Define the following terms:

Element - a substance made up of only one type of atom found in the Periodic Table

Compound - a substance made up of two or more types of atoms chemically bonded together

Mixture - two or more elements and/or compounds that aren't chemically combined together

Identify the following metal salts from their formulae:

LiCl = Lithium Chloride

$CaCl_2$ = Calcium Chloride

KBr = Potassium Bromide

MgF_2 = Magnesium Fluoride

Complete the table below:

Substance	Formula	Number of Atoms in a Molecule	Elements present in Molecule	Element, Compound or Mixture?
Nitrogen	N_2	2	1	Element
Sulphur Dioxide	SO_2	3	2	Compound
Salt Solution	$CuSO_4 \cdot 5H_2O$	17	4	Mixture

Use this Periodic Table to complete the following tasks:

- Write down the symbol for Magensium Mg

- Colour in red the alkali metals

- What do we call the family of elements in Group 7?

The Halogens

- Colour in blue the period that contains Potassium

- Colour in yellow the Noble/ Inert gases

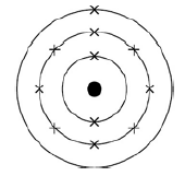
Describe a physical process that could be used to separate a mixture of an insoluble solid and water

Pass the mixture through a filter paper that allows the water molecules to pass through and retains the insoluble mixture

Name a physical process that could be used to separate a mixture of a soluble solid and water

Heat the mixture gently in an evaporating basin to evaporate off the water molecules and crystallise the soluble solid

Identify the element from the electronic structure of one of its atoms pictured below and represent this with numbers:



Sodium 2.8.1

Use your knowledge of atomic structure to explain why the elements in Group 0 are unreactive.

The elements in Group 0 are very unreactive because their highest occupied energy levels (outer shells) are full of electrons … this is a stable configuration in which electrons are not available for bond formation.

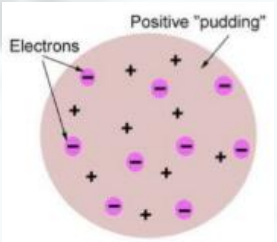
CHEMISTRY
Unit: 1
Atomic Structure
&
The Periodic Table

1. Name the scientist who proposed the model of the atom pictured opposite J.J Thomson
2. Describe the model

A ball of positive mass with negative electrons embedded in it

3. Identify the new piece of experimental evidence that led to its proposal

The discovery of the electron



1. Name the scientist who proposed the model of the atom pictured opposite Ernest Rutherford
2. Describe the model

A positive central nucleus containing the concentrated mass of the atom surrounded by orbiting negative electrons

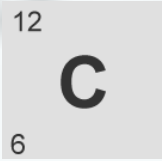
3. Identify the new piece of experimental evidence that led to its proposal

An alpha particle scattering experiment produced evidence that the majority of the atom's mass was localised in the centre of the atom

Complete the table below to show the relative charges and masses of the three subatomic particles:

Subatomic Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electron	-1	0.0005

Use the symbol below taken from the Periodic Table to identify the following values:



Relative Atomic Mass = 12

Atomic Number = 6

Number of Protons = 6

Number of Neutrons = 6

Number of Electrons = 6

Describe the following trends for the elements in Group 7 of the Periodic Table:

Melting Point

The melting points of the elements in Group 7 increase down the group.

Boiling Point

The boiling points of the elements in Group 7 increase down the group.

Molecular Mass The molecular mass of the elements in Group 7 increases down the group.

Reactivity The reactivity of the elements in Group 7 decreases down the group.

Describe two problems with early versions of the Periodic Table

Early versions of the Periodic Table did not contain all elements as some had yet to be discovered. Some elements were placed in inappropriate groups due to their arrangement by atomic weight.

How did Mendeleev overcome these problems?

Mendeleev overcame these problems by leaving gaps for elements that he predicted were yet to be discovered and in some places changing the atomic weight order of elements so that their new placement fitted group patterns.