CHAPTER 1

MEASUREMENT AND PROBLEM SOLVING

Remind students that their answers to odd-numbered exercises may be slightly different from those given here because of rounding. Refer to Problem-Solving Hint: The "Correct" Answer in Chapter 1.

1. (b).

2. (c).

3. (c).

4. (a) Since 1 gal = 3.785 L, 300 L = (300 L) × \( \frac{1 \text{ gal}}{3.785 \text{ L}} \) = 79.3 gal. Not reasonable.
   
   (b) Since 1 in. = 2.54 cm, 225 cm = (225 cm) × \( \frac{1 \text{ in.}}{2.54 \text{ cm}} \) = 88.6 in. = 7 ft 5 in.. Yes.
   
   (c) Since 1 m = 3.28 ft, 120 m² = (120 m²) × \( \frac{3.28 \text{ ft}}{1 \text{ m}} \)² = 1.29 × 10³ ft². Not reasonable.

5. (b)

6. Since 1 in. = 2.54 cm, 3 cm = (3 cm) × \( \frac{1 \text{ in.}}{2.54 \text{ cm}} \) = 1.2 in. That would have been a huge lady bug. No.

Since 1 kg is equivalent to 2.2 lb., 10 kg = (10 kg) × \( \frac{2.2 \text{ lb.}}{1 \text{ kg}} \) = 22 lb. Salmon are quite large. Yes.

7. The decimal system (base 10) has a dime worth 10¢ and a dollar worth 10 dimes, or 100¢. By analogy, a duodecimal system would have a dime worth 12¢ and a dollar worth 12 "dimes," or $1.44 in decimal dollars. Then a penny would be \( \frac{1}{144} \) of a dollar.

8. (a) Different ounces are used for volume and weight measurements. 16 oz = 1 pt is a volume measure and 16 oz = 1 lb. is a weight measure.
   
   (b) Two different pound units are used. Avoirdupois lb. = 16 oz, troy lb. = 12 oz.

9. That is because 1 nautical mile = 6076 ft = 1.15 mi. A nautical mile is larger than a (statute) mile.

10. (d).

11. (d).