Name: _____ Hour: _____

PERCENT ERROR PRACTICE

Percent Error = Estimated or Predicted Value – Actual Value   x 100

Predicted Value

Example: Joshua uses his thermometer and finds the boiling point of ethyl alcohol to be 75°C. He looks in a reference book and finds that the actual boiling point of ethyl alcohol is 80°C. What is his percent error?

| METHOD |

First identify the predicted value and the actual value. In this case the reference book would be the predicted value and the experiment would give you the actual value. Find the difference:

80 – 75 = 5

Now set up the difference over the Predicted value and divide to get a decimal:

$$\frac{5}{80} = 0.0625$$

Last you multiply by 100 to get your percent error: 0.0625 *x 100 =* **6.3%**

Problems – Show your work

1. Ariel weighed an object on her balance and recorded a mass of 24.3 grams. The label on the object said that it should weigh 24.5 grams. What is the percent error to the nearest hundredth of a percent?

2. Chase worked in a lab helping pack material that was labeled to weigh 15 ounces. When one of his boxes was pulled and weighed it was 14.5 ounces. What was the percent error to the nearest tenth?

3. The density of water at 4°C is known to be 1.00 g/mL. Kayla experimentally found the density of water to be 1.075 g/mL. What is her percent error?

4. The Handbook of Chemistry and Physics lists the density of a certain liquid to be 0.7988 g/mL. Taylor experimentally finds this liquid to have a density of 0.7925 g/mL. The teacher allows up to +/– 0.500% error to make an "A" on the lab. Did Fred make an "A"? Prove your answer.

5. An object has a mass of 35.0 grams. On Anthony's balance, it weighs 34.85 grams. What is the percent error of his balance?

Directions: *For each of the following situations find the percent error involved.*
Be careful in determining the true vs. observed value.

1. Samantha S. Sloppiness measured the volume of her soda before she drank it for her midmorning snack. She measured the volume of the 12 oz. bottle to be 14 oz.

2. Clyde Clumsy was directed to weigh a 500 g mass on the balance. After diligently goofing off for ten minutes, he quickly weighed the object and reported 458 g.

3. Pretty Patty Pestilence had casually recorded her grades for the nine weeks in her notebook. She concluded she had 250 points out of 300 for the grading period. However, Miraculous (chem teacher) determined she had 225 points out of 300 and awarded her a "C" for the grading period.

4. Drew D. Dingaling came to Miraculous with a problem. Drew was told to measure 50 cm of copper wire to use in an experiment. Since his ruler only measured to 45 cm he used this amount of wire and his experiment was a failure.

5. Henry Heavyfoot was just arrested for speeding by Officer O'Rourke for traveling 65 mph in a 55 mph zone. Henry claimed his speedometer said 55 mph not 65 mph.

6. Willomina Witty was assigned to determine the density of a sample of nickel metal. When she finished, she reported the density of nickel as 5.59 g/ml. However, Miraculous knew the density of nickel was 6.44 g/ml.

7. An experiment to determine the volume of a "mole" of a gas was assigned to Barry Bungleditup. He didn't read the experiment carefully and concluded the volume was 18.7 liters. Miraculous knew he should have obtained 22.4 liters.

Answers: 1. 16.6%; 2. 8.40%; 3. 11.1%; 4. 10.0%; 5. 15.4%; 6. 13.2%; 7. 16.5%