

Pump up the Volume (Measurement)
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Cheryl L. Eames
cleames@ilstu.edu

Melike Kara
mkara@ilstu.edu

Jeffrey E. Barrett
jbarrett@ilstu.edu

Illinois State University
Normal, Illinois



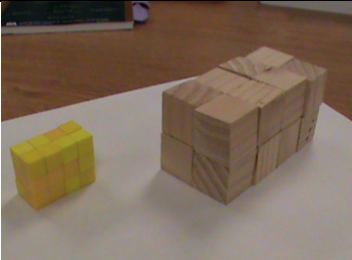
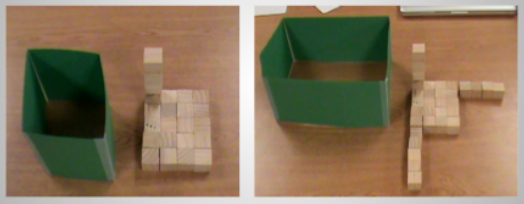
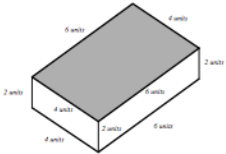

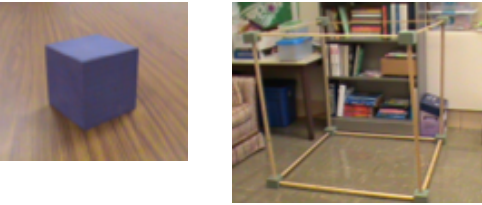
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A Longitudinal Examination of Children's Developing Knowledge of Measurement:
Mathematical and Scientific Concept and Strategy Growth from Pre-K through Grade 5

Principle Investigators
Illinois State University
Jeffrey E. Barrett, Ph.D.

University at Buffalo, State University of New York
Douglas H. Clements, Ph.D.
Julie Sarama, Ph.D.
(Currently University of Denver)

<http://childrensmeasurement.org>

Volume Measurement Tasks	Connections to CCSSM
 <p>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?</p>	<p style="text-align: center;">Grade 4</p> <ul style="list-style-type: none"> (4.MD.1) Solve problems involving measurement and <u>conversion</u> of measurements from a larger unit to a smaller unit. <ul style="list-style-type: none"> Know <u>relative sizes of measurement units</u> within one system of units <p style="text-align: center;">Grade 5</p> <ul style="list-style-type: none"> (5.MD.3) <u>Recognize</u> volume as an <u>attribute</u> of 3D space
 <p>How many blocks would be needed to fill this container?</p>	<p style="text-align: center;">Grade 5</p> <ul style="list-style-type: none"> (5.MD.4) Measure volumes by <ul style="list-style-type: none"> Finding the <u>total</u> number of same-size units of volume required to fill the space without gaps or overlaps Viewing 3D shapes as decomposed into <u>layers of arrays</u> of cubes (5.MD.5) Relate volume to <u>multiplication</u> and <u>addition</u> and solve real world and mathematical problems
 <p>What is the volume of the solid?</p>	<p style="text-align: center;">Grade 5</p> <ul style="list-style-type: none"> (5.MD.4) Measure volumes by <ul style="list-style-type: none"> Selecting appropriate <u>units, strategies,</u> and tools <u>Counting unit cubes,</u> using cubic cm, cubic in, cubic ft, and improvised units Viewing 3D shapes as decomposed into layers of <u>arrays</u> of cubes (5.MD.5) Relate volume to <u>multiplication</u> and <u>addition</u> and solve real world and mathematical problems
 <p>Draw something that has three times the volume of this. Build the figure based on your drawing.</p>	<p style="text-align: center;">Grade 5</p> <ul style="list-style-type: none"> (5.MD.4) Measure volumes by <ul style="list-style-type: none"> <u>Viewing</u> 3D shapes as decomposed into layers of <u>arrays</u> of cubes (5.MD.5) Relate volume to <u>multiplication</u> and <u>addition</u> and solve real world and mathematical problems
 <p>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.</p>	<p style="text-align: center;">Grade 5</p> <ul style="list-style-type: none"> (5.MD.4) Measure volumes by <ul style="list-style-type: none"> Selecting <u>appropriate units, strategies,</u> and <u>tools</u> Counting <u>unit cubes,</u> using <u>cubic cm,</u> cubic in, cubic ft, and improvised units Finding the <u>total number of same-size units</u> of volume required to fill the space without gaps or overlaps Viewing 3D shapes as <u>decomposed</u> into layers of arrays of cubes (5.MD.5) Relate volume to <u>multiplication</u> and <u>addition</u> (6.G.2, 7.G.6) Solve real world and mathematical problems