

Isotopes of Elements

Name - _____

1.) What is the difference between a hydrogen atom and a proton?

The difference between a hydrogen atom and a proton is that a hydrogen atom has electrons and a proton doesn't.

2.) The neutron was discovered long after the proton and electron. Why was it so hard to discover?

The neutron was harder to discover than other subatomic particles because it doesn't have a charge. This lack of a charge made it difficult to cause movement that could be seen or measured as neutrons don't repel or attract as they have no charge.

3.) Explain the difference between the atomic number and the mass number.

The atomic number is the number of protons in the nucleus of an atom. The atomic mass is the average mass (mass of electrons, protons and neutrons) of all isotopes of a certain element.

4.) Fill the following table:

<u>Isotope Name</u>	<u>Symbol</u>	<u>Number of Protons</u>	<u>Number of Neutrons</u>
Astatine-211	$\frac{211}{85}\text{At}$	85	126
Uranium-235	$\frac{235}{92}\text{U}$	92	143
Magnesium-25	$\frac{25}{12}\text{Mg}$	12	13
Radon-209	$\frac{209}{86}\text{Rn}$	86	123
Chlorine-37	$\frac{37}{17}\text{Cl}$	17	20
Deuterium	$\frac{2}{1}\text{H}$	1	1
Silicon-30	$\frac{30}{14}\text{Si}$	14	16
Palladium-102	$\frac{102}{46}\text{Pd}$	46	56
Iodine-127	$\frac{127}{53}\text{I}$	53	74
Tantalum-180	$\frac{180}{73}\text{Ta}$	73	107

5.) Write a definition of an isotope in your own words.

Isotopes of an element are the same element in every way except the number of neutrons will be different.

6.) Chlorine occurs naturally as either chlorine-35 or chlorine-37. What is the difference between the two isotopes?

The difference between Cl-35 and Cl-37 is the number of neutrons. Cl-35 has 18 neutrons and Cl-37 has 20 neutrons.