



Essential Pre-Uni Chemistry B6.3

GCSE

A Level



Consider the equation for each reaction and hence calculate the amount of acid required for complete reaction in each of the following cases.

Part A (a)

0.10 mol NaOH reacting with H_2SO_4 . Give your answer to 2 significant figures.

Part B (b)

HCl reacting with 20 g of CaCO_3 . Give your answer to 2 significant figures.

Part C (c)

24 g CuO reacting with HNO_3 . Give your answer to 2 significant figures.

Part D (d)

5.6 g Fe reacting with HCl. Give your answer to 2 significant figures.

Part E (e)

14.8 g of calcium hydroxide reacting with H_2SO_4 . Give your answer to 3 significant figures.

10 g of magnesium oxide reacting with nitric acid. Give your answer to 2 significant figures.



Essential Pre-Uni Chemistry B6.2

GCSE



A Level



By considering a balanced equation each time, calculate the amount of water produced by complete combustion of the following in oxygen.

Part A (a)



1 mole of pentane, C_5H_{12}

Part B (b)



2.5 moles of heptane, C_7H_{16}

Part C (c)



200 moles of hydrogen, H_2

Part D (d)



4.0 moles of butane

Part E (e)



0.0030 moles of methane



Essential Pre-Uni Chemistry B4.3

GCSE



A Level



Calculate the amount of:

Part A (a)



1.001 g of CaCO_3 (s), to 3 significant figures

Part B (b)



197 kg of Au (s), to 3 significant figures

Part C (c)



1.4 g of CO (g), to 2 significant figures

Part D (d)



2.006 kg of Hg (l), to 4 significant figures

Part E (e)



11.1 g of lithium carbonate, to 3 significant figures

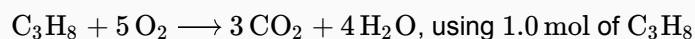
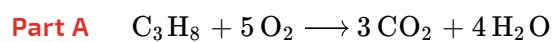
10.0 mg of lead(II) iodide, to 3 significant figures



Essential Pre-Uni Chemistry B6.1

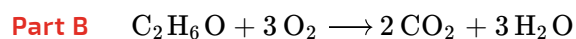


Calculate the amount of oxygen needed, and amount of carbon dioxide produced, in each of the cases below.



Calculate the amount of oxygen needed.

Calculate the amount of carbon dioxide produced.



Calculate the amount of oxygen needed.

Calculate the amount of carbon dioxide produced.

Part C $2\text{CO} + \text{O}_2 \longrightarrow 2\text{CO}_2$



$2\text{CO} + \text{O}_2 \longrightarrow 2\text{CO}_2$, using 4.0 moles of CO

Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:

Part D $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$



$\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \longrightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$, using 0.040 moles of $\text{C}_6\text{H}_{12}\text{O}_6$

Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:

Part E $\text{C}_2\text{H}_4\text{O}_2 + 2\text{O}_2 \longrightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$



$\text{C}_2\text{H}_4\text{O}_2 + 2\text{O}_2 \longrightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$, using 0.10 moles of $\text{C}_2\text{H}_4\text{O}_2$

Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:



Essential Pre-Uni Chemistry B5.2

GCSE



A Level



Calculate the mass of solute in grams of each of the following:

Part A (a)



500 ml of $0.010 \text{ mol dm}^{-3}$ NaOH

Part B (b)



150 ml of 4.0 mol dm^{-3} HCl

Part C (c)



1.00 ml of 10.0 mol dm^{-3} H_2SO_4

Part D (d)



25.0 ml of 0.50 mol dm^{-3} FeSO_4

Part E (e)



21.8 ml of $0.0050 \text{ mol dm}^{-3}$ KMnO_4

Part F (f)



2.0 dm³ of 0.10 mol dm⁻³ NaCl

Part G (g)



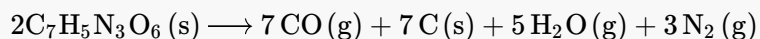
100 ml of limewater with a concentration of 0.00020 mol dm⁻³

TNT

A Level



TNT is used as an explosive. It can decompose according to the following equation:



Part A RMM



Calculate the relative molecular mass of TNT.

Part B Moles of gas



The volume of gas produced at 400°C , when 10 g of TNT explode, is to be calculated.

How many moles of gas are produced from 1 mol of TNT?

Part C Volume of gas



At 400°C and 1 atm, 1 mol of gas occupies 55 dm^3 .

Calculate the volume of gas produced under these conditions from 10 g of TNT?

Adapted with permission from UCLES, A Level Chemistry, November 1992, Paper 3, Question 1



Balancing Equations

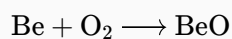
A Level



Part A Be and O



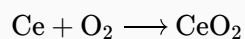
Balance the following equation, reducing coefficients to the smallest possible integers:



Part B Ce and O



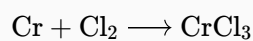
Balance the following equation, reducing coefficients to the smallest possible integers:



Part C Cr and Cl



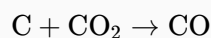
Balance the following equation, reducing coefficients to the smallest possible integers:



Part D C and CO₂



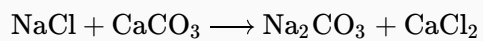
Balance the following equation, reducing coefficients to the smallest possible integers:



Part E NaCl and CaCO₃



Balance the following equation, reducing coefficients to the smallest possible integers:



Part F Fe₂O₃ and CO



Balance the following equation, reducing coefficients to the smallest possible integers:

