Chemistry First Marking Period Review Sheet

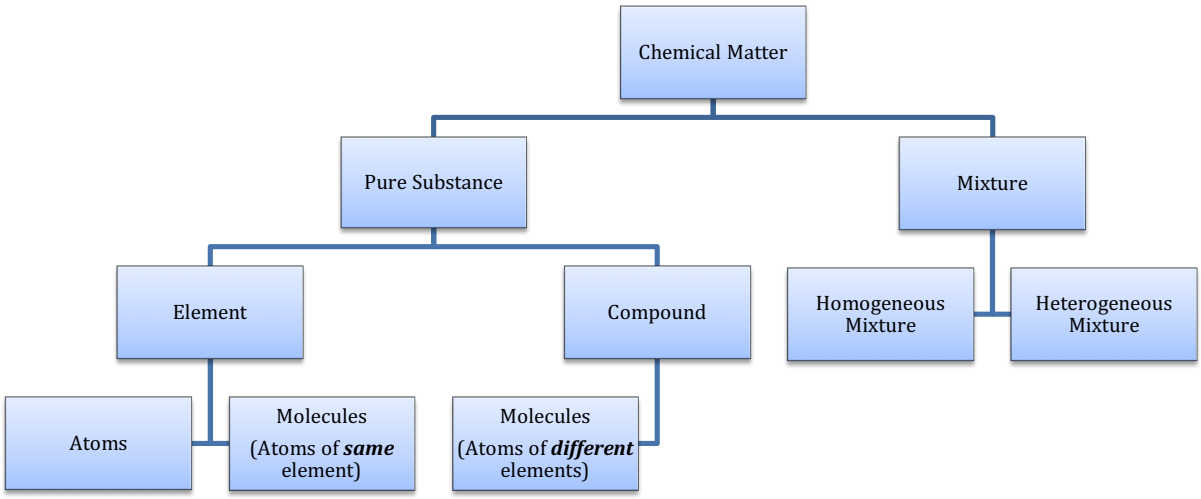
Fall, Mr. Wicks

Chapter 1: Introduction to Chemistry

- I can explain how the subject of chemistry fits into science and into everyday life.
- I can explain the scientific method to someone not enrolled in Chemistry.

Chapter 2: Matter and Change

- I can distinguish between and give examples of a law, a hypothesis, and a theory.
- I can understand the language used in the scientific method and I can distinguish between a hypothesis, an experiment, data, an independent variable, and a dependent variable.
- I can distinguish between qualitative and quantitative results.
- I can give the two characteristics of chemical matter.
- I can summarize the four states of matter and I can describe the changes of state for solids, liquids, and gases.
- I can explain the difference between chemical and physical changes and give examples of chemical and physical properties.
- I can properly use a classification scheme for chemical matter.



- I can distinguish between and give examples of homogeneous mixtures and heterogeneous mixtures.
- I can distinguish between and give examples of elements, compounds, atoms, and molecules.
- I can distinguish between metals, nonmetals, and metalloids on a periodic table of the elements.
- I can distinguish between the terms malleable and ductile, which are characteristics of some metals.

Chapter 3: Scientific Measurement

- I can convert numbers back and forth between scientific notation and their decimal form with ease.
- I know the rules for rounding and how to apply them properly.
- I know the three types of zeros and I can count the number of significant digits in any given number.
- I can apply the rules for using significant figures in calculations. I remember that the rules for addition and subtraction are different from those for multiplication and division.

- I can use metric-metric and English-metric conversion factors to solve problems.

Kilo-	k	thousand	$10^3 = 1{,}000$	1 inch (in.) = 2.54 cm
Hecto-	h	hundred	$10^2 = 100$	1 pound (lb.) = 454 g
Deka-	da	ten	$10^1 = 10$	1 quart (qt.) = 0.946 L
		one	$10^0 = 1$	
Deci-	d	tenth	$10^{-1} = 0.1$	
Centi-	c	hundredth	$10^{-2} = 0.01$	
Milli-	m	thousandth	$10^{-3} = 0.001$	1 mL = 1 cm^3

- I can compare and contrast mass with weight and explain why scientists prefer to use mass instead of weight.
- I can demonstrate how dimensional analysis is used for problem solving. I can remember the four steps—(1) given, (2) want, (3) conversion factor, (4) setup--where units cancel in the setup to give the final answer.
- I can demonstrate how densities are used as conversion factors in problem-solving.

Chapter 4: Atomic Structure

- I can describe how Dalton's atomic theory explained the law of conservation of mass, the law of definite proportions (law of constant composition), and the law of multiple proportions. See Table 1.

Table 1: Laws Explained by Dalton's Atomic Theory

Law	*Meaning*
Law of Conservation of Mass	Matter is neither created nor destroyed during ordinary chemical reactions or physical changes.
Law of Definite Proportions (Law of Constant Composition)	Chemical compounds contain the same elements in the same proportions by mass regardless of the sample size or sample source.
Law of Multiple Proportions	If two elements can combine to form more than one compound, the masses of one element that combine with a fixed mass of the other element are in ratios of small whole numbers.

- I can explain why parts of Dalton's atomic theory are no longer accepted today.
- I can identify some of the key scientists and their contributions toward our modern atomic theory of matter.
- I can explain the significance of Rutherford's gold foil experiment and Millikan's oil drop experiment.
- I can compare and contrast the charge, location, and relative masses for protons, neutrons, and electrons.
- Given atomic numbers and mass numbers, I can calculate the number of protons, neutrons, and electrons in atoms of given elements.
- I can explain what isotopes are and how isotopic abundance can be used to calculate the atomic mass for a given element.
- I understand the chemical mole and how it is related to Avogadro's number, 6.022×10^{23}.
- I can use Avogadro's number and molar masses as conversion factors to solve problems.