**Activity 2: Taking Measurements and Reporting Significant Figures**

***Learning Objectives***

*Part 1 Calculate percentages*

*Calculate percent error*

*Part 2 Report significant figures correctly*

**Estimated Completion Time** 45–60 Minutes

**Instructor Information**

*Supplies: Mini packs of M&M candies or other candies. The number of grams per package must be available.*

It is important to point out to students that counting integers (as in the counting of M&Ms) are numbers with infinite significant figures since they are counting items. This is in contrast to the number of grams per package which is measured and has a finite number of significant figures.

Activities 2 and 3 could be performed during a laboratory period. If this is done, care must be taken that students do not eat the M&Ms in the laboratory.

**ANSWERS TO QUESTIONS**

**Part 1. Making Predictions and Taking Measurements.[[1]](#footnote-2)**

A. Students will make predictions.

B. Students should use the percentage definition to calculate the % of M&Ms in their package. The instructor should give students the mass of one package (nutritional information is located on the large bag containing the candies). Students should also calculate the grams/M&M (this is often miscalculated as M&Ms/gram).

C. Information will be similar to part B but with data instead of predicted values.

D. Values for percent error will vary based on student predictions.

E. Student values will vary.

**Part 2. Significant Figures**

1. Answers will vary, usually 2.

2. a. 2 b. 3 c. 4 d. 3

3. The answers will vary; however, if two significant figures are in the mass of the M&Ms, the answers using this weight should have 2 significant figures.

4. a. 54 b. 25 c. 1.24 d. 200

**Activity 2: Skill Development**

***Significant Figures***

1. a. 2 b. 4 c. 4 d. 3

2. a. 2 b. 1 c. 5 d. 4

3. a. 600 b. 16.09 c. 9.47 d. 4

4. a. 3.5 b. 43.3 c. 0.071 d. 19.021

***Calculating Percent***

1.

2.

3. After 1 week:

After 3 weeks:

4.

5. Use

a.

b.

1. Part 1 activity adapted with permission from *Instructor’s Manual and Complete Solutions for Chemistry: An Introduction to General, Organic, and Biological Chemistry* 9e by Karen Timberlake, Pearson Benjamin-Cummings, 2006. [↑](#footnote-ref-2)