

FIRST SEMESTER REVIEW

Welcome to second semester! Before beginning a new unit, we will review key concepts from first semester. Use your own paper. Work independently, but you may ask your partner for help if necessary. You may use a textbook and notes.

CHEMISTRY, THE SCIENTIFIC METHOD and MEASUREMENT

- 1) **What kind of information can you find in the arrangement of the periodic table? Write as much as you can remember.**
- 2) Define chemistry in your own words.
- 3) Compare and contrast a theory with a scientific law.
- 4) Compare and contrast an element with a compound.
- 5) Describe what significant figures are and why they are used in measurements using various instruments.
- 6) How many mm are in a meter?
- 7) How many cs (centiseconds) are in a second?
- 8) How many grams are in a kg?

PROPERTIES OF MATTER

- 9) What is a mixture? Give an example.
- 10) Is boiling water a chemical or physical change? How can you tell?
- 11) Where are the following particles located: protons, neutrons, and electrons?

COMPOUNDS, IONS, and FORMULAS

- 12) What is valence?
- 13) How can you tell what charge an ion will be?
- 14) Describe the difference between binary ionic, binary molecular, and ternary ionic compounds.

Name the following compounds:

- 15) NaCl
- 16) CaS
- 17) Al(OH)₃

Write the formulas for the following compounds:

- 18) calcium nitride
- 19) barium sulfate
- 20) diphosphorus trioxide

ELECTRON CONFIGURATIONS and DOT DIAGRAMS

- 21) Write the complete electron configuration for antimony.
- 22) Write the condensed electron configuration for titanium.
- 23) Write the valence electron configuration for barium.
- 24) Draw the electron dot diagram (Lewis structure) for chlorine.
- 25) Draw the electron dot diagram (Lewis structure) for zinc.
- 26) Draw the electron dot diagram (Lewis structure) for a sodium ion.
- 27) Draw the electron dot diagram (Lewis structure) for a sulfide ion.

POLARITY and MOLECULAR GEOMETRY

- 28) What is the difference between ionic bonds, polar covalent bonds, and non polar covalent bonds?
- 29) Contrast polar and nonpolar molecules.
- 30) How can you determine the shape of a molecule with VSEPR?