Fantastic Fractions

Identifiers

Grade Level
2–6

Subject
Math

Duration
5 class periods

Objective
Students learn that shapes can be divided into equal parts, that each part will be equal to its counterpart(s), and that all combined parts will equal one whole.

Description
Students create an animation to demonstrate the concept of fractions and how fractions are written in mathematical terms.

Application
Clay Animation, Frames™

Process

Authentic Task
After seeing Wallace & Gromit, the people at your local public access television station think it might be a good idea to add clay animation to their animated short films that play on Saturday mornings. They want to see some samples before they make their decision. To help them, you will create a sample clay animation that teaches kids about fractions.

Procedure
Step 1: Explore Fractions
Discuss the concept of fractions with your students. Help them understand the concept of less than 1, but greater than 0. Provide everyday examples of fractions, such as slices of pizza, orange segments, or squares of a chocolate bar. You can have students work along with you as you read *The Hershey's Milk Chocolate Bar Fractions Book* by Jerry Pallotta and Rob Bolster.

Show how you can divide one object into many objects and how this translates into a written fraction. For example, when 1 chocolate bar is separated into 4 pieces, each piece equals ¼ of the chocolate bar.

Step 2: Brainstorm Objects
Have students work with their parents, or other family members, to brainstorm a list of foods and household objects that can easily be divided into fractions. Have students share their ideas as you create a master list of objects. Have students bring the objects to school and work as a class to discuss how the whole object can be divided into pieces that represent fractions.

Step 3: Brainstorm and Plan
Divide students into small groups of 3–5. Have student teams choose a common object from the list that the class brainstormed. Student teams should choose the object that they think will best help other kids learn about fractions.

Have students complete a print storyboard before beginning to build their animations. Their storyboards should demonstrate how they will show the object as a whole, how it will be divided into fractions, and how these fractional parts will be labeled. This will help you evaluate for comprehension before they begin working.

Step 4: Build the Objects and Create an Animation
When the storyboards are complete, provide clay and other materials for the students to create the object they will divide into fractions, as well as a background or any other props their animations will need.

Each team should take between 15 and 40 still pictures of their objects dividing into various fractions.

On the computer, students can use Frames to combine the still images into an animation. Be sure to have them create a title screen, label the different fractions, and add their names to a credits page.

If students finish a basic animation early, have them write a School House Rock style song to go with their fraction animations. You might suggest a rap-style song, with lyrics that rhyme.

Step 5: Share the Animations
When students are finished creating their animations, celebrate their success

Steps for Students

Creating Animated Fractions in Frames™

Once you take pictures of your fractions object, you can use Frames to combine them into a Fantastic Fraction animation.

1. Connect your camera to the computer.
2. Launch **Frames**.
3. Click the **Library** button to navigate to the camera and import the frames you have captured.
4. Click and drag the pictures in the storyboard to change the order.
5. Click the **New blank frame** button on the toolbar to add more frames.
6. Click the **Text** tool on the Tools panel to add text. Use the handles and Format options to change how the text looks.
7. Click the **Record** tool on the Tools panel to add narration.
8. Select a frame or group of frames and adjust the Duration slider on the Tools panel to change the timing.
9. Click the **Save** button on the toolbar to save changes.
10. Click the **Project** button and choose Export to create an animated movie to share.

by having each team present its animations to the rest of the class or to another class learning fractions. As they present, ask team members to share what they learned about fractions as they built their animations. You may also want to share the completed animations on your web site or during school video announcements. You could also give copies of the animation to your local access television station to help young television viewers learn this important math concept!

Assessment

Begin assessing student understanding as you work with manipulatives and explore fractions. See how many fraction ideas students come up with on their own, with family help, and then create a class list of objects.

The objects students choose can indicate comfort with the topic. Are they choosing only objects you have already worked with? Is everyone in the group comfortable with the choice? You may want to have them write an argument about why they think a given object will be the best way to teach someone else about fractions.

Be sure to check the storyboards before students begin taking pictures. This allows you to correct any misconceptions before the project proceeds too far.

As students present the final animation, ask each team member for feedback about the process and what he or she learned during it.

Resources

Adler, David. *Fraction Fun.*
ISBN: 0823413411

Cummings, Alyece. *Painless Fractions* (Barron's Painless Series).
ISBN: 0764104454

Pallotta, Jerry and Bolster, Rob. *The Hershey's Milk Chocolate Bar Fractions Book.*
ISBN: 0439135192

Math Forum: Fractions, Decimals, and Percents
http://mathforum.org/library/topics/fractions

No Matter What Shape Your Fractions Are In
http://math.rice.edu/~lanius/Patterns/

Standards

NCTM Math Standards—Numbers and Operations

Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Grades 3–5: All students should develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers.

NETS for Students—2007

1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Students:

b. create original works as a means of personal or group expression.

c. use models and simulations to explore complex systems and issues.

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Students:

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.