

Introduction to Fractions Lesson and Activity

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Grade Level: Grades 3–5

Objective: For students to be able to understand and identify where fractions “live” on a number line.

Materials: You will need to use individual packs of SweeTart candies and 12 snack-size plastic bags. You will need enough SweeTarts to create 12 bags that show the range of fractions from $2\frac{1}{12}$ to $2\frac{12}{12}$ (which is the same as 3). You also will need enough packs of SweeTarts so that each child can have his or her own pack, plus a few extra ones, for Part 2 of the activity. If you cannot find SweeTarts, use something else that comes in a pack of 12, such as different-colored pencils. Of course, you also can use tenths instead of twelfths; a pack of Starburst Fruit Chews candies would be an example of tenths!

Introduction

Read the story *Give Me Half!* by Stuart J. Murphy. After reading the story, ask the students to describe what it means to have half of something (one of two parts). Ask if they know how to write $\frac{1}{2}$ using numbers and then ask, “What kind of number is $\frac{1}{2}$?” (*a fraction*). If they know, then have them give names of other fractions they know, write these on the chalkboard, and draw pictures to show these amounts. Ask, “Where do these fractions live? For instance, the numbers 1, 2, 3, and so on live on the number line...what about fractions – do they live on the number line?” They probably will not have a response for this...that is okay. Tell them to keep this question in their minds for awhile and you will come back to it later. Write the question “Where do fractions live?” in a small corner of the chalkboard.

Discussion

Ask the students if they can figure out what half of a number is; for instance, What is half of 100? What about half of 50? Have the students explain how they know these answers; what are they doing or thinking in their heads to figure out what half of a number is (listen for the idea of two equal parts)? Draw a long number line on the chalkboard and label one end as 0 and the other end as 20. Have a student come up and put a mark at the halfway point on the number line and have this student write the number that “lives” at that point (*10*). Then have someone else come up and mark the spot on the number line that is the halfway point between 0 and 10. Also have this student write the number that “lives” at this point (*5*). Place a mark at the spot that is halfway between 0 and 5 and ask, “What number lives here?” Be ready for several responses, usually 2 and 3.

If students have trouble coming up with the number $2\frac{1}{2}$, then refer to money and say, “What would you do if you and a friend babysat together and were paid \$5 total for the job? How would

you split the money? Would it be fair for one person to get \$3 and the other to get \$2? Why not?" Once they decide on the correct amount (\$2.50), label the spot on the number line as \$2.50 and ask if they know a fraction that means the same as this money amount. Be sure to label the point as $2\frac{1}{2}$ when they say it. Reinforce the concept that this spot now has more than one name, just as they do. Use yourself as an example: "All of these names refer to the same person...Ms. Patti, mom, daughter, wife, sister, and teacher."

The idea that numbers can and do have more than one name is a *very* important concept for students to learn and understand!

Activity

See the Materials section at the beginning of the lesson and assemble the bags of SweeTarts before you start the activity.

Part 1

Give each student in the class a pack of SweeTarts. Ask them, "How many packs do you have?" (1). "So, the number for this amount of candy is 1. What if I add another pack, what would we call this?...2. How about another pack...3." (Place the 1, 2, and 3 bags on the number line at the correct points.) "Now, what if we decide not to add a whole pack, just part of the pack, such as 1 little piece?" (Show a bag with 1 pack and 1 extra piece in it.) "Could we call this 2? Why not?" (*because 2 means 2 whole packs*). We've already given the name 1 to 1 whole pack and the name 2 to 2 whole packs, so what would we call 1 pack and 1 extra piece of the pack?" Encourage them to focus on the number of pieces that make up the whole pack.

*At this point you may need to refer to how the fractions were named at the beginning of the lesson and what the examples were for naming those fractions. The idea is to get students to **first** focus on the number of pieces that make up the whole (the denominator) and **then** to focus on the pieces that are set apart...usually shaded in textbooks (the numerator).*

Once students decide on the name for this fraction ($1\frac{1}{12}$), ask, "What if I put 2 extra pieces in, how about 3, 4, and so on?" (Make sure they give the names of the new fractions in twelfths and label the spots on the chalkboard where the fractions live.) Ask, "At what point will we reach 2?" (*when we have $1\frac{12}{12}$*). Then show the bag with 2 whole packs of SweeTarts and ask, "Why did we put this here?" (*because it shows 2 whole packs, it represents the number 2 and the number $1\frac{12}{12}$*). Then show a bag with 2 packs and 1 extra and ask, "What name should be given to this bag? Should it be 3? Why or why not?" Again, get students to focus on the number of pieces needed to make the whole pack and listen for them to say that you only have 1 piece out of the 12, so the name for what is in the bag is $2\frac{1}{12}$. Label this point on the number line ($2\frac{1}{12}$) and tape up the bag.

Part 2

Tell the students that they are now going to work with a partner. Give each pair a bag that has some loose SweeTarts in it (bags will contain 1 to 12 loose SweeTarts). Each student already has

a pack of SweeTarts. Have each partner put their pack of SweeTarts in the bag that already has the loose SweeTarts in it. Their task is to decide what the fraction name is for the contents of their bag, and then to write that name on a piece of sticky notepad paper. Allow about five minutes for them to work on this task.

Have a pair of students show their bag, tell the fraction name for what they have, and tape their bag (with its label) where it lives on the number line. You do not need to do this in order (that is, you do not need to start with the group that has $2\frac{1}{12}$ SweeTarts). Just have the groups report randomly and see where they decide to place their bags. Lead the discussion by asking the class if they agree with where each group places their bag. Be prepared for a couple of groups to place their bags in the wrong spot. **This is okay!**

Let the students talk about whether they think the number lives there or not. Be sure they explain their thinking and allow other students to agree or disagree with comments that are made. For example, if the first group to go has $2\frac{6}{12}$ SweeTarts, and they place their bag right next to the mark for the 2 instead of next to the mark for $2\frac{6}{12}$, leave the bag up there and see if the students notice the error. If they do not think it is wrong, move onto the next group. Eventually there will be discussion about moving the bag with $2\frac{6}{12}$ SweeTarts when the groups with smaller fraction sets (such as those with a bag having $2\frac{1}{12}$ SweeTarts) come up to the chalkboard.

It is important for the *students* to recognize the errors in a lesson rather than having the teacher tell them what is wrong. Allowing this to occur will give you a much better understanding of what your students know—and more important—what they do not know, about the concepts you are teaching.

Closure

Refer to the question from the beginning of the lesson about where fractions live, and ask if anyone would like to answer the question now (*fractions live between the numbers on the number line*). If they provide this answer, then ask, “Do they live only between 2 and 3? How do you know?” If they cannot answer the questions, **do not** tell them the answer. Just leave the question up on the chalkboard and come back to it after several more lessons.

Optional Homework

Find something at home or in a store that comes in pieces and give each piece a fraction name. Bring it in to show the class, or draw a picture of it and write down the fraction name for each piece.

These items can be tacked up on a bulletin board in the room with fraction labels placed on them. Students should be encouraged to add items or pictures to the bulletin board throughout the year.