**FORMING IONS**

* When there are \_\_\_ valence electrons (or a full valence orbit, which is sometimes only 2e−), then the electron arrangement is stable (does not gain or lose electrons).
* Atoms will react to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons to achieve a stable electron arrangement of a full valence orbit.
* Ions are atoms with either extra electrons or missing electrons.

Remember these examples?

|  |  |  |
| --- | --- | --- |
| **Lithium** | **Sodium** | **Potassium** |
| Li3p **2e 1e** | Na11p **2e 8e 1e** | K19p **2e 8e 8e 1e** |

* All members of Group 1 have one valence electron. They are not in a stable configuration. What could they do to reach this state?

**IONS USING BOHR MODELS**

|  |  |  |
| --- | --- | --- |
| **Sodium** |  | **Sodium Ion** |
| 11p |  Reacts to  | 11p |
| Element | Number of Protons (p) | Number of Electrons (e) | Charge(p - e) |
| Sodium |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Ion | Number of Protons (p) | Number of Electrons (e) | Charge(p - e) |
| Sodium |  |  |  |
| **Oxygen** |  | **Oxygen Ion** |
| 8p |  Reacts to  | 8p |
| Element | Number of Protons (p) | Number of Electrons (e) | Charge(p - e) |
| Oxygen |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Ion | Number of Protons (p) | Number of Electrons (e) | Charge(p - e) |
| Oxygen |  |  |  |

**SUMMARY:**

*gain e-*

*lose e-*

Positive Ion 🡨 Neutral Atom 🡪 Negative Ion

 *“Cation” “Anion”*

**Examples** Draw the stable ion configuration for each of the following

|  |  |  |
| --- | --- | --- |
| **Chlorine Ion** | **Lithium Ion** | **Potassium Ion** |
| Cl-17p | Li+3p | K+19p |