Volume Measurement:
Going Beyond the Formulas with the Common Core

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A Longitudinal Examination of Children's Developing Knowledge of Measurement: Mathematical and Scientific Concept and Strategy Growth from Pre-K through Grade 5

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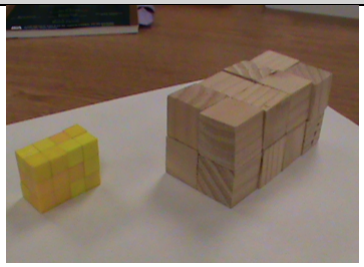
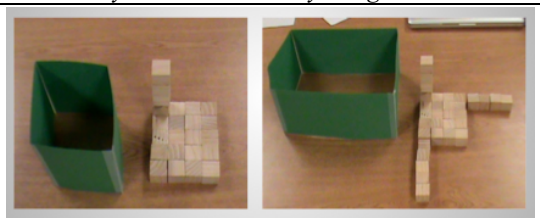
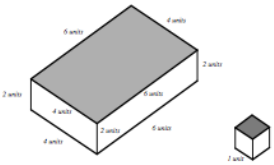
http://childrensmeasurement.org

Volume Measurement Tasks	Connections to CCSSM
 *Another student said that this one (the yellow cube building) has a larger volume than the other one (the wooden cube building) because it has 24 cubes but the other one only as 16 cubes. Do you agree?*	**Grade 4** • (4.MD.1) Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. ○ Know relative sizes of measurement units within one system of units **Grade 5** • (5.MD.3) Recognize volume as an attribute of 3D space


How many blocks would be needed to fill this container?
	Grade 5
	• (5.MD.4) Measure volumes by
	  – Finding the total number of same-size units of volume required to fill the space without gaps or overlaps
	  – Viewing 3D shapes as decomposed into layers of arrays of cubes
	• (5.MD.5) Relate volume to multiplication and addition and solve real world and mathematical problems


If this cube has a volume of one, what is the volume of the solid?
	Grade 5
	• (5.MD.4) Measure volumes by
	  – Selecting appropriate units, strategies, and tools
	  – Counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units
	  – Viewing 3D shapes as decomposed into layers of arrays of cubes
	• (5.MD.5) Relate volume to multiplication and addition and solve real world and mathematical problems

 Draw something that has three times the volume of this. Build the figure based on your drawing.	**Grade 5** • (5.MD.4) Measure volumes by – Viewing 3D shapes as decomposed into layers of arrays of cubes • (5.MD.5) Relate volume to multiplication and addition and solve real world and mathematical problems

How many purple decimeter cubes do you need to fill up this room? If you want, you might want to find out how many purple cubes are in here.
	Grade 5
	• (5.MD.4) Measure volumes by
	  – Selecting appropriate units, strategies, and tools
	  – Counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units
	  – Finding the total number of same-size units of volume required to fill the space without gaps or overlaps
	  – Viewing 3D shapes as decomposed into layers of arrays of cubes
	• (5.MD.5) Relate volume to multiplication and addition and solve real world and mathematical problems