

# Analyzing Data

## Section 3 Uncertainty in Data

**Main Idea**

**Details**

**Skim** Section 3 of your text. Focus on the headings, subheadings, boldfaced words, and main ideas. Summarize the main ideas of this section.

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**New Vocabulary**

Use your text to define each term.

*accuracy*

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*precision*

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*error*

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*percent error*

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*significant figure*

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**Section 3 Uncertainty in Data (continued)****Main Idea****Error and Percent Error***Use with pages 48–49.***Calculating Percent Error***Use with Example Problem 5, page 49.***Details****Explain** *percent error by completing the statement and equation below.*

Percent error is the \_\_\_\_\_ of an \_\_\_\_\_ to an \_\_\_\_\_.

Percent error = \_\_\_\_\_ × \_\_\_\_\_

**Solve** *Read Example Problem 5 in your text.***You Try It****Problem**

Calculate the percent errors. Report your answers to two places after the decimal point. The table below summarizes Student B's data.

Trial	Density (g/cm <sup>3</sup> )	Error (g/cm <sup>3</sup> )
1	1.4	-0.19
2	1.68	0.09
3	1.45	-0.14

**1. Analyze the Problem**Known: \_\_\_\_\_  
\_\_\_\_\_

Unknown: \_\_\_\_\_

Use the accepted value for density and the errors to calculate percent error.

**2. Solve for the Unknown**

Substitute each error into the percent error equation.

percent error =  $\frac{\text{error}}{\text{accepted value}} \times 100$

percent error =  $\frac{\text{error}}{1.59 \text{ g/cm}^3} \times 100 = \boxed{\phantom{000}}$

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**3. Evaluate the Answer**

The percent error is greatest for trial \_\_\_\_\_ which had the largest error, and smallest for trial \_\_\_\_\_, which was closest to the accepted value.

**Section 3 Uncertainty in Data (continued)****Main Idea****Details****Significant Figures***Use with page 50.***Rounding Numbers***Use with page 52.*

**Identify** the significant numbers below by drawing a circle around them. Use the five rules for recognizing significant digits on page 51 for reference.

0.025

325,078

5600

**Explain** the rules for rounding numbers by completing the following sentences. Then complete the example of each rule for rounding numbers.

1. If the digit to the immediate right of the last significant figure is less than five, \_\_\_\_\_  
3.751 \_\_\_\_\_

2. If the digit to the immediate right of the last significant figure is greater than five, \_\_\_\_\_  
4.127 \_\_\_\_\_

3. If the digit to the immediate right of the last significant figure is equal to five and is followed by a nonzero digit, \_\_\_\_\_  
8.3253 \_\_\_\_\_

4. If the digit to the immediate right of the last significant figure is equal to five and is not followed by a nonzero digit, look at the last significant figure. \_\_\_\_\_  
1.4750 = \_\_\_\_\_; 1.4650 = \_\_\_\_\_