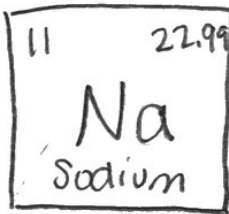


Warm up:

① How many of the following does the atom have?



Protons? 11 ← atomic # (determines the element)

Neutrons? 12 ← atomic mass = 23 $23 - 11 = 12$

Electrons? 11 ← neutral atom - matches # of protons.

② If the atom were to become an ion, what would change? change # of electrons

③ The 2 most common isotopes of Sodium are Na-23 and Na-24. What makes them different?
The # of neutrons is different.

Notes

Building an Atom lab

Adding proton - changes the element

Adding neutron - changes the mass

Adding electron - changes the charge

When protons and neutrons are not balanced

↳ unstable nucleus

What determines stability of an atom?

the balance between the number of protons and neutrons.

As it gets more massive, needs higher number of neutrons to balance out.

When an atom is stable, it is non-radioactive.

When an atom is unstable, it is radioactive

↳ atom will change

3 types of radiation:

① Alpha radiation - Biggest radiation
consists of 2 protons.

↓
(He²⁺) - Helium

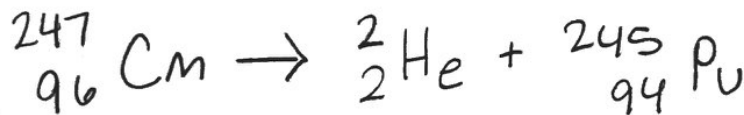
Dangerous? generally not

Skin stops helium from getting to you.
Can be harmful if swallowed
absorbed through open wounds.

Smoke detectors - alpha radiation

atomic
mass →

atomic
number →



This side = this side

$$247 = 2 + 245$$

$$96 = 2 + 94$$

He is an alpha radiation.

When we added the He,
we then subtract to get

Pu from the periodic table.

② Beta Radiation - consists of electrons

1 electron (e^-)

A neutron turns into a proton
+ an electron

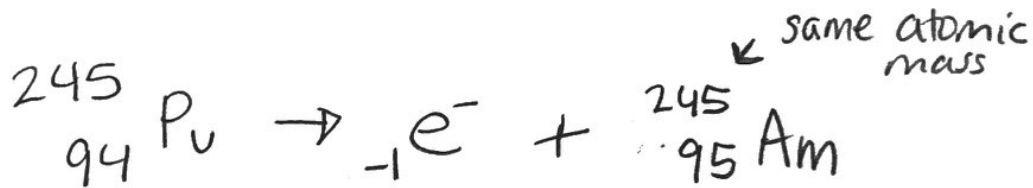
↳ exits atom as Beta radiation.

Electrons move very fast.

It would be dangerous to be hit with a ton of electrons.

Can penetrate skin.

CT scans use Beta radiation



↳ same atomic mass

atomic # of -1

↓
of protons must go up by 1.

③ Gamma radiation -

Pure energy - no changes
comes out when other radiation occurs.

A wave

↳ extremely dangerous.

Passes through skin, muscles, bones, DNA

Stopped by lead.