Today Sept 5: Sections 2.6 - 2.9

Friday Sept. 7: · Review - no new stuff

· 8:45 - 9:15 Nom quiz (optional)

· checklist for CK1 available

* look at old exams

Monday Sept. 10: CK1

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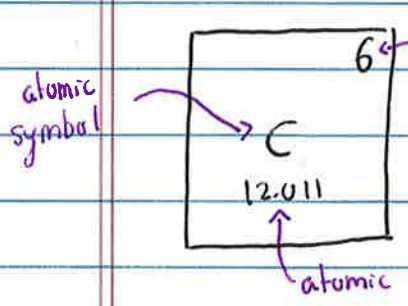
Which of these are real?

| | | | | |
|---|---|---|---|---|
| $NaNO_3$ | $SrCl_2$ | $Li_3P$ | $KCl$ | $Rb_2O$ |
| $NaCl_2$ | $CaCl$ | $MgBr$ | $K_2O$ | $LiS$ |
| $CaS_2$ | $Be_2N$ | $KBr$ | $Li_2Br$ | $MgCl$ |

| formulas → names | | names → formulas | |
|---|---|---|---|
| $PF_5$ | phosphorus pentafluoride | calcium sulfite | $CaSO_3$ |
| $Ca(ClO_3)_2$ | calcium chlorate | barium nitrate | $Ba(NO_3)_2$ |
| $CoBr_3$ | cobalt (III) bromide | magnesium (II) perchlorate | $Mn(ClO_4)_2$ |
| $N_2O$ | dinitrogen monoxide | ammonium phosphate | $(NH_4)_3PO_4$ |
| $Ba(HCO_3)_2$ | barium bicarbonate | carbon disulfide | $CS_2$ |
| | | chlorine dioxide | $ClO_2$ |

| | electron | proton | neutron |
|---|---|---|---|
| mass | 0 | ~1 | ~1 |
| charge | -1 | +1 | 0 |

nucleus




atomic number = number of protons

types of Carbon (isotopes)

$^{12}_{6}C$ 98.9% of all Carbon

$^{13}_{6}C$ 1.1%

$^{14}_{6}C$ radioactive ($\sim 1 \times 10^{-10}$ %)

mass number = # protons + # neutrons

• Boron exists as 2 isotopes,

$^{10}_{5}B$ $^{11}_{5}B$

5p + 5n 5p + 6n

| | abundance | isotopic mass |
|---|---|---|
| $^{10}_{5}B$ | 0.199 (or 19.9%) | 10.012932 |
| $^{11}_{5}B$ | 0.801 (or 80.1%) | 11.009305 |

To get periodic table atomic mass:

weighted Sum

atomic mass = (abundance$_1$)(isotopic mass$_1$) + (abundance$_2$)(isotopic mass$_2$)

atomic mass B = (0.199)(10.012932) + (.801)(11.009305)

atomic mass B = 10.811

F => 18.98

$^{19}_{9}F$ , $^{19}_{9}F^-$

| | |
|---|---|
| 9p | 9p |
| 10n | 10n |
| 9e | 10e |

Gallium exists as 2 isotopes. One of them is $^{69}Ga$ with exact mass equal to 68.9257amu and an abundance of 60.119%. What is the isotopic mass of the other isotope?

69.723 = (.60119)(68.9257) + (.39881)(isotopic mass$_2$)

isotopic mass of 2nd isotope = 70.925 amu

Avogadro's number is $6.02 \times 10^{23}$

$6.02 \times 10^{23}$ C atoms has a mass of 12.011 grams

1 mole (mol) = $6.02 \times 10^{23}$ individual items

1 mol Li $\triangleq$ 6.941 g Li

How many moles lithium are in a 75.4g chunk of Lithium

$$n_{Li} = \frac{75.4\text{ g Li} \mid 1\text{ mol Li}}{6.941\text{ g Li}} = 10.86\text{ mol Li}$$

How many Lithium atoms are in the sample?

$$\frac{10.86\text{ mol Li} \mid 6.02 \times 10^{23}\text{ Li atoms}}{1\text{ mol Li}} = 6.5 \times 10^{24}\text{ Li atoms}$$