DIMENSIONAL ANALYSIS (DA)

(Factor-label method)

***Using units (dimensions) that are part of a measurement to analyze a problem.

Conversion factor: Ratios of equivalent measurement; Equal to 1 (dimension)

1 m = 100 cm $\quad \frac{1\text{ m}}{100\text{ cm}} \quad \frac{100\text{ cm}}{1\text{ m}}$ Both = 1

ex. Solve 3.6 m = _____cm

5 steps of problem solving

1. Unknown?
2. Known?
3. Relationship?
4. DA or formula
5. Check units/sig figs – does it make sense?

Conversion Factor List (metrics)

Length -= base unit of measurement is meter (m)

1 m = 1000 mm
1m = 100 cm
1m = 10 dm
1Km = 1000 m
1 Hm = 100 m
1 Dm = 10 m

Refer to printout (The Metric System) for other base units

Multistep DA problems: use more than 1 conversion factor to solve.

ex. 3.560 mg = _____Kg

Complex Unit Problems: These are problems with units in the denominator and numerator that may need changed. ex. moles/liter, grams/milliter

Do the following by DA

1. 193 g = ? mg
2. 12.6 mg = ? Kg
3. 0.53 L = ? KL
4. 6.27 cL = ? HL
5. 8.7 Dm = ? mL
6. 100.5 L = ? mL
7. 10,800 g = ? cg