

Metric Conversions / Dimensional Analysis

Name: _____

Part I: Dimensional Analysis (Factor Labeling) – ALL UNITS (Non-Metric)!

Conversion Factors:

1 mL = 1 cm³
1 mol = 22.4 L

1 cal = 4.184 Joules
1 atm = 101.3 kPa = 760 mmHg

1 mol = 6.02 x 10²³ atoms
1 hr = 60 min

1 hr = 3600 sec
1 min = 60 sec

Example #1: 53.0 L = ? mol → _____ mol

Example #2: 3.40 kPa = ? mmHg → _____ mmHg

Example #3: 600. sec = ? min → _____ min

Perform the following conversions by showing the **DIMENSIONAL ANALYSIS METHOD**. Show units in answer!

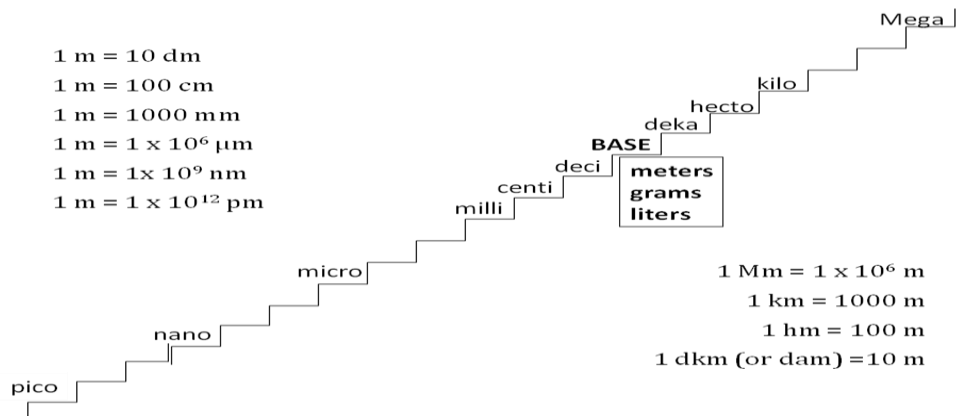
1) 850. Joules = ? cal → _____ (in scientific notation form)

2) 12.0 cm³ = ? mL → _____ (in scientific notation form)

3) 4.20 atm = ? kPa → _____

4) 800. mmHg = ? atm → _____ (in scientific notation form)

5) 2.93 mol = ? atoms → _____



Part II: Dimensional Analysis (*Factor Labeling*) – METRIC SYSTEM!

Example #1: 23.0 km = ? m → _____ m

Example #2: 133 cm = ? km → _____ km

Example #3: 0.800 hm = ? mm → _____ mm

Perform the following conversions by showing the DIMENSIONAL ANALYSIS METHOD. Show units in answer!

6) 35.0 hm = ? m → _____

7) 180. pg = ? g → _____ (in scientific notation form)

8) 2.50 km = ? dm → _____

9) 964 nm = ? cm → _____

10) 10,340 μ L = ? hL → _____ (in standard form)

Part III: Complete the following table using the given information. NOTE: Research may be required for various derived quantities.

Unit Name / Measurement	S.I. Unit Symbol	Concept/Idea	Fundamental or Derived?	Related Unit(s)
	kg		Fundamental	
		length x width x height		dm^3
		temperature: average kinetic energy of particles		Celsius, Fahrenheit
	g/mL		Derived (from mass, volume)	
	m/s^2	gravity		