

Element Investigation Lab

NAME: _____ DATE: _____ PERIOD: _____

Background:

Many elements on the periodic table occur naturally in various states (solid, liquid, gas) representing a variety of colors. Some elements look similar to each other while other elements have a very different appearance. The periodic table has eighteen vertical columns called groups and seven horizontal rows called periods. Several groups have specific names. Group 17 is called the halogens, Group 18 is called the noble or inert gases, Group 1 is called the alkali metals and Group 2 is called the alkaline earth metals. The table can also be classified into the groupings of metal, metalloid and nonmetal. The metalloids sit on the "stair-step" dividing the metals on the left from the nonmetals on the right of the stair-step. In this lab, a variety of elements will be observed in order to become familiar with their physical characteristics.

Procedure:

- 1) Visit each lab station and observe the color and state of each element and record in the data table below.
- 2) Use a periodic table in order to fill in the columns for symbol, group number, and type of element (metal, nonmetal, metalloid).
- 3) Use an information sheet or CRC handbook at each station to find the density, melting point and boiling point. Give the density to two decimal places and record the melting point and boiling point to the nearest whole number.

Data:

Station Number & Element	Element Symbol	Group Number	Color of Element	State of Element S/L/G	Metal Nonmetal Metalloid	Density	Melting Point °C	Boiling Point °C
1 Zinc								
2 Nitrogen								
3 Silicon								
4 Magnesium								

Station Number	Element Symbol	Group Number	Color of Element	State of Element S/L/G	Metal Nonmetal Metalloid	Density	Melting Point °C	Boiling Point °C
5 Oxygen								
6 Iron								
7 Aluminum								
8 Cobalt								
9 Sulfur								
10 Hydrogen								
11 Nickel								
12 Copper								

Element Investigation Lab Data Continued:

Station Number	Element Symbol	Group Number	Color of Element	State of Element S/L/G	Metal Nonmetal Metalloid	Density	Melting Point °C	Boiling Point °C
13 Helium								
14 Chromium								
15 Gallium								
16 Lead								
17 Carbon								
18 Antimony								
19 Tin								
20 Bismuth								

Conclusion:

- 1) What is the name given for a horizontal row on the periodic table? _____
- 2) What is the name given for a vertical column on the periodic table? _____
- 3) What group is on the "stair-step" of the periodic table? _____
- 4) What is the name for the group numbered 7A or 17? _____
- 5) What is the name for the group numbered 8A or 18? _____
- 6) What is the name for the group numbered 1A or 1? _____
- 7) What is the name for the group numbered 2A or 2? _____
- 8) Water has a density of 1.0 g/mL, which group has the highest percentage of elements that would sink if placed into water? (M or NM) _____
- 9) Metals and metalloids typically occur in what state? (S/L/G) _____
- 10) What element occurs as a yellow solid? _____
- 11) What element is prone to rusting? _____
- 12) What element is used for water pipes? _____
- 13) What element is used at home for covering food? _____
- 14) What element is a colorless gas and is used in balloons? _____
- 15) What element is a black solid and can be used in a grill? _____

Fill-in the following blanks with the choice that best completes the sentence.

Choices: metals, nonmetals and metalloids

- 16) Some _____ have very low boiling points.
- 17) Many _____ have very high melting points.
- 18) _____ exhibit properties of both metals and nonmetals.
- 19) _____ occur in a variety of states and colors.
- 20) _____ have luster (shiny).