Lesson Summary

Objectives

This lesson will help students to:

- Divide wholes into fractional parts;
- Represent and compare fractions;
- Relate division to fractions (e.g., 3 divided by 4 is 3/4).

Curriculum Expectations

By the end of Grade 4, students will:

- read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to $100;
- represent fractions using concrete materials, words, and standard fractional notation, and explain the meaning of the denominator as the number of the fractional parts of a whole or a set, and the numerator as the number of fractional parts being considered;
- compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional parts (e.g., 4/5 is greater than 3/5 because there are more parts in 4/5; 1/4 is greater than 1/5 because the size of the part is larger in 1/4);

By the end of Grade 5, students will:

- read, represent, compare, and order whole numbers to 100 000, decimal numbers to hundredths, proper and improper fractions, and mixed numbers;
- represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools (e.g., fraction circles, Cuisenaire rods, number lines) and using standard fractional notation;

By the end of Grade 6, students will:

- read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;
- represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools (e.g., fraction circles, Cuisenaire rods, drawings, number lines, calculators) and using standard fractional notation (***Sample problem:*** Use fraction strips to show that 1 1/2 is greater than 5/4.);

Materials

- Diagrams showing cabins, number of campers, and number of pizzas (attached)
- Large sheets of paper (e.g., chart paper)
- Markers
- Diagrams of fraction circles (attached)

Approach

Getting Started

Refer to the diagrams showing cabins, number of campers, and number of pizzas (attached) as you explain the following scenario:

> At a camp, the campers stayed in 4 cabins. In the Grizzly Bear cabin, there were 4 campers, in the Snowy Owl cabin, 5 campers, in the Caribou cabin, 8 campers, and in the Salmon cabin, 6 campers. One day, the campers were treated to pizza. The pizzas were given out in the following way:
> Grizzly Bear cabin – 3 pizzas
> Snowy Owl cabin – 4 pizzas
> Caribou cabin – 7 pizzas
> Salmon cabin – 5 pizzas

Discuss how the number of pizzas given to each cabin was always one less than the number of campers.

Pose the problem that the students will solve:

> Did some campers get more pizza than others, or did all the camper receive the same amount of pizza?

Clarify that:

- all the pizzas are the same size;
- the pizzas can be cut into any number of equal pieces.

Ask students to think about how they might solve the problem. Have students share their thoughts with a partner, and then invite a few students to share their ideas with the whole class.

Provide an opportunity for students to ask questions about the problem or about possible approaches to finding a solution.

Divide students into pairs or groups of three. Provide each pair or group with a large sheet of paper (e.g., a sheet of chart paper) and markers. Encourage students to work together to solve the problem, and to record information on their paper that clearly shows their strategy and solution.

Working on It
Observe students as they solve the problem. Ask questions that help them to think about the problem, the strategies they are using to solve it, and their progress toward a solution:

- What strategy are you using to solve the problem?
- How are you finding the amount of pizza that each camper in the Grizzly Bear (Snowy Owl, Caribou, Salmon) cabin will receive?
- Into how many equal pieces are you dividing each pizza? Why are you dividing the pizza in this way?
- How much will each camper in this cabin receive?
- What more will you need to do to find a solution to the problem?
- What information will you need to record so that others can understand your strategy and solution?

Reflecting and Connecting
Reconvene the students after they have solved the problem. Invite a few pairs/groups of students to show their work and to explain their strategies and solutions. Consider having students who used inefficient strategies to present first, followed by students who used more efficient strategy. This approach demonstrates to students that various strategies are possible and valid, although some strategies work better than others.

Pose questions that help students think about what they found out:

- What strategy did you use to figure out the amount of pizza the campers in each cabin received?
- How much pizza did each camper in each of the cabins receive?
- Did all the campers receive the same amount of pizza? How do you know?
- Which campers received the most pizza? How do you know?
- Which campers received the least pizza? How do you know?

Show students the diagrams of the fraction circles (attached), and relate the diagrams to the problem:

- Each Grizzly Bear campers received thee fourths of a pizza.
- Each Snowy Owl campers received four fifths of a pizza.
- Each Caribou campers received seven eighths of a pizza.
- Each Salmon campers received five sixths of a pizza.

Ask the following questions:

- Which fractional part – fourths, fifths, eighths, or sixths – is largest? Why? (Fourths – fewer parts are needed to make the whole.)
- Which fraction – three fourths, four fifths, seven eighths, or five sixths – is closest to one whole? (Seven eighths – only one eighth is missing, and eighths are the smallest fractional part.)
- Why is seven eighths more than five sixths? (In both fractions, one fractional part is missing. Because eighths are smaller than sixths, seven eighths is closer to the whole than five sixths.)

Assessment

Observe students as they solve the problem, and listen to their explanations in order to assess the following:

- how well they understand the problem and whether they are applying an appropriate strategy;
- whether they are dividing the pizzas into appropriate fractional parts (e.g., dividing a pizza into fourths for 4 campers);
- how well they are relating division to fractions (e.g., 3 divided by 4 is 3/4);
- how well they are comparing fractional parts (e.g. a fifth is larger than an eighth);
- how well they are comparing fractions (three fourths is less than seven eighths).