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Volume Of Cylinder Worksheet Questions and Answers PDF

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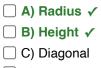
Part 1: Building a Foundation

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.

> A cylinder is a three-dimensional shape with two parallel circular bases and a curved surface.

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

Hint: Consider the parts that make up a cylinder.

☐ **A) Radius** ✓
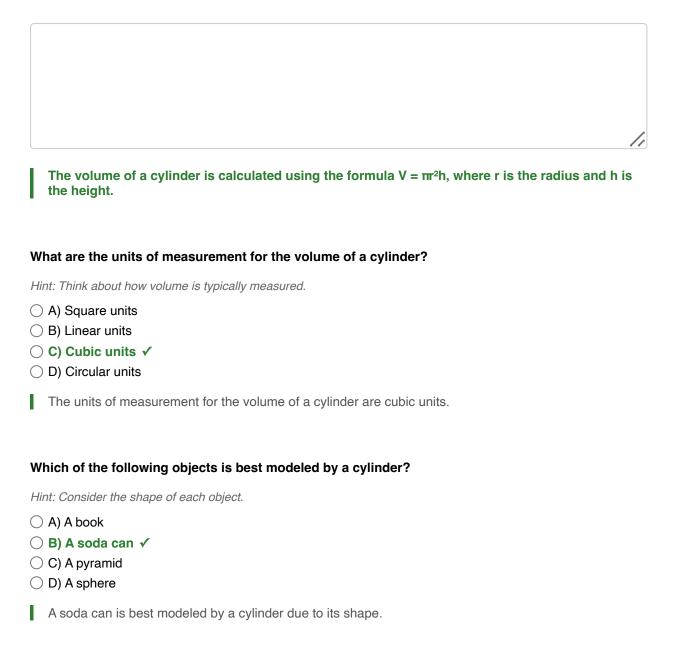
☐ **B) Height** ✓

☐ C) Diagonal

☐ **D) Base** ✓

> The components of a cylinder include the radius, height, and base.

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

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

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> **The volume of a cylinder is calculated using the formula V = πr²h, where r is the radius and h is the height.**

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

Hint: Think about how volume is typically measured.

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

> The units of measurement for the volume of a cylinder are cubic 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

> A soda can is best modeled by a cylinder due to its shape.

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.

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> **The radius can be calculated using the formula V = πr²h, resulting in r = 5 cm.**

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

> The water tank can hold 12π m³ of water.

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

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

> **Increasing the radius of a cylinder increases its volume exponentially, while keeping the height constant.**

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?

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> $V = \pi r^2 h$

---

2. What is the formula for surface area?

> $SA = 2\pi rh + 2\pi r^2$

---

3. How do they relate to each other?

> Both depend on the radius and height.

> Volume measures the space inside a cylinder, while surface area measures the total area of its outer surface.

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.

> **Cylindrical packaging is efficient for storage and transport but may waste space in certain arrangements.**

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

Hint: Use the volume formula to guide your design.

1. What is the radius?

| 5 cm

2. What is the height?

| 6.37 cm

3. Why did you choose these dimensions?

| To achieve the required volume efficiently.

| A possible design could be a cylinder with a radius of 5 cm and a height of 6.37 cm to achieve 500 cm³.

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

| The radius of the cylinder is the most critical factor in determining its volume.

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