SUMMER TASKS – GCSE TO A-LEVEL TRANSITION

Subject: Chemistry
Title: Being A Level Chemistry Ready
Task(s): Complete the booklet of baseline Chemistry tasks. This booklet has several parts and is designed to help you bring the useful parts of your GCSE knowledge to the start of A Level Chemistry. We expect you to bring this work to your first lesson and it will show us your strengths and weaknesses and help you to become organised at meeting deadlines. You can print the document out to complete your answers or answer them on paper. Bring your answers to your first lesson of Chemistry in September.
How long should I spend on this? This should take about 1 to 1½ hours at most
How will I get feedback? Feedback will be given in September
Contact email: jmorrell@yorkcollege.ac.uk

Student's Checklist for Being A Level Chemistry-ready

You are expected to know/understand the following:

Electron configuration for the first 20 elements

Naming compounds from formulae and vice versa

Bonding

Three main types – formation and properties

- ionic
- covalent
- and metallic

Dot and cross diagrams for covalent molecules and ionic compounds to include:

- sodium chloride, calcium oxide, calcium fluoride, aluminium oxide
- chlorine, oxygen, nitrogen, ammonia, carbon dioxide, methane, ethane, ethanol, sulfur dioxide, water

Writing formulae for all of the above plus compounds with:

- carbonate
- nitrate
- hydroxide
- hydrogen carbonate
- sulfate.

Balancing equations for

- neutralisation
- metals with acids
- alkali metals with water
- redox (displacement of halogens and metals), thermal decomposition

Calculations

- relative atomic mass, relative formula mass and empirical formulae
- Percentage yield and atom economy
- Reacting masses and limiting reagent

Energetics

- difference between exothermic and endothermic
- graphs associated with these
- energies in bond making and bond breaking

Organic Chemistry

- differences between alkanes and alkenes
- naming and reactions of alkanes and alkenes
- fractional distillation
- cracking
- characteristics of good fuels
- balancing combustion equations

1 Give the formulae of the following compounds.

Copper(II) sulfate _____

Lithium hydrogencarbonate _____

Sodium hydroxide _____

Potassium nitrate _____

Strontium nitrate _____

Calcium hydroxide _____

Sodium carbonate _____

Aluminium fluoride _____

(4 marks)

2 Name the following compounds.

NH_4Cl _____

HNO_3 _____

C_2H_4 _____

C_3H_8 _____

CO_2 _____

C_2H_5OH _____

Fe_2O_3 _____

SO_2 _____

HBr _____

NH_3 _____

(5 marks)

3 Complete the table below.

Particle	**Where it is found**	**Charge**	**Mass**
		0	
Proton			
			0

(3 marks)

4 Deduce the relative formula mass of the following.

SO_2	_____	KBr	_____
C_2H_6	_____	$Ca(OH)_2$	_____
C_2H_5OH	_____	$NaNO_3$	_____
NH_4Cl	_____	$FeCl_3$	_____

(4 marks)

5 State what is meant by the following terms.

a the mass number of an atom

(1 mark)

b relative atomic mass

(2 marks)

c isotopes

(2 marks)

6 For the following reactions, write:

a the word equation (1 mark)

b the chemical equation complete with state symbols. (2 marks)

Calcium carbonate and hydrochloric acid

Magnesium and sulfuric acid

Complete combustion of butane

Thermal decomposition of calcium carbonate

Sodium and water

(12 marks)

7 State what is meant by the following terms.

Ionic bonding

Covalent bonding

Metallic bonding

(3 marks)

8 Complete the table below. You may use the following words to help you.

ionic covalent giant simple metallic

Substance	**Formula**	**Type of bonding**	**Type of structure**
Hydrogen sulfide			
Graphite			
Silicon dioxide			
Methane			
Calcium			
Magnesium chloride			

(6 marks)

9 Explain why graphite can be used as a solid lubricant and also as electrodes.

(4 marks)

-End of assessment-