

DIRECT INSTRUCTION

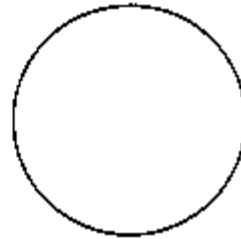
GEOMETRY LESSON: VOLUME OF A CYLINDER

OBJECTIVES

- Recognize and correctly name a cylinder
- Distinguish between two-dimensional regions and three-dimensional ones
- Use a formula to perform a calculate the volume of a cylinder

LESSON SET

- **Activate Background Knowledge:** We have been studying geometry. You are familiar with formulas and shapes.
- **Involve All Students:** Name the shapes that I draw.

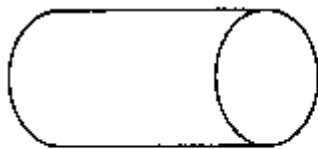


Name and define the parts of a circle.

Review pi.

Recall the area and circumference formulas.

What is the name of this shape?



- **Relate to Real Life:** Where might I encounter such a shape in everyday life?

-Cylinder, 3 feet high, 1 foot radius

- **(Teacher does, student helps)** For the next two examples, I will do the work on the board, but I want you to help me by telling me what to do. Do not try to work these examples on paper. Instead, let's see if we can do them orally.

-Cylinder, 8 feet high, radius 2

-Cylinder, 6 feet high, radius 3

***** **Distribute worksheet**

- **(Student does, teacher helps)** For the next two examples, I want you to work with your pencil. I will still work the problems on the board, but you should work them on your sheet with me.

-Examples one and two on worksheet

- **(Student does)** - I am going to let you work the last two examples by yourself. I will help you if you need my help. If you need to talk yourself through the steps, do so. When you are finished, I will check to make sure you have done the examples correctly.

(Volunteers to come to the board and work the examples?)

-Examples three and four on the worksheet

- **Guided Practice:** I am going to give you another set of examples to practice. Complete these in class. If you need help, I will help you. (Group work is a good thing to do at this point. Students can help each other, as well as talk to each other about the work they are doing. I ask volunteers to work the examples on the board sometimes.)

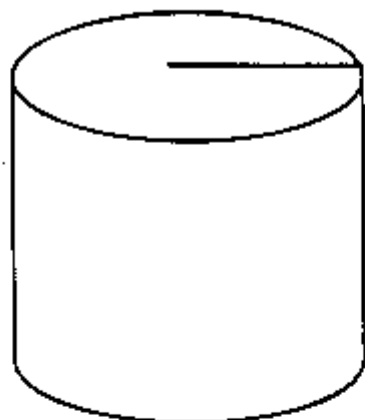
- **Closure**

- Remove all notes and examples. Tell your partner how to find the volume of a cylinder.
- Tell ME how to find the volume of a cylinder. I will write the steps on chart paper as you tell me. (Often, I post these closure lists in the room to help students remember the steps for later use. If they help generate the lists, the lists make more sense.)
- Let's do one more example.
Cylinder, 10 feet high, 8-feet radius

- **Independent Practice:** exercises to be completed by students without supervision

- a worksheet of examples like those done in class
- a set of controlled real-life examples students measure and calculate the volume of the cylinders (could include fraction and decimal calculations)
- uncontrolled real-life examples- find cylinders in the room, measure, and calculate volume
- series of word problems involving the calculations learned
- calculations with examples where diameter is given instead of radius

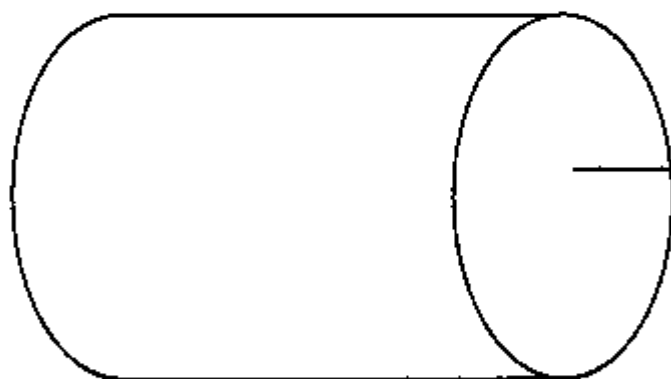
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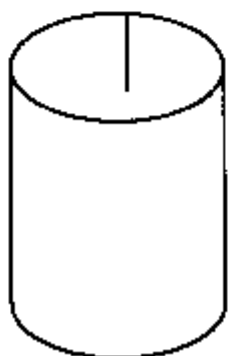
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How is such a shape useful to us? What is the difference between a circle and cylinder?

- **Label the Learning:** Today we will learn to calculate the area of a cylinder. We will use a formula to do the calculations.

LESSON: For this lesson, we will need the following formula:

$$V = \pi r^2 h$$

Review the fact that V,h,r are variables. The 2 is an exponent, and π is a Greek letter that is constant.

- **(Teacher does)** For the first part of the lesson, I am going to work the examples on the board. I only want you to watch and listen. Do not help me on these examples. Try to picture in your head what I am going to do. Do not try to work these examples on paper. (eyes and ears ONLY)

-Cylinder: 10 feet high, radius 2 feet

(Draw the example on the board, and follow the Volume formula. Talk through these steps as you work the examples.)

Write the formula.

Put spaces in place of ALL letters (π is a letter).

Fill in the spaces with info you know.

Perform the calculations.