**Volume and Surface Area Lesson**

**Lesson Plan for Math Grade 8**

Teacher: Mr. Barker

School: PHG

Date: 4/24/2014

**Standard: 8.M.G.B.09 I can find the volume of a cone, cylinder, or sphere.**

**Estimated Duration**: *70 minutes*

**Lesson objective(s):**

Students will be able to determine the volume and surface area of cones, spheres, and cylinders.

**Long-term and Short-Term Plans:**

Students need to know this material for the district benchmark testing in May and for AIMs testing in high school. I will give them post assessment the following day.

**Interdisciplinary Connections:**

The teacher will relate this activity to the ‘ship the chip’ science fair activity. The teacher will emphasize the importance of knowing the volume of an object when designing a shipping vessel for products. The students are measuring the volume and surface area of actual objects (authenticity) rather than a two dimensional image of a three dimensional object.

**Pre-Assessment:**

During the week previous to the lesson each student will work independently on the pre-Assessment for several minutes.

**Prior Lessons:**

This activity is a review of previous material already learned.

**Preparation:**

Each student will be given a ruler, worksheet, and a post-it at the beginning of class. Desks need to be arranged in pairs around the room.

**Key Vocabulary (written on the board):**

Sphere

Cylinder

Cone

Volume

Surface Area

Slant Height

Height

Radius

Diameter

**Lesson Overview:**

Bellwork (10 minutes)

Activity (50 minutes):

The lesson provides kinesthetic/tactile experience as the students must measure the various objects. Each partnership will be given a cone, sphere, and cylinder that is edible. Students must measure the diameters, heights, and slant heights of the given objects in order to then calculate volume and surface area. Students will brainstorm about how to measure these dimensions. When students have found all the correct answers, the teacher will check their work and then students may eat the edible objects.

Closure (10 minutes):

On the front of the post-it note, ask students to write down something that they did not understand from the lesson today. If they understand everything, they should write down ‘nothing’. On the back of the post-it write something new that they learned today. Give it to the teacher on the way out the door.

**Formative Assessments:** observation, post-it notes

**Subgroup Identification**

Observation is an effective method used by teachers to identify subgroups. As students work together, the teacher will also ask a variety of questions that will help determine student understanding and skill. For example:

* How did you find that answer?
* Why do you think that?
* Are there other ways to get that answer?
* Does your partner have a different answer?

I will carry a clip board and make note of students who are struggling and who achieve competence as I survey the room. I have a few gifted students who may finish quickly and will be given other material to work on.

**Differentiation strategies to meet diverse learner needs**

For students who achieve understanding (high subgroup), I may have those students work on the challenge problems. I may have advanced students explain or sit by struggling students to peer teach.

Instruction is differentiated according to learner needs and may include the following. For the low sub-group, I may use the following strategies:

* Give hints to struggling students.
* Allow students to verbally explain how they intend to determine surface area and volume.