

Let's Share the Brownies

Lesson Summary Students will use brown paper “brownies” to learn about fractions.

Major Topic and SOL
Math SOL (2009) 5.2.a, 5.8.a

Length of Unit 90 minutes

Student Objectives

In Mathematics the student will be able to:

- represent common fractions by separating a paper which represents “a whole” into pieces (brownies) which represent fractional shares of the brownie
- measure the pieces of paper (brownies) in order to determine the perimeter and area of each
 - Although the pieces of paper are flat, the students will pretend they are 1 inch thick in order to calculate the volume.

In Language the students will be able to:

- correctly name/describe fractional parts of the whole
- correctly use the terms perimeter, area, and volume

21st Century Skills

- Critical-Thinking and Problem Solving
- Communication
- Creativity and Innovation
- Collaboration
- Contextual Learning

Assessment Evidence

- Student understanding will be assessed by observation, visiting with and questioning groups, and student presentations to their classmates.

Supplies/Materials/Technology

- Document camera
- Teacher copies of white 8 ½ by 11 paper
 - several sheets with lines drawn to represent halves, fourths, eighths, etc

- these should show further divisions within halves, etc
- Student copies of white pages to match teacher copies
- Brown construction paper
 - several sheets per student
- Student rulers

Lesson Plan

Motivation & Building Background:

- **Background:**
 - The students should have studied fractions, perimeter, area, and volume.
- **Motivation:**
 - Reason for Lesson: This is a review of fractions, perimeter, area, and volume.
 - The teacher will ask the students:
 - If you were presented with a pan of brownies, how would you be able to divide the brownies if you wanted each student to get the same amount of brownie but a different number of brownies?
 - How would you convince a student receiving one piece that he was receiving the same amount as a student receiving four pieces?

Presentation

- Using the document camera, the teacher will show students some 8 ½ by 11 pieces of paper separated differently with lines.
 - Talk about how one page is separated into halves, another into fourths, and another into tenths, etc.
 - Show the students papers that have halves further separated into fourths, etc.
 - Talk about how the two fourths represent the same amount as one half.
- Students are given pages that match these so that they can color representative sections as the teacher does the same.
 - Students will be encouraged to make observations about representative sections
 - i.e. “If we color two of these, it is the same amount as one of these.”
 - Students may use the document camera to present observations.
- Students will then meet in groups of three to take brown paper and partition it into “brownies”.
 - Students will be encouraged to make their own decisions about how to divide the paper (which represents the pan of brownies).
 - Students will need to measure perimeter and area of the pieces to support their divisions.

- Students will be encouraged to find as many ways as they can to separate the brownies equally but giving a different number of brownies to each.
- Students will be allowed to draw lines, fold, or cut as they desire.
- The teacher will circulate through the room, visiting with each group and listening to their discussion about how to divide the brownies.
- Students will be given a “wrap it up” warning of 10 minutes, and then 5 minutes.
- Groups will be allowed to use the document camera to present their “pan of brownies” and solution for dividing them.
 - They will also need to show, by measuring, equal representations of portions.