

Grade 1 Clarifying Lessons: To Be (Half) or Not To Be (Half)

OLD Resources. These resources have NOT yet been updated to align with the revised elementary mathematics TEKS. These revised TEKS were adopted by the Texas State Board of Education in 2005, with full implementation scheduled for 2006–07. These resources align with the original TEKS that were adopted in 1998 and should be used as a starting point only.

What is a Clarifying Lesson?

A model lesson teachers can implement in their classroom. Clarifying Lessons combine multiple TEKS statements and may use several Clarifying Activities in one lesson. Clarifying Lessons help to answer the question "What does a complete lesson look like that addresses a set of related TEKS statements, and how can these TEKS statements be connected to other parts of the TEKS?"

TEKS Addressed in This Lesson

Number, operation, and quantitative reasoning: 1.2A, B

Underlying processes and mathematical tools: 1.11B, C, D; 1.13

Materials

- interlocking cubes
- measurement tools (e.g. balance scales, tape measures, grid paper)

Lesson Resources

Eating Fractions by Bruce Macmillan
I Can Count the Petals of a Flower by John and Stacy Wahl

Lesson Overview

Students demonstrate various ways to represent and verify a whole or set separated into two, three, or four equal parts.

Mathematics Overview

Students use appropriate tools and language to find and describe a part of a whole or a part of a set.

Set-up (to set the stage and motivate the students to participate)

1. Have a large bag or box filled with interlocking cubes. Discuss with the students that you would like for them to use half of the cubes in the activity, and you will share the other half with the class next door so they can do the activity, too. Ask, "How can the set of cubes be divided into two equal parts (halves)?" (1.2A, B)
2. Ask for students' ideas on how to verify that the set of cubes will have been divided into two equal parts. These ideas can be recorded on a chart or on the board for future reference, if desirable. (1.11B)
3. After brainstorming some ideas for two equal parts (halves), ask students what would happen if there were three classes that wanted to use the cubes at the same time? What would need to be done? What could be done to verify that the group of cubes was divided into three equal parts? (1.11B)
4. Discuss how some problems can be investigated more easily by looking at a simpler problem that is very much like the "bigger" problem and give each group of students a bag of cubes (50 or so, or let them each grab two handfuls of cubes to combine at their table). (1.11C)
5. Have each group of students divide their set of cubes into two equal parts (halves) and find as many ways as they can to verify that the group has been divided into two equal parts. (1.2A, B; 1.11D)
6. After investigating two equal parts (halves), each group of students should explore ways to verify three equal parts (thirds) and four equal parts (fourths). (1.2A, B; 1.11D)
7. Each group should write about or draw a picture of the ways they have used to verify their equal parts in order to compare and contrast their ways with those of other groups. (1.13A)

Teacher Notes (to personalize the lesson for your classroom)**Guiding Questions (to engage students in mathematical thinking during the lesson)**

- What is it important for you to do when you make two equal parts (halves)? Three equal parts (thirds)? Four equal parts (fourths)? (1.2A, B)
- How do you know when you have fair shares, or equal parts, (or whatever language the students begin using at this time)? (1.2A, B)
- What did you do if you had left-overs? (1.11D, 1.13A)

- What other ways can you compare the parts, without counting the cubes in them? (1.2A, B; 1.11B)
- How could you use the balance scale to compare the parts? (1.11B, C, D)
- How could you use the grid paper to compare the parts? (1.11B, C, D)
- How could you use shapes or designs to compare the parts? (1.11B, C, D)
- Which of the ways you used to verify two equal parts (halves) worked also for three equal parts (thirds)? Which of the ways, if any, did not work? (1.2A, B; 1.13A)
- Which of the ways you used to verify two equal parts (halves) worked also for four equal parts (fourths)? Which did not work? (1.2A, B; 1.13A)
- If you divided your set of cubes first into two equal parts (halves), could you divide it into three equal parts (thirds) or four equal parts (fourths)? Why or why not? (1.2A, B)
- If you divided your set of cubes first into four equal parts (fourths), could you make three equal parts (thirds) or two equal parts (halves)? Why or why not? (1.2A, B)
- How did your group decide to record your methods? (1.13A)

Teacher Notes (to personalize the lesson for your classroom)

Summary Questions (to direct students' attention to the key mathematics in the lesson)

To determine students' understanding of what it means to separate a whole or a set into equal parts, ask questions such as:

- What things were important in order to verify two equal parts (halves)? Three equal parts (thirds)? Four equal parts (fourths)? (1.2A, B)
- Were you able to show two equal parts for every set of cubes? Three equal parts? Four equal parts? Why or why not? (1.11D, 1.13A)
- What did your group decide to do when there were left-overs? Why? (1.11D, 1.13A)
- Did you notice any patterns or connections between two equal parts (halves) and three equal parts (thirds)? Between two equal parts (halves) and four equal parts (fourths)? Between three equal parts (thirds) and four equal parts (fourths)? (1.2A, B)

To encourage students to reflect on their problem-solving procedures, ask questions such as:

- How were your techniques for two equal parts different from your techniques for three equal parts? For four equal parts? (1.11B, C)
- How is your group's technique different from, or similar to, the technique of another group? (1.11B, C, D)

To determine to what extent students have connected the ideas of equal parts (halves, thirds, and fourths) to their own everyday experiences, ask questions such as:

- What are some circumstances in which you might use your knowledge of two, three, or four equal parts? (1.11A)
- How could you relate the ideas of equal parts to everyday life, to things around our classroom and homes? (1.11A)

Teacher Notes (to personalize the lesson for your classroom)

Assessment Task(s) (to identify the mathematics students have learned in the lesson)

- Have students tell about or demonstrate one of the techniques their group used to verify two equal parts (halves), three equal parts (thirds), or four equal parts (fourths). Students can tell what they think are the advantages and disadvantages of a particular technique.
- Have students dictate a class language-experience story about how this information might be helpful to them in the future. (For example, your group had a lump of clay, and each person used some to make a different animal. How can you prove to the teacher that the clay was shared evenly?)

Teacher Notes (to personalize the lesson for your classroom)

Extension(s) (to lead students to connect the mathematics learned to other situations, both within and outside the classroom)

- Students can use a variety of materials with which to represent the equal parts, e.g. candy bars, bags of candies, fruit.
- Students can bring something from home that shows two equal parts, three equal parts, or four equal parts.
- Students can make a symmetrical picture and relate it to making two equal parts. Students can make a picture that shows three equal parts or four equal parts.

- Students can take a nature walk and collect various types of wildflowers that can be used to show two, three, or four equal parts. (See *I Can Count the Petals of a Flower* from NCTM.)

Teacher Notes (to personalize the lesson for your classroom)