

Announcements

Wednesday, February 04, 2009

- Ch 3 Mastering Chemistry due before class today.
- Ch 4 MC due Wed, Feb 11 9:45 am.
- Ch 5 MC due **Tues**, Feb 17 9:45 am.

Experiment 6 in lab next week. (Check the syllabus for the lab schedule!)

For practice:

- Rework previous MC assignments
- Practice worksheets on webpage (unit conversion, density)

If you're having trouble:

- See me during my office hours
- See a tutor in the academic support center - bring a problem you're having trouble with
- Work with a friend or study group
- Post a question to the D2L discussions (you need at least 2 posts in Exam 1 discussions before Exam 1)

Mass number

Atomic number = # protons in nucleus

Mass number = # p^+ + # n^0 in nucleus

carbon-12: $\#p^+ = 6$ (AN of C)

 MN

$\#n^0 = 6$

 12 (MN)

carbon-13

 MN

$\#p^+ = 6$
 $\#n^0 = 7$ (13-6)

 13 (MN)

Isotopes: versions of an atom with the...

Same AN
 different MN

Same # p^+
 different # n^0

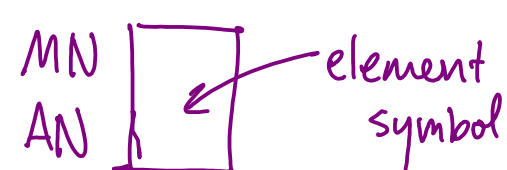
3 naturally-occurring isotopes of carbon:

<u>Isotope name</u>	<u>AN</u>	<u>MN</u>	<u>#p^+</u>	<u>#n^0</u>	<u>#e^-</u>	<u>Symbol</u>
carbon-12	6	12	6	6	6	${}^{12}_6C$
carbon-13	6	13	6	7	6	${}^{13}_6C$
carbon-14	6	14	6	8	6	${}^{14}_6C$

if neutral

in MC, use button

isotope symbol:



Isotopes

An atom has 11 protons and 12 neutrons

$$AN = 11$$

$$MN = 23 = \#p^+ + \#n^0$$

isotope name = sodium-23

isotope symbol = ${}_{11}^{23}\text{Na}$

#e⁻ if neutral = 11

#e⁻ if stable ion = 10 (Na^+ ion)

Mass number: $\#p^+ + \#n^0$ in nucleus
(exact number)

Atomic mass: actual mass of an atom (in amu)
(a measurement)

<u>Atom</u>	<u>MN</u>	<u>atomic mass</u>
carbon-12	12	exactly 12 amu (by definition)
carbon-13	13	13.00335 amu
magnesium-24	24	23.98504 amu

(mass of $1p^+ \approx 1n^0 \approx 1\text{amu}$)

Atomic mass

A sample of natural carbon contains...

98.9% carbon-12

1.1% carbon-13

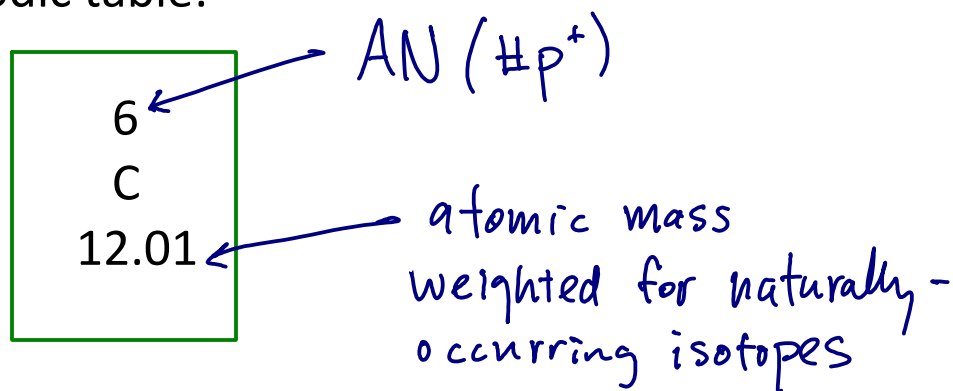
trace carbon-14

Atomic mass of "natural carbon": 12.01 amu

(because of small amt
of heavier isotopes)

a weighted
average

On periodic table:



Mass number is NOT on the periodic table!

#p + #n for a given isotope