3.2 Pizza Pricing
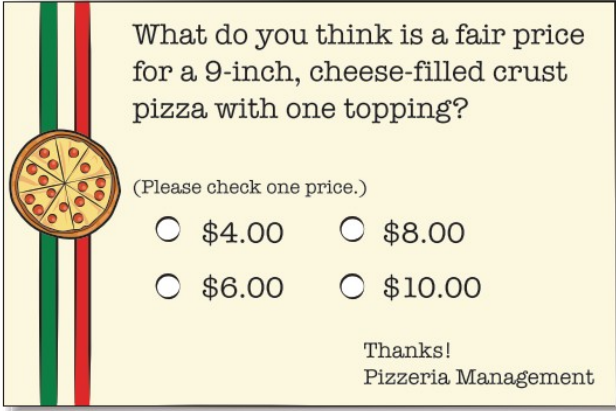## Connecting Area, Diameter, and Radius

A pizzeria plans to sell three sizes of its new pizza with cheese in the crust. A small pizza will be 9 inches in diameter, a medium will be 12 inches in diameter, and a large will be 15 inches in diameter.

The owner surveyed her lunch customers to find out what they would be willing to pay for a small pizza.

She found that $6 was a fair price for a 9-inch pizza with one topping. Based on this price, the owner wants to find fair prices for 12- and 15-inch pizzas with one topping.

- What prices would you suggest for the larger pizzas?

One of the cooks suggests making the difference in prices match the difference in pizza diameters, but the owner disagrees. She says that area is the best measurement to use to set the prices. She also says that comparing areas would suggest different prices from comparing diameters. Together, the cook and the owner wonder about the following question:

- What is the relationship, if any, between the diameter or radius of a circle and its area?

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3.1 **3.2** 3.3 3.4

Problem 3.2

To answer this question, the owner uses the scale models of the different size pizzas shown below.

1 inch
1 inch
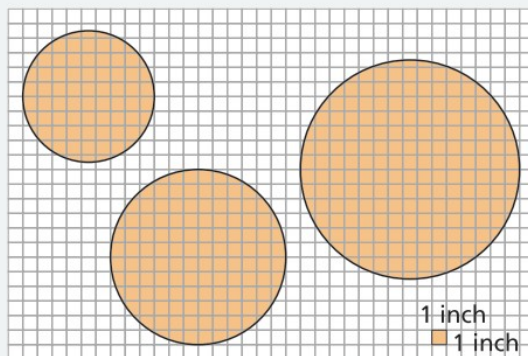
A Find as many different ways as you can to estimate the area of each pizza. For each method, give your estimate for the area and describe how you found it.

B Copy the table. Record each pizza's diameter, radius, and your estimate of its area.

Pizza Measurements

Size	Diameter (in.)	Radius (in.)	Area (in.²)
Small	■	■	■
Medium	■	■	■
Large	■	■	■

C Examine the data in the table and your strategies for finding area.

  1. Describe the pattern relating area to diameter or radius.

  2. What would be your best estimate for the area of a circle with diameter 18 inches?

D Based on your area estimations, what would be fair prices for medium and large pizzas? Explain your reasoning.

A C E Homework starts on page 58.