STOICHIOMETRY

Consider the chemical reaction equation given:
1 c butter + 2½ c flour + 2 eggs +
1 c sugar + ¾ c cocoa + 2 tsp. baking → 24 brownies
soda
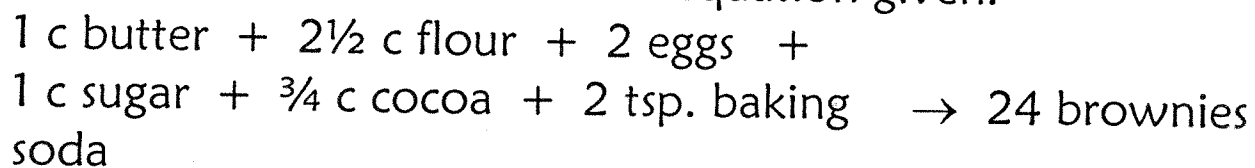
If you are going to a party and you want to bring 132 brownies, how many eggs do you need?

> * Note that even though there are many substances in the reaction, you are only concerned with two of them. Make a ratio of their amounts. This is a conversion factor.

2 eggs : 24 brownies   OR $\dfrac{2 \text{ eggs}}{24 \text{ brownies}}$

Use this conversion factor to solve the problem.

Calculations with <u>other</u> chemical reactions work the same way. Consider the following chemical reaction:
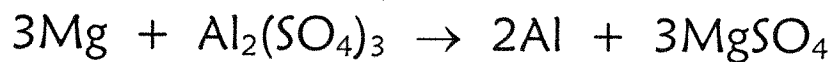
$$3Mg + Al_2(SO_4)_3 \rightarrow 2Al + 3MgSO_4$$
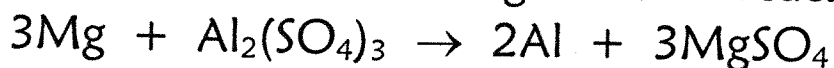
If 3 atoms of Mg react, what quantity of Al is made?

" 300 "   "   "   "   "   "   " " "   "

"6.02×10^{23} "   "   "   "   "   " " "   "

" 2 mol   "   "   "   "   "   " " "   "

If 17.3 mol Mg are used in a reaction with $Al_2(SO_4)_3$, how many moles of Al are produced?

$$3Mg + Al_2(SO_4)_3 \rightarrow 2Al + 3MgSO_4$$

*Mole ratios relate a pair of reactants or products from a BALANCED chemical equation.

Homework: p.238 #5, 6
                   Read Sample Problem p.239-240
                   p.240 #8, 9