



Physics. *You work it out.*

[Home](#) [Gameboard](#) [Chemistry](#) [Foundations](#) [Stoichiometry](#) [Essential Pre-Uni Chemistry B4.3](#)

Essential Pre-Uni Chemistry B4.3



Calculate the amount of substance in:

Part A (a)

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

Part B (b)

197 kg of $\text{Au}(\text{s})$, to 3 significant figures

Part C (c)

1.4 g of $\text{CO}(\text{g})$, 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

Part F (f)

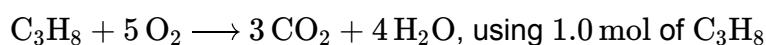
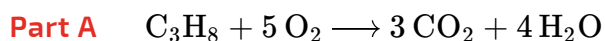
10.0 mg of lead(II) iodide, to 3 significant figures



Essential Pre-Uni Chemistry B6.1



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



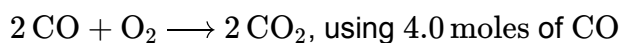
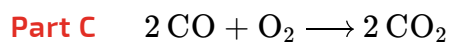
Calculate the amount of oxygen needed.

Calculate the amount of carbon dioxide produced.



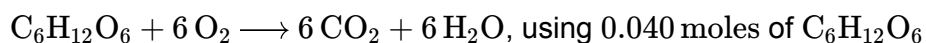
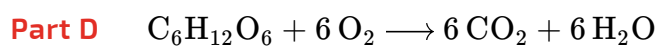
Calculate the amount of oxygen needed.

Calculate the amount of carbon dioxide produced.



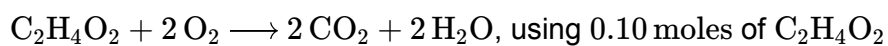
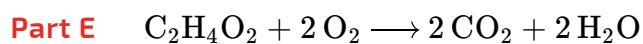
Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:



Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:



Calculate the amount of oxygen needed:

Calculate the amount of carbon dioxide produced:



Physics. *You work it out.*

[Home](#) [Gameboard](#) [Chemistry](#) [Foundations](#) [Stoichiometry](#) [Essential Pre-Uni Chemistry B6.2](#)

Essential Pre-Uni Chemistry B6.2



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

All materials on this site are licensed under the [Creative Commons license](#), unless stated otherwise.



Physics. *You work it out.*

[Home](#) [Gameboard](#) [Chemistry](#) [Foundations](#) [Stoichiometry](#) [Essential Pre-Uni Chemistry B6.3](#)

Essential Pre-Uni Chemistry B6.3



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.

Part F (f)

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

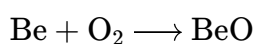


Balancing Equations



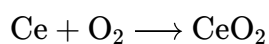
Part A Be and O

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



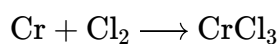
Part B Ce and O

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



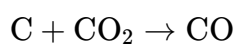
Part C Cr and Cl

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



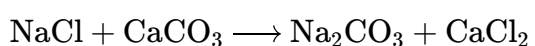
Part D **C and CO₂**

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



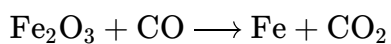
Part E **NaCl and CaCO₃**

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:

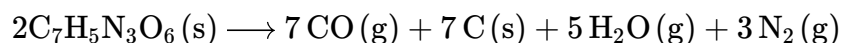




TNT



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



Part A RMM

Calculate the relative molecular mass of TNT, rounding your answer to an integer.

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.



Physics. *You work it out.*

[Home](#) [Gameboard](#) [Chemistry](#) [Foundations](#) [Stoichiometry](#) [Essential Pre-Uni Chemistry B3.1](#)

Essential Pre-Uni Chemistry B3.1



RTP = room temperature and pressure.

Any gas occupies 24 dm^3 per mole at RTP.

Avogadro's number, $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$.

Part A (a)

Calculate the volume occupied by 4.0 moles of gas at RTP.

Part B (b)

Calculate the volume occupied by 0.030 moles of gas at RTP.

Part C (c)

Calculate the volume occupied by 5.0×10^{18} atoms of helium gas at RTP.

Part D (d)

Calculate the volume occupied by 1.2×10^{24} molecules of ozone at RTP.

Part E (e)

Calculate the volume occupied by 8.0 g of O_2 at RTP.

Part F (f)

Calculate the volume occupied by 1.1 kg of carbon dioxide at RTP.



Physics. *You work it out.*

[Home](#) [Gameboard](#) [Chemistry](#) [Foundations](#) [Stoichiometry](#) [Essential Pre-Uni Chemistry B3.2](#)

Essential Pre-Uni Chemistry B3.2



RTP = room temperature and pressure.

Any gas occupies 24 dm^3 per mole at RTP.

Avogadro's number, $N_A = 6.02 \times 10^{23}$.

Part A (a)

Calculate the amount of gas (at RTP) in 4.8 dm^3 .

Part B (b)

Calculate the amount of gas (at RTP) in 12 m^3 .

Part C (c)

Calculate the amount of gas (at RTP) in 400 cm^3 . Give your answer to 2 significant figures.

Part D (d)

Calculate the amount of gas (at RTP) in 18 mL.

All materials on this site are licensed under the [Creative Commons license](#), unless stated otherwise.



Essential Pre-Uni Chemistry B3.5



RTP = room temperature and pressure.

Any gas occupies 24 dm^3 per mole at RTP.

Avogadro's number, $N_A = 6.02 \times 10^{23}$.

Part A (a)

Calculate the the mass of 1.0 m^3 of neon at RTP.

Part B (b)

Calculate the the mass of 20 cm^3 of $(\text{CH}_3)_2\text{O}$ at RTP.

Part C (c)

Calculate the the mass of 420 cm^3 of ammonia at RTP. Give your answer to 2 significant figures.