

Name: \_\_\_\_\_ Date \_\_\_\_\_

# NOTES: THE PERIODIC TABLE

## The "Father" of the Periodic Table

\_\_\_\_\_ was the first scientist to notice the \_\_\_\_\_

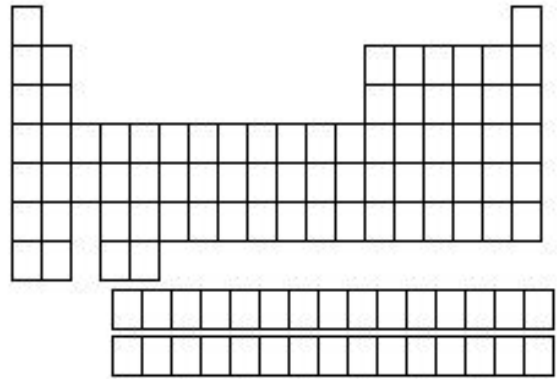
- Arranged his periodic table by \_\_\_\_\_
- Said \_\_\_\_\_ of \_\_\_\_\_ could be predicted by \_\_\_\_\_

English chemist \_\_\_\_\_ later discovered that the periodic nature of the elements was associated with \_\_\_\_\_, **not** atomic mass.

## The Periodic Table

Column: \_\_\_\_\_ or \_\_\_\_\_  
\_\_\_\_\_ columns on the periodic table

Row: \_\_\_\_\_ (periodic table)  
\_\_\_\_\_ rows on the periodic table



On the diagram to the right, shade in the 1st column and the 3rd row

## Every element has its own unique symbol

- For some elements, the symbol is simply the \_\_\_\_\_
  - Examples: Hydrogen = \_\_\_\_\_, Sulfur = \_\_\_\_\_, Carbon = \_\_\_\_\_
- Symbols for other elements use the \_\_\_\_\_ other letter of the element's name. The first letter is \_\_\_\_\_ and the second \_\_\_\_\_.
  - Examples: Aluminum = \_\_\_\_\_, Platinum = \_\_\_\_\_, Cadmium = \_\_\_\_\_
- The origins of some symbols \_\_\_\_\_ . Some elements have symbols that refer to the \_\_\_\_\_.
  - Examples: Gold = \_\_\_\_\_, Lead = \_\_\_\_\_, Copper = \_\_\_\_\_

## What does the information in the box tell me?

Atomic \_\_\_\_\_ =  
Number of \_\_\_\_\_

Atomic \_\_\_\_\_  
= number of \_\_\_\_\_

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

1
H
1.008

Element \_\_\_\_\_:  
Abbreviation of \_\_\_\_\_

\_\_\_\_\_

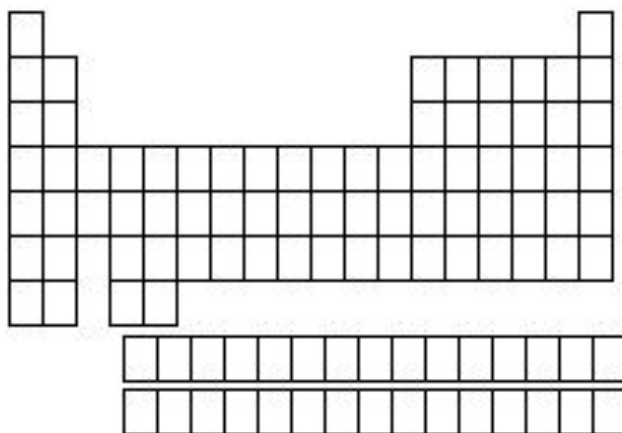
## Metals, Nonmetals, and Metalloids

\_\_\_\_\_ is the only nonmetal on the left of the table

\_\_\_\_\_ are to the \_\_\_\_\_ of the stair-step line

\_\_\_\_\_ touch the stair-step line.

\_\_\_\_\_ are on the right of the \_\_\_\_\_



\*Draw a star on the square for hydrogen

\*Draw the stair-step line on the periodic table

\*Shade in the metalloids- careful to get the right ones!

\*Label metals and nonmetals on the diagram

## Types of Elements: Metals

- On the \_\_\_\_\_ side of the periodic table
- Properties:
  - \_\_\_\_\_ of electricity and heat
  - \_\_\_\_\_ in appearance (\_\_\_\_\_)
  - \_\_\_\_\_; can be molded or re-shaped, \_\_\_\_\_ into a thin sheet (think \_\_\_\_\_)
  - \_\_\_\_\_; able to be stretched into wire
  - These are general properties; \_\_\_\_\_ properties of metals \_\_\_\_\_ . Some will be \_\_\_\_\_ or \_\_\_\_\_ than others.

## Types of Elements: Nonmetals

- Elements of the \_\_\_\_\_ side of the periodic table
- Properties are the \_\_\_\_\_ those of \_\_\_\_\_
  - Usually \_\_\_\_\_
  - Not \_\_\_\_\_
- Most are \_\_\_\_\_

## Types of Elements: Metalloids

- Found touching the “\_\_\_\_\_”
- Have properties of both \_\_\_\_\_
- Most common metalloid is \_\_\_\_\_, which is the \_\_\_\_\_ in Earth’s crust

## Valence Electrons and Reactivity

- \_\_\_\_\_ are the electrons \_\_\_\_\_ from the nucleus. Atoms have \_\_\_\_\_ of valence electrons.
- \_\_\_\_\_: how likely an atom is to \_\_\_\_\_ (\_\_\_\_\_) with other atoms.
- Some elements are \_\_\_\_\_, while others almost \_\_\_\_\_.
  - Reactivity is determined by \_\_\_\_\_
  - Atoms with \_\_\_\_\_ valence electrons are \_\_\_\_\_, atoms with \_\_\_\_\_ valence electrons are \_\_\_\_\_.

## Families on the Periodic Table

- Elements on the periodic table can be grouped into families \_\_\_\_\_
- Each family has a \_\_\_\_\_
- Elements in each family \_\_\_\_\_

## Alkali Metals: Group 1

- \_\_\_\_\_ is **not** a member, it is a \_\_\_\_\_
- All are metals and \_\_\_\_\_ at room temp
- 1 \_\_\_\_\_
- \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_
- \_\_\_\_\_, especially with water
- \_\_\_\_\_

## Alkaline Earth Metals: Group 2

- \_\_\_\_\_
- \_\_\_\_\_ at room temp
- \_\_\_\_\_ in the outer shell
- \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_
- \_\_\_\_\_, but \_\_\_\_\_ Alkali metals
- \_\_\_\_\_

## Transition Metals: Groups 3-12

- \_\_\_\_\_
- Almost all are \_\_\_\_\_ at room temp (except for Hg-Mercury)
- Good conductors of \_\_\_\_\_ and \_\_\_\_\_
- 1 or 2 \_\_\_\_\_
- \_\_\_\_\_ than Alkali and Alkaline Earth
- Can \_\_\_\_\_ with many elements in a variety of \_\_\_\_\_.

### Boron Family: Group 13

- \_\_\_\_\_ in the outer shell
- Most are \_\_\_\_\_
- \_\_\_\_\_ is a \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ at room temp

### Carbon Family: Group 14

- \_\_\_\_\_ in the outer shell
- Contains \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ Carbon (C)
- \_\_\_\_\_
- \_\_\_\_\_ at room temp

### Nitrogen Family: Group 15

- \_\_\_\_\_ in the outer shell
- Can \_\_\_\_\_ to form \_\_\_\_\_
- Contains \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ is the only gas at room temp, the rest are solids

### Oxygen Family: Group 16

- \_\_\_\_\_ in the outer shell
- Contains \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ is a gas, the rest are \_\_\_\_\_ at room temp

### Halogen Family: Group 17

- \_\_\_\_\_ in the outer shell
- \_\_\_\_\_
- \_\_\_\_\_ - are often bonded with Group 1 Alkali Metals
- Has 2 gases, 1 liquid (Br), and 2 solids

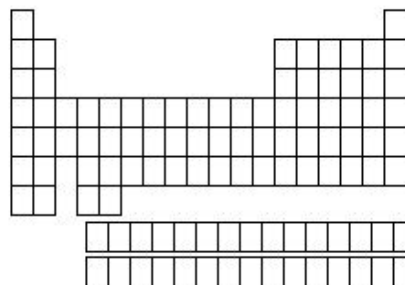
### Noble Gases: Group 18

- Exist as \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ in the outer shell = \_\_\_\_\_
- \_\_\_\_\_ (He) has only 2 electrons in the outer shell = \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ with other elements

### Rare Earth Metals

→ These are placed under the main table for convenience. These would go between group 2 and group 3, but moving them down allows the PTE to be smaller and easier to read.

- Some are \_\_\_\_\_
- The rare earths are \_\_\_\_\_, silvery-white, or gray metals.
- \_\_\_\_\_



Label the lanthanide and actinide rows in the diagram above

### Trends of the Periodic Table

- Atomic size \_\_\_\_\_ as you move from \_\_\_\_\_ across the table. Atomic size \_\_\_\_\_ as you move from \_\_\_\_\_ on the table.
- The \_\_\_\_\_ of an element \_\_\_\_\_ from \_\_\_\_\_. The element \_\_\_\_\_ has the highest known density
- The \_\_\_\_\_ elements are groups \_\_\_\_\_. The \_\_\_\_\_ elements are in group \_\_\_\_\_.