

All About Isotopes

Name _____

Period _____

Date _____

Did you ever wonder why there were so many atomic mass numbers on the periodic chart that had all those *decimals*? The reason has to do with the particles in the nucleus. Let's do a quick review:

Atoms have two particles in their nuclei- they are called the _____ and the _____. Atoms are defined by their number of _____. The Protons have a charge of _____ and a mass of _____. The neutrons have a charge of _____ and a mass of _____. Let's look at a typical atom of carbon to show this example:

6
C
12.0

The Bohr model looks like this:

6p
6n

What would happen if there were another neutron in the nucleus?

6p
7n

Would the charge change? yes no WHY? _____

Would the number of electrons change? yes no

What would change? _____

We call atoms like these _____.

Isotopes of an element have the same number of _____ in the nucleus, but have different masses, which means they must have a different number of _____ in the nucleus.

Here is an example:

C_{12}
p = 6
n = 6
e = 6

C_{13}
p = 6
n = 7
e = 6

C_{14}
p = 6
n = 8
e = 6

As you can see, these are all atoms of _____, because they all have _____ protons. The heaviest isotope is C_{14} , with 6p and 8n. On the periodic chart, we see that carbon has an average atomic mass of 12, due to the many isotopes (differing number of neutrons) that exist.