2.2 Comparing Pizza Prices
Scaling Rates

You have used fractions, percents, and ratios to make comparisons. Many real-world situations require another, related strategy to compare numbers.

- What is being compared in each statement below?

We need two sandwiches for each person at the picnic.

I earn $ 5.50 per hour when I babysit for my neighbor.

The mystery meat in the cafeteria has 355 Calories per 6-ounce serving.

Akira's top running rate is 8.5 kilometers per hour.

These statements can be written as ratios, such as 5.5 dollars to 1 hour or 355 Calories to 6 ounces of meat. Each of these ratios is a **rate,** a comparison of two quantities measured in different units.

- How are the ratios below similar? How are they different?

2 sandwiches to 1 person

2 votes for Bolda Cola to 1 vote for Cola Nola

- The ratio of the width of Mug's mouth to the width of Pug's mouth is 2 : 1. Is this a rate? Explain.

Julia is in charge of ordering pizzas for a camp dinner. She wonders whether to order the pizzas from Royal Pizza or Howdy's Pizza.

Each pizzeria allows customers to use the same pricing rate for fewer or more pizzas than the listed number.

You can use the ads to find the cost for any number of pizzas you want to purchase. One way to find the costs is to build a **rate table.** This is a table that shows the prices for different numbers of pizzas.

Problem 2.2

As the campers plan their pizza dinner, they need to calculate the costs for many different numbers of pizzas.

A **1.** Copy the pizza price table below. Complete the table with the prices for each of the numbers of pizzas shown.

Pizza Prices

Number of Pizzas	1	2	3	4	5	10	15	20	100	150	200
Price of Royal Pizza	■	■	■	■	■	$120	■	■	■	■	■
Price of Howdy's Pizza	■	■	■	■	■	■	$195	■	■	■	■

2. How much will 53 pizzas from Royal cost? Explain your reasoning.

3. How much will 27 pizzas from Howdy's cost? Explain.

4. The campers consider their budget. How many pizzas can they buy from Royal with $400? What if they only have $96? Explain.

B **1.** If you know the price of one pizza, how can you find the price of additional numbers of pizzas?

2. For each pizza place, use your strategy from part (1) to write an equation for the total price P for any number of pizzas n.

3. How does your equation help you solve problems such as those in Question A, part (4)?

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Problem 2.2 continued

C Howdy's listed price is valid only if you pick up the pizza. If you request delivery, they charge a flat $5 fee for any number of pizzas.

1. a. Copy and complete the table below. Find the prices for Howdy's pizzas if you pick up and if they deliver.

Howdy's Pizza Prices

Number of Pizzas	1	2	3	4	5	10	15
Price if Howdy's Delivers	■	■	■	■	■	■	■
Price for Pick Up	■	■	■	■	■	■	$195

b. Describe the patterns you see in the table.

c. In Question B, part (2), you wrote an equation for the cost of pizza at Howdy's. How does the information represented by the equation show up in the table? Explain.

2. a. On the same coordinate plane, plot the data for Howdy's prices with no delivery fee and with the delivery fee.

b. How are the graphs similar? How are they different?

c. For each graph, which coordinate pair represents how much one pizza costs? how much zero pizzas cost?

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