

Topic: Math, fractions

Overview

During this lesson students will investigate relationships among fractions. Students will use Hershey Bars, and magnetic pizza pieces to compare equivalent fractions. First, in small groups students will use Hershey bars to create several fractions as I am reading The Hershey's Fraction Book. Next they will watch a brief segment of the video Mathematical Eye. In which students will see how to create fractions that are equal in size. They will then apply what they learned by using the magnetic pizzas on the chalkboard and seeing how many equivalent fractions they can make out of 8 pieces. Finally, students will match equivalent fractions on the computer. The matching game they will use is called "Fraction Frenzy."

Grade 4

Time Allotment

Two 60-minute periods

Learning Objectives

On completion of this lesson students will be able to:

- Identify fractions that are equivalent and find fractions equivalent to a given fraction using models
- Determine equal fractions by comparing fractions that take up the same area, with the help of manipulatives.
- Investigate relationships among fractions.

This lesson addresses Va. SOL Math 4.2 (b), 4.3.

Media Components

- Videostreaming: Mathematical Eye: Fractions and Percentages. United Learning. 1989. 24 October 2005. <http://wvpt.unitedstreaming.com>.
Segment 1: Finding Fractions of a Whole (04:57).
- Computer with Internet access
- Multimedia projector
- Computer lab
- Website:
 1. <http://www.learningplanet.com/sam/ff/index.asp> This is an interactive site for matching equivalent fractions. This game requires the installation of Shockwave.

Materials and Student Handouts

- Pallotta, Jerry. The Hershey's Fractions Book. Scholastic Books. 1999. This book provides a hands-on, exciting introduction into my lesson on equivalent fractions by using candy bars.
- Wallaker Prince, Jillayne. Brain-Boosting Math. Carson Dellosa Publishing Inc. 2003. Assessment sheet 91, Fraction Twins.

Per group of 4

- Solid milk chocolate Hershey bar (large)

Per student

- Miniature Hershey bars-one per student
- Paper for each student
- Pencil for each student
- “Fraction Twins” assessment sheet-one per student (cited above)

Per teacher

- Pizza cut-outs (I had pre-made pizza slices however if you do not have access to that you may make your own slices out of construction paper.
- Magnetic strips to go on the back of pizza slices to use on the chalkboard

Teacher Preparations

- Divide the class into groups of 3-4 students.
- Download and preview Mathematical Eye: Fractions and Percentages
- Access “Fraction Frenzy” Internet game (cited above) to ensure game can be used on the day of your lesson. Create a shortcut on each student’s computer or put on your portaportal (if you have one).
- Make copies of assessment sheet.
- Reserve computer lab, if necessary.

Introductory Activity

Focus: I am going to hand each group a Hershey’s chocolate bar, but no eating! You will get to eat chocolate later if you can follow all my directions. I am going to read you a book about chocolate and fractions and I want you to listen for how many times we make equivalent fractions using the candy bar throughout the book. (Hand out the candy bars and caution students to carefully break the candy into sections.) You can keep track on paper by writing the fractions we made that were equivalent to one another. Each person in the group must take turns both writing the fractions down and also making the equivalent fractions with the candy bar.

Activity: Begin reading The Hershey’s Fraction Book by Jerry Pallotta. As I read each page, students will be required to follow the directions given on that page. We will discuss each page as I monitor each group to make sure they are working together and following directions.

Follow-up: First verbally ask each group to give one example of an equivalent fraction that they found using their candy bar and also how many total equivalent fractions were throughout the book. Students may answer by saying (12/12, 1 whole) (6/12, 1/2) (8/12, 2/3) (3/12, ¼) (9/12, ¾) and etc. There are a total of 8 equivalent groups of fractions throughout the book. After the activity, throw out the chocolate pieces, collect each group’s paper with all group members’ names on it, and pass out the Hershey miniature chocolate bars to each student. They may eat and enjoy.

Learning Activities

1. **Focus:** We are going to watch a video segment in which students are using yarn to divide a cake into fractional pieces. Watch carefully to see how they divide a cake and how many pieces they wind up with.

Play: video segment from the beginning.

Pause: Time: (01:27)

Visual: several pieces of cut cake

Audio: "...one sixth of the cake."

Follow-up: How were the students able to evenly divide the cakes? (using yarn to make same size pieces) Which ones were easy to do? (halves, working with a rectangular cake rather than a round one) How many pieces did the students wind up with? (six)

2. **Focus:** Now watch to see what equivalent fractions the students make from the sixths.

Play: from where you paused.

Pause: Time: (01:52)

Visual: six pieces of pie grouped into thirds

Audio: "...three thirds."

Follow-up: What equivalent fractions did they make from six sixths? (put $\frac{2}{6}$ together to make $\frac{1}{3}$)

3. **Focus:** Can the students put the sixths together in another way to make equivalent fractions? (Allow student responses.) Let's watch and see.

Play: from where you paused.

Stop: Time: (02:05)

Visual: all six pieces put back together

Audio: "...you'll get the whole cake."

Follow-up: Were you right? Did you notice that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$ and $\frac{3}{6}$ is equivalent to $\frac{1}{2}$? If we have all six pieces, what is that equivalent to? (one whole)

4. **Focus:** We will now work with a pizza and see what other equivalent fractions we can come up with.

Activity: Using the magnetic fraction pieces, have students come to the board to create a whole pizza and then equivalents. Have students list the equivalent fractions on the board.

Follow-up: Point out- equivalent fractions can be made by reducing fractions as well as multiplying the numerator and denominator by the same number.

Culminating Activities

Focus: Now we're going to use an online game to see how well you understand equivalent fractions. You will be given fractions and you'll have to match equivalent fractions before the time runs out. I'll show you an example first.

Activity: Go to the website that you have already bookmarked or put on your teacher PortaPortal. Play one game as a class to show students how it works. Students should know that the more time you have left at each round the more points you will accumulate.

Have students keep track of their points on paper. Give students sufficient time to play several rounds of the game.

Follow-up: Allow students to share their scores. Discuss whether or not they were able to improve each time and why that might be. If desired, allow students to recall as many equivalent fractions on paper as they possibly can within a set amount of time. I will collect these papers and for the remaining amount of time students may share questions or mis-understandings of equivalent fractions. You may also, at your discretion, reward the students with the highest scores.

Assessment

- Fraction Twins worksheet (Teacher may also create her own worksheet.)

Community Connections

- Discuss jobs that apply the use of fractions every day, such as a musician, chef, carpenter, and etc.
- Invite a professional that chose a career that uses fractions to come into the classroom and demonstrate how fractions are used within their job.
- Invite the cafeteria manager to bring a sample recipe and show how she has to adapt the recipe for smaller or larger groups.

Cross-Curricular Extensions

Math

- Encourage students to select a cookie recipe at home with the help of their parents and double or triple it as necessary to serve each student in the class two or three cookies. Provide a variety of recipes that students may choose from (excellent extra credit opportunity).
- Students may graph and display their own result from the Fraction Frenzy game.

Language Arts

- Have students write a story on how understanding fractions might help to solve a disagreement.

Art

- Have students brainstorm everyday ways you can show fractions without using pizza as an example. Ask students to create posters to be displayed around the school showing fractions in real life.

Adaptations (optional)

- Throughout this lesson I will have special needs students working with the assistant during all activities.
- The use of manipulatives and models will allow all students to have a visual representation in which they can learn from.



Fraction Frenzy
Stephanie Griffin
Page County Public Schools



About the Author:

Stephanie Griffin is a fourth/fifth grade math teacher at Luray Elementary School in Page County, Virginia.

This lesson was written as part of the Fall 2005 WVPT NTTI for the Virginia Enhancing Education Through Technology Ed Tech Grant awarded to the Shenandoah Valley Technology Consortium (SVTC).