Teacher	Johnson, Carter, Shipley	Subject	Geometry 3D Measurement	Timeline (Dates)	2-3 weeks of instruction (After Spring Break) 2015

Demonstrators/ Exit Standards (Core Content)	1. **CCSS.Math.Content.7.G.A.3** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 2. **CCSS.Math.Content.7.G.B.6** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Essential Question(s)	**What is the difference between 2D and 3D figures? How can I measure and create 3D figures to solve real world problems?**

Guiding Questions: (Objectives, Learning Targets)	1. I can classify and provide examples of the geometric elements of 3D figures. 2. I can describe the 2D figures that result (cross-sections) from the slicing of 3D figures. 3. I can solve real world problems involving volume of prisms. 4. I can solve real world problems involving surface area of prisms. 5. I can solve real world problems involving volume of pyramids. 6. I can solve real world problems involving surface area of pyramids.	Unit Vocabulary	Base Height Slant height Volume Surface area Units Cross-section

What products will students create to show they understand? (Formative & Summative Assessments)			Please attach Open Response and Rubric.	
Manipulative Problem-Solving	Quizzes	Pre-Post Assessments	Daily Skills Checks -Warm-ups	Open Response

Hook :

Pose the question: **How can you cut a cake into 8 pieces with only three cuts?** Students will struggle with this and most will think 2D. This will introduce 3D figures.

Thoughtful Education Strategies (Minimum of three per week) (Fifteen different strategies per semester)				
Mastery	**Interpersonal**	**Understanding**	**Self – Expressive**	**Utility (Can be used in multiple styles)**
Fact or Fiction Categories Spider/Fist List Memory Box Word Association Write to learn Word Wall Building writing Reading for Meaning Interactive Lecture Group & Labeling	Reciprocal Learning Think/Pair/Share Give one, Get one Collaborative Summarizing Jeopardy	Anticipation Guides KWL Concept Attainment Compare/Contrast 1,2,3,4 Yes, No, Why	Etch-a-Sketch Mystery	Graduated Difficulty Reader's Theatre Comprehension Menu Vocabulary Code Task Rotation Jigsaw Voc Notebook 4-2-1 Free Write Carousel Brainstorming Kindling Boggle TGT

Student Activities Below				
Day 1: Cross-Section	**Day 2 Classifying 3D figures**	**Day 3: Volume of Prisms**	**Day 4: Volume of Prisms**	**Day 5: Surface Area of**

(Flexible lesson- insert anytime into the unit) - Students will complete the cross-section candy bar hook (flipchart) and watch a video about cross-sections. We will sketch and complete practice problems in class and review with a warm-up the next day.	- Students will cut and tape 2D nets to form 3D figures. Students will be asked to work in groups of 6-8 and group the solids. We will complete the Solids graphic organizer and brainstorm characteristics of each (prisms, cones, cylinders, and pyramids) category. Discuss vertices, edges, and faces. -Extension: Build the shapes with coffee stirrers and marshmallows to model vertices (marshmallows) and edges (stirrers) and then use algebra to determine any n-sided solid. (located in p-drive)	- Students will develop a conceptual understanding of volume by completing the volume discovery lab sheet. Students will use centimeter grid paper to construct a net (with teacher guidance on board). Split the class into fourths and each group make a different box. (Ex. 2x5x4, 3x4x5, 2X3X4, 8X2X2.) Students will keep a side open for filling the box. Students will fill the box with foam cubic centimeters. Students will share the volume of their box and together, the class will discuss the volume is filling a space with cubic units and can be found by multiplying the area of the base by the height. **No hw**	- Students will use their conceptual understanding of volume to solve various volume problems. Complete the Bridge to Algebra worksheet.	**Prisms** - Utilizing nets, orthogonal views and formulas, students will develop an understanding of surface area of prisms. Also, focusing on when it is appropriate NOT to add certain faces. - practice sheet
CORE STANDARDS for above lessons				
CCSS.Math.Content.7.G.A.3	CCSS.Math.Content.7.G.A.3 CCSS.Math.Content.7.G.B.6 .			
Student Activities				
Day 6 Surface Area of Prisms - Continuation of conceptualizing surface area - focus on misconceptions from the previous lesson	**Day 7: Volume of Pyramids** - Ask students, "Would the volume of prisms formula, work for pyramids? Explain why or why not." Students should understand the base's area does not stay the same throughout the height of the pyramid. - Demonstration: Using 3D plastic models, ask the students how the volume of a pyramid (same base area and height)	**Day 8: Surface Area of Pyramids** - Focus on nets, orthogonal views, and formulas for surface area of pyramids. - practice sheet	**Day 9: Lab Day Practice** - IXL lessons	**Day 10: UNIT DOG (enrichment)** **(2-4 days)** **-located on pdrive** **Day 11: TEST/OR**

	compares to the same sized prism. Most students will say half. Using beans, show that it takes three pyramids to equal the prism. Students will develop a conceptual understanding of the pyramid formula V=1/3bh - Practice Problems			
CORE STANDARDS for above lessons				
Student Activities				
Student Activities				
CORE STANDARDS for above lessons				