Teacher Guide
VOLUME OF CUBES

OBJECTIVE:
Students will be able to identify and calculate the volume of a cube.

VOCABULARY: (Definitions are located in the Appendix)
CUBE   HEIGHT   LENGTH
VOLUME   WIDTH

MATERIALS:
BrickLab materials, Paper, Ruler, Measuring Tape.

PREPARATION:
Be familiar with BrickLab materials. Prepare a large brick cube for Activity 3.

DISCUSSION:
The instructor will lead a group discussion regarding the concept of volume. Volume is a measurement of the amount an object holds, or how much space it occupies. Volume is usually expressed in cubic units, such as cubic centimeters. A cube is a solid shape with six square sides in which the length, width, and height are equal, and all of its angles are right angles. To calculate the volume of a cube, (or any similar block shape) you must multiply the cube's length, width, and height.

Volume = Length x Width x Height

or V = LWH

ACTIVITY 1:
Students will measure bricks with rulers (excluding the height of the cylindrical studs). Each brick should be about 0.96 cm tall (0.38 in). The distance of the midpoints between each stud is approximately 0.8 cm (0.31 in.). A 2x4 brick would be 1.6 cm (0.63 in) wide and 3.2 cm (1.26 in) long. Require students to build a brick cube. Each block will contain a total of six 2x4 bricks. Students will calculate its approximate volume.

ACTIVITY 2:
Students will build a larger brick cube and calculate the volume. A sample class cube should be shown using forty-eight 2x4 bricks, stacked six bricks tall and having a width and length of eight studs.

ACTIVITY 3:
Students will calculate how many of the instructor's cube would be required to fill the room. This will require students to calculate the volume of the room using a measuring tape (or manually with a ruler).
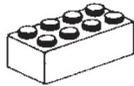
ACTIVITY 4:
Students will write a short essay defining and explaining the importance of finding volume.
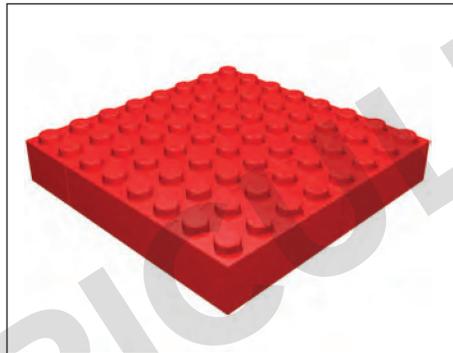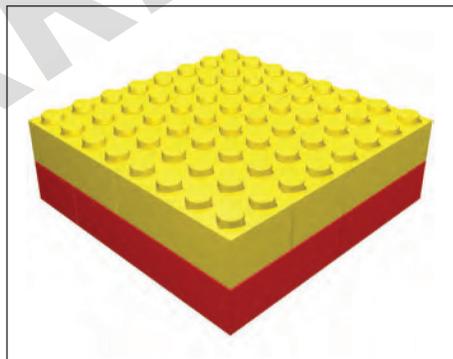
Project Plans
VOLUME OF CUBES

Required Materials:

48 - 2x4 bricks

1. Select eight 2x4 bricks, and make a square. Lay your bricks out as shown.

Check off when complete ☐

2. Continue stacking up layers of bricks. Create the second row by covering the cracks of the first row.

Check off when complete ☐

3. Continue building upwards until you have six levels constructed.

Check off when complete ☐
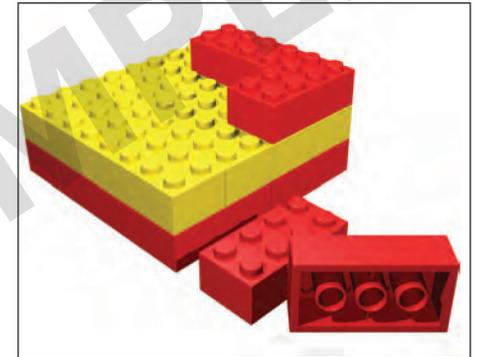
4. Cover the cracks as you build up. You don't want your model to have a center that will fall out when you pick it up to measure it.

Check off when complete ☐

5. When you are finished, you will have a brick cube!

Check off when complete ☐

Assessment
VOLUME OF CUBES

Vocabulary Review:

CUBE   HEIGHT   LENGTH

VOLUME   WIDTH

Multiple Choice:

1. The amount of space occupied by a solid object or a liquid is its...

- ⭕ Length
- ⭕ Cube
- ⭕ Volume
- ⭕ Height

2. A cube has...

- ⭕ Six sides
- ⭕ Right angles
- ⭕ Width, length, and height
- ⭕ All of the above

3. You need to know all of the following to calculate volume *except*:

- ⭕ Length
- ⭕ Height
- ⭕ Width
- ⭕ Weight

Questions to Ponder:

(Use these questions as a starting point for your journal entry.)

1. What are length, width, and height?

2. Can you define and present an example of volume?

3. Why would knowing an object's volume prove useful?

Journal Entry:

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Grade: _____

Name:

Date: