

Name \_\_\_\_\_ Per. \_\_\_\_\_ Date \_\_\_\_\_

## Classification of Matter, Physical/Chemical Properties, Scientific Method and the Atom

- Define the following:
  - element
  - compound
  - homogeneous mixture
  - heterogeneous mixture
- Classify the following mixtures as an element, compound, homogeneous mixture or heterogeneous mixture:
  - Neon
  - Salt (sodium chloride)
  - Pure water
  - Pure air
  - Iced tea with ice
  - Soda
- Define diatomic elements. What are the diatomic elements?
- What is the difference between a chemical change and a physical change?
- What is the difference between a chemical property and a physical property?
- Identify the following as a physical or chemical property:
  - malleable
  - flammable
  - combustible
  - brittle
- Identify the following as a physical or chemical change:
  - boiling
  - torn in half
  - burning
  - fizzing
- What are the steps of the scientific method?
- What is the difference between a theory and a law?
- What is the difference between a dependent and an independent variable?
- What are the three fundamental particles of an atom? What are their charges and masses?
- How can you find the number of protons, neutrons and electrons of an atom?
- How many protons, neutrons and electrons do the following atoms have?
  - Iron-56
  - Hydrogen-3
  - Chromium-54
  - $^{238}\text{U}^{2-}$
  - $^{42}\text{Ca}^{2+}$
  - $^{81}\text{Br}^-$
- Define isotope.
- Most of an atom's volume is taken up by the \_\_\_\_\_.
- Most of an atom's mass is taken up by the \_\_\_\_\_.
- Who discovered the electron and how did he do it?
- Who discovered the nucleus and how did he do it?
- Complete the following problems: **p. 13 #12, p. 32 #12, p. 34 #17, p. 39 #31, p. 41 #35ab, 36ab, p. 42 #37ab, 38ab, p. 82 47abc, p. 113 #64, 67, 68, 79, p. 114 #80**