Grade 5

Unit	Unit Title	Lesson	Day
3.2	Understanding Volume	1 of 3	1 – 2

Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
5.MD.3 Recognize volume as an attribute of solid figures (3D) and understand concepts of volume measurement.	•Identify, describe, and classify solid (three-dimensional) figures. •Know what a polyhedron is or is not. •Recognize the base of a pyramid and polygon by name. •Naming a polyhedron (prism or pyramid) knowing the name of its base.	**SMP4** Model with mathematics. **SMP6** Attend to precision. **SMP7** Look for and make use of structure.	•How can you identify, describe, and classify three- dimensional figures? •What is a polyhedron? •How do you distinguish the base of a prism? Pyramid**?** •How does knowing the shape of the base help you name the prism or pyramid?
5. Prerequisite Knowledge	**6. Essential Vocabulary**	**7. Possible Misconceptions**	**8. Necessary Materials**
•Identify polygons and circles. •Classify a polygon by its number of sides. •Classify quadrilaterals.	Polyhedron Pyramid, prism Base Lateral faces Cylinder, cone, sphere	Misunderstanding the vocabulary.	**OnCore Lesson 86** Student pages 171 & 172 **Investigations** Unit 2 INV 3 Session 3.1 – 3.3

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide students to identify, describe, and classify solid (three-dimensional) figures before they focus on recognizing volume as an attribute of these solids. They will help students identify what a polyhedron is or is not. Teachers will also find ways to help students recognize the base of a prism and pyramid and that knowing the shape of the base is used in naming the solid. Teachers may use OnCore Lesson 86 and various materials from Investigations Unit 2 INV 3 Session 3.1 – 3.3.	Students will identify, describe, and classify (solid) three-dimensional figures before they focus on recognizing volume as an attribute of these solids. They will be able to identify what a polyhedron is or is not. Students will recognize the base of a prism and pyramid and know that knowing the shape of the base will b helpful when naming the solid. Students will practice this concept using OnCore Lesson 86 and Investigations Unit 2 INV 3 Session 3.1 – 3.3.

Grade 5

Unit	Unit Title	Lesson	Day
3.2	Understanding Volume	2 of 3	3 - 5

Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
5.MD.3 Recognize volume as an attribute of solid figures (3D) and understand concepts of volume measurement. **a.** *A cube with side length 1 unit, called a "unit cube", is said to have "one cubic unit" of volume, and can be used to measure volume.*	Understand what a unit cubes is and how they can be used to build a solid (3D) figure.	**SMP4** Model with mathematics. **SMP6** Attend to precision. **SMP7** Look for and make use of structure.	•What is a unit cube? •How can you use a unit cube to build a solid figure?
5. Prerequisite Knowledge	**6. Essential Vocabulary**	**7. Possible Misconceptions**	**8. Necessary Materials**
Recognize a rectangular prism.	Unit cube		**OnCore** Lesson 87 Student pages 173 & 174 **Investigations** Unit 2 INV 2 Session 2.1-2.3 **K-5 Math Resources** http://www.k-5mathteachingresources.com/support-files/build-a-cubic-meter.pdf

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide students to understand what a unit cute represents and how they can be used to build a solid (3D) figure. Teachers may use the OnCore Lesson 87, Investigations Unit 2 Session 2.1 – 2.3 (including the Quick Images) or the K-5 Math Resource "Build a Cubic Meter" to help students become proficient in this standard.	Students will understand what a unit cube represents and how they can be used to build a solid (3D) figure. They will build this understanding using Oncore student pages, Investigations Unit 2 materials, including the Quick Images and may possibly construct a cubic meter using directives from K-5 Math Resources.

Grade 5

Unit	Unit Title	Lesson	Day
3.2	Understanding Volume	3 of 3	6 -10 (teachers may not need 5 days)

Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. **b.** A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	•Understand that the volume of a rectangular prism is equal to the number of unit cubes that make up the prism. •Count unit cubes that fill a solid figure to find volume. •Volume is labeled in cubics, e.g. cubic inches (cu in), cubic centimeters (cu cm), etc.	**SMP4** Model with mathematics. **SMP6** Attend to precision. **SMP7** Look for and make use of structure.	•How can you use unit cubes to find the volume of a rectangular prism? •Why is it important not leave gaps between the unit cubes? •Why is it important not to overlap the cubes when packing a solid figure to determine its volume?

5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
Use unit cubes to build a solid figure.	Volume Cubic unit 1 unit cube = 1 cubic unit	Difficulty counting the cubes that cannot be seen.	**Oncore** Lesson 88 Student pages 175 & 176 **Investigations** Unit 2 INV 1 **K-5 Math Resources** *Exploring Volume* *Building Rectangular Prisms with a Given Volume*

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide students to understand that the volume of a rectangular prism is equal to the number of unit cubes that make up (or fit inside) the prism. They will help students realize that they can count the unit cubes that fill a solid figure to find the volume. Teachers will also insure that the students use the correct label (cubics/units cubes) when referring to volume. Teachers will determine which available materials to use for their classroom or particular students.	Students will understand that the volume of a rectangular prism is equal to the number of unit cubes that make up (or fit inside) the prism. They will realize that they can count the unit cubes that fill a solid figure to find the volume. Students will use the correct label (cubics/units cubes) when referring to volume. They will practice this concept using the materials the teacher determines is best for their classroom or particular students.