Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_

***Atomic Structure***

|  |  |  |
| --- | --- | --- |
| A/B | In Class | **Independent Practice** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Find Someone Who Knows……

|  |  |  |
| --- | --- | --- |
| Question | Answer | *Name (print)* |
| 1. What matter is made of |  |  |
| 1. The charge of a proton |  |  |
| 1. The charge of an electron |  |  |
| 1. The charge of a neutron |  |  |
| 1. Subatomic particle(s) found in the nucleus |  |  |
| 1. Subatomic particle(s) found outside the nucleus |  |  |
| 1. Smallest subatomic particle |  |  |
| 1. What the atomic number stands for |  |  |
| 1. The definition of an isotope |  |  |
| 1. The definition of an ion |  |  |
| 1. The formula for sulfate |  |  |
| 1. The formula for carbonate |  |  |
| 1. The formula for acetate |  |  |
| 1. The formula for perchlorate |  |  |
| 1. The formula for oxide |  |  |

A **cation** \_\_\_\_\_\_\_\_\_ electrons and has a \_\_\_\_ charge.

\*Metals form cations

#p+ #e-

Examples:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

An **anion** \_\_\_\_\_\_\_\_\_ electrons and has a \_\_\_\_ charge.

\*Nonmetals form anions

#p+ #e-

Examples:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

HOW TO NAME CATIONS: name(charge) HOW TO NAME ANIONS: name with –ide suffix

Pb2+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Example: S2- = sulfide

Cu+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Find charge based on periodic table column

Cu2+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cl = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exceptions 🡪 No roman numerals needed for

Group IA, IIA, and CdZnAgAl O = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Na+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cd2+ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Br = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Naming Practice =

Make sure to go form🡪name and name🡪 formula for quiz

Isotopes & Isotope notation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Element Name** | **Element Symbol** | **Isotope Symbol** | **Atomic #** | **Mass #** | **# of Protons** | **# of Electrons** | **# of Neutrons** |
| Sodium | Na |  | 11 | 23 | 11 | 11 | 12 |
|  | K |  |  | 40 |  | 19 |  |
|  |  |  |  |  | 38 | 38 | 52 |
|  | F |  |  |  |  |  | 10 |
|  |  |  | 20 | 41 |  | 20 |  |
|  |  |  | 50 |  |  | 50 | 72 |
| Iodine |  |  |  | 131 |  | 54 |  |
|  | Mg |  |  | 26 |  | 10 |  |
|  |  |  |  | 109 | 47 | 46 |  |

**Postulates of Dalton’s Atomic Theory textbook pages 104-105**

In the right column, identify if the postulate is TRUE or FALSE today. If FALSE, briefly explain why.

|  |  |
| --- | --- |
| 1. All matter consists of a large number of tiny particles. |  |
| 1. Atoms of an element cannot be created, destroyed, broken into smaller parts or transformed into atoms of another element. |  |
| 1. All atoms of the same element are identical and have the same weight. |  |
| 1. Chemical reactions involve the combination, separation, or rearrangement of atoms. |  |
| 1. Atoms combine to form molecules in fixed ratios of small whole numbers. |  |

**History of the Modern Atomic Theory**

|  |  |
| --- | --- |
| **Picture of Atomic Model** | **Scientist, his experiment, and his findings** |
|  | **Democritus** |
|  | **Dalton** |
|  | **Thomson** |
|  | **Rutherford** |
|  | **Bohr** |
|  | **Chadwick** |

**Atomic Mass (Weighted Average)**

1. Magnesium has three isotopes. Magnesium-24 has a 78.70% abundance; magnesium-25 has a 10.13% abundance; and magnesium-26 has a 11.17% abundance. Calculate the atomic mass. Show your work!

2. Mystery element X has two isotopes: 10X (20%) and 11X(80%). What is element X? Use calculations to back up your answer.

3. Please use the following table to calculate the average atomic mass of chlorine.

|  |  |  |
| --- | --- | --- |
| Isotope | % Abundance | Mass(amu) |
| 35Cl | 75.78% | 34.969 |
| 37Cl | 24.22% | 36.966 |

4. Raiderium (Rr) has three naturally occurring isotopes. Raiderium is 74.655% 44Rr, which has an atomic mass of 43.064 amu, 24.958% 46Rr, which has a mass of 46.125 amu, and 0.387% 48Rr, which has an atomic mass of 47.982 amu. Calculate the average atomic mass of Raiderium.

5. There are two naturally-occurring isotopes of carbon: carbon-12 and carbon-13. Given that the atomic mass of carbon is 12.011, determine the percent abundance for each of the two isotopes. Show all calculations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Element or Ion | Orbital Diagram | Electron Configuration | # of Valence Electrons |
| 1 | Sn |  |  |  |
| 2 | Ni |  |  |  |
| 3 | Kr |  |  |  |
| 4 | Ra |  |  |  |
| 5 | Te |  |  |  |
| 6 | S-2 |  |  |  |
| 7 | Zr+4 |  |  |  |
| 8 | As-3 |  |  |  |
| 9 | Ga+3 |  |  |  |
| 10 | K+ |  |  |  |
|  | Element or Ion | Orbital Diagram | Electron Configuration | # of Valence Electrons |
| 11 | Co+2 |  |  |  |
| 12 | Sn+4 |  |  |  |
| 13 | Sc+2 |  |  |  |
| 14 | V+5 |  |  |  |
| 15 | Mn+2 |  |  |  |
| 16 | O-2 |  |  |  |
| 17 | Cu+ |  |  |  |
| 18 | Cd+2 |  |  |  |
| 19 | Si4- |  |  |  |
| 20 | Co3+ |  |  |  |