



NCEA Math Lesson Plan

Grade: 7

Subject: Mathematics

Domain: Surface Area and Volume
Standard Number(s) and Description: 7.G.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.
Vocabulary to be Highlighted: Surface area, volume
Mathematical Practices (#): 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 4. Model with mathematics. 5. Use appropriate tools strategically. Essential Questions: Why are surface area and volume important and useful in real-world problems? What do we mean by surface area and volume? How do we calculate surface area? How do we calculate volume?
Materials/Tools (include technology): St. Joseph: http://www.catholic.org/saints/saint.php?saint_id=4 Google SketchUp Wood cubes Glue Paint Other suitable building materials (i.e. Legos)
Connections to Other Math Domains:
Connections to Other Subject Areas: Art Science (engineering, building) Religion
Catholic Identity Component: Luke 22-25, particularly the Last Supper St. Joseph
Resources (attachments):

Activities/Timeline:**Lesson 1**

1. Read Luke 22:7-23 “Story of the Last Supper.” Discuss the context of eating together in the home. When does your family eat together? What is the importance of food and fellowship? Where does your family sit during a meal? How many people sit at the table in your home?
2. If there is a rectangular table available in the classroom, find the area of the tabletop. Discuss how many people could sit and eat comfortably at the table.
3. In small groups, have student determine how much area would be needed for one person to eat at a table. Let them present their ideas to the whole group.
4. If Jesus needed 13 people to sit at the table, calculate how much area would be needed and sketch diagrams of possible tables. Let groups share the sketches.
5. Now, suppose the tabletop needs to be stained. What height is reasonable for a table?
6. How much stain would be needed to cover the top, sides and bottom of the table (no legs)?
7. Conclude the lesson by discussing the measurements found, the terms area and surface area, and the units used – linear, dimensional, etc.

Lesson 2

1. Begin the lesson by asking about Jesus’ father. Who was he? What was his profession? Does anyone in the class have a father who has taught him or her to build?
2. What are some steps in the building process? What math and science skills are necessary?
3. Suppose Joseph built the top of the table for the Last Supper. How many cubic units of wood will he need?
4. Students will determine the volume of the tabletop with the dimensions from the previous lesson.
5. Students can actually build the tabletop using materials or Google Sketch-up.
6. Have student groups submit a scaled blueprint of their design, as well as calculations, a physical model and a written description of the building process.

You can expand this lesson to include measurements of the cross.

Formative Assessment (what to look for, how/when to look):

Observe student work.

Summative Assessment: