

# Tips for Teachers

## Chapter 9 More Geometry and Measures

### Sections 9.1, 9.3, and 9.5 Converting Between American Units of Capacity, Weight, Time, and Area

The techniques for converting between American units of capacity, weight, time, and area are the same as those for converting between American units of length. See Tips for Teachers for Section 8.1.

#### Choosing a Technique

As in Section 8.1, explain to your students that if they are confused about when to use the substitution technique and when to multiply by 1, then they can simply multiply by 1 in all cases. For example, we can conveniently use substitution to convert 3 lb to ounces since we are converting a larger weight to a smaller weight.

$$\begin{aligned} 3 \text{ lb} &= 3 \times 1 \text{ lb} \\ &= 3 \times 16 \text{ oz} \\ &= 48 \text{ oz} \end{aligned}$$

We generally multiply by 1 to convert a smaller unit to a larger unit, as shown below.

Complete: 12 qt = \_\_\_\_\_ gal





$$\begin{aligned} 12 \text{ qt} &= 12 \text{ qt} \times \frac{1 \text{ gal}}{4 \text{ qt}} \\ &= \frac{12}{4} \times 1 \text{ gal} \\ &= 3 \text{ gal} \end{aligned}$$

In addition, we can multiply by 1 to convert a larger unit to a smaller one. We illustrate this by converting 3 lb to ounces again.

$$\begin{aligned} 3 \text{ lb} &= 3 \text{ lb} \times \frac{16 \text{ oz}}{1 \text{ lb}} \\ &= 3 \times 16 \text{ oz} \\ &= 48 \text{ oz} \end{aligned}$$

Some students will find it easier to employ a single technique for all conversions than to try to differentiate between situations where substitution can be used and situations where multiplying by 1 is used. When you do example of conversions from larger to smaller units, do them using both techniques.

#### Supplement Key Further Instruction and Practice for Your Students

Video	Audio cassette	MathMax CD-ROM	InterAct Math Online Exercises	Printed Test Bank/ Instructor's Resource Guide	
				Exercises	Chapter Review
Tapes 15 & 16	14B, 15A, 15B	Section 9.1		pp. 643-644	p. 748