EXAMPLE 4 Comparing Unit Prices

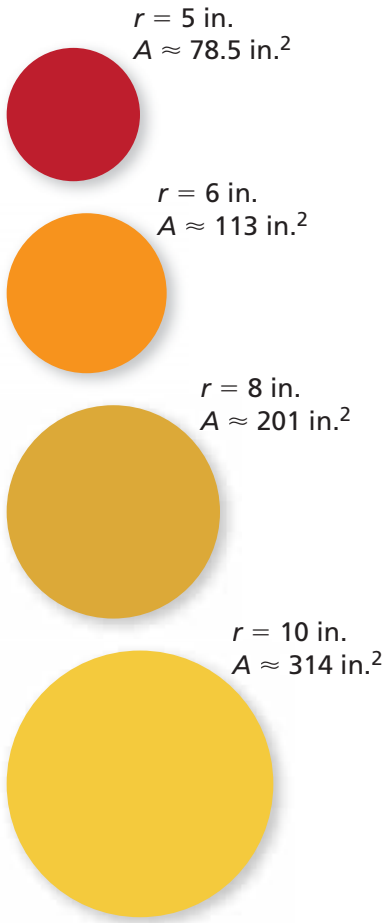
Compare the unit prices of the different sizes of pizza.

a. Personal (10-inch diameter): $5.99

b. Small (12-inch diameter): $9.99

c. Medium (16-inch diameter): $13.99

d. Large (20-inch diameter): $18.99



Notice that when the radius of the pizza doubles, the area is four times greater.

SOLUTION

Use the formula for the area of a circle to find the area of each pizza. Remember that the formula for the area of a circle is $A = \pi r^2$, where π is approximately equal to 3.14 and the radius r is half the diameter.

a. Area $\approx 3.14(5^2) = 78.5$ in.^{2}

$$\text{Unit price} \approx \frac{\$5.99}{78.5 \text{ in.}^2} \approx \$0.076 \text{ per sq in.}$$ Personal

b. Area $\approx 3.14(6^2) \approx 113$ in.^{2}

$$\text{Unit price} \approx \frac{\$9.99}{113 \text{ in.}^2} \approx \$0.088 \text{ per sq in.}$$ Small

c. Area $\approx 3.14(8^2) \approx 201$ in.^{2}

$$\text{Unit price} \approx \frac{\$13.99}{201 \text{ in.}^2} \approx \$0.070 \text{ per sq in.}$$ Medium

d. Area $\approx 3.14(10^2) = 314$ in.^{2}

$$\text{Unit price} \approx \frac{\$18.99}{314 \text{ in.}^2} \approx \$0.060 \text{ per sq in.}$$ Large

The small pizza has the greatest unit price. The large pizza has the least unit price.

Checkpoint

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Find the unit price of a jumbo pizza.

e. Jumbo (24-inch diameter): $24.99