CHEMISTRY FIRST SEMESTER REVIEW

Welcome to second semester!
Before beginning a new unit, let's review key concepts from first semester.

CHEMISTRY, THE SCENTIFIC METHOD, MEASUREMENT

1) What kind of information can you find in the arrangement of the periodic table? Write as much as you can remember.
2) Compare and contrast theory with scientific law.
3) Compare and contrast element with compound.
4) Compare and contrast experimental group with control group.
5) Describe what significant figures are and why they are used in scientific measurements.
6) List the metric prefixes symbolized by K H D (U) D C M, and list the numerical values for each.
7) How many liters are in one mole of gas at STP?
8) How many particles (atoms etc.) are in one mole of a substance?
9) Explain how to find the number of grams in one mole of a substance.

PROPERTIES OF MATTER

10) What is a mixture? Give an example.
11) Is boiling water a chemical or physical change? Why?
12) Is rusting iron a chemical or physical change? Why?
13) Is dissolving sugar in water a chemical or physical change? Why?

COMPOUNDS, IONS, FORMULAS

14) What is valence?
15) How can you tell what charge an monatomic ion ion will be?
16) Describe the difference between binary ionic, binary molecular, ternary ionic, and other compounds.
17) When are Roman numerals needed in naming a compound?

Name and classify the following compounds:

18) $NaClO_4$
19) CaS
20) $Al(CH_3COO)_3$

Write the formulas and classify the following compounds:

21) calcium nitride
22) barium sulfate
23) diphosphorus trioxide
24) cobalt(III) bicarbonate pentahydrate

MORE →

ELECTRON CONFIGURATIONS, DOT DIAGRAMS

25) Write the complete electron configuration for Sb.
26) Write the condensed electron configuration for Ti.
27) Write the valence electron configuration for Ba.
28) Draw the electron dot diagram (Lewis structure) for chlorine.
29) Draw the electron dot diagram (Lewis structure) for zinc.
30) Draw the electron dot diagram (Lewis structure) for a sodium ion.
31) Draw the electron dot diagram (Lewis structure) for a sulfide ion.

POLARITY, MOLECULAR GEOMETRY

32) What is electronegativity?
33) What is the difference between ionic bonds, polar covalent bonds, and non polar covalent bonds?
34) Contrast polar and nonpolar molecules.
35) How can you determine the shape of a molecule with VSEPR?

CHEMICAL REACTIONS (honors only)

36) Write the balanced equation: zinc + phosphorous acid →
37) Write the balanced equation: nitrogen + hydrogen →
38) Write the balanced equation: sulfuric acid + aluminum hydroxide →
39) Write the balanced equation: the complete combustion of butane (C_4H_{10})
40) Write the balanced equation: the incomplete combustion of octane (C_8H_{18})