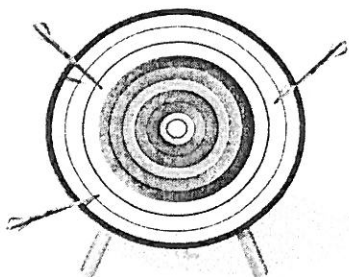


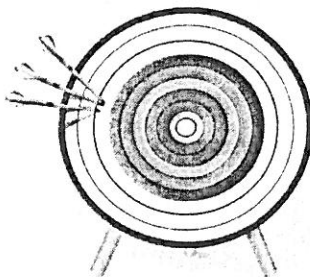
## Section 2.3 Uncertainty in Data

In your textbook, read about accuracy and precision.

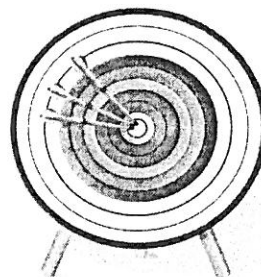
1. Use the terms *precise* and *accurate* to describe the following figures. You may use both terms for some figures. If a term does not apply to a figure, leave the space blank.



a. \_\_\_\_\_  
\_\_\_\_\_



b. \_\_\_\_\_  
\_\_\_\_\_



c. \_\_\_\_\_  
\_\_\_\_\_

Circle the letter of the choice that best completes the statement or answers the question.

2. The difference between an accepted value and an experimental value is called a(n)
  - a. error.
  - b. percent error.
  - c. measured value.
  - d. precise measurement.
3. The ratio of an error to an accepted value is called a(n)
  - a. accuracy-to-precision value.
  - b. accuracy.
  - c. percent error.
  - d. precision.
4. When you calculate percent error, you can ignore the
  - a. accepted values.
  - b. measured values.
  - c. experimental values.
  - d. plus and minus signs.
5. If two measurements are very close to each other, then they are
  - a. accurate.
  - b. precise.
  - c. both accurate and precise.
  - d. accepted values.
6. Which of the following is most likely to produce data that are not precise?
  - a. a balance that is not set to zero
  - b. not reading a graduated cylinder at eye level
  - c. altering the procedure during an experiment
  - d. making the same error with each trial

## CHAPTER 2 STUDY GUIDE

### Section 2.3 *continued*

*In your textbook, read about significant figures.*

Use each of the terms below just once to complete the statements.

counting numbers	estimated	non-zero	zeros
scientific notation	significant figures	placeholders	

7. The digits that are reported in an answer are called \_\_\_\_\_.
8. The numeral 9.66 has three significant figures, two known figures and one \_\_\_\_\_ figure.
9. \_\_\_\_\_ numbers are always significant.
10. All final \_\_\_\_\_ to the right of the decimal place are significant.
11. Zeros that act as \_\_\_\_\_ are not significant.
12. \_\_\_\_\_ have an infinite number of significant figures.
13. When you convert to \_\_\_\_\_, you remove the placeholder zeros.

*In your textbook, read about rounding off numbers.*

14. Round the following to four significant figures.
  - a. 12.555 km \_\_\_\_\_
  - b. 1.0009 \_\_\_\_\_
  - c. 99.999 \_\_\_\_\_
  - d. 23.342999 \_\_\_\_\_
15. Round 12.783456 to the requested number of significant figures.
  - a. 2 significant figures \_\_\_\_\_
  - b. 5 significant figures \_\_\_\_\_
  - c. 6 significant figures \_\_\_\_\_
  - d. 7 significant figures \_\_\_\_\_
16. Round 120.752416 to the requested number of significant figures.
  - a. 3 significant figures \_\_\_\_\_
  - b. 4 significant figures \_\_\_\_\_
  - c. 5 significant figures \_\_\_\_\_
  - d. 7 significant figures \_\_\_\_\_
17. Complete the following calculations. Round off the answers to the correct number of significant figures.
  - a.  $51.2 \text{ kg} + 64.44 \text{ kg}$  \_\_\_\_\_
  - b.  $6.435 \text{ cm} - 2.18 \text{ cm}$  \_\_\_\_\_
  - c.  $16 \text{ m} \times 2.82 \text{ m} \times 0.05 \text{ m}$  \_\_\_\_\_
  - d.  $3.46 \text{ m} / 1.82 \text{ s}$  \_\_\_\_\_