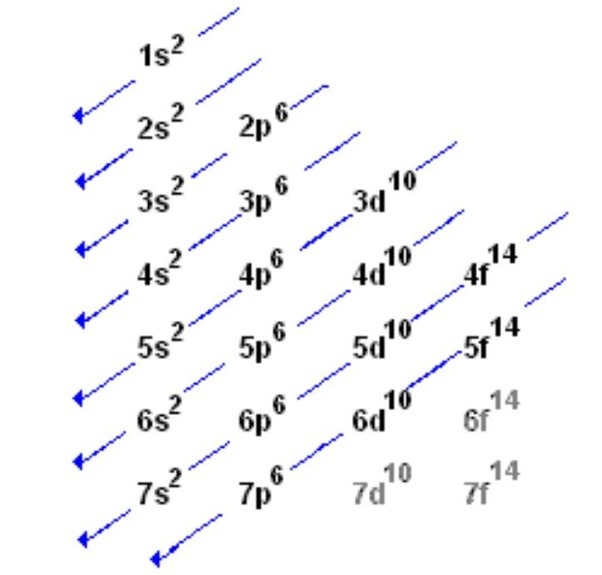
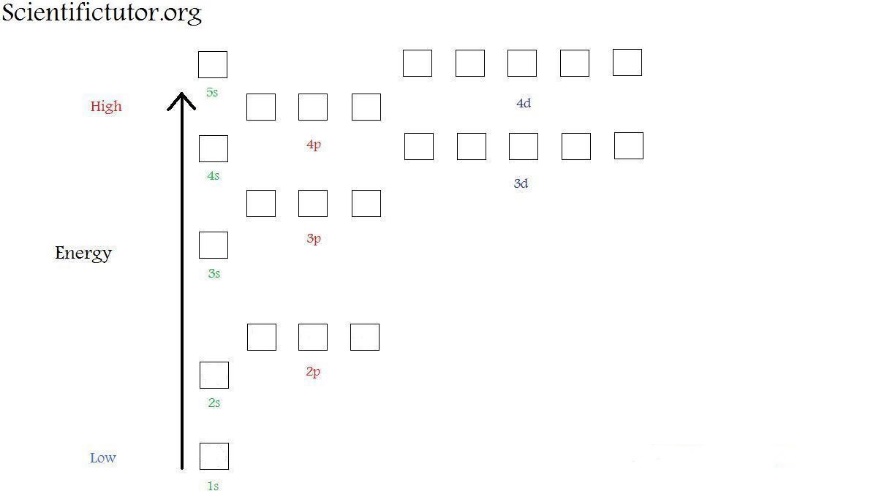
**Figuring out the rules for electron arrangement**

This is one way the electron arrangement of the elements is drawn.

| **Element** | **Diagram of element** | **Electrons and group** |
| --- | --- | --- |
| **Lithium** | Structure of a lithium atom. A black dot represents the nucleus. The small circle around this has two red dots on it, representing the first energy level with two electrons. A larger outer circle has one red dot on it, representing the second energy level with one electron | A black dot represents the nucleus. Lithium atoms have three electrons. A small circle around the nucleus has two red dots on, representing the first shell with two electrons. A larger outer circle has one red dot on, representing the second shell with one electron.  Lithium is in **Group 1** of the Periodic Table. |
| **Fluorine** | Structure of a fluorine atom. A black dot represents the nucleus. The small circle around this has two red dots on it, representing the first energy level with two electrons. A larger outer circle has seven red dots on it, representing the second energy level with seven electrons | Fluorine atoms have nine electrons.  Fluorine is in **Group 7** of the Periodic Table. |
| **Neon** | Structure of a neon atom. A black dot represents the nucleus. The small circle around this has two red dots on it, representing the first energy level with two electrons. A larger outer circle has eight red dots on it, representing the second energy level with eight electrons | Neon atoms have ten electrons.  Because its outer shell is full, neon is *stable* and **unreactive**.  Neon is in **Group 8** (ie, the eighth group) of the Periodic Table. |
| **Sodium** | Structure of a sodium atom. A black dot represents the nucleus. The small circle around this has two red dots on it, representing the first energy level with two electrons. A larger middle circle has eight red dots, representing the second energy level with eight electrons. A larger outer circle has one red dot on it, representing the third energy level with one electron | Sodium atoms have 11 electrons.  Sodium is in **Group 1** of the Periodic Table. |
| **Calcium** | Structure of a calcium atom. A black dot represents the nucleus. The small circle around this has two red dots on it, representing the first energy level with two electrons. A larger circle has eight red dots, representing the second energy level with eight electrons. Another larger circle has eight red dots on it, representing the third energy level, with eight electrons. An even larger outer circle has two red dots, representing the fourth energy level with two electrons | Calcium atoms have 20 electrons.  Calcium is in **Group 2** of the Periodic Table. |

This is another way of showing how electrons are arranged in atoms

This is a third way of showing how electrons are arranged in atoms

**QUESTION:**

**What does this information tell you about the rules for arranging electrons in atoms?** Hint – there are 3 rules.