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Volume Of Cylinder Worksheet

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Part 1: Building a Foundation

What is a cylinder?

Hint: Think about the shape and its properties.

◯ A) A three-dimensional shape with two parallel circular bases and a curved surface.
◯ B) A two-dimensional shape with a circular base.
◯ C) A three-dimensional shape with a square base and a curved surface.
◯ D) A two-dimensional shape with two parallel lines.

Which of the following are components of a cylinder? (Select all that apply)

Hint: Consider the parts that make up a cylinder.

☐ A) Radius
☐ B) Height
☐ C) Diagonal
☐ D) Base

Explain the formula for calculating the volume of a cylinder and what each variable represents.

Hint: Consider the formula $V = \pi r^2 h$.

What are the units of measurement for the volume of a cylinder?

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Hint: Think about how volume is typically measured.

○ A) Square units
○ B) Linear units
○ C) Cubic units
○ D) Circular units

Which of the following objects is best modeled by a cylinder?

Hint: Consider the shape of each object.

○ A) A book
○ B) A soda can
○ C) A pyramid
○ D) A sphere

Part 2: Application and Analysis

A cylinder has a volume of 314 cm³ and a height of 10 cm. Calculate the radius of the cylinder.

Hint: Use the volume formula to find the radius.

A water tank in the shape of a cylinder has a radius of 2 meters and a height of 3 meters. How much water can it hold?

Hint: Use the volume formula for a cylinder.

☐ A) 12π m³
☐ B) 24π m³
☐ C) 36π m³
☐ D) 48π m³

Analyze how changing the radius of a cylinder affects its volume, assuming the height remains constant.

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Hint: Consider the relationship between radius and volume in the formula.

[ ]

Compare the concepts of volume and surface area for a cylinder. How are they similar and different?

Hint: Think about how both are calculated and their significance.

1. What is the formula for volume?

[ ]

2. What is the formula for surface area?

[ ]

3. How do they relate to each other?

[ ]

Part 3: Evaluation and Creation

Evaluate the efficiency of using a cylindrical shape for packaging. What are the advantages and disadvantages?

Hint: Consider the use of space and material.

[ ]

Design a cylindrical container that can hold 500 cm³ of liquid. Specify the dimensions (radius and height) and justify your design choices.

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Hint: Use the volume formula to guide your design.

1. What is the radius?

2. What is the height?

3. Why did you choose these dimensions?

Which factor is most critical in determining the volume of a cylinder?

Hint: Consider the variables involved in the volume formula.

◯ A) The material of the cylinder
◯ B) The height of the cylinder
◯ C) The radius of the cylinder
◯ D) The color of the cylinder

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