# Formation of Ions

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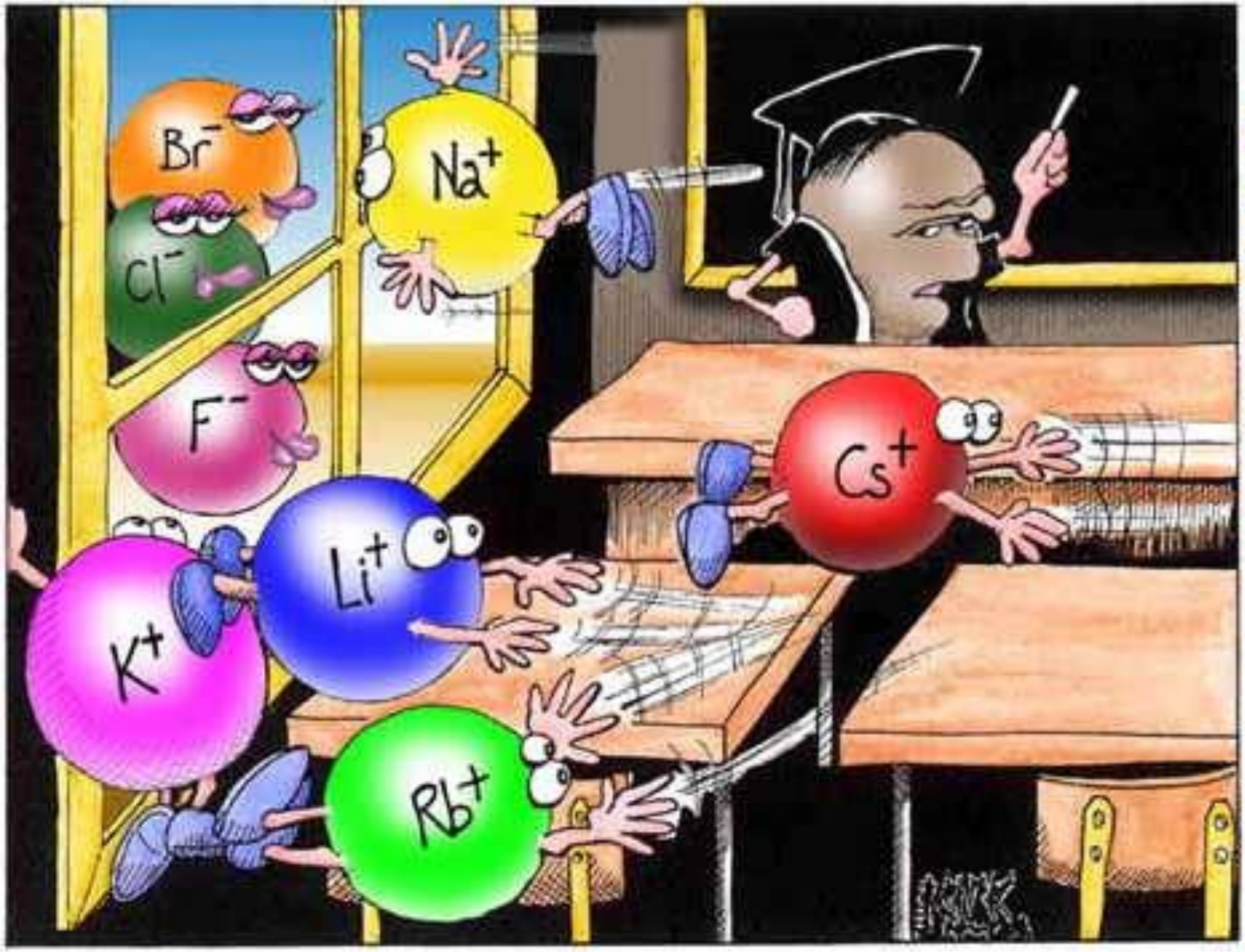
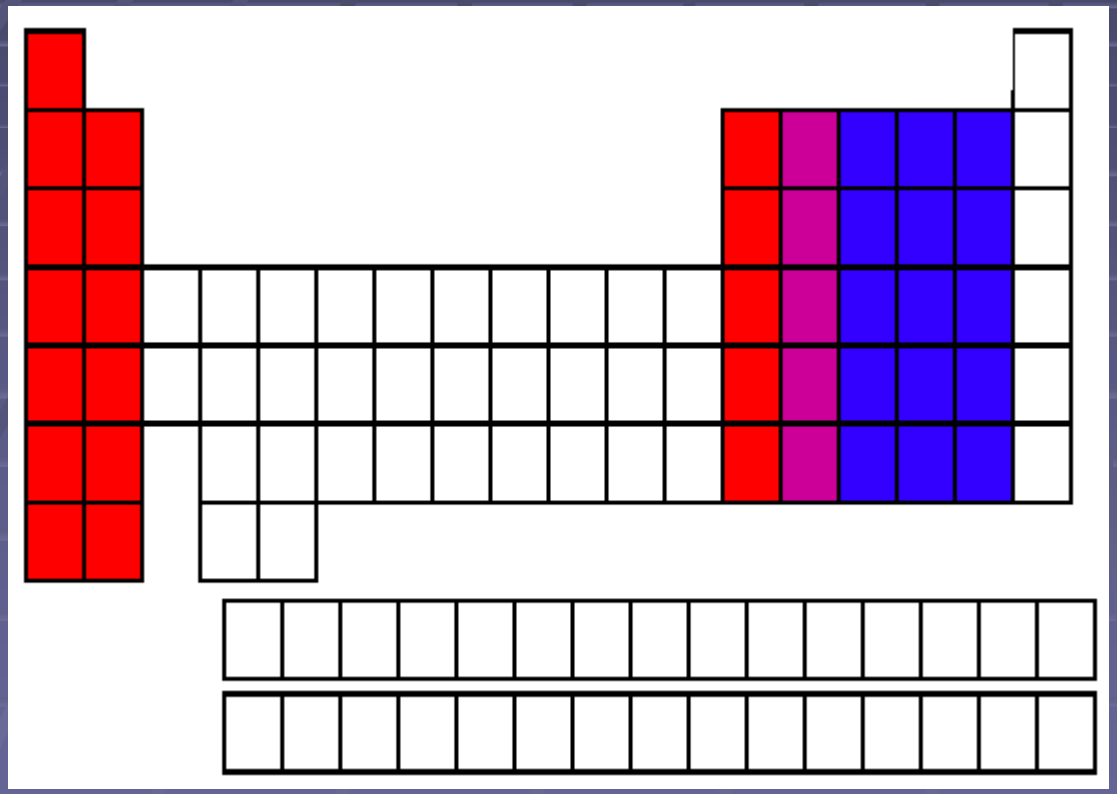



"Perhaps one of you gentlemen would mind telling me just what it is outside the window that you find so attractive...?"

- Elements tend to lose or gain electrons to fill their outermost energy levels with eight electrons
- This causes an imbalance of charge (more or less electrons than protons)

- Ions are atoms that have either lost or gained electrons. While atoms are neutral, ions are charged particles.
- A loss of electrons results in a positive ion or cation (pronounced “cat – eye - on”).
- A gain of electrons results in a negative ion or anion (pronounced “an – eye - on”).

# Groups & Ion Formation



- **Each element in a group has the same number of electrons in their outer shell.**
- **The closer an atom is to having a full valence shell, the more likely it is to accept electrons, while those with relatively empty shells will give them away.**

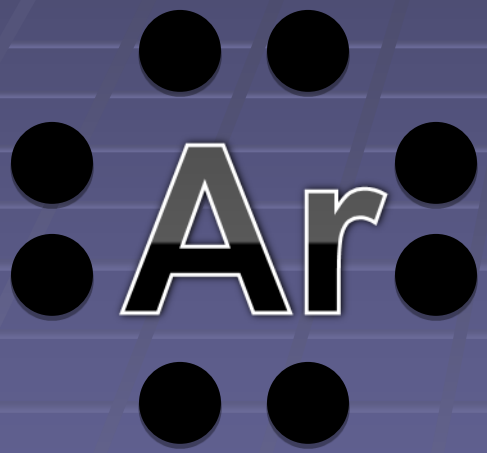
- The charge of an ion can be computed by subtracting the new number of electrons from the number of protons:
  - Chlorine would gain 1 electrons so:

    17 - 18 = -1 charge

An ion and its charge is represented by the element's symbol and then the charge is written after it as a superscript:

$Na^{+1}$ $Cl^{-1}$

# Lewis Structures




- Using your periodic table, check to see how many valence electrons the atom will have.
- Write the element symbol.
- Starting at the right, draw electrons, or dots, counter-clockwise around the element symbol.
- Add or subtract electrons as needed to notate an ion.