**Density and Calculating with Significant Digits**

**Density –** the ratio of an object’s \_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Units:**

**g/mL (liquid)**

**g/ cm3 (solid)**

**Formula:**

EVERYTHING has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ density, therefore density can be used to \_\_\_\_\_\_\_\_\_\_\_ an unknown sample of matter.

Will it float or sink?

The density of water = **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* + Anything with a density more than 1.0 g/ml = \_\_\_\_\_\_\_\_\_\_\_\_ in water
  + Anything with a density less than 1.0 g/ml = \_\_\_\_\_\_\_\_\_\_ on water

**Significant Figures in Calculations**

* Calculated values must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ so that they are consistent with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from which they were calculated.

**Multiplication and Division**

* In calculations involving multiplication and division, answers should be rounded so that they contain the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ digits as the measurement with the \_\_\_\_\_\_\_\_\_\_\_\_ number of significant digits.

Example: 7.55 m x 0.34 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Should be rounded to \_\_\_\_\_\_\_\_\_\_\_\_

2.4526 m / 8.4 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Should be rounded to \_\_\_\_\_\_\_\_\_\_\_\_

**Addition and Subtraction**

* The answer to an addition or subtraction calculation should be rounded to the same number of \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ **(not digits)** as the measurement with the\_\_\_\_\_\_\_\_\_\_\_\_\_ number of decimal places.

Example: 12.52 m + 349.0 m + 8.24 m =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Should be rounded to \_\_\_\_\_\_\_\_\_\_\_\_\_

74.626 m – 28.34 m =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Should be rounded to \_\_\_\_\_\_\_\_\_\_\_\_\_

**Review**

How many significant digits are in each of the measurements below:

1) 100 m \_\_\_\_\_\_\_\_\_\_\_\_ 2) 0.0230 m/s \_\_\_\_\_\_\_\_\_ 3) 100.1 m \_\_\_\_\_\_\_\_\_\_

4) 2.0 x 1011 m/s \_\_\_\_\_\_\_\_\_\_ 5) 50 metersticks \_\_\_\_\_\_\_\_\_\_ 6) 10.380 s \_\_\_\_\_\_\_\_\_\_

**Answer in the correct number of significant digits.**

7) 3.42 cm + 8.13 cm = \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_

8) 0.00457 cm x 0.18 cm = \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_

9) 85.0869 m2 ÷ 9.0049 m= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_

10) 13.80 cm – 6.0741 cm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_