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Down in the Dumps

By Linda Buchwald

• Check out how much trash people create by calculating volume of a rectangular prism.

New York City alone throws out more than 400,000 tons of recyclable paper each year. Heavy! Plus, that much trash takes up a lot of space. It could fill the Empire State Building!

The amount of space taken up by a 3-D shape is called **volume**. We'll show you how to calculate it below. Then, find the volume of rectangular prisms to see how much waste we produce. Now, let's get cleaning--er, calculating.

Volume of a Rectangular Prism

• Volume of a rectangular prism = length x width x height

• The formula also can be written like this: $V = l$ x w x h

• Volume is measured in cubic units.

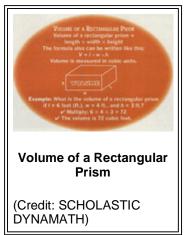**Example:** What is the volume of a rectangular prism if l = 6 feet (ft.), w = 4 ft., and h = 3 ft.?

• Multiply: 6 x 4 x 3 = 72
• The volume is 72 cubic feet.

Volume of a Rectangular Prism

(Credit: SCHOLASTIC DYNAMATH)

What to Do

Use the information in **Volume of a Rectangular Prism** to answer the questions.

1. An average person in the U.S. throws out enough newspaper each year to fill a refrigerator. Refrigerator's dimensions: l = 3 ft., w = 2 ft., and h = 5 ft.

A. What equation would you write to find the refrigerator's volume? _____

B. What is the volume of that refrigerator (and the volume of newspaper an average person throws out each year) in cubic units? _____

2. The total amount of trash that one average person in the U.S. throws away each year could fill a walk-in closet. Closet's dimensions: l = 5 ft., w = 5 ft., and h = 6 ft. What is the volume of that waste? _____

3. Each year, an apartment building of 535 average people throws away enough trash to fill an Olympic swimming pool. Pool's dimensions: l = 164 ft., w = 82 ft., and h = 6 ft. What is the trash's volume? _____

4. The Empire State Building has the volume of a rectangular prism where l = 500 ft., w = 100 ft., and h = 740 ft. Its volume is equal to the volume of recyclable paper that is thrown out in New York City each year! What is the volume of all that paper? _____

5. Combined, Chicago, Illinois, and Philadelphia, Pennsylvania, have a population of about 4,300,000. Each day, that many people throw away enough trash to fill the White House. The White House's dimensions are about l = 168 ft., w = 152 ft, and h = 70 ft. What is the volume of that trash? _____

6. The amount of aluminum thrown out by the average person in a year could fit inside an ice-cream freezer. Dimensions: l = 4 ft., w = 0.5 ft., and h = 4 ft. What is the volume of the aluminum? _____

Supermath

Americans throw out about 100,000 CDs and DVDs each month. In their cases, they take up about 189 cubic feet. If those CDs were in a box with l = 7 ft. and h = 9 ft., what would w equal? _____

• **Recycling and taking care of the environment are sometimes called "going green."**

Answers

1a. V = 5 x 2 x 3
1b. 30 cubic feet

2. 150 cubic feet

3. 80,688

4. 37,000,000 cubic feet

5. 1,787,520 cubic feet

6. 8 cubic feet

Supermath: 3 feet