



The Thomas Hardy School

Summer Preparation Task

A Level Chemistry

Purpose of task:

Consolidate and develop key skills and information from GCSE that is essential and assumed knowledge for A-level Chemistry.

Task:

In preparation for starting your A-level Chemistry course in September you will be required to print and complete this document. Submission will be your first chemistry lesson in week commencing the 11th September 2017.

Recommended resources

<http://www.bbc.co.uk/schools/gcsebitesize/chemistry/>

<http://www.s-cool.co.uk/gcse/chemistry>

https://www.youtube.com/watch?v=UGf60kq_ZDI

GCSE revision books and chemistry class notes

Ions Table - *Complete the table below filling in the ions (Research this)*

Positive Ions (Cations)		Negative Ions (Anions)	
Name	Symbol	Name	Symbol
Hydrogen		Chloride	
Sodium		Fluoride	
Silver		Bromide	
Potassium		Iodide	
Lithium		Hydrogencarbonate	
Ammonium		Hydroxide	
Barium		Nitrate	
Calcium		Oxide	
Magnesium		Sulphide	
Copper (I)		Sulphate	
Copper (II)		Carbonate	
Zinc		Phosphate	
Lead			
Iron (II)			
Iron (III)			
Aluminium			

Formulae of Ionic compounds

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Ionic compounds contain positive and negative ions. The number of **positive charges** must equal the number of **negative charges** so that the compound has no charge overall.

Brackets

Watch out for **compound ions**, e.g. *ammonium*, *hydrogencarbonate*, *hydroxide*, *nitrate*, *sulphate* and *carbonate*. If you need more than one of them to balance the charges, put brackets around their symbol.

Complete the chemical formulae table using the ions table above

Chemical formulae

In the 1st 2 columns write the correct chemical formula, in the 2nd the correct name.

<i>Name</i>	<i>Formula</i>	<i>Formula</i>	<i>Name</i>
Magnesium Fluoride		CaF ₂	
Lithium Chloride		KBr	
Calcium Chloride		CuCl	
Copper (I) Iodide		CuCl ₂	
Potassium Bromide		CuO	
Aluminum Oxide		AlCl ₃	
Iron(II) Oxide		AgCl	
Aluminum Sulfide		MgI ₂	
Sodium Chloride		NaBr	
Barium Chloride		ZnCl ₂	
Iron (III) Sulfate		LiF	
Iron (III) Sulfide		PbO ₂	
Sodium Hydroxide		AgNO ₃	
Ammonium Bromide		Na ₂ CO ₃	
Potassium Sulfate		(NH ₄) ₂ SO ₄	
Sulfuric Acid		KNO ₃	

Decimal Points and Significant Figures

Good to know!



Molecular and Atomic Masses (M_r & A_r) - 1 decimal place

Volumes - 2 decimal places

Moles - 3 significant figures

Concentrations - 3 significant figures

Temperatures - 1 decimal place

Masses - 2 decimal places

Common Acids and Bases (alkali's) - *Complete the table below*

Acids		Bases/Alkalis	
Name	Formula	Name	Formula
Sulphuric acid		Sodium hydroxide	
	HCl		KOH
Nitric acid		Ammonia	
Phosphoric acid			
	CH ₃ COOH		

Balancing Equations

Balance the equation so that it has the same number of atoms of each element on each side. This can be done by putting the correct numbers in front of the formulae.

Write balanced symbol equations for the following chemical reactions.

Remember to balance the equations.

1. Barium chloride + Sodium sulphate → Barium sulphate + Sodium chloride
2. Calcium + Oxygen → Calcium oxide
3. Calcium carbonate + Sulphuric acid → Calcium sulphate + Carbon dioxide + Water
4. Carbon + Oxygen → Carbon dioxide
5. Copper + Oxygen → Copper(II) oxide
6. Copper(II) oxide + Sulphuric acid → Copper(II) sulphate + Water

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7. Hydrogen + Chlorine → Hydrogen chloride
8. Iron + Chlorine → Iron(III) chloride
9. Iron(III) chloride + Ammonium hydroxide → Iron(III) hydroxide + Ammonium chloride
10. Magnesium + Steam → Hydrogen + Magnesium oxide
11. Magnesium + Sulphuric acid → Hydrogen + Magnesium sulphate
12. Sodium + Oxygen → Sodium oxide
13. Sodium hydroxide + Copper(II) sulphate → Sodium sulphate + Copper(II) hydroxide
14. Sodium hydroxide + Phosphoric acid → Sodium phosphate + Water
15. Sodium hydroxide + Sulphuric acid → Sodium sulphate + Water

Acid Reactions - *Complete the word equations below*

Acid + Base →

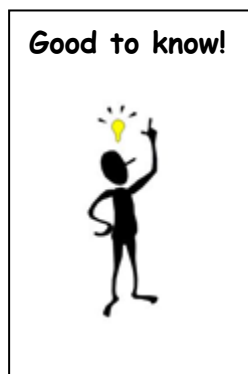
Acid + Alkali →

Acid + Metal →

Acid + Metal carbonate →

Unit Conversions

- 100cm = 1m
- 1000g = 1kg
- 1000mg = 1g
- 10mm = 1cm
- 1dm³ = 1000cm³



Key Term Definitions

Find the definitions for

Write the equivalent measurement

- 1) 8 g = _____mg
- 2) 9 mg = _____g
- 3) 6 kg = _____g
- 4) 4 cm = _____m
- 5) 12 mg = _____g
- 6) 6035 mm = _____cm
- 7) 0.32 m = _____cm
- 8) 5 dm³ = _____m³

- Acid -
- Base -
- Exothermic -
- Endothermic -
- Isotope -
- Oxidation -
- Reduction -
- Atomic number -
- Mass Number -

Calculations

a. Magnesium reacts with steam to produce hydrogen gas and magnesium oxide. The equation for the reaction is:



- (i) A teacher used 1.00 g of magnesium to demonstrate this reaction. Use the equation to calculate the maximum mass of magnesium oxide produced. Give your answer to three significant figures.

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Maximum mass = g

- (ii) The teacher's demonstration produced 1.50 g of magnesium oxide. Use your answer from part (b)(i) to calculate the percentage yield. If you could not answer part (b)(i), use 1.82 g as the maximum mass of magnesium oxide. This is **not** the answer to part (b)(i).

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Percentage yield = %

- (iii) Give 3 reasons why the percentage yield is less than 100%.

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b. Scientists separated a compound from maple syrup. The compound contained:

5.65 g carbon (C); 2.20 g nitrogen (N); 0.629 g hydrogen (H).

Calculate the empirical formula of the compound.

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Empirical formula =