Name: _____ **Unit 4 Day 5 - Percent Error Assignment**

Round to the nearest hundredth.

Mistakes are opportunities for learning.

1. A student estimated a mass to be 250g, but upon carefully measuring it, found the actual mass to be 240g. What is the percent error?

2. A person attempting to lose weight on a diet weighed 175 lb. on a bathroom scale at home. An hour later at the doctor's office, on a more accurate scale, this person's weight is recorded as 178 lb. Assuming there was no real weight change in that hour, what is the percent error for these readings?

3. As the result of experimental work, a student finds the density of a liquid to be 0.1369 g/cm^3. The known density of that liquid is 0.1478 g/cm^3. What is the percent error of this student's work?

4. After heating a 10.00g sample of potassium chlorate, a student obtains an amount of oxygen calculated to be 3.90g. Theoretically, there should be 3.92g of oxygen in this amount of potassium chlorate. What is the percent error in this experiment?

5. The melting point of potassium thiocyanate determined by a student in the laboratory turned out to be 174.5 ^oC. The accepted value of this melting point is 173.2 ^oC. What is the percent error in this reading?

6. A student decides it is possible to estimate the capacity of a test tube by treating it as a rectangle and neglecting its "roundness." On this basis, the student finds the capacity of the test tube to be 100.5 mL. In fact, the real capacity of the test tube is 100.0 mL. What percent error has resulted from the student's assumption?

7. A chemist attempts to determine the surface tension of various detergent-containing liquids by using a tensiometer. In determining the accuracy of the instrument, the chemist tests the surface tension of pure water and obtains a value of 71.28 dynes cm. The standard value for surface tension of pure water is 71.97 dynes cm. What is the percent error of the tensiometer?

8. In an exercise to teach students how to use an analytical balance, the instructor gives a student a quarter which has been pre-weighed as 5.6026g. The weight that the student obtains for the same quarter is 5.6013g. What is the percent error in the student's reading?

9. The concentration determined for an unknown sample of hydrochloric acid by a student is 0.1355 M. (moles) According to the instructor's information, the true molarity (M) of this solution is 0.1364 M. What is the percent error in this experiment?

10. A student's calculation was found to have a 15.6% error, and the actual value was determined to be 25.7 mL. What are the two possible values for the student's experimental measurement?

11. A student's calculation was found to have a 35.5% error, and his experimental measurement was 15.6 cm. What are the two possible values for the actual measurement?

12. An object with a pre-weighed mass of exactly (and correctly) 0.54g is given to two students. One student obtains a weight of 0.59g for the object, while another says the weight is 0.49g. Which of the students, if either, has the greater percent error?