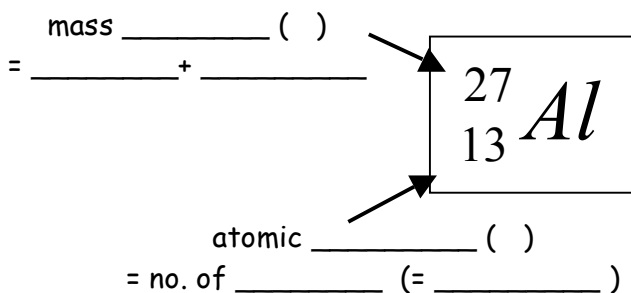


Nucleons:

- are particles occupying the _____
- consist of ___ charged _____ and _____
- have almost 2000times the _____ of _____
- are made up of _____ and _____

Nuclear Notation:



$^{27}_{13}Al$ has _____ protons and _____ neutrons, for a total of _____ nucleons.

$^{28}_{13}Al$ has _____ protons and _____ neutrons, for a total of _____ nucleons.

isotopes: atoms of _____ element with different numbers of _____ (different _____)

Forces Acting on Nucleons:

strong forces -

- forces of _____ between nucleons
- are independent of the _____ of the nucleon
- are short range (exist only between _____ neighbors)

electrical force -

- force of _____ between _____ charged protons
- are long range

When are nuclei **unstable**?

- large nuclei ($Z > 82$) - electrical forces of _____ are greater than strong forces of _____
- wrong neutron : proton _____

A radioactive isotope:

- has an _____ nucleus
- spontaneously emits a _____ and _____ into another _____

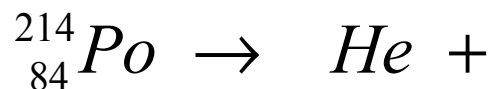
transmutation - changing into another _____ through radioactive _____

Types of Radioactive Emission:

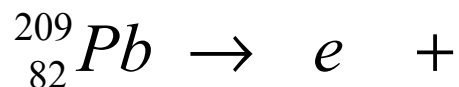
	Symbol	Composition	Stopped By -
alpha			
beta			
gamma			

Nuclear Equations:

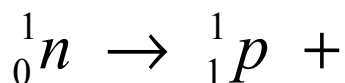
alpha decay:



beta decay:



During beta decay, a neutron changes into a proton and an _____.



half-life:

- the _____ it takes for _____ the _____ of a radioactive sample to _____
- ranges from a fraction of a _____ to billions of _____
- is _____ affected by _____ conditions

The Chemistry Quiz

1. _____ 2. _____ 3. _____ 4. _____ 5. _____

On back, list some dangers and uses for radioactivity.