


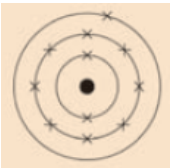


C1 Atomic Structure & The Periodic Table

<i>Can you...?</i>			
1.1.1 Atoms, elements and compounds			
Define the word 'element' in terms of atoms.			
Recall that there are about 100 different elements which are shown in the periodic table.			
Describe what a compound is and how they are represented.			
Describe how compounds are formed and separated, and what this involves.			
Use the names and symbols of the first 20 elements in the periodic table, the elements in Groups 1 and 7, and other elements in the Chemistry course.			
Name compounds of these elements from formulae or symbol equations.			
Write word equations for all the chemical reactions in the Chemistry course.			
Write formulae and balanced chemical equations for all the chemical reactions in the Chemistry course.			
1.1.2 Mixtures			
Describe what a mixture is and whether the properties of each substance in the mixture are changed or unchanged.			
State the 5 processes which can be used to separate mixtures, and remember that they do not involve chemical reactions.			
For each process, state the mixture(s) it can be used to separate.			
Describe, explain and give examples of the each of these processes.			
Suggest suitable separation and purification techniques for mixtures when given information.			
1.1.3 The development of the model of the atom			
Explain what may lead to a scientific model being changed or replaced.			
Describe how the model of the atom changed as new evidence was discovered.			
Describe the roles of Niels Bohr and James Chadwick in the development of the model of the atom.			
Explain why the new evidence from the scattering experiment led to a change in the atomic model.			
Describe the difference between the plum pudding model of the atom and the nuclear model of the atom.			
1.1.4 Relative electrical charges of subatomic particles			
State the relative charges of protons, neutrons and electrons.			
Explain why atoms have no overall electrical charge.			
State what atomic number represents.			




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State how atoms of different elements differ from each other.			
Use the nuclear model to describe the structure of atoms.			
1.1.5 Size and mass of atoms			
State the radius of an atom.			
State the radius of a nucleus			
State where most of the mass of an atom is.			
State the relative masses of protons, neutrons and electrons.			
State what mass number represents.			
Describe what an isotope is, how they differ from one another and how they are the same.			
Use the mass number and atomic number to calculate the number of protons, neutrons and electrons in an atom or ion.			
Relate the size of atoms to objects that can be seen.			
1.1.6 Relative atomic mass			
State what relative atomic mass is and how it is calculated.			
Calculate relative atomic mass from data given.			
1.1.7 Electronic Structure			
Describe how electrons fill up the energy levels (or 'shells') around the nucleus, starting from the lowest energy level (or innermost available shell).			
Represent the electronic structure of the first 20 elements of the periodic table in the following forms: <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;">  <div style="margin-left: 20px; text-align: center;"> <p>sodium</p> <p>2,8,1</p> </div> </div>			
1.2.1 Periodic table			
Describe how elements in the periodic table are arranged and why it is called the periodic table.			
State the name of the columns in the periodic table and why elements are placed in the same column.			
Explain how the position of an element in the periodic table is related to the arrangement of electrons in its atoms and its atomic number.			
Predict possible reactions and reactivity of elements from their positions in the periodic table.			
1.2.2 Development of the periodic table			

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State how scientists initially classified elements.			
Describe problems with the early periodic table.			
Explain how Mendeleev overcame these problems.			
Explain how Mendeleev was proved right, and why the initial order based on atomic weights was not always correct.			
Describe the steps in the development of the periodic table.			
1.2.3 Metals and non-metals			
Identify where metals and non-metals appear in the periodic table.			
State the type of ion metals form.			
State the type of ion non-metals form.			
Describe the physical and chemical properties of metals.			
Describe the physical and chemical properties of non-metals			
Explain how the atomic structure of metals and non-metals relates to their position in the periodic table.			
Explain how the reactions of elements are related to the arrangement of electrons in their atoms and therefore their atomic number.			
1.2.4 Group 0 (Noble Gases)			
Explain why the noble gases (group 0) are unreactive, in terms of their outer electrons.			
Describe the trend in boiling point going down group 0.			
Predict properties from trends down the group.			
1.2.5 Group 1 (Alkali Metals)			
Describe the electronic structure of the alkali metals (group 1) and explain how their properties depend on this.			
Describe the reactions (observations and products) of the first 3 alkali metals with oxygen.			
Describe the reactions (observations and products) of the first 3 alkali metals with chlorine.			
Describe the reactions (observations and products) of the first 3 alkali metals with water.			
Explain the trend in reactivity going down the group.			
Predict properties from trends down the group.			
1.2.6 Group 7 (Halogens)			
Describe the electronic structure of the halogens (group 7) and explain how their properties			

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depend on this.			
State the type of element the halogens are and describe what their molecules consist of.			
Describe the type of compounds formed when they react with metals			
Describe the type of compounds formed when they react with non-metals			
Explain the trend in reactivity going down the group.			
Explain displacement reactions involving halogens and solutions of their salts.			
Predict properties from trends down the group.			