

Problem Set 1: Scientific Measurements Solutions

- 1) Define accuracy and precision.

Accuracy is how close a measured value is to the accepted or real value.

Precision is the degree of reproducibility of a measured quantity; how close a series of measurements of the same quantity are to one another.

- 2) Identify the measurements by the given SI unit.

- a) g grams
- b) cm centimeters
- c) mL milliliters
- d) L liters
- e) m³ cubic meters
- f) mols moles
- g) K Kelvin
- h) s seconds
- i) g/cm³ density

- 3) To construct a cube that has a length of 10 cm each side, how many cubes measuring 1 cm each side would you require?

$$V = l \times w \times h = 10 \text{ cm} \times 10 \text{ cm} \times 10 \text{ cm} = 1000 \text{ cm}^3 = 1000 \text{ cubes}$$

- 4) Two objects have different volumes, but identical masses. Therefore,

- a) The object with the larger volume has the lower density.
- b) Both objects have the same density.
- c) The object with the larger volume has the higher density.
- d) The object with the smaller volume has the lower density.

- 5) Write 1 meter using the SI prefixes centi, milli, and micro.

100 centimeters = 1 meter

1000 millimeters = 1 meter

1 000 000 micrometers = 1 meter