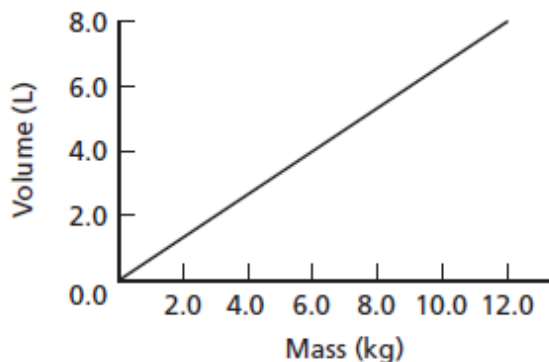


Ch. 1 Study Guide Make-up Assignment – Grant (Fall 2014)

Due: Wednesday, September 17, 2014

- Express the following quantities in scientific notation.
 - 4501 m
 - 75,000 km
 - 6438 g
 - 0.6438 g
 - 0.00048 s
 - 24 h
- Convert each of the following quantities as indicated.
 - 3600 cm to meters
 - 5000 m to kilometers
 - 5000 km to meters
 - 15 kg to grams
 - 1.5 mg to grams
- Write the conversion factor for each of the following conversions.
 - mL to liters
 - kg to grams
 - nm to meters
 - μg to grams
 - km/s^2 to m/s^2
- Calculate each of the following and express the results in scientific notation with the correct number of significant digits and correct units.
 - $4.098 \text{ m} + 56.03 \text{ m} + 10.2 \text{ m} =$
 - $603 \text{ km}/1000 \text{ s} =$
 - $4.000 \text{ m} \times 20.30 \text{ m} =$
 - $5.5 \times 10^{-1} \text{ mm} + 2.0 \times 10^{-3} \text{ mm} =$
- On Earth, the force of gravity on an object is expressed as $F = m \times g$, where F is the force applied on the object, m is the mass of the object, and g is the gravitational constant, which is 9.80 m/s^2 .
 - What are the units of the force of gravity if the mass is expressed in kilograms?
 - Calculate the gravitational force on an object with a mass of 10.32 kg.
- State the number of significant digits in each of the following measurements and express the value in scientific notation.
 - 903 kg
 - 600.00 m
 - 0.0030 mm
 - $8.030 \times 10^{-4} \text{ J}$
 - $38.60 \times 10^{-3} \text{ m/s}$
- The figure below shows a graph of the mass of a substance compared to its volume.
 - What type of relationship is mass versus volume?
 - What is the volume of 6.0 kg of the substance?
 - What is the mass of each liter of the substance?



8. The surface of a rectangular table is measured as 2.24 m long and 1.103 m wide.
- Calculate the perimeter of the tabletop.
 - Calculate the area of the tabletop.
 - What is the area of the tabletop, expressed in square centimeters?
9. As a pump transfers water into a cylindrical tank, the mass of water in the tank is measured on a balance. Table 1-1 shows the mass of water in the tank and its depth.
- Plot the values given in the table and draw a curve that best fits all the points.
 - Describe the resulting curve.
 - Write an equation relating the depth of water in the tank to the mass of water.
 - What is the slope of the line in your graph?
 - Why is the value for the mass of water measured at 40 cm not exactly twice the value measured at 20 cm?

Table 1-1	
Depth of Water (cm)	Mass of Water (kg)
10	75
20	149
30	225
40	302
50	376
60	453

10. A student measures the mass of a standard set of calibration weights on a triple-beam balance and an electronic balance, obtaining the data in Table 1-2.
- Which set of results is more precise? Explain your answer.
 - Which set of results is more accurate? Explain your answer.

Table 1-2		
Standard Value	Triple-Beam Balance	Electronic Balance
1.000 g	1.001 g	1.1033 g
2.000 g	2.002 g	2.1033 g
3.000 g	3.001 g	3.1034 g
5.000 g	5.000 g	5.1033 g

11. Add or subtract as indicated. Make sure that your answers contain the correct number of significant digits.
- $0.00039 \text{ mm} + 0.0025 \text{ mm}$
 - $2103 \text{ s} - 2.4 \text{ s}$
 - $2.3 \times 10^{-4} \text{ kg} + 6.7 \times 10^{-3} \text{ kg}$
 - $5.85 \times 10^3 \text{ m} - 5.2 \times 10^2 \text{ m}$
12. Multiply or divide as indicated. Make sure your answers contain the correct number of significant digits.
- $(2.21 \text{ kg})(100.0 \text{ m/s}^2)$
 - $\frac{3.3 \times 10^{-5} \text{ m}}{6.55 \times 10^{-6} \text{ s}}$
 - $\frac{200.0 \text{ cm}^2}{1.23 \text{ cm}}$
 - $(7.89 \times 10^4 \text{ km})(3 \times 10^2 \text{ km})$