

## "What Do You Know?"

### Review - Grade 9 Chemistry

## Unit 1 - Physical Science: Chemical Reactions

The physical sciences are concerned with the study of inanimate natural objects.

Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy.

<https://www.youtube.com/watch?v=L2Q2q20KaEk>

## Periodic Table of the Elements

The periodic table of the elements is a structured arrangement of elements that helps us to explain and predict physical and chemical properties.

<http://www.youtube.com/watch?v=r7hO-1ItqXw>

<https://www.youtube.com/watch?v=0RRVV4Diomg>

5-7

## Elements and the Periodic Table

- Mendeleev published his first periodic table in 1869 and included the 64 elements that were then known
- The modern periodic law states - "If the elements are arranged in order of increasing atomic number, a pattern can be seen in which similar properties occur regularly"
- The repetition in the properties of the elements is a fundamental pattern known as the periodicity of the elements

Periodic Table Arrangement

- The elements are arranged in groups and periods:
  - Groups
    - the vertical columns on the periodic table
    - also called chemical families
    - new IUPAC labelling/numbering system: Groups 1 - 18 (from left to right across the table)
    - old labelling system: Roman numerals followed by the letter A or B
    - includes elements with similar chemical properties
    - the elements in a group have the same number of electrons in the outermost shell/orbit
    - the electrons in the outermost shell are called the valence numbers
  - Periods
    - the horizontal rows on the periodic table
    - numbering system: 1, 2, 3, ..., 7 (from top to bottom of the table)

Periodic Table

- The periodic table shows several trends:
  - the reactivity of metals decreases across a period from left to right and increases down a group - therefore, the most reactive metal is rubidium
  - the reactivity of nonmetals increases across a period from left to right, and decreases down a group - therefore, the most reactive nonmetal is fluorine
  - although the noble gases are nonmetals, they have a completely filled valence shell and are unreactive

<http://safeshare.tv/w/ubjnFIEZzx>

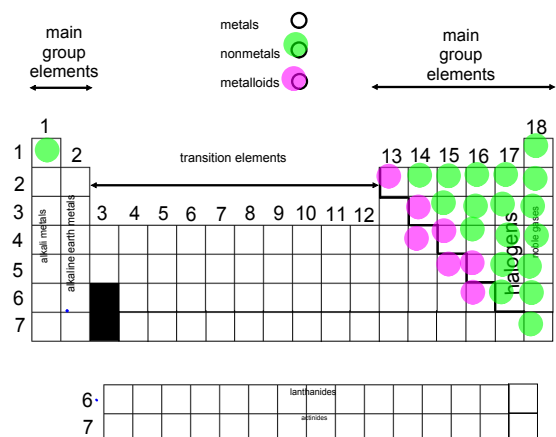
Metals	Nonmetals
generally solids	found in all three states <i>l, s, g</i>
mostly hard and nonbrittle	solid nonmetals are hard but brittle
good conductors of heat and electricity	bad conductors of heat and electricity
ductile and malleable	neither ductile nor malleable
melting points and boiling points are generally high	melting points and boiling points are generally low
generally lustrous and can be polished	generally non-lustrous and cannot be polished

<http://safeshare.tv/w/CvDkQfwOLc>

Periodic Table of the Elements

Chemical Periods and Groups

Elements in the periodic table are arranged in **periods** (rows) and **groups/families** (columns).



## Attachments

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Science 10 - Grade 9 Chem Topics.docx

Science 10 - Grade 9 Chem - What Do You Know.docx

Science 10 - Activity - Molecular Models.docx

Science 10 - Answer Key - Ions and Subatomic Particles.pdf