Unit 1 Practice Problems

Scientific Notation

1. Jim has 2 x 103 marbles. Bill has 3 x 102 marbles. Who has more marbles?
2. One mile equals 1690 meters. Express this measurement in scientific notation.
3. An oval track is 421 meters long. Express this measurement in scientific notation.

Significant Figures

1. Round 54.145 cm to four significant figures.
2. Round 100.1 degrees Celsius to 1 significant figure.
3. Round 0.000718 to two significant figures.

Accuracy & Precision

Identify the following as accurate. precise, or both.

1. Four of five repetitions of a measurement were numerically identical, and the fifth varied from the others in value by less than 1%.
2. A single measurement is within 1% of the correct value.
3. A block is massed three times, the masses were 10.2 g, 10.3 g, and 10.2 g. The actual mass of the block is 10.2 g.

Density

SHOW ALL YOUR WORK.

1. What is the mass of 5 L of air if the density of air is 1.20 g/L?
2. An object measuring 4.0 cm by 2.5 cm by 5.0 cm has a mass of 110 grams. What is the density of the object?

12. A student a finds a shiny piece of metal that she thinks is aluminum. In the lab,

she determined that the metal has a volume of 245 cm3 and a mass of 612 g.

Calculate the density. Is the metal aluminum? (density of aluminum = 2.7 g/cm3 )

Percent error

SHOW ALL YOUR WORK.

13. A chemistry student performed a lab and extracted 2.98 g of copper from a penny. Each penny is supposed to have 3.00 g of copper. What was the

percent error?

14. The mass of a metal block is 1.30 g. In the lab, Mrs. K-W found its mass to be

1.24 g. What is Mrs. K-W’s percent error?

15. A technician experimentally determined the boiling point of octane to be

124.1oC. The actual boiling point of octane is 125.7oC. Calculate the percent

error.