

Chemistry Unit Review

Name: KEY

Structure of an atom

Particle name	Charge	Comprised of	Where it is found
proton	positive (+)	quarks	nucleus
neutron	neutral (0)	quarks	nucleus
electron	negative (-)	leptons	shells/orbits

What is the outer most shell called? valence

How many electrons can each shell hold?

1st 2 2nd 8 3rd 8 4th 32

What are the 2 main measurements of atoms?

atomic mass and net charge

How do you find the mass of an atom?

neutrons + protons

How do you determine the total charge of an atom/ion?

protons - electrons

Bohr models

What is the purpose of the Bohr model?

To show the atomic structure of elements by showing their electrons.

Draw Bohr models for the following elements:

a) Nitrogen



Valence electrons?

5

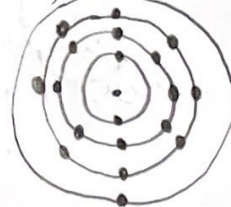
b) Helium



Valence electrons?

2

c) Potassium



Valence electrons?

1

For each of the given numbers of subatomic particles, find the total mass of the atom, and the total charge: 14p, 18n, 15e & 25p, 22n, 25e

32 amu, -1

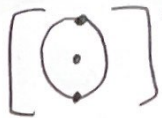
47 amu, 0

Draw the ions Bohr models for the first 10 elements on the Periodic Table and say what family they are in:

H = Nonmetal



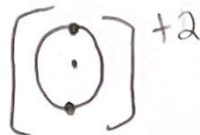
He = Noble gas



Li = Alkali Metal



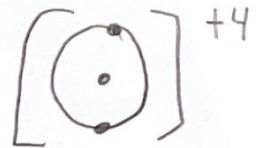
Be = Alkali Earth
Metal



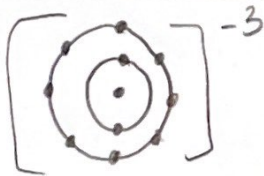
B = Semi metal



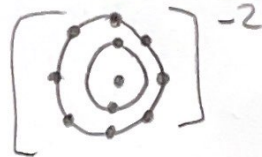
C = Non-metal



N = Non-metal



O = Non-metal



F = Halogen



Ne = Noble gas



Naming Compounds

There are two types of compounds: ionic + covalent

What is the difference between the two compounds?

ionic = electrons transferred between a metal + non-metal
covalent = electrons shared between a non-metal + non metal

Name the following covalent compounds:

- a) NO_2 nitrogen dioxide
b) P_2O_5 diphosphorus pentoxide
c) CF_4 carbon tetrafluoride
d) TeO tellurium oxide

Write the formulas for the following covalent compounds:

- a) Diphosphorous trioxide P_2O_3
b) Trisilicon dinitride Si_3N_2
c) Selenium hexafluoride SeF_6
d) Dinitrogen monoxide N_2O

Name the following ionic compounds:

- a) Al_2O_3 Aluminum oxide
b) $\text{Mn}(\text{CrO}_4)_2$ Manganese (IV) Chromate
c) AgCl Silver chloride

Write the formulas for the following ionic compounds:

- a) Manganese (IV) Oxide MnO_2
b) Calcium Phosphate $\text{Ca}_3(\text{PO}_4)_2$
c) Osmium (III) Sulphate $\text{Os}_2(\text{SO}_4)_3$

What is the difference between a Chemical Change and a Physical Change?

Chemical Change - chemical compound changes

Physical Change - change in matter that does not change chemical composition

Chemical or Physical?

- a) Snow becoming slush

physical

- b) Leaves changing colour in the fall

chemical

For the following: name each of the atoms involved, the number of each atoms and the total number of atoms in the formula: $(\text{NH}_4)_2\text{SO}_4$ & CrF_2

nitrogen 2
hydrogen 8
sulfur 1
oxygen 4
} 15 total

Chromium 1
fluorine 2
} 3 total

Scientific Method

What is science?

The study of the natural world.

What is the scientific method?

- 1 - observe / ask question
- 2 - form hypothesis
- 3 - Design controlled experiment
- 4 - record + analyze results
- 5 - draw conclusions!

List 3 pieces of lab safety equipment in the science room.

- fire extinguisher
- lab safety goggles
- shower + eye wash

Design a controlled experiment and give examples of two types of data you would collect. Include a hypothesis for this experiment that uses the word because!

Think back to gummy bear lab...

This answer must include

- qualitative data
- quantitative data
- hypothesis *
- control group
- experimental group
- independent variable
- dependent variable