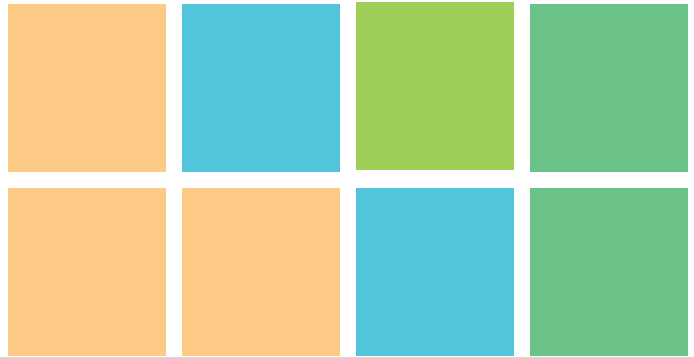


Discovering the Atom

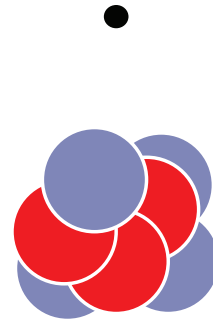


Mendeleev's idea of what Lithium looked like

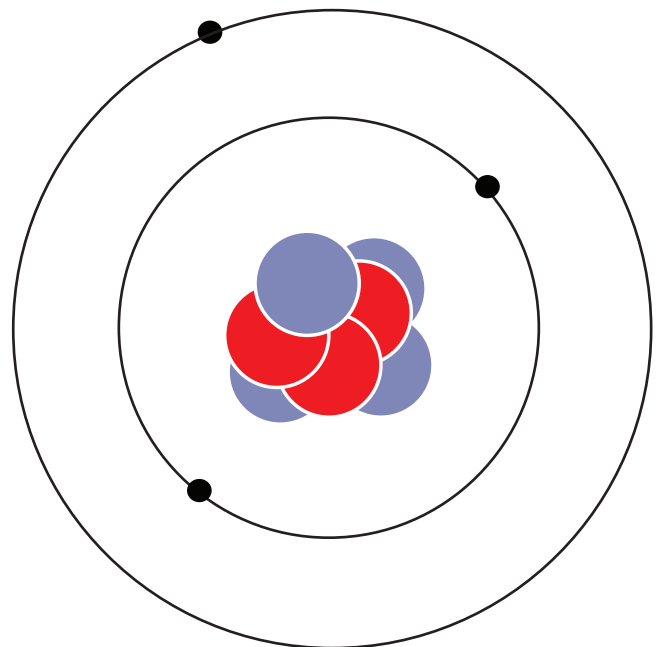
In the 1920s a Danish scientist named Niels Bohr expanded our understanding of Mendeleev's Periodic Table. He believed that there was one reason why elements had distinctive properties and could combine with other elements in distinct ways – the number of electrons in an atom of the element.

Scientists already knew that the atoms of each element have a certain number of electrons. They assigned each element a number, which reflected the number of electrons and protons in that element's atom.

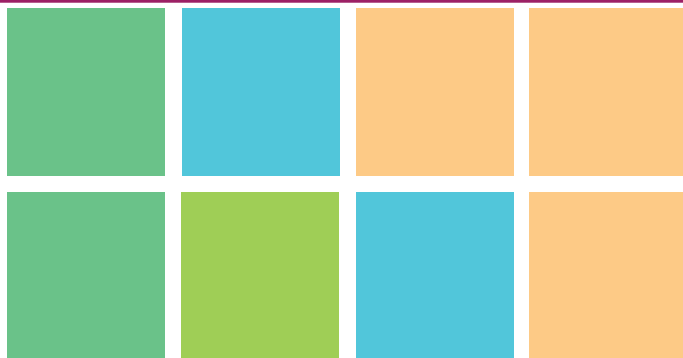
Bohr took that idea one step further. He said that the electrons arranged themselves in "shells," or energy levels around the nucleus. He also believed these shells had a pattern.



Bohr's idea of what Lithium looked like



Discovering the Atom

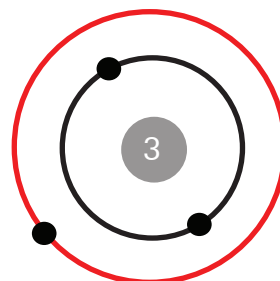


We can see an example of Bohr's pattern by looking at atoms of lithium, sodium and potassium, which line up vertically on the periodic table.

Element 3 Lithium

shell 1: 2 electrons

shell 2: 1 electron

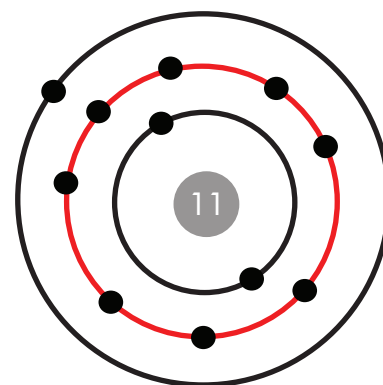


Element 11 Sodium

shell 1: 2 electrons

shell 2: 8 electrons

shell 3: 1 electron



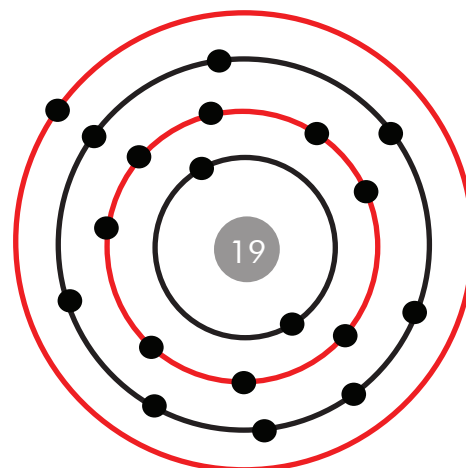
Element 19 Potassium

shell 1: 2 electrons

shell 2: 8 electrons

shell 3: 8 electrons

shell 4: 1 electron



What do you notice about this pattern?

All the elements have just one electron in their outermost shell. All the elements have two electrons in their inner most shells.

Bohr thought that the electrons in the outermost shell were the ones that determined the properties of the atom.