**Physical Science Unit 4- The Atom and Periodic Table Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Notes**

What is matter?

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| **Definition** | **Examples** |
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What are the three parts of an atom?

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| **Protons** | | |
| **Location:** | **Charge:** | **Mass:** |
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| **Neutrons** | | |
| **Location:** | **Charge:** | **Mass:** |
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| **Electrons** | | |
| **Location:** | **Charge:** | **Mass:** |
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|  | **Location** | **Mass** | **Charge** |
| **Protons** |  |  |  |
| **Neutrons** |  |  |  |
| **Electrons** |  |  |  |

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| **Element** | | |
| **How do we identify them?** | **Where is the symbol located on the Periodic Table?** | **What are the rules for writing the symbol of an element?** |
|  |  | 1.  2. |

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| **Atomic Number** | | |
| **Where is it located on the Periodic Table?** | **Atomic # tells us the:** | **Can the atomic number ever change? Why or why not?** |
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| **Atomic Mass** | | |
| **Where is it located on the Periodic Table?** | **How do they determine the atomic mass?** | **How do we change the atomic mass to mass #?** |
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| **Mass Number (Mass #)** | | |
| **How do you get this number from the Periodic Table?** | **Formula** | **Mass # lets us calculate the:** |
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**Sample Problems:**

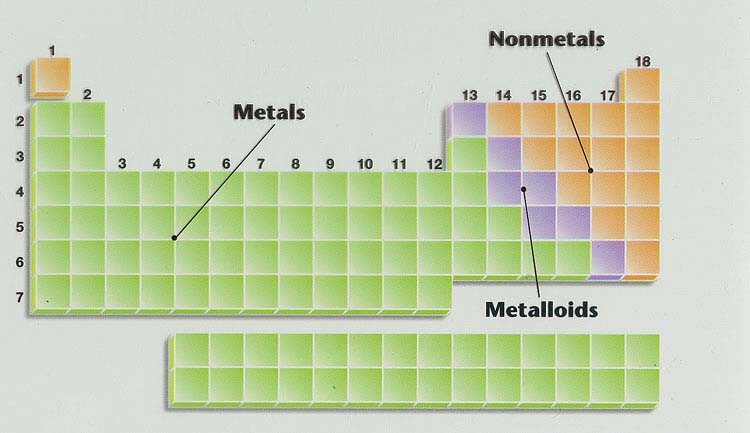
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| **Lithium** | |
| **Atomic Number:** |  |
| **Protons:** |  |
| **Electrons:** |  |
| **Atomic Mass:** |  |
| **Mass Number:** |  |
| **Neutrons:** |  |

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| **Sodium** | |
| **Atomic Number:** |  |
| **Protons:** |  |
| **Electrons:** |  |
| **Atomic Mass:** |  |
| **Mass Number:** |  |
| **Neutrons:** |  |

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| **Boron** | |
| **Atomic Number:** |  |
| **Protons:** |  |
| **Electrons:** |  |
| **Atomic Mass:** |  |
| **Mass Number:** |  |
| **Neutrons:** |  |

Which direction does a **period** go on the periodic table?

What does **periodic** mean?



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| **Properties of Metals** |
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| **Properties of Nonmetals** |
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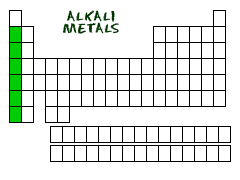
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| **Properties of Metaloids (Semi-metals)** |
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How was Mendeleev’s original periodic table arranged?

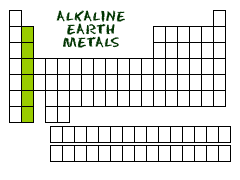
How is the periodic table arranged now?

What are the columns on the periodic table called? How are they organized?

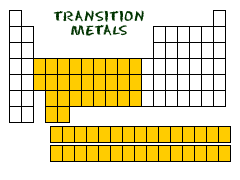
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| **Properties of Alkali Metals** |
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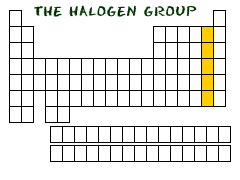
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| **Properties of Alkaline Earth Metals** |
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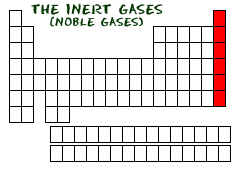
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| **Properties of Transition Metals** |
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| **Properties of Halogens** |
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| **Properties of Noble Gasses** |
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| **Electron Clouds** | |
| How many electrons in the 1st shell? |  |
| How many electrons in the 2nd shell? |  |
| How many electrons in the 3rd shell? |  |

**Sulfur**

**Aluminum**

Why would we use **Lewis Dot Structures**?

**Sample Problems:**

**O**

**Caa**

**Cl**

What is the slogan of the **octet rule**?

What are ions?

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| **Ions** | |
| What are negatively charged particles called? |  |
| What are positively charged particles called? |  |

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| **Charges** | |
| How do you calculate the number of electrons for a positively charged particle? |  |
| How do you calculate the number of electrons for a negatively charged particle? |  |

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| **Lithium** | |
| Number of valence electrons: |  |
| Easier to gain or lose: |  |
| How many will it gain or lose: |  |
| What charge will it have? |  |

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| --- | --- |
| **Oxygen** | |
| Number of valence electrons: |  |
| Easier to gain or lose: |  |
| How many will it gain or lose: |  |
| What charge will it have? |  |

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| **Name** | **Symbol** | **Atomic #** | **Mass #** | **Protons** | **Neutrons** | **Electrons** | **Charge** |
| Magnesium - 24 |  |  |  |  |  |  | +2 |
| Sulfur – 33 |  |  |  |  |  |  | -2 |
| Phosphorus - 34 |  |  |  |  |  |  | -3 |

**Examples:**

List the rules for **atomic tables** below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Symbol** | **Atomic #** | **Mass #** | **Protons** | **Neutrons** | **Electrons** | **Charge** |
| Neon – 20 |  |  |  | 10 |  |  | 0 |
| Iron – 56 |  |  |  |  | 30 | 26 | 0 |
|  | Na |  | 23 |  |  |  | +1 |
| Sulfur – 32 |  | 16 |  |  | 16 |  | -2 |
| Nitrogen – 15 |  |  |  |  |  | 10 |  |