Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade\_\_\_\_\_

**Grouping the elements**

1. The properties of the elements in a group are similar because the atoms of the elements have the same number of electrons in their outer energy level.

**Group 1: Alkali Metals: Li, Na, K, Rb, Cs, Fr**

1. Group contains: metals

Electrons in the outer level: 1

Reactivity: very reactive

Other shared properties: softness, color of silver, shininess, low density

1. Elements in this group are the most reactive metals. In nature, they are only found combined with other elements.
2. Uses: sodium chloride (table salt) and potassium bromide is used in photography.

**Group 2: Alkaline-Earth Metals: Be, Mg, Ca, Sr, Ba, Ra**

1. Group contains: metals

Electrons in the outer level: 2

Reactivity: very reactive but less reactive than alkali metals

Other shared properties: color of silver, higher densities than alkali metals

1. Uses: magnesium can be mixed with other metals to make low-density materials used in airplanes. Compounds in calcium are found in cement, chalk and the human body.

**Groups 3-12: Transition Metals**

1. Group contains: metals

Electrons in the outer level: 1 or 2

Reactivity: less reactive than alkaline-earth metals

Other shared properties: shininess, good conductors of thermal energy and electric current, higher densities and melting points than elements in groups 1 and 2

1. Lanthanides and actinides: some transition metals from periods 6 and 7 appear in two rows at the bottom of the periodic table to keep the table from being too wide. The elements in each row tend to have similar properties.

**Group 13: Boron Group: B, Al, Ga, In, TI, Uut**

1. Group contains: one metalloid and five metals

Electrons in the outer level:3

Reactivity: reactive

Other shared properties: solids at room temperature

1. The most common element from group 13 is aluminum which is the most abundant metal in Earth’s crust.

**Group 14: Carbon Group: C, Si, Ge, Sn, Pb, Uuq**

1. Group contains: one nonmetal, two metalloids and three metals

Electrons in the outer level: 4

Reactivity: varies among the elements

Other shared properties: solids at room temperature

1. The nonmetal carbon forms a wide variety of compounds such as proteins, fats, and carbohydrates.
2. The metalloids silicon and germanium are used to make computer chips

**Group 15: Nitrogen Group: N, P, As, Sb, Bi, Uup**

1. Group contains: two nonmetals, two metalloids and two metals

Electrons in the outer level: 5

Reactivity: varies among the elements

Other shared properties: solids at room temperature (except for nitrogen)

1. Nitrogen makes up about 80% of the air you breathe.

**Group 16: Oxygen Group: O, S, Se, Te, Po**

1. Group contains: three nonmetals, one metalloid and one metal

Electrons in the outer level: 6

Reactivity: Reactive

Other shared properties: all but oxygen are solid at room temperature

1. Oxygen makes up about 20% of air and it is necessary for substances to burn

**Group 17: Halogens: F, Cl, Br, I, At**

1. Group contains: nonmetals

Electrons in the outer level: 7

Reactivity: very reactive

Other shared properties: poor conductors of electric current, violent reactions with alkali metals to form salts, never in uncombined form in nature

1. The reaction of a halogen with a metal makes a salt, such as sodium chloride
2. Chlorine and iodine are used as disinfectants.

**Group 18: Noble Gases: He, Ne, Ar, Kr, Xe, Rn**

1. Group contains: nonmetals

Electrons in the outer level: 8 (except helium, which has 2)

Reactivity: Unreactive

Other shared properties: colorless, odorless gases at room temperature

1. All the noble gases are found in small amounts

**Hydrogen**

1. Electrons in the outer level: 1

Reactivity: Reactive

Other properties: colorless, odorless gas at room temperature, low density, explosive reactions with oxygen

1. The properties of hydrogen do not match the properties of any single group, so hydrogen is set apart from the other elements in the table.
2. Hydrogen is above group 1 because atoms of the alkali metals also have only one electron in their outer level. However, the physical properties of hydrogen are more like those of nonmetals than those of metals.
3. Hydrogen is found in stars; it is the most abundant element in the universe.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Grade\_\_\_\_\_

**Grouping the elements**

1. The properties of the elements in a group are similar because the atoms of the \_\_\_\_\_\_\_ have the same number of electrons in their outer \_\_\_\_\_\_\_\_\_\_\_ level.

**Group 1: Alkali Metals: Li, Na, K, Rb, Cs, Fr**

1. Group contains: \_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_

Reactivity: very \_\_\_\_\_\_\_\_\_\_

Other shared properties: softness, color of silver, shininess, low \_\_\_\_\_\_\_\_\_

1. Elements in this group are the most reactive metals. In nature, they are only found combined with other \_\_\_\_\_\_\_\_\_\_\_\_\_
2. Uses: sodium chloride (table \_\_\_\_\_\_\_) and potassium bromide is used in photography.

**Group 2: Alkaline-Earth Metals: Be, Mg, Ca, Sr, Ba, Ra**

1. Group contains: \_\_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_\_\_\_

Reactivity: very reactive but less reactive than \_\_\_\_\_\_\_\_\_metals

Other shared properties: color of silver, higher densities than alkali \_\_\_\_\_\_\_\_

1. Uses: magnesium can be mixed with other metals to make low-density materials used in \_\_\_\_\_\_\_\_\_\_\_\_. Compounds in calcium are found in cement, chalk and the human body.

**Groups 3-12: Transition Metals**

1. Group contains: \_\_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_\_\_\_\_\_\_

Reactivity: less reactive than alkaline-earth \_\_\_\_\_\_\_\_\_\_\_\_\_

Other shared properties: shininess, good conductors of thermal energy and electric current, higher densities and melting points than elements in groups \_\_\_\_ and \_\_\_\_\_

1. Lanthanides and actinides: some transition metals from periods 6 and 7 appear in two rows at the \_\_\_\_\_\_\_\_\_\_ of the periodic table to keep the table from being too wide. The elements in each row tend to have similar properties.

**Group 13: Boron Group: B, Al, Ga, In, TI, Uut**

1. Group contains: one \_\_\_\_\_\_\_\_\_\_\_\_\_ and five \_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_\_\_

Reactivity: \_\_\_\_\_\_\_\_\_\_\_

Other shared properties: solids at room \_\_\_\_\_\_\_\_\_\_\_\_\_

1. The most common element from group 13 is aluminum which is the most abundant metal in Earth’s \_\_\_\_\_\_\_\_\_

**Group 14: Carbon Group: C, Si, Ge, Sn, Pb, Uuq**

1. Group contains: one \_\_\_\_\_\_\_\_\_\_\_\_, two metalloids and three \_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_\_\_

Reactivity: \_\_\_\_\_\_\_\_\_\_\_\_ among the elements

Other shared properties: solids at \_\_\_\_\_\_\_\_\_\_\_ temperature

1. The nonmetal carbon forms a wide variety of compounds such as \_\_\_\_\_\_\_\_\_\_, fats, and carbohydrates.
2. The metalloids silicon and germanium are used to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_ chips

**Group 15: Nitrogen Group: N, P, As, Sb, Bi, Uup**

1. Group contains: two \_\_\_\_\_\_\_\_\_\_\_\_\_, two metalloids and two \_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_

Reactivity: varies among the \_\_\_\_\_\_\_\_\_\_

Other shared properties: solids at room temperature (except for \_\_\_\_\_\_\_\_\_\_\_\_\_\_)

1. Nitrogen makes up about \_\_\_\_\_\_\_ of the air you breathe.

**Group 16: Oxygen Group: O, S, Se, Te, Po**

1. Group contains: three nonmetals, one \_\_\_\_\_\_\_\_\_\_\_\_ and one metal

Electrons in the outer level: \_\_\_\_\_\_

Reactivity: \_\_\_\_\_\_\_\_\_\_\_

Other shared properties: all but oxygen are \_\_\_\_\_\_\_\_\_\_\_ at room temperature

1. Oxygen makes up about \_\_\_\_\_\_\_ of air and it is necessary for substances to burn

**Group 17: Halogens: F, Cl, Br, I, At**

1. Group contains: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_\_

Reactivity: very \_\_\_\_\_\_\_\_\_\_\_

Other shared properties: poor conductors of electric current, violent reactions with alkali metals to form salts, never in \_\_\_\_\_\_\_\_\_\_\_\_\_ form in nature

1. The reaction of a halogen with a metal makes a salt, such as sodium \_\_\_\_\_\_\_\_\_\_\_
2. Chlorine and iodine are used as \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Group 18: Noble Gases: He, Ne, Ar, Kr, Xe, Rn**

1. Group contains: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Electrons in the outer level: \_\_\_\_\_\_ (except helium, which has 2)

Reactivity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other shared properties: colorless, \_\_\_\_\_\_\_\_\_\_\_\_\_ gases at room temperature

1. All the noble gases are found in small \_\_\_\_\_\_\_\_\_\_\_\_\_

**Hydrogen**

1. Electrons in the outer level: \_\_\_\_\_\_\_\_

Reactivity: \_\_\_\_\_\_\_\_\_\_\_\_\_

Other properties: colorless, odorless gas at room temperature, low \_\_\_\_\_\_\_\_, explosive reactions with oxygen

1. The properties of hydrogen do not match the properties of any single group, so hydrogen is set \_\_\_\_\_\_\_\_\_ from the other elements in the table.
2. Hydrogen is above group 1 because atoms of the \_\_\_\_\_\_\_\_\_\_metals also have only one electron in their outer level. However, the physical properties of hydrogen are more like those of \_\_\_\_\_\_\_\_\_\_\_\_\_ than those of metals.
3. Hydrogen is found in \_\_\_\_\_\_\_\_\_\_\_\_; it is the most abundant element in the universe.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Group\_\_\_\_\_\_\_\_

**Elements Project**

**Assignment:** Research a specific element and create a power point presentation on that element. **MY ELEMENT:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Format:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 1- include:

Name of the element

Your name

Date

Grade

Class

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 2- include:

Element’s symbol

Element’s name

Element’s atomic number

Element’s mass number

Picture

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 3- include:

What group does it belong to? (specify if it is an alkali metal, alkaline-Earth metal etc…)

What period does it belong to?

Add a picture indicating where in the periodic table it is found

Picture

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 4- include:

Number of protons

Number of neutrons

Number of electrons

Add a picture of your element’s atom

Picture

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 5- include:

Physical properties

Chemical properties

Picture

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 6- include:

Where is this element found?

Picture

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Slide 7- include:

What are some industrial uses of this element? Or what do humans use this element for?

Picture