

# Volume of a Rectangular Prism

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| <b>Reporting Category</b> | Measurement   |
| <b>Topic</b>              | Determining the volume of a rectangular prism   |
| <b>Primary SOL</b>        | 7.5b The student will solve practical problems involving the volumes and surface areas of rectangular prisms and cylinders. |
| <b>Related SOL</b>        | 7.5a, 7.5c  |

## Materials

- Transparent rectangular prisms (can be constructed using transparent sheets)
- Small cubes

## Vocabulary

*length, width, height, volume* (earlier grades)

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Place students into groups of three. Give each group a rectangular prism and some cubes.
2. Fill the bottom layer of a rectangular prism with cubes, and direct each group to follow your example.
3. Facilitate a discussion concluding that the number of cubes needed to fill the bottom layer is the same as the rectangle's length times its width. Write this information on the board.
4. Fill the second layer with cubes, and discuss the results. Continue filling each layer until the class concludes that a prism's volume can be determined by multiplying the number of cubes in a layer by the height of the prism. Add height to the formula previously written on the board.
5. Place students in groups of two or three, and have each group use 48 cubes to build a prism. Compare each group's prisms.
6. Display three rectangular prisms of various sizes, and ask students to predict which will have the greatest volume. Fill each with rice to determine which has the greatest volume.
7. Give students additional problems for practice.

## Assessment

- **Questions**
  - What is volume?
  - Why is volume measured in cubic units?
- **Journal/Writing Prompts**
  - Explain the difference between surface area and volume.
  - Describe a practical example of when you would need to find the volume of a rectangular prism.

## Extensions and Connections (for all students)

- Have students find the volume of another prism.

**Strategies for Differentiation**

- Begin with prisms that have attributes that are whole numbers less than 10. Give plenty of practice building prisms with the cubes.
- Have students build several sizes of cubes. Use the cubes to introduce cubic units.
- Relate the base of the prism to the classroom floor.