Periodic Table

We’re with the Periodic Table.

Name_________________

Quiz Date _______________

Test Date______________
**History of the Periodic Table**

| Mendeleev | Arranged the periodic table by _______________ ____________.  
|           | Elements in the same column had _______________ _______________.  
|           | **Significance of his Periodic Table:**  
| Moseley   | Discovered the _______________ _______________.  
|           | **Rearrangement:**  
| Modern Periodic Law |  

****The Periodic Table as we know it today is arranged by _______________ _______________ _______________.*****

---

**Arrangement of the Periodic Table**

<table>
<thead>
<tr>
<th>Metals</th>
<th>Nonmetals</th>
<th>Metalloids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td><strong>Location:</strong></td>
<td><strong>Location:</strong></td>
</tr>
<tr>
<td><strong>Properties:</strong></td>
<td><strong>Properties:</strong></td>
<td><strong>Properties:</strong></td>
</tr>
</tbody>
</table>

| Ex: | Ex: | Ex: |

**Periodic Table Organization:**

| Groups: | Periods: |
### Groups/Families of the Periodic Table

<table>
<thead>
<tr>
<th>Family Name</th>
<th>Group Number/PT Location</th>
<th>Characteristics</th>
<th>Example elements</th>
<th>Representative or transition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Valence Electrons and Charges (Oxidation Numbers)

<table>
<thead>
<tr>
<th>Group #</th>
<th>1</th>
<th>2</th>
<th>3-12</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valence Electrons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidation Number (charges)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When an element **loses** electrons it becomes a __________________________ ( )

When an element **gains** electrons it becomes a __________________________ ( )

#### Practice Problems – Valence Dot Diagrams

1) Calcium

2) Nitrogen

3) Helium

4) Xenon

5) Selenium

---

**Helium ONLY** has 2 valence e\(^{-}\) even though it’s a noble gas

**Generic Dot Notation**

An atom’s valence electrons can be represented by electron dot (AKA Lewis dot) notations.

<table>
<thead>
<tr>
<th>1 valence e(^{-})</th>
<th>2 valence e(^{-})</th>
<th>3 valence e(^{-})</th>
<th>4 valence e(^{-})</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 valence e(^{-})</th>
<th>6 valence e(^{-})</th>
<th>7 valence e(^{-})</th>
<th>8 valence e(^{-})</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
**Periodic Table Trends**

List the different trends:
1) 
2) 
3) 
4) 
5) 

**Atomic Radius**

Definition:

Trend:
- Across a Row: 
- Down a Group:

Largest Element:

Why?

---

**Ionic Radius**

Definition:

Trend:
- Across a Row: 
- Down a Group:

---

**Apply It!**

1) Bigger: Li or K?

2) Larger: C or F?
**Reactivity**
Metals:

Trend:

Nonmetals:

Trend:

**Ionization Energy**
Definition:

Trend:

Across a Row:

Down a Group:

Highest F.I.E?   Why?

**Apply It!**
1) More reactive: K or Cs?
2) Less reactive: Cu or Ca?
3) More reactive: Cl or I?
4) Less reactive: C or O?

---

**Electronegativity**
Definition:

Trend:

Across a Row:

Down a Group:

Element with Highest EN:   Why?

**Apply It!**
1) Higher: Cl or I?
2) Higher: Na or S?

2) Higher: Cu or Fe?

---