

<i>Lesson</i>	<i>Summary of Content</i>	<i>Text book reference</i>	<i>Time</i>
1	Meet the elements: Describe what an element is and use specific examples in your definitions and diagrams. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 255.	pg 24-26	Dec
2	Compounds: Describe what a compound is and how they form. Describe the properties of compounds. Include labelled diagrams in your work. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 255.	pg 29-30	
3	Mixtures and separation: Describe what a mixture is and the properties of a mixture. Draw labelled diagrams of filtration (pg 37); evaporation and crystallisation (pg 38) and distillation (pg 40). Describe how each of these separation techniques work.	pg 34 pg 38 pg 40	
4	Required practical activity 6: Chromatography Write a plan or method on how to carry out paper chromatography (pg 35). Draw a labelled diagram of paper chromatography. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 256.	pg 35-36	
5	Atoms and sub-atomic particles: Draw and label a diagram of the nuclear model of the atom (pg 22). Copy the table on the bottom of pg 22. Describe and explain why the overall electrical charge of atoms is always neutral. Define what an ion is. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 255.	pg 22-23	
6	Arranging electrons: Describe how the electrons are arranged in the shells of atoms; include labelled diagrams in your work. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 256.	pg 44-45	Jan
7	History of the atomic model: Describe what the plum pudding model of the atom is; the nuclear model of the atom and the Bohr model of the atom. Draw a labelled diagram for each model. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 256.	Pg 42-43	
8	Isotopes: Describe what an isotope is and use a specific example in your description and a labelled diagram. Define what relative atomic mass is and write out the formula to show how to calculate it. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 255.	pg 27-28	
9	Atomic mass and relative formula mass: Describe how to calculate relative formula mass, make notes on the worked example on pg 104. Describe how to calculate percentage mass by copying out the formula and a worked example on pg 104. Answer the fact-recall and practice application questions in full sentences . Check your answers on pg 262.	pg 104-105	
10	Review of learning: Complete revision of the previous nine lessons by making mind maps; revision cards; revision poster. Use the checklist on pg 46-47 to identify the topics.	pg 22-45 pg 46-47	
11	Practice and application of learning: Complete specimen exam questions in full sentences. Check your answers on pg 256-257	pg 48-49	

12	Balancing equations: Describe how chemical word equations should be written and give an example. Describe chemical symbol equations should be written and give an example. Write out the method for balancing equations and read through the worked examples. Answer the fact-recall and practice application questions. Check your answers on pg 255.	pg 31-33	Feb	
13 and 14	Mendeleev's dream: Describe how elements were arranged in the early periodic table and state some of the problems that scientists came up against. Describe how Mendeleev's periodic table was different to the early periodic tables. State the things that Mendeleev did to make his periodic table make sense. Answer the fact-recall questions. Check your answers on pg 257. Read pages 52-53 and answer the fact-recall and practice application questions. Check your answers on pg 257. Describe the properties of the noble gases. Describe the trends down the group (pg 64). Answer the fact-recall and practice application questions. Check your answers on pg 258.	pg 50-51 pg 52-53 pg 64-65		
15	Metals, non-metals and noble gases: Describe where the metals and non-metals are found in the periodic table. Describe the electronic structure of metals and non-metals. Make a table of the similarities and differences of the physical properties of metals and non-metals. Answer the fact-recall questions. Check your answers on pg 257.	pg 54-55		
16	Ferocious metals (Group 1): Describe the properties of the alkali metals. Describe the trends of reactivity, melting point and relative mass down the group. Describe how the alkali metals react with water; include a drawing in your answer (pg 58). Answer the fact-recall and practice application questions. Check your answers on pg 257.	pg 56-60		
17	Ferocious non-metals (Group 7): Describe the properties of the halogens. Describe the trends of reactivity, melting point and relative mass down the group. Describe how the halogens react in displacement reactions. Answer the fact-recall and practice application questions. Check your answers on pg 258.	pg 61-63		
18	Metals and oxygen: Describe what oxidation is and include an equation in your description (pg 137). Describe how metal oxides react with acids (pg 130). Describe how you would make a soluble salt from an insoluble base; include a diagram in your answer (pg 132).	pg 137 pg 132		Mar
19	Metals and acids: Write a general equation for the reaction of metals and acids (pg 134). Describe how different metals react with acids, depending of their reactivity; include a drawing in your answer. Describe which salts are formed when metals react with different acids. Answer the fact-recall question and practice application questions 1-4. Check your answers on pg 265.	pg 134-136		
20	Displacement reactions: Describe what a displacement reaction is; include an equation in your description (bottom of pg 135 and pg 136). Answer the fact-recall and practice application questions. Check your answers on pg 265.	pg 135-136		
21	Review of learning: Complete revision of the previous eight	pg 50-65		

	lessons by making mind maps; revision cards; revision poster. Use the checklists on pg 66-67 and 148 to identify the topics.	pg 130-136 pg 148	
22	Practice and application of learning: Complete specimen exam questions in full sentences. Check your answers on pg 258 and 266.	pg 68-69 pg 150-151	
23	Extraction of metals: Describe how metals are extracted from their ores, using carbon; include an equation in your description. Copy the diagram of the reactivity series on pg 138 and describe how this can be used to show which metals can be extracted using carbon. Answer the fact-recall and practice application questions. Check your answers on pg 265.	pg 135-136	
24	Oxidation and reduction (HT): Describe what oxidation and reduction is in terms of electrons. Describe what a redox reaction is. Describe how displacement reaction can be classed as redox reactions; include equations in your description. Answer the fact-recall and practice application questions. Check your answers on pg 265-266.	pg 139-140	
25	Electrolysis-the basics: Describe what electrolysis is and the how it works; include a diagram in your description. Answer the fact-recall questions on pg 141. Check your answers on pg 266.	pg 141	
26	Electrolysis investigation: Describe how to carry out an investigation into electrolysis. Write a full experimental plan and include a labelled diagram in your work.	pg 146	Apr
27	Electrolysis consolidation and practice: Read through pages 141-142 and 145-146 and make key fact bullet point notes as you read. Answer the fact-recall and application questions on pg 143 and 147. Check your answers on pg 266.	pg 141-146	
28	Aluminum extraction: Describe the whole process of aluminium extraction using electrolysis; include a labelled diagram in your work. Answer the fact-recall questions on pg 144. Check your answers on pg 266.	pg 144	
29	Resources and sustainability: Describe what natural, renewable and finite resources are and give an example of each. Describe what sustainable develop is. Describe the ways in which chemistry can be made more sustainable. Higher tier: Describe what bioleaching, phytomining are. Answer the fact-recall and application questions on pg 221. Check your answers on pg 274.	pg 218-220	
30	Recycling: Describe what it means to reuse and recycle. Make a table to summarise the reasons why we should recycle. Describe how glass is recycled. Answer the fact-recall questions on pg 222. Check your answers on pg 274.	pg 218-220	
31	Review of learning: Complete revision of the previous eight lessons by making mind maps; revision cards; revision poster. Use the checklists on pg 149 and 230 to identify the topics.	pg 141-147 pg 218-222	
32	Practice and application of learning: Complete specimen exam questions 5.1-5.5 and 6.1-6.5 on pg 151 and 1.1-1.3 and 2.1 on pg 232 in full sentences. Check your answers on pg 266 and 274.	pg 151 pg 232	
33	Introduction to rates of reaction: Describe what rate of reaction is and the factors that affect it. Describe what collision theory is	pg 164-168	Apr and May

	and the ways in which the frequency and energy of collisions can be increased; include diagrams in your work.		
34	Collecting a gas over water: Describe the two ways in which you can collect gas produced during an experiment. Include diagrams in your work.	pg 236 pg 235 pg 170	
35	Calculating a rate of reaction: Write the formula for calculating the rate of a reaction (pg 168). Describe how graphs can be used to show and compare the rate of reactions (pg 171-172). Answer the application questions 1-4 on pg 174-175. Check your answers on pg 274. Higher tier: Tangents: Describe how tangents can be used to calculate a rate of reaction from a graph, include diagrams in your work. Answer the application question 5 on pg 175. Check your answers on pg 274.	pg 168 pg 171-172 pg 174-175	
36 and 37	Concentration and rate of reaction: Describe and explain how concentration or pressure (gases) affects rate; include a diagram in your work (pg 165). Write a full experimental plan to describe how you would investigate how the concentration of hydrochloric acid affects the rate of its reaction with magnesium metal. Describe the reaction between sodium thiosulphate and hydrochloric acid; include an equation in your work. Write a plan to investigate into how the concentration of either the acid or the sodium thiosulphate solution affects the rate of a chemical reaction (black cross method); include a diagram in your work. Answer the fact-recall and application questions on pg 177. Check your answers on pg 269.	pg 165 pg 176-177	
38	Surface area and rate of reaction: Describe and explain how the surface area of solids affects rate; include a diagram in your work (pg 165). Answer the application question on pg 166. Check your answers on pg 268. Plan an experiment to investigate how the different forms of calcium carbonate (marble chips, crushed marble chips and powder chalk) affect the rate of reaction with hydrochloric acid. Include a diagram of the apparatus in your work (see pg 169 for ideas).	pg 165 pg 169 pg 176-177	June
39 and 40	Temperature and rate of reaction: Describe and explain how the temperature of a reaction affects rate; include a diagram in your work (pg 165). Read through pg 176 and using either the reaction between magnesium metal and hydrochloric acid or sodium thiosulphate and hydrochloric acid as a guide; write a plan of a full experiment to investigate how changing temperature affects rate of reaction.	pg 165 pg 176-177	
41	Catalysts: Describe what a catalyst is and include a reaction profile diagram in your work. Describe and explain why enzymes can be described as catalysts. Write a plan for an experiment to investigate how changing the mass of the catalyst, manganese dioxide, affects rate of oxygen release from hydrogen peroxide, when the two are mixed. (See pg 169 or 170 for extra help.	pg 166-167	
42	Exothermic and endothermic reactions: Describe what energy transfer is. Describe and give an example of an exothermic and an endothermic reaction. Create a mind map or poster of the different uses of exothermic and endothermic reactions.	pg 152-153	
43	Energy changes practical: Plan an experiment to investigate the	pg 153-	

	temperature changes which take place when an acid is neutralised by an alkali; include a labelled diagram in your work. Answer the fact-recall questions on pg 154. Check your answers on pg 267.	154	
44	Activation energy and energy profiles: Describe what a reaction profile is. Draw reaction profiles for an exothermic and an endothermic reaction. Describe what activation energy is and label it on the energy profiles that you have drawn. Answer the fact-recall and application questions on pg 156. Check your answers on pg 267.	pg 155-155	July
45 and 46	Calculating energy changes in reactions: State the units of energy and describe the energy changes involved in bond breaking and bond breaking. Explain how the overall energy change of a reaction can be determined. Answer the fact-recall questions on pg 160. Check your answers on pg 267. Higher tier: Calculating bond energy changes: Write the formula for calculating energy change (green box on pg 158) Read and work through and answer the application questions on pg 160. Check your answers on pg 267.	pg 158-160	
47	Review of learning: Complete revision of the previous eight lessons by making mind maps; revision cards; revision poster. Use the checklists on pg 178 and pg 161 to identify the topics.	pg 178 pg 164-177	
48	Practice and application of learning: Complete specimen exam questions on pg 179-180. Check your answers on pg 269-270.	pg 179-180	
49	Reversible reactions and dynamic equilibrium: Describe what a reversible reaction is. Describe what equilibrium is. Describe how energy is transferred in reversible reactions; include a labelled drawing in your work. Answer the fact-recall and application questions on pg 183. Check your answers on pg 270.	pg 181-183	
50	Higher Tier: Le Chatelier's principle and changing conditions: Describe Le Chatelier's principle. Describe and explain how changing temperature, pressure and concentration. Answer the fact-recall and application questions on pg 185-186. Check your answers on pg 270.	pg 185-186	