Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 6* / Grade 6 (Math Regional Curriculum)

Wednesday, October 31, 2012, 12:10PM

Standard/Module: Proficiency with Geometry Concepts 6.G.2 (Week 25, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Supporting (20%) Links to 6.NS.1, 6.NS.3, 6,EE.1, 6.EE.2c

6 Grade CCS Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 6th Grade , Geometry

6.G Solve real-world and mathematical problems involving area, surface area, and volume.

- 2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Enduring Understandings	Essential Questions
1. Students need to be able to see the relationship between the side lengths of a cube and its volume. 2. Volume of a rectangular prism is made up of how many cubic units fit inside. 3. Rectangular prisms are three dimensional that you calculate the volume by multiplying the length, height, and width to find the volume. 4. The formulas V= lwh and V=Bh repseent the same formula.	1. Can you identify rectangular prisms in the real-world? 2. How can area be used to help find the volume of a rectangular prism (lw = B)? 3. How can the size of fractional units change the numerical value of a rectangular prism?

Critical Content

1. Volume

   a. formula: V= l x w x h OR V= B x h

   b. concept of volume

c. cubic units

2. Fractions

a. Multiplying

b. Dividing

c. mixed numbers

d. improper fractions

e. converting mixed numbers and improper fractions

Skills	Vocabulary
1. Use the formula for volume (V= l x w x h) 2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths. 3. Show that the volume is the same as would be found by multiplying the edge lengths of the prism. 4. Apply the formulas V= l x w x h OR V= B x h 5. Solve real- world problems using the context of volume. 6. Multiplication of whole numbers 7. Multiplication and division of fractions and mixed numbers 8. Converting from mixed number to improper fractions and improper fractions to mixed numbers	Tier 2: cube height length width prism formula Tier 3: volume

Stage 2: Assessment Evidence

Assessments

Formative: Other: Quiz

Students will be given three word problems involving a cube and 2 rectangular prisms with fractional edge lengths, and will be asked to find the volume of each prism.

Stage 3: Learning Plan

Learning Activities	Resources
Find the volume using milk cartons, tissue boxes, etc.	http://engageny.org/common-core/
What's in the Box? Materials ruler or measuring tape With your student, look at some of the boxes and cans in your cupboard or pantry. Ask your student to select four or five rectangular containers that look as though they might have the same volume. Help your student measure the necessary dimensions, then calculate the volume of each container. The containers can be arranged in order of their volumes from least to greatest. If two containers do have the same volume, they can be returned to the shelf. Now have your student look again for other containers that might have the same volume as those previously measured. Measure, calculate, and compare again.	http://illustrativemathematics.org/ www.livebinders.com/play/play/52180 http://illuminations.nctm.org/
Going Bigger If you don't care to have your food measured, challenge your student to find the volume of a box that could hold something larger: a bed, a chair, a television, or a couch. This will require some imaginative measuring, but your student is capable of performing these tasks.	http://www.mathsisfun.com/geometry/polyhedron.html http://www.korthalsaltes.com/

Differentiation Opportunities

Students need multiple opportunities to measure volume by filling rectangular prisms with blocks

and looking at the relationship between the total volume and the area of the base. Through these

experiences, students derive the volume formula (volume equals the area of the base times the height). Students can explore the connection between filling a box with unit cubes and the volume formula using interactive applets such as the Cubes Tool on NCTM's Illuminations

(See http://illuminations.nctm.org/ActivityDetail.aspx?ID=6).

In addition to filling boxes, students can draw diagrams to represent fractional side lengths, connecting with multiplication of fractions. This process is similar to composing and decomposing two dimensional shapes.

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Last Updated: Thursday, October 11, 2012, 9:59PM

Atlas Version 7.2.6
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