NAME _____ DATE _____ PERIOD _____

Study Guide and Intervention

7MG1.1, 7MG2.4

Converting Square and Cubic Units of Measure

Some of the units of area in the customary system are in^2, ft^2, yd^2, and mi^2.
Some of the units of area in the metric system are cm^2 and m^2.

Example 1 **Convert 5 square yards to square feet.**

$$5\ yd^2 = 5 \cdot \cancel{yd} \cdot \cancel{yd} \cdot \frac{3\ ft}{1\ \cancel{yd}} \cdot \frac{3\ ft}{1\ \cancel{yd}}$$
$$= 45\ ft^2$$

Example 2 **Convert 2.5 square meters to square centimeters.**

$$2.5\ m^2 = 2.5 \cdot \cancel{m} \cdot \cancel{m} \cdot \frac{100\ cm}{1\ \cancel{m}} \cdot \frac{100\ cm}{1\ \cancel{m}}$$
$$= 25{,}000\ cm^2$$

Some of the units of volume in the customary system are in^3, ft^3, yd^3, and mi^3.
Some of the units of volume in the metric system are cm^3 and m^3.

Example 3 **Convert 1,500 cubic centimeters to cubic meters.**

$$1{,}500\ cm^3 = 1{,}500 \cdot \cancel{cm} \cdot \cancel{cm} \cdot \cancel{cm} \cdot \frac{1\ m}{100\ \cancel{cm}} \cdot \frac{1\ m}{100\ \cancel{cm}} \cdot \frac{1\ m}{100\ \cancel{cm}}$$
$$= \frac{1{,}500\ m^3}{1{,}000{,}000}$$
$$= \frac{65{,}000\ m}{2{,}237.04\ sec}$$
$$= 0.0015\ m^3$$

Convert 30 square feet to square meters.

$$30\ ft^2 = 30 \cdot \cancel{ft} \cdot \cancel{ft} \cdot \frac{0.3048\ m}{1\ \cancel{ft}} \cdot \frac{0.3048\ m}{1\ \cancel{ft}}$$
$$\approx 2.79\ m^2$$

Example 4 **Complete each conversion. Round to the nearest hundredth if necessary.**

1. $6\ ft^2 = \blacksquare\ in^2$

2. $0.25\ m^2 = \blacksquare\ cm^2$

3. $18\ ft^2 = \blacksquare\ yd^2$

4. $189\ ft^3 = \blacksquare\ yd^3$

5. $2\ m^3 = \blacksquare\ cm^3$

6. $3{,}456\ in^3 = \blacksquare\ ft^3$

7. $24\ cm^2 \approx \blacksquare\ in^2$

8. $15\ ft^3 \approx \blacksquare\ m^3$

9. $7\ in^3 \approx \blacksquare\ cm^3$