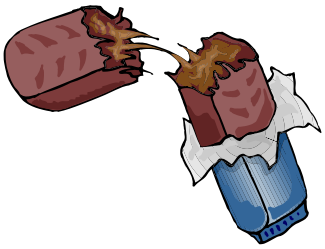

# **Constructing Task:** Benchmark Fractions

*Adapted from Fosnot, C. The Field Trip, Context for Learning Mathematics.*

## STANDARDS FOR MATHEMATICAL CONTENT

**MCC4.NF1** Explain why a fraction a/b is equivalent to a fraction (nxa)/(nxb) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

**MCC4.NF.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

## STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## BACKGROUND KNOWLEDGE

Students were familiarized with benchmark fractions in 2nd grade. They worked to partition circles and rectangles into halves and thirds. In 3rd grade students generated simple equivalent fractions and were required to explain why the fractions were equivalent.

## ESSENTIAL QUESTIONS

- How can benchmark fractions be used to compare fractions?

## MATERIALS

- Connecting cubes
- Strips of equal length paper
- Fraction Kits


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## GROUPING

small group or partner

## TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

**Comments:** For this task, if some students immediately say 17/22, having constructed the idea of fractions as fair sharing division from previous tasks, acknowledge their thinking but explain you were wondering about how much that would be. In a real situation, no one is going to cut a candy bar into 22 pieces, and you are wondering about how much that amount is so that the fewest possible cuts could be made. Direct students to the guiding questions listed on their student sheet. The main focus of this task is on the development of reasonableness of judging the magnitude of fractional amounts.

**Task directions:**

Students will follow the directions below from the "Benchmark Fractions" task sheet.

Mrs. Toms' 4th grade class just concluded a unit on the solar system. To celebrate how hard students worked, Mrs. Toms decided to purchase Milky Way candy bars for students to share. The grocery store only had 17 of the king size candy bars, but there are 22 students in her class. If Mrs. Toms buys the bars, about how much of a bar would each student receive? Is the amount about ½, ¼, ¾, 2/3 or 1 whole? Where could one cut be made that would be a nice approximate?

## FORMATIVE ASSESSMENT QUESTIONS

- What do you notice about the unit fractions you have created?
- If you tried dividing, would you have the same results?
- Can you give me an estimated size of the fraction you created with that cut?
- Can you tell me what you are doing with the pieces of the bars as you work with them?
- Does your answer make sense? How do you know?

## DIFFERENTIATION

**Extension**

- Explain how the process for redistributing the pieces differs as the number of candy bars and/or number of students changes?

**Intervention**.

- Students can cut out their drawings of the bars then cut off pieces and move them to make approximate equivalent amounts.


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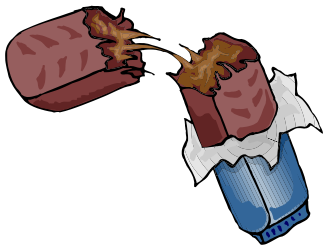
# Benchmark Fractions

Directions



Mrs. Toms' 4th grade class just concluded a science unit on the solar system. To celebrate how hard students worked, Mrs. Toms decided to purchase Milky Way candy bars for students to share. The grocery store only had 17 of the king size candy bars, but there are 22 students in her class. If Mrs. Toms buys the bars, about how much of a bar would each student receive? Is the amount about $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{3}{4}$ , $\frac{2}{3}$ or 1 whole? Where could one cut be made that would be a nice approximate?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