

Students: Meet Fractions (An Introduction)

Summary

Teacher demonstration and student activities will introduce the concept of fractions.

Main Core Tie

Mathematics Grade 2

[Strand: GEOMETRY \(2.G\) Standard 2.G.3](#)

Materials

- 2 large candy bars
- bite-sized candy bars
- knife
- overhead projector
- brown construction paper (9x12)
- measuring devices
- scissors
- [Fraction Terms](#) pdf
- [Journal Fraction Terms](#) pdf
- [Let's Explore: Fractions in My World](#) pdf

Additional Resources

Books

- *Apple Fractions*
, by Jerry Pallotta; ISBN 0-439-38901-1
- *The Hershey's Milk Chocolate Fractions Book*
, by Jerry Pallotta; ISBN 0-439-13519-2
- *Math to Know: A Mathematics Handbook*
, by Mary C. Cavanagh; ISBN 0-669-47153-4
- *Fraction Action*
, by Loreen Leedy; ISBN 0-8234-1244-X
- *Fraction Fun*
, by David Adler; ISBN 0-8234-1341-1
- *Piece=Part=Portion*
, by Scott Gifford; ISBN 0-439-74054-1
- *Clean-Sweep Campers*
, by Lucille Penner; ISBN 1-57565-096-7
- *Inchworm and A Half*
, by Elinor Pinczes; ISBN 0-618-31101-7
- *Give Me Half*
, by Stuart Murphy; ISBN 0-06-446701-8

Games

- *Pizza Fraction Fun, Jr.*
, Learning Resources (LER 5061 is the item number from the catalog; check Webster or catalog for ordering)
- *Pie in the Sky Fraction Game*
, Learning Resources (LER 5054 is the item number from the catalog; check the website or catalog for ordering.)

- *Auntie Pasta's Fraction Game*

, Learning Resources (LER 5053 is the item number from the catalog; check website or catalog for ordering.)

Background for Teachers

A fundamental knowledge of number sense and relationship (greater than, less than, equal to, grouping) needs to be in place as well as the ability to add, subtract, multiply, and divide small numbers. By this time, students should also be able to explore numbers and mathematical concepts and practices in a way that allows them to see that working with numbers is not a scary thing. That seeing more than one way to approach finding a mathematical solution can be fun (yes, I said fun.)

Intended Learning Outcomes

1. Develop a positive learning attitude toward mathematics.
4. Communicate mathematical ideas and arguments coherently to peers, teachers, and others using the precise language and notation of mathematics.
5. Connect mathematical ideas within mathematics, to other disciplines, and to everyday experiences.

Instructional Procedures

Invitation to Learn

Who Wants to Share?

Begin this activity by taking a large candy bar to the front of the room (use one that can be easily cut such as Three Musketeers, Milky Way, or 100 Grand) and tell the students that you want to share this candy bar with someone in the room. Choose a student (I often use name sticks to keep some choices random) and have that student come to the front with you. As you are unwrapping and preparing to cut the bar invite the other students to watch and help decide if you are doing it fairly or not. Cut the candy bar into two unequal parts. If the students don't pretty quickly let you know that you are not dividing it equally (fairly) then ask them what they think of how you did it. Showing this on an overhead projector will allow the classroom to see what the division looks like. Cut the candy bar again and stick the pieces together to make another uneven division (or you could use another candy bar instead.) Through continuing to divide and through questioning get the students to begin to see that the candy bar can be divided in an equal way (using a ruler to measure, etc.) Get a final candy bar and, using the techniques you came up with your students, divide the candy bar into two equal parts. (This activity is the lead-in to individual student practice.) Explain that the class is going to begin exploring how things (including numbers) are divided into equal parts. At this point you can give smaller bite-size candy bars to the rest of the class (make sure there are NO allergies) to share in the joy of chocolate!

Instructional Procedures

Divide the students into groups of two, three or four. Use varying sizes of groups so that students can explore how to divide into multiple parts.

Explain that the students will now be dividing up paper candy bars instead of real ones. Use sheets of 9" x 12" construction paper that have been cut in half.

Give each group of students a single half and ask them to divide their candy bars into parts so that each person in their group has an equal part. Have different measuring tools available for the groups to use. Have each group attach their divided candy bars to a piece of paper. Ask each group to assign a spokesperson to explain to the rest of the class how they did their work. Give some time for each group to work on their problem. After about 10 to 15 minutes have each group's spokesperson come to the front of the room and explain to everyone how they divided up their paper candy bar. Use the overhead, tape, magnets, etc. to display the papers to the rest of the class.

As the students are explaining their work make sure you, as the teacher, are leading them to understand the terms whole, halves, thirds, and fourths. Cut up the Fraction Terms sheet to display these terms during the discussion.

If time permits, group the students again (mixing them up so that students who might have done halves are now doing thirds or fourths, etc.) Give each group another paper candy bar and ask them to divide it equally among the students in their group. Again, give 10 to 15 minutes to complete this task (hopefully, the students are beginning to catch on and it won't take as long this time.)

As the groups are explaining their work this time, ask them if they found any different ways of dividing the paper. Brainstorm. Get them thinking about other ways to divide (into thirds and fourths, especially).

Again, if time permits, divide into groups one more time (there will be some students who are dividing ways they have before, but that's okay.) Have them think about the different ways to divide that which was explored earlier. Hand out another paper candy bar and have the groups work one more time.

Pull the students back together as a whole group and discuss how the groups divided their candy bars. The students need to be lead (if they haven't already figured it out) that fourths can be divided up by halving the halves. As this is discussed, show the students another paper candy bar divided into fourths and ask them how we could use our new knowledge to divide this into eighths. Remind them that we need to have eight equal parts. Do the same thing with a paper candy bar divided into thirds and have them divide into sixths. Display the terms eighths and sixths as you do this.

Conclude this lesson/activity with the Let's Explore assessment suggestion.

Extensions

Use time for another lesson that shows how to divide circular items (such as pizza or cookies) into halves, thirds, fourths, sixths, and eighths.

Share the book *Apple Fractions* with students.

For students with special needs (ELL, resource): during assessment, have students represent one or two of the items they found during exploration with manipulatives or drawing. For ELL students you could use an interpreter, if needed.

Family Connections

Have students find things at home that are divided into equal parts and have them share with their families.

The next time the family has some kind of food that is rectangular (casserole, cake, etc.) or round (pizza, cookies, etc.), have the student divide the food into equal parts for the family to share.

Have them share the experience at school.

Assessment Plan

Let's Explore: Take the class for a walk around the classroom, the building, and outside (weather permitting) to find things that are divided into equal groups. Give each student a copy of the *Let's Explore: Fractions in My World* worksheet to fill out as they do this. Take about 15 to 20 minutes to complete this activity and discuss their findings after you gather them back together in the classroom. This can also be used as a homework extension. Have them go home and spend 15 minutes finding things around their home (inside and out) that are divided into equal parts.

Have students draw a representation of how they divided their paper candy bars in halves, thirds, fourths, sixths, or eighths. Ask them to explain their work using pictures, words, or numbers (or any combination of these).

Use *Journal Fraction Terms* to have students cut and glue the terms into their journals. Have

them explain (using pictures, words and/or numbers) the terms.

Bibliography

Research Basis

Long, C., (2007). Can We Compete? *NEA today*, Vol. 25 (Number 4), Page 24

The author examined various sources that have been published in the past few years in which students in America are being compared with students from other countries (primarily India, Singapore and China) in their ability to compete in the fields of science and mathematics. This article shows that many of the works skew findings because studies cited are not accurate or fair. These other countries are sending representatives to American schools to see how we do things here. They have learned that innovation, inventiveness, creativity, curiosity, and ambition are skills taught in America that often outweigh the ability to simply recite rote knowledge on written tests.

Carpenter, T., Fennema, E., Franke, M., (January 1996). Cognitively Guided Instruction: A Knowledge Base for Reform in Primary Mathematics Instruction. *The Elementary School Journal*, Vol. 97 (Number 1), Page 3

The authors of this article explore how the understanding of students' mathematical thinking can provide a framework for the development of teachers' knowledge. They also look at the idea that children come to school with an intuitive knowledge of mathematics that can serve as a basis for developing much of the curriculum in the classroom.

Authors

[Utah LessonPlans](#)