THE PERIODIC TABLE OF THE ELEMENTS

Learning Goal…

- To understand the manner in which the periodic table is organized (metals, non-metals etc)
- To identify commonalities between different groups and periods in the p.t.
- Materials, periodic table + pencil crayons

How are elements organized?

- The periodic table was created by a Russian scientist name Dmitri Mendeleev.

- He arranged the elements according to their ATOMIC NUMBER (number of protons)

- Each row across the periodic table is called a PERIOD.

- Each column going down the periodic table is called a GROUP or FAMILY.

Metals and Non-metals

- Elements on the periodic table are divided into two groups:

1. Metals

2. Non-metals.

- The metals and non-metals are divided by a “staircase”.
- There are a few elements called METALLOIDS that have properties of metals and non-metals. They are found along the “staircase”.

Metals

- Located on the left side
- Malleable, ductile
- Good conductors
- React with acids

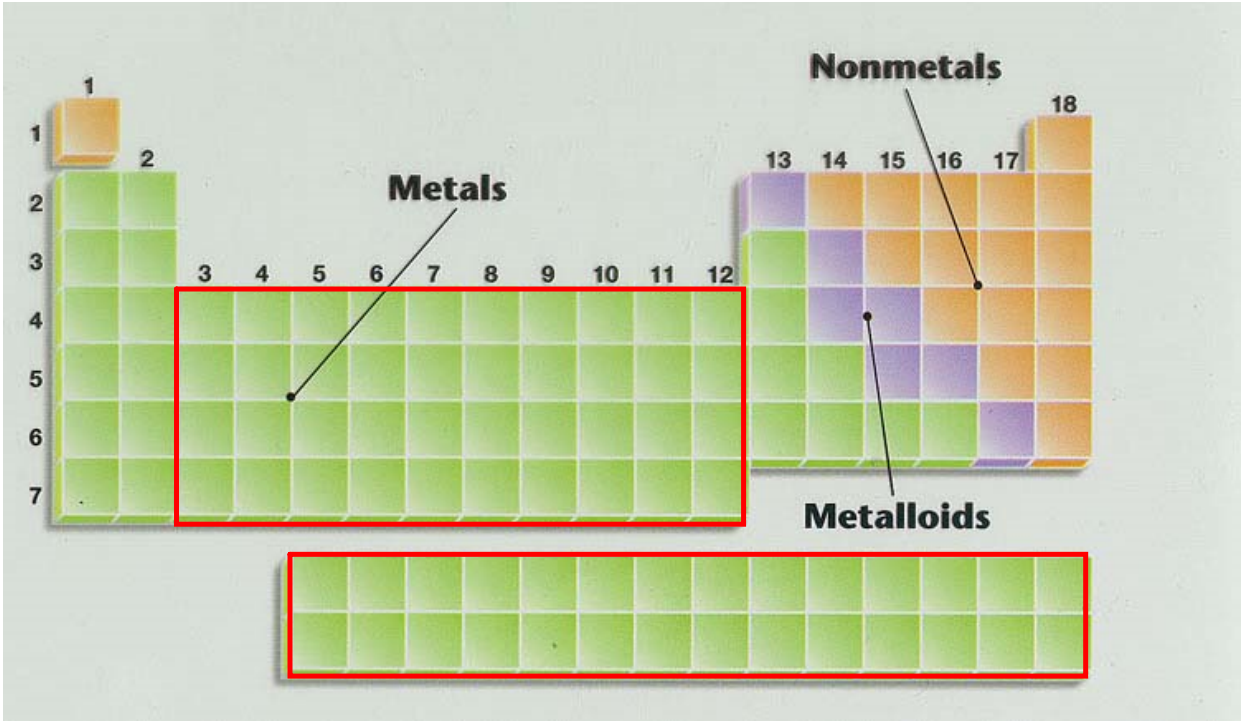
Metalloids

- Properties of metals and non-metals
- Located on stepladder between metals and non-metals

Non-Metals

- Located on right
- Dull and brittle
- Insulators (don't conduct electricity)

Colour code your periodic table now.... include a legend



Also referred to as "transition metals"

Periods

- The rows that go across the periodic table are called periods.

- The elements in a period are all different, and can contain metals, non-metals, and metalloids.

- Two significant periods are:
  1. Lanthanides
  2. Actinides

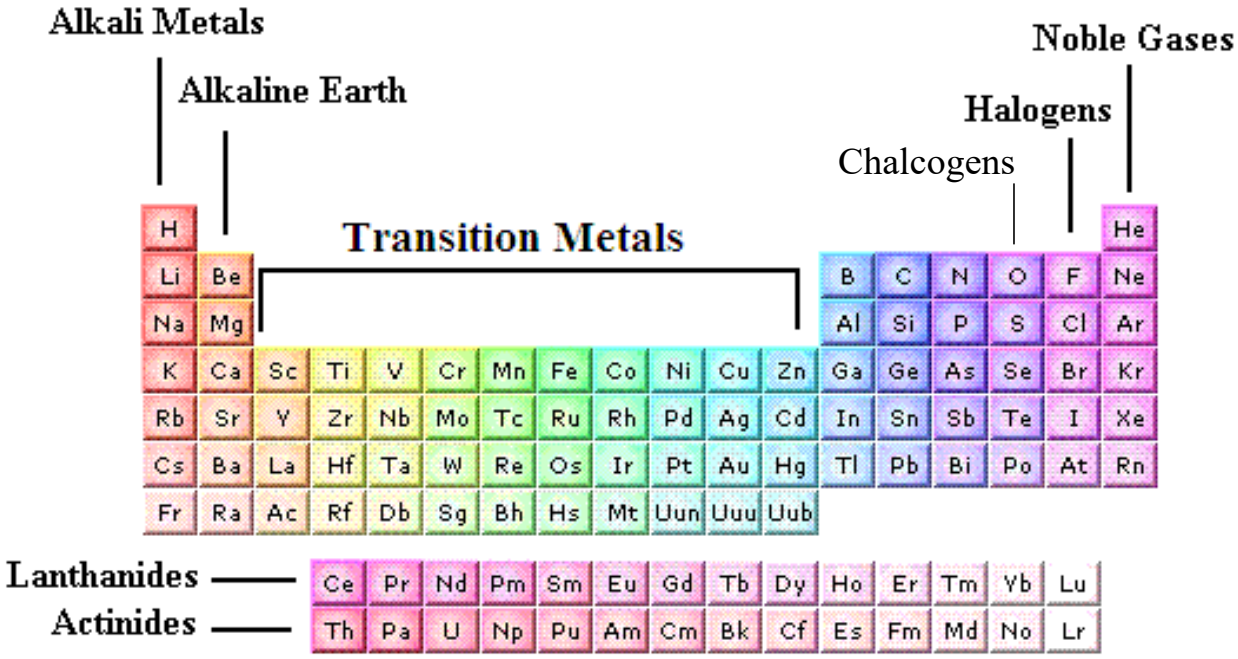
Groups/Families

- The periodic table is a grid that contains rows and columns.
- The columns going down the periodic table are called groups or families. These groups generally look and act the same.

These groups include:
(don't write them yet, will go over each one)

1. Alkali metals
2. Alkaline earth metals
3. Transition metals
4. Chalcogens
5. Halogens
6. Noble gases

Groups on the Periodic Table…label your periodic table now



1. Alkali metals (Group 1)
   - –Shiny
   - –Most reactive metals
   - –1 valence e-
2. Alkaline earth metals (Group 2)
   - –Reactive
   - –2 valence e-
3. Transition metals (Group 3-12)
   - –Reactive with acid
   - –Shiny
   - –Malleable
   - –Good conductors
   - –Number of valence e- varies as you move across the table.
4. Chalcogens (group 16)
   - –6 valence electrons
5. Halogens (Group 17)
   - –Most reactive non-metals
   - –7 valence e-
6. Noble gases (Group 18)
   - –Very unreactive/stable
   - –Does not form ions
   - –8 e-, full valence shell, stable octet

homework

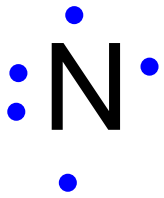
- Lewis structure review worksheet

The Bohr model diagram can become quite cumbersome to draw for elements higher in the periodic table, so the Lewis diagram is a faster model to use.

Only the valence electrons are used in the diagram. There are four sides, and electrons are populated as singles, then doubles.

Nitrogen Atom

(5 valence electrons)



Nitrogen Ion 3-

(**8** valence electrons)