

LAD G1 Reactivity of the Alkali Metals and the Halogens

Name _____ Per _____

Alkali Metals

- The alkali metals are very reactive metals
- All of them have a strong potential to react with other substances to lose their single valence electron and become a positive ion. The vigor with which they react is related to their valence orbital and thus their position in the periodic chart.
- Observe the demonstration in class, and write a correlation statement that relates location within the column to chemical reactivity.

1. Observations (flame, no flame? color of flame, temp of water, acid/base indicator)

Li

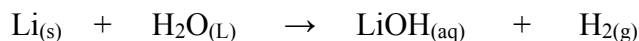
Na

K

Association statement:

2. Explanation as related to the valence orbital.

Solid lithium reacts with liquid water to produce dissolved lithium hydroxide and hydrogen gas.



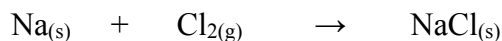
3. Write out the balanced equation that represents the following reaction:
Solid sodium reacting with liquid water to produce dissolved sodium hydroxide and hydrogen gas.
4. Write out the balanced equation that represents the following reaction:
Solid potassium reacting with liquid water to produce dissolved potassium hydroxide and hydrogen gas.

Halogens (It's time to memorize the 7 diatomic elements: H₂, N₂, O₂, F₂, Cl₂, Br₂, I₂)

The *opposite* periodic trend occurs for the halogens. Fluorine is the *most reactive* in its family.

5. What is happening with electrons as a halogen reacts, and why does this movement of electrons make the reactivity trend opposite to the alkali metals?

A reaction between solid sodium and chlorine gas to produce solid sodium chloride is represented below.



6. Thus an extremely reactive reaction would be the combination of cesium metal with fluorine gas.
Write out reaction in the space below.