



## 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  $\text{H}_2\text{SO}_4$ . Give your answer to 2 significant figures.

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### Part B (b)

HCl reacting with 20 g of  $\text{CaCO}_3$ . Give your answer to 2 significant figures.

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### Part C (c)

24 g CuO reacting with  $\text{HNO}_3$ . Give your answer to 2 significant figures.

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### Part D (d)

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

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### Part E (e)

14.8 g of calcium hydroxide reacting with  $\text{H}_2\text{SO}_4$ . Give your answer to 3 significant figures.

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**Part F** (f)

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

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## 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

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GCSE



A Level



Calculate the amount of:

**Part A**   (a)

1.001 g of  $\text{CaCO}_3$  (s), to 3 significant figures

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**Part B**   (b)

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

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**Part C**   (c)

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

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**Part D**   (d)

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

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**Part E**   (e)

11.1 g of lithium carbonate, to 3 significant figures

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**Part F** (f)

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

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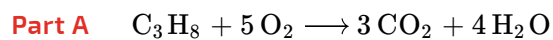
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## Essential Pre-Uni Chemistry B6.1



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



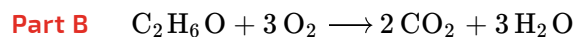
$\text{C}_3\text{H}_8 + 5 \text{O}_2 \longrightarrow 3 \text{CO}_2 + 4 \text{H}_2\text{O}$ , using 1.0 mol of  $\text{C}_3\text{H}_8$

Calculate the amount of oxygen needed.

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Calculate the amount of carbon dioxide produced.

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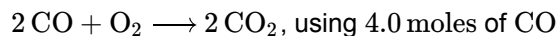
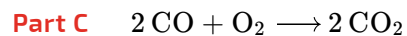
$\text{C}_2\text{H}_6\text{O} + 3 \text{O}_2 \longrightarrow 2 \text{CO}_2 + 3 \text{H}_2\text{O}$ , using 0.2 mol of  $\text{C}_2\text{H}_6\text{O}$

Calculate the amount of oxygen needed.

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Calculate the amount of carbon dioxide produced.

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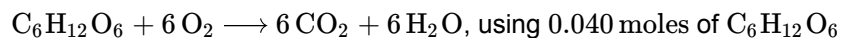
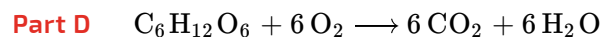


Calculate the amount of oxygen needed:

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Calculate the amount of carbon dioxide produced:

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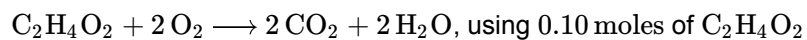
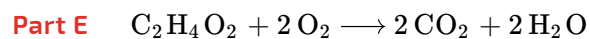


Calculate the amount of oxygen needed:

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Calculate the amount of carbon dioxide produced:

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Calculate the amount of oxygen needed:

---

Calculate the amount of carbon dioxide produced:

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## Essential Pre-Uni Chemistry B5.2

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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

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**Part B**   (b)

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

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**Part C**   (c)

1.00 ml of  $10.0 \text{ mol dm}^{-3}$   $\text{H}_2\text{SO}_4$

---

**Part D**   (d)

25.0 ml of  $0.50 \text{ mol dm}^{-3}$   $\text{FeSO}_4$

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**Part E**   (e)

21.8 ml of  $0.0050 \text{ mol dm}^{-3}$   $\text{KMnO}_4$

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**Part F** (f)

2.0 dm<sup>3</sup> of 0.10 mol dm<sup>-3</sup> NaCl

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**Part G** (g)

100 ml of limewater with a concentration of 0.00020 mol dm<sup>-3</sup>

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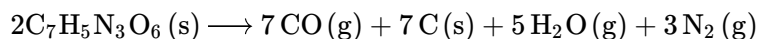


# TNT

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



## Part A RMM

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Calculate the relative molecular mass of TNT.

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## Part B Moles of gas

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The volume of gas produced at  $400^\circ\text{C}$ , when 10 g of TNT explode, is to be calculated.

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

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## Part C Volume of gas

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At  $400^\circ\text{C}$  and 1 atm, 1 mol of gas occupies  $55 \text{ dm}^3$ .

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

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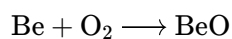


# Balancing Equations



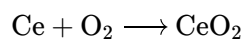
## Part A Be and O

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



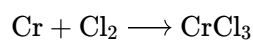
## Part B Ce and O

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



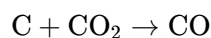
## Part C Cr and Cl

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



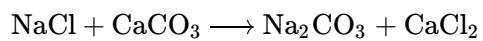
## Part D C and CO<sub>2</sub>

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



**Part E**    **NaCl and CaCO<sub>3</sub>**

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



**Part F**    **Fe<sub>2</sub>O<sub>3</sub> and CO**

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

