# Additional Measurement Practice

# Terminology

- 1. Describe a situation where you could properly conclude that a set of data is precise but not accurate.
- 2. Describe a situation where you could properly conclude high accuracy but low precision.

#### Measurement

- 1. When measuring the length of a table, a student records 2.35 meters. What does the recorded value tell you about the markings on the measuring device?
- 2. Explain how systematic errors impact the uncertainty in a set of measurements.
- 3. Explain how random errors impact the uncertainty in a set of measurements.

#### Conversions

- 1. A high school cross country race is 5.0 km long. How many miles do they race? 1 mile = 1.61 km.
- 2. Top sprinters can reach approximately 12.0 meters/second. What is the speed in miles/hour?

## Significant Figures

- 1. Identify the number of significant figures in each of the following numbers:
  - a. 5030
  - b. 5030.0
  - c. 0.05030
- 2. Write a number that is greater than 10000 that has three significant figures.
- 3. Write a number that is less than 0.001 that has four significant figures.

## **Scientific Notation**

- 1. Write a number that is greater than  $10^5$  in both standard and scientific notation.
- 2. Write a number that is less than  $10^{-5}$  in both standard and scientific notation.

## Integrated Problem

- 1. A group of students is conducting a lab to determine the average speed of a cart as it moves along the ground. They measure the distance traveled by the cart every 2.0 seconds to be: 80.2 cm, 79 cm, 81.35 cm and 78.2 cm.
  - a. The students all use the same measuring device. What evidence do you have that the students made some mistakes in measuring the lengths?
  - b. Find the total distance traveled in the 8.0 seconds. Report the answer in cm with the correct number of significant figures.
  - c. Use the fact that average speed = distance / time to calculate the average speed of the cart in cm/s.
  - d. Convert the speed to km/h.
  - e. Rewrite the answer in scientific notation.