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Trigonometric Ratios Worksheet

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Part 1: Building a Foundation

What is the sine of a 30° angle?

Hint: Recall the basic trigonometric values.

○ A) 0.5
○ B) 0.866
○ C) 1
○ D) 0

Which of the following are primary trigonometric ratios?

Hint: Identify the basic ratios used in trigonometry.

☐ A) Sine
☐ B) Cosecant
☐ C) Tangent
☐ D) Secant

Explain the significance of the unit circle in trigonometry.

Hint: Consider how the unit circle relates to trigonometric functions.

List the trigonometric ratios for a 45° angle.

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Hint: Recall the values for sine, cosine, and tangent.

1. What is the sine of 45°?

[_____]

2. What is the cosine of 45°?

[_____]

3. What is the tangent of 45°?

[_____]

Part 2: Understanding and Interpretation

Which trigonometric ratio is defined as the reciprocal of cosine?

Hint: Think about the definitions of trigonometric ratios.

○ A) Sine
○ B) Secant
○ C) Tangent
○ D) Cosecant

Which of the following angles have a tangent value of 1?

Hint: Recall the angles where tangent equals one.

☐ A) 30°
☐ B) 45°
☐ C) 60°
☐ D) 90°

Describe how trigonometric ratios can be used to determine the height of a building when the distance from the building and the angle of elevation are known.

Hint: Consider the relationship between angles and opposite sides in a right triangle.

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Part 3: Application and Analysis

If the sine of an angle is 0.6, what is the cosecant of the angle?

Hint: Recall the relationship between sine and cosecant.

◯ A) 1.67
◯ B) 0.6
◯ C) 1.5
◯ D) 0.83

Which of the following scenarios can be solved using trigonometric ratios?

Hint: Think about practical applications of trigonometry.

☐ A) Calculating the distance between two points on a map.
☐ B) Determining the height of a tree using its shadow.
☐ C) Finding the speed of a car.
☐ D) Measuring the angle of a ramp.

Apply trigonometric ratios to solve the following problem: A ladder leans against a wall, forming a 60° angle with the ground. If the ladder is 10 meters long, how high does it reach on the wall?

Hint: Use the sine function to find the height.

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Part 4: Evaluation and Creation

Which trigonometric identity is represented by the equation sin²θ + cos²θ = 1?

Hint: Consider the fundamental identities in trigonometry.

○ A) Pythagorean Identity
○ B) Reciprocal Identity
○ C) Quotient Identity
○ D) Co-Function Identity

Analyze the following statements and identify which are true regarding the unit circle:

Hint: Consider the properties of the unit circle.

☐ A) The radius of the unit circle is always 1.
☐ B) The unit circle can be used to find trigonometric values for any angle.
☐ C) The unit circle is only applicable for angles between 0° and 90°.
☐ D) The coordinates of a point on the unit circle represent the cosine and sine of the angle.

Analyze how the trigonometric ratios change as the angle increases from 0° to 90°.

Hint: Consider the behavior of sine, cosine, and tangent.

Which of the following best evaluates the use of trigonometric ratios in architecture?

Hint: Think about the role of trigonometry in design and construction.

○ A) They are rarely used.
○ B) They are essential for designing structures.
○ C) They are only used for aesthetic purposes.
○ D) They are used to calculate material costs.

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Create a scenario where trigonometric ratios would be necessary to solve a problem. Which elements would be essential?

Hint: Think about practical applications of trigonometry.

☐ A) An angle of elevation or depression.

☐ B) A known distance or height.

☐ C) A right-angled triangle.

☐ D) A circular path.

Design a real-world problem that involves using trigonometric ratios to find an unknown length or angle. Describe the problem and the steps needed to solve it.

Hint: Consider a practical application of trigonometry.

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