

C h e m i s t r y – C h e m i c a l c h a n g e s - C h e c k l i s t

4.4.1 Reactivity of metals	Taught	Practiced	Mastered
<p>Define the following terms:</p> <ul style="list-style-type: none"> • oxidation • reduction. <p>Write word and balanced symbol equations for the reactions of metals with oxygen to produce metal oxides. Use these to identify where reduction and oxidation has taken place.</p>			
<p>Draw the atomic structure of metals and the ion formed. Use these to describe how the ion has been formed.</p> <p>Make links between the ability to form ions and the reactivity with water and acid.</p> <p>Grade 9: explain the trends in reactivity of Group 1 in terms of atomic structure.</p> <p>Describe what occurs in a displacement reaction, using suitable examples.</p> <p>Explain why displacement occurs.</p> <p>Compare the year of discovery of a metallic element with its position in the reactivity series. Link discoveries to new technology such as the invention of the battery.</p>			
<p>Describe how carbon is used to reduce metal oxides. Explain how this takes place in terms of movement of electrons.</p> <p>Identify which products have been oxidised in extraction examples. Explain how this takes place in terms of movement of electrons.</p>			
<p>Write balanced symbol equations/half equations for the displacement of metal oxides. Use these to identify which species has been oxidised or reduced. Give reasons for your answers.</p>			

4.4.2 Reactions of acids	Taught	Practiced	Mastered
Define the term neutralisation. Using common reactants, predict the products.			
Extended writing: describe how to make a pure, dry sample of a soluble salt. Define the terms: <ul style="list-style-type: none"> • soluble • insoluble. Explain what is meant by a soluble salt. Explain why reactants are often used in excess.			
Define the following terms: <ul style="list-style-type: none"> • acid • base • alkali • neutral. Recall the pH numbers for the following solutions: <ul style="list-style-type: none"> • acidic • alkaline • neutral. Write the symbol equation for the neutralisation of an acid and an alkali.			
Explain the meaning of the following terms: <ul style="list-style-type: none"> • dilute • concentrated • weak • strong. Explain why strong acids are completely ionised in aqueous solutions but a weak acid is only partially ionised. Recall examples of strong and weak acids. Describe neutrality in terms on hydrogen ion concentration. Describe relative acidity in terms of hydrogen ion concentration.			

4.4.3 Electrolysis	Taught	Practiced	Mastered
<p>Explain why solid ionic compounds cannot conduct electricity but ionic compounds can conduct electricity when melted or dissolved in water.</p> <p>Define the term electrolyte. Describe how an electric current can pass through an ionic compound.</p> <p>Explain what happens to positive and negative ions during electrolysis and how elements form from their ions.</p>			
<p>Calculate the atom economy for simple examples.</p> <p>Extended writing: write instructions to another student how to calculate the atom economy giving explained examples.</p>			
<p>Recall the reactivity series.</p> <p>Give reasons why some metals have to be extracted by electrolysis.</p> <p>Extended writing: describe how aluminium is extracted from its ore.</p> <p>Write balanced half equations for the reactions that occur at both electrodes.</p> <p>Extended writing: describe how reactive metal elements were discovered by electrolysis. Construct a timeline.</p>			
<p>Define the term aqueous.</p> <p>Extended writing: describe how an aqueous solution is electrolysed.</p> <p>Explain why the following atoms could be produced:</p> <ul style="list-style-type: none"> • hydrogen • oxygen. 			
<p>Explain thoroughly what happens at the following electrodes using suitable examples and half equations:</p> <ul style="list-style-type: none"> • cathode • anode. 			