
Workshop 4 – Dimensional Analysis

Show your calculation setup for the following problems. Make certain to express the appropriate units and round-off your answers to the proper number of significant figures.

1. Convert 25 °F to degrees Celsius. _____

2. Convert $-75\text{ }^{\circ}\text{C}$ to degrees Fahrenheit. _____

3. A ruler is 48.0 in. long. How long is this in centimeters? _____

4. A bowling ball weights 15.3 lbs. Calculate its mass in grams. _____

5. 125 mL of water are contained in a beaker. Convert this to quarts. _____

6. A baseball bat is 95.9 cm long. How long is this in:

(a) Millimeters? _____

(b) Feet? _____

7. An object has a mass of 35.8 g and a volume of 40.5 cm^3 . Calculate the density of the object in g/mL.

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8. A rubber stopper weighing 65.4 g is immersed into a graduated cylinder filled with 30.0 mL of liquid. The liquid level then rises to 48.8 mL. Calculate the density of the stopper.

9. If the density of the liquid in Problem 8 is 0.785 g/mL, calculate the mass of the liquid in the graduated cylinder.

10. A flask contains 365 mL of water. The density of water is 1.00 g/mL. Calculate:

(a) The mass of the water in grams.

(b) The volume of the water in liters.

11. The density of CCl_4 is 1.57 g/mL. Calculate the volume of 135 g of CCl_4 .

12. What is the density (g/mL) of a rectangular block of wood if it measures 4.0 cm thick, 120 mm long, and 0.57 in wide and has a mass of 0.0620 kg? Will the block sink or float in water?

Circle one: sink or float