# 2

# Comparing and Scaling Rates

In Investigation 1, you explored strategies for comparing quantities. You used ratios, fractions, percents, and differences. Knowing several methods of comparison is not enough. You also need to be able to choose an appropriate and effective method of comparison for any given situation.

## 2.1 Sharing Pizza
### Comparison Strategies

The dining room at a camp has two sizes of table. A large table seats ten people, and a small table seats eight people. When the campers come for dinner one night, there are four pizzas on each large table and three pizzas on each small table.

| Large Table | Small Table |
| --- | --- |
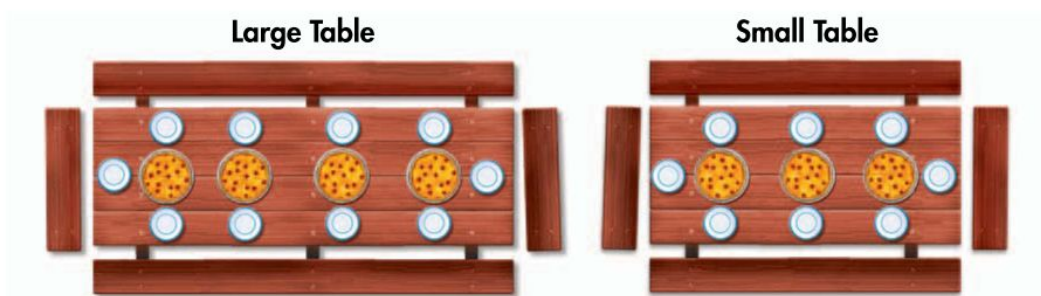


### Common Core State Standards

**7.RP.A.2a** Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane . . .

**7.RP.A.2b** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

**7.RP.A.2c** Represent proportional relationships by equations.

**Also 7.RP.A.1, 7.RP.A.2, 7.RP.A.2a, 7.RP.A.2d, 7.RP.A.3, 7.EE.B.4, and 7.EE.B.4a**

## Problem 2.1

**A** The campers at each table share the pizzas equally. Does a person sitting at a small table get the same amount of pizza as a person sitting at a large table? Explain your reasoning.

**B** Selena wonders whether a person at a small table or a person at a large table gets more pizza. She uses two ratios, 8 : 3 and 10 : 4, and says

> The difference of 10 and 4 is 6. The difference of 8 and 3 is 5. The large table has more people, so the people at the small table will get more pizza.

1. Do you agree with Selena's reasoning? Explain.

2. Tony disagrees with Selena. He says

> If you place five pizzas on the large table and three pizzas on the small table, Selena's method would show that the campers at the large table and the campers at the small table get the same amount of pizza.
>
> If ten people share five pizzas, however, each person gets $\frac{1}{2}$ pizza. That's more pizza than each of the eight people who share three pizzas will get.

Do you agree with Tony's reasoning? Explain.

**C** There are 160 campers.

1. If everyone sits at small tables, how many pizzas should the camp director order?

2. If everyone sits at large tables, how many pizzas should the camp director order?

3. The camp director also has extra-large tables that seat 25. How many pizzas should be placed on each of these tables? Explain.

4. How many pizzas should he order if everyone sits at extra-large tables?

**A C E** Homework starts on page 51.