Comparison A

Generate and recognize equivalent fractions using models and symbols

Recipe Task

Description

Students decompose fractional amounts in a recipe using the unit fraction $\frac{1}{4}$ in order to accurately mix ingredients using only a $\frac{1}{4}$ measuring cup. They compose equivalent fractions using unit fractions and represent them in a variety of ways. As an option, the recipe can be prepared and baked by the class.

Mathematics

Decomposing fractions aids students in gaining a concrete understanding of the relationship between a pair of equivalent fractions. Using concrete and visual representations like drawings or measuring cups are beneficial when proving equivalency.

Curriculum Connections

Students will:

- decompose fractions into unit fractions;
- count by unit fractions;
- compare fractions with friendly but unlike denominators;
- generate equivalent fractions using models.

Instructional Sequence

1. Pair students.
2. Introduce task using BLM 1: You want to bake some cookies but you only have a $\frac{1}{4}$ measuring cup.
3. Allow students to work toward a solution using strategies of their choice (eg. concrete models or drawings of area or set models).
4. Consolidate their learning by having a few students share their work using the Key Questions as guidance.
5. Have the students independently place all of the recipe fractions on a number line. Also ask them to name the equivalent fractions using fourths. ($1\frac{2}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{6}{4}$)

Highlights of Student Thinking

Students may:

- use a variety of concrete models: area, set, volume;
- write the fractions on the number line in many ways $1\frac{1}{2}, 1\frac{2}{4}, \frac{6}{4}$;
- use mixed and improper fractions interchangeably;
- make connections to money (.25 = $\frac{1}{4}$);
- have difficulties partitioning their number line into unit fractions;
- have difficulties transferring knowledge to number line.

Key Questions

1. What model did you use to decompose or break down the given fractions?
2. How did your unit fraction ($\frac{1}{4}$) compare to the fractional amounts in the recipe?
3. How did you recognize the equivalent fractions on the number line?
4. Can you write your mixed fraction as an improper fraction (or vice versa)?

Materials

BLM 1 (one copy per pair) Note: BLM 2 contains complete recipe for actually making the cookies

Paper for number line

Multiple $\frac{1}{4}$ measuring cups (you could use paper cups to allow a lot of cups per pair)