Select all that apply)

Hint: Think about the direction of the observer's line of sight.

- A) A pilot looking down at the runway from the cockpit.
- B) A person looking up at a flag on a pole.
- C) A lighthouse keeper looking down at a ship.
- D) A person looking straight ahead at a mountain.

Describe how you would set up a problem involving the angle of elevation to find the height of a tree when given the distance from the tree and the angle.

Hint: Consider the trigonometric relationships involved.

Part 3: Application and Analysis

A ladder is leaning against a wall, forming a 60-degree angle with the ground. If the base of the ladder is 4 meters from the wall, how would you calculate the height at which the ladder touches the wall?

Hint: Think about the relationship between the angle, height, and distance from the wall.

- A) Use sine function
- B) Use cosine function
- C) Use tangent function
- D) Use secant function

You are given the angle of elevation and the distance from the observer to the base of the object. Which of the following can you calculate? (Select all that apply)

Hint: Consider the relationships defined by trigonometric functions.

- A) The height of the object
- B) The angle of depression
- C) The distance from the top of the object to the observer
- D) The horizontal distance from the observer to the object

A person is standing on a hill and sees a car at an angle of depression of 15 degrees. If the hill is 100 meters high, calculate the horizontal distance from the person to the car.

Hint: Use trigonometric relationships to find the distance.

If two observers are standing at different distances from a tower and both measure the angle of elevation to the top of the tower, what can be inferred if one angle is larger than the other?

Hint: Consider the relationship between distance and angle of elevation.

- A) The observer with the larger angle is closer to the tower.
- B) The observer with the larger angle is farther from the tower.
- C) Both observers are at the same distance.
- D) The angles do not provide any information about distance.

Part 4: Evaluation and Creation

Consider a situation where you need to determine the height of a mountain using the angle of elevation. Which of the following factors could affect the accuracy of your calculation? (Select all that apply)

Hint: Think about measurement precision and environmental factors.

- A) The precision of the angle measurement
- B) The distance from the observer to the mountain
- C) The curvature of the Earth
- D) The observer's height above sea level

Design a real-world problem involving both the angle of elevation and depression that requires calculating the height of an object. Provide a step-by-step solution to your problem.

Hint: Think about a scenario that includes both angles.

