

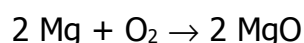
Name

Reacting mass calculations

It is possible to do quantitative calculations in chemistry – how much product can you make from a certain amount of reactant, or how much reactant do you need to make a certain amount of product?

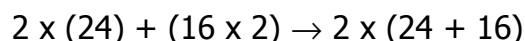
You can do this without using moles! It isn't the best way, but it does work...

To do this you first of all need a **balanced equation** for the reaction, for instance

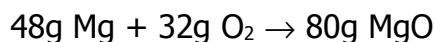


You need to know the atomic masses of Mg (24) and O (16)

If we convert this into **reacting masses** we get



which means



(notice that there is the same total mass on both sides – we haven't created or destroyed matter!).

This gives a basic **ratio** of the reacting masses.

Ratios will help give the right answer in any reaction – you have to know the **balanced symbols equation** though!

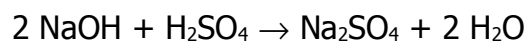
Q: How much MgO can be made from 24g of Mg?

A: 24g is $24 / 48 = \frac{1}{2}$ the amount of Mg in the basic ratio above.
Therefore we can make $\frac{1}{2}$ the amount of MgO in the equation above.
 $\frac{1}{2}$ of 80g is 40g of MgO

Q: How much Mg is needed to make 20g of MgO?

A: 20g is $20 / 80 = \frac{1}{4}$ the amount of MgO in the basic ratio above
Therefore we need $\frac{1}{4}$ the amount of Mg...
 $\frac{1}{4} \times 48 = 12\text{g}$ of Mg needed.

Name

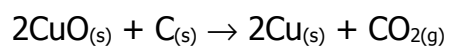


Atomic masses: Na = 23, O = 16, H = 1, S = 32

What is the basic ratio of the reacting masses?

Q: How much sodium hydroxide is needed to make 5g of sodium sulphate?

Q: How much water is formed from the reaction of 10g of sulphuric acid?



What is the ratio of the reacting masses?

Q: In a copper smelter how many tonnes of carbon is needed to make 16 tonnes of copper?

Q: How many tonnes of copper can be made from 640 tonnes of copper oxide ore?