5th Grade Math

Module 5: Addition and Multiplication with Volume and Area

Math Parent Letter

This document is created to give parents and students an understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Grade 5 Module 5 of Eureka Math (Engage New York) covers Addition and Multiplication with Volume and Area. This newsletter will discuss Module 5, Topic A. In this topic students will explore volume.

Topic A: Concepts of Volume

Words to know:
- cube
- unit cubes
- base
- right rectangular prism
- cubic units
- volume of a solid
- solid figure
- face

Things to Remember!
- Cube – three-dimensional figure with six square sides
- Unit Cubes/Cubic Units – cubes of the same size used for measuring volume; all sides measure 1 unit
- Base – one face of a three-dimensional solid; often thought of as the surface upon which the solid rests
- Volume of a Solid – measurement of space or capacity
- Solid Figure – three-dimensional figure
- Right Rectangular Prism – rectangular prism with only 90° angles
- Face – any flat surface of a three-dimensional figure
- u³ is read units cubed. cm³ is read centimeter cubed.

Focus Area– Topic A

Module 5: Addition and Multiplication with Volume and Area

1. The following solids are made up of 1-cm cubes. Find the volume of each figure, and write in the chart below.

<table>
<thead>
<tr>
<th>Figure</th>
<th>Volume</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5 cm³ or 5 cubic cm</td>
<td>I counted the cubes.</td>
</tr>
<tr>
<td>B</td>
<td>9 cm³ or 9 cubic cm</td>
<td>I counted 4 cubes on the right and then multiplied by 2 to include the cubes of the left side and then added the cube in the middle.</td>
</tr>
</tbody>
</table>

2. Dwight says that the figure below, made of 1-cm cubes, has a volume of 5 cubic centimeters. Explain his mistake.

He failed to count the cube that is hidden. The cube on the second layer has to be sitting on a cube below it.

Application Problem:

Jack and Jill both have 12 centimeter cubes. Jack builds a tower that is 6 cubes high and 2 cubes wide. Jill builds one that is 6 cubes long and 2 cubes wide. Jack says his structure has the greater volume because it is taller. Jill says that the structures have the same volume. Who is correct? Draw a picture to explain how you know.

Jill is correct because both have a volume of 12 cubic centimeters. Jack’s is standing upright and Jill’s is lying down.
Application Problem: Mary and Sue were finding the volume of the prism below. The girls agreed that 4 layers can be added together to find the volume. Mary said she could see on the end of the prism that each layer will have 16 cubes in it. Sue said each layer has 24 cubes in it. Who is right? Explain how you know.

Mary thought of vertical lines so it resembled bread slices. There are 16 cubes in each layer but there are 6 layers and not 4 layers.

Sue thought of horizontal lines so it resembled layers of cake. There are 24 cubes in each layer and there are 4 layers.

Answer: Sue is correct.