# Stoichiometry

1 Marshmallow + 4 choc chips + 2 crackers
$\rightarrow$ 1 smoore

If I have 6 marshmallow, 24 chips and 12 crackers, how many smoores can I make?
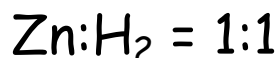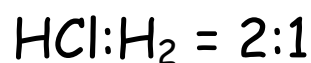
Coefficients in balanced chemical equations tell you the quantities needed for a reaction, and how much product is produced!

$$Zn + 2\ HCl \rightarrow ZnCl_2 + H_2$$

Coefficients can be read as either number of molecules or moles.

Mole Ratio: a ratio between the coefficients in an equation.

The mole ratios for the above equation are:
- $Zn:HCl = 1:2$          $HCl:ZnCl_2 = 2:1$
- $Zn:ZnCl_2 = 1:1$         $HCl:H_2 = 2:1$
- $Zn:H_2 = 1:1$

You can use mole ratios to find the amount of reactants needed or predict the amount of product made.

*Write the ratio as a conversion factor as the unknown/known.

Ex 1.    $3MgCl_2 + 2Na_3P \rightarrow Mg_3P_2 + 6NaCl$

   a) If 9 mol of $MgCl_2$ is consumed, how many mol NaCl is produced?

   b) How many mol of $Na_3P$ react?

   c) If 3.2 mol of $Na_3P$ react, what mass of $Mg_3P_2$ is produced?

   d) If 10 g of NaCl was produced, how many moles of $Na_3P$ was reacted?