

Brixham College: Year 11 CHEMISTRY

<i>Lesson</i>	<i>Summary of Content</i>	<i>Text book reference</i>	<i>Time</i>
1	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	Sept
2	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	
3	Forming ions: Describe what ions are. Explain why ions are formed. Describe and explain how ionic charge relates to the group number of the periodic table. Answer the fact-recall questions in full sentences. Check your answers on pg 259.	pg 70-71	
4	Ionic bonding: Describe what ionic binding is. Draw out examples of ionic bonding, using the dot and cross diagrams. Answer the fact-recall and practice application questions in full sentences. Check your answers on pg 259.	pg 72-74	
5	Ionic structures and properties: Describe the structure of ionic compounds. Make a table to summarise the properties of ionic compounds. Answer the fact-recall and practice application questions in full sentences, where possible. Check your answers on pg 259.	pg 75-77	
6	Covalent bonding: Describe what covalent bonding. Draw out and label the different ways in which covalent bonds can be represented. Answer the fact-recall and practice application questions in full sentences, where possible. Check your answers on pg 259-260.	pg 78-80	Oct
7	Small molecules: Describe what simple molecules are. Draw out and label the different examples of covalent molecules, using dot and cross diagrams. Describe the properties of simple molecules. Answer the fact-recall and practice application questions in full sentences, where possible. Check your answers on pg 260.	pg 81-84	
8	States of matter: Describe the different states of matter; include particle diagrams in your work. Copy and label the changing state diagram at the bottom of page 100. Describe the difference between atomic and bulk properties. Describe what thee different state symbols mean; include an equation in your work to illustrate your answer. Answer the fact-recall and practice application questions in full sentences, where possible on pg 99 and 100. Check your answers on pg 262. Higher Tier: Describe the limitations of the particle model.	pg 97-99 pg 100	
9	Practice and application of learning: Complete specimen exam questions 1-3 (pg 94-95) in full sentences. Check your answers on pg 261	pg 94-95	
10	Polymers and giant structures: Describe what a polymer is; include an example in your work. Describe the properties of polymers. Describe what giant covalent structures are. Describe the properties of giant covalent structures. Answer the fact-recall and practice application questions in full sentences, where possible. Check your answers on pg 260.	pg 85-86	

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11	Diamond and graphite: Make a fact sheet on diamond and graphite. Include diagrams on you fact sheet and describe and explain the properties of these giant structures. Answer questions 4.1 and 4.2 on pg 96, in full sentences. Check your answers on pg 260.	pg 87-88 pg 96	
12	Graphene and fullerenes: Make a fact sheet on graphene and fullerenes. Include diagrams on you fact sheet and describe and explain the properties and uses of these giant structures. Answer the fact-recall and practice application questions in full sentences, where possible. Check your answers on pg 260.	pg 88-89	Nov
13	Metals and alloys: Describe the bonding in metals; include a diagram in you answer. Describe and explain the properties of metals. Describe what alloys are and how they differ from pure metals. Answer the fact-recall questions in full sentences, where possible. Check your answers on pg 260.	pg 90-91	
14	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	
15	Electrolysis of aqueous solutions: Describe how it is possible to predict the products of electrolysis of aqueous solutions. Copy out each example; include half equations and diagrams in your work. Answer the fact-recall and application questions on pg 147. Check your answers on pg 266.	pg 145-146	
16	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	
17	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	
18	Conservation of mass: Describe what conservation of mass means. Describe the situations when mass seems to change in a reaction. Answer the fact-recall and practice application questions. Check your answers on pg 263.	pg 108-110	Dec
19	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	
20	Balancing equations using moles: Read and work through the examples to balance equations using reacting masses. Answer the practice application questions (pg 113). Check your answers on pg 263.	pg 111-113	
21	Review of learning: Complete revision of the previous twelve lessons by making mind maps; revision cards; revision poster. Use the checklist on pg 92-93, pg 102, pg 120-121 to identify the topics.	pg 70-91 pg 97-101 pg 141-147	
22	Practice and application of learning: Complete specimen exam questions in full sentences. Check your answers on pg 94-96, pg 121-122 and pg 150-151	pg 94-95 pg 121-122 pg 150-151	
23	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	

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24	Formula mass and moles: Describe how to calculate relative formula mass. Answer the practice application question 1a-d on pg 105. Describe what the Avogadro constant represents. Describe what a mole is. Higher Tier: Write the formula to calculate moles of a substance. Work through the examples of how to calculate moles and mass. Answer the practice application questions on page 107. Check your answers on pg 255.	pg 104-105 pg 106-107	
25	Limiting reagents: Higher tier: Describe the meaning of the terms, excess and limiting reagent. Read and work through the examples to calculate the mass of a product and a mass of a reactant from an equation. Answer the fact-recall and practice application questions in full sentences (pg 116-117). Check your answers on pg 264-265.	pg 116-117	Jan
26	Concentration: Describe what concentration is. Describe how to calculate concentration. Answer the fact-recall and practice application questions in full sentences (pg 119). Check your answers on pg 264. Higher tier: Strong, weak acids: Describe what acid dissociation is. Describe the difference between strong and weak acids; use examples in your answer. Describe the effect of acid strength on reactivity and pH. Describe what the concentration of an acid is and how it is different from the strength of an acid. Answer the fact-recall and practice application questions in full sentences (pg 129). Check your answers on pg 265.	pg 118-119 pg 127-129	
27	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	
28	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	
29	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	
30	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	
31	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	

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32	Required practical 1: Making salts 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 131-132	Feb
33	Energy changes practical: Plan an experiment to investigate the 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.	pg 153-154	
34	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	
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	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	
37	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	Mar
38	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	
39	Combustion of fuels: Describe the complete combustion of hydrocarbons; include equations in your answer. Answer the practice application questions in full sentences (pg 190). Check your answers on pg 271.	pg 189-190	
40	Separating crude oil: Describe what fractional distillation is; include a diagram in your answer. Answer the practice application questions in full sentences (pg 192). Check your answers on pg 265.	pg 191-192	
41	Cracking, alkenes and polymers: Describe what cracking is; include a diagram in your description. Describe and explain how cracking works. State what the products of cracking are; use a specific example to illustrate your answer. Answer the fact-recall and practice application questions in full sentences (pg 195). Check your answers on pg 271.	pg 194-195	

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42	<p>The composition and evolution of the atmosphere: Describe what the atmosphere is like today; include the percentages of the gases. Describe what the early atmosphere was like and how oceans formed. Describe how the carbon dioxide in the atmosphere decreased and oxygen in the atmosphere increased. These descriptions could be in the form of a story board or poster. Explain the evidence for the evolution of the atmosphere. Answer the fact-recall and practice application questions in full sentences (pg 208). Check your answers on pg 272.</p>	pg 206-208	
43	<p>Human activities, greenhouse gases and climate change: State what greenhouse gases are and explain how they cause the greenhouse effect in the Earth's atmosphere; include a diagram in your answer. Describe and explain how human activity contributes to global warming. Describe what climate change is and the consequences of climate change. Describe how the risks of climate change are assessed. Answer the fact-recall questions in full sentences (pg 211). Check your answers on pg 273.</p>	pg 209-211	Apr and May
44	<p>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.</p>	pg 218-220	
45	<p>Water and water treatment: Required practical 8: Water purification Describe the process of distillation; include a diagram in your work (pg 40). Describe how the separation technique of distillation works. Describe how you could test the distilled water (pg 227). State the different sources of waste water. Describe the different stages of water treatment and include a diagram in your work. Answer the fact-recall questions on pg 229. Check your answers on pg 274.</p>	pg 40 pg 227 pg 228-229	
46	<p>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. Describe the theory of chromatography. State the formula to calculate R_f values. Describe how to identify substances using chromatography. Answer the fact-recall and practice application questions in full sentences (pg 202). Check your answers on pg 272.</p>	pg 35-36 pg 200-202	
47	<p>Testing for gases: Make flash cards on how to test for hydrogen, oxygen, carbon dioxide and chlorine (use one card for each); include drawings on your cards. Answer the practice application questions in full sentences (pg 203). Check your answers on pg 272.</p>	pg 203	