**This Two-Year Scheme of Work for Years 7 and 8 is made up of selected lessons in Collins Key Stage 3 Science Books and Teacher Packs 1, 2 and 3. It is based on three science lessons per week (one each of Biology, Chemistry and Physics). Lessons can be used for 40-60 minute sessions.**

|  |  |  | **Collins Key Stage 3 Science** | | | |  |  |  |  |
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| **Year** | **Term** | **Week** | **Book** | **Chapter** | **Student Book spread number** | **Lesson title** | **Lesson objectives** | **Overarching (PoS) objectives** | **Lesson resources on Collins Key Stage 3 Science CD-ROM** | **Collins *Connect* resources** |
| Year 7 | Term 1 | 1 | **1** | **1 Cells – the building blocks of life** | 1.1.3 | Comparing plant and animal cells | Develop models to explain the differences between animal and plant cells; record evidence using a microscope; communicate ideas about cells effectively using scientific terminology. | Cells as the fundamental unit of living organisms, including how to observe and record cell structure using a light microscope  The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts  The similarities and differences between animal and plant cells | Worksheet 1.1.3a  Worksheet 1.1.3b  Practical sheet 1.1.3a  Practical sheet 1.1.3b  Technician’s notes 1.1.3 | Quick starter; Video: Common structures in animal and plant cells; Slideshow: Differences between animal and plant cells; Interactive activity: Animal or plant?; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 1 | **1** | **3 Mixing, dissolving and separating** | 1.3.2 | Working safely in a laboratory | Recognise and reduce risks when working in a laboratory; name and select appropriate equipment. |  | Worksheet 1.3.2 | Quick starter; Video: Scientists working in a laboratory; Interactive activity: Measuring, mixing or heating; The Naked Scientist: What causes my kettle to fur up? |
| Year 7 | Term 1 | 1 | **1** | **5 Forces and their effects** | 1.5.2 | Discovering forces | Recognise different examples of forces; list main types of force; represent forces using arrows. | Forces as pushes or pulls arising from the interaction between two objects  Using force arrows in diagrams | Worksheet 1.5.2 | Quick starter; Slideshow: Examples of forces and magnetism; Video: Felix Baumgartner's freefall from space; Interactive activity: Balanced or unbalanced?; The Naked Scientist: What does it take to put a man on the Moon? |
| Year 7 | Term 1 | 2 | **1** | **1 Cells – the building blocks of life** | 1.1.4 | Describing cells | Classify specialised cells as animal or plant cells; describe different specialised animal and plant cells; explain the structure and function of specialised cells using models. | The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts  The similarities and differences between animal and plant cells | Worksheet 1.1.4 | Quick starter; Interactive activity: Match the animal cells to their functions; Video: Specialised plant cells |
| Year 7 | Term 1 | 2 | **1** | **3 Mixing, dissolving and separating** | 1.3.4 | Recognising materials, substances and elements | Recognise the difference between materials, substances and elements; identify elements by their names and symbols; explain what is meant by a chemically pure substance. | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds  The concept of a pure substance | Worksheet 1.3.4 | Quick starter; Interactive activity: Order the elements from most to least abundant |
| Year 7 | Term 1 | 2 | **1** | **5 Forces and their effects** | 1.5.3 | Measuring forces | Measure forces using newtonmeters; use correct unit for force; explain difference between mass and weight. | Forces measured in newtons | Worksheet 1.5.3  Practical sheet 1.5.3 | Quick starter; Interactive activity: Forces definitions; Slideshow: How do we measure mass, and what is it? |
| Year 7 | Term 1 | 3 | **1** | **1 Cells – the building blocks of life** | 1.1.5 | Understanding unicellular organisms | Recognise different types of unicellular organisms; describe differences in unicellular organisms; compare and contrast the features of unicellular organisms. | The structural adaptations of some unicellular organisms | Worksheet 1.1.5 | Quick starter; Interactive activity: Prokaryotes and Eukaryotes ; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 3 | **1** | **3 Mixing, dissolving and separating** | 1.3.6 | Dissolving | Explain the terms solvent, solution, solute and soluble; identify factors that affect dissolving; explain the difference between a dilute solution and a concentrated solution. | Mixtures, including dissolving | Worksheet 1.3.6  Practical sheet 1.3.6  Technician’s notes 1.3.6 | Quick starter; Interactive activity: Sucrose solutions; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 3 | **1** | **5 Forces and their effects** | 1.5.5 | Exploring the effects of forces | Identify and describe the effects of forces of different sizes and directions; predict and explain the changes caused by forces; explain the concept of force pairs (action and reaction). | Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion | Worksheet 1.5.5  Practical sheet 1.5.5  Technician’s notes 1.5.5 | Quick starter; Interactive activity: True or false? |
| Year 7 | Term 1 | 4 | **1** | **1 Cells – the building blocks of life** | 1.1.6 | Understanding diffusion | Describe the process of diffusion and its relation to the cell; plan a fair test investigation to explore the factors affecting diffusion; explain how the different factors speed up or slow down diffusion. | The role of diffusion in the movement of materials in and between cells  Diffusion in liquids and gases driven by differences in concentration | Worksheet 1.1.6  Practical sheet 1.1.6a  Practical sheet 1.1.6b  Practical sheet 1.1.6c  Technician’s notes 1.1.6 | Quick starter; Interactive activity: How molecules of perfume move across a room; Slideshow: Understanding how factors affect the rate of diffusion; Interactive activity: Diffusion |
| Year 7 | Term 1 | 4 | **1** | **3 Mixing, dissolving and separating** | 1.3.7 | Separating mixtures | Recognise the differences between substances and use these to separate them. | Mixtures, including dissolving  Simple techniques for separating mixtures: filtration | Worksheet 1.3.7 | Quick starter; Video: Using size to separate mixtures: Panning for gold; Slideshow: Sieving for a reason; Interactive activity: Steps for separating a mixture of salt and sand |
| Year 7 | Term 1 | 4 | **1** | **5 Forces and their effects** | 1.5.6 | Understanding stretch and compression | Explain the relationship between applied force and the change of shape of an object; investigate forces involved in compressing and stretching materials; identify applications for compressible and stretchable materials. | Forces associated with deforming objects  Measurements of stretch or compression as force is changed | Worksheet 1.5.6  Practical sheet 1.5.6  Technician’s notes 1.5.6 | Quick starter; Interactive activity: Stretch and compress |
| Year 7 | Term 1 | 5 | **1** | **1 Cells – the building blocks of life** | 1.1.7 | Understanding organisation in multicellular organisms | Define the terms tissues, organs and organ systems; explain the organisational structure in multicellular organisms; compare the strengths and weaknesses of multicellular organisms and single-celled organisms. | Hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms | Worksheet 1.1.7 | Quick starter; Interactive activity: Organisation in multicellular organisms; Interactive activity: How did cells evolve?; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 5 | **1** | **3 Mixing, dissolving and separating** | 1.3.8 | Dissolving and evaporating | Separate a soluble substance from water; form crystals from solutions; explain solubility. | Mixtures, including dissolving  Simple techniques for separating mixtures: evaporation | Worksheet 1.3.8 | Quick starter; Video: Salt crystallizing under microscope; Interactive activity: Drag the quantity into the saturated solution |
| Year 7 | Term 1 | 5 | **1** | **5 Forces and their effects** | 1.5.7 | Investigating Hooke’s Law | Investigate the effects of applied forces on springs; generate data to produce a graph and analyse outcomes. | Forces associated with deforming objects; stretching and squashing – springs  Measurements of stretch or compression as force is changed  Force–extension linear relation; Hooke’s Law as a special case | Worksheet 1.5.7  Practical sheet 1.5.7  Technician’s notes 1.5.7 | Quick starter; Slideshow: An introduction to Robert Hooke; Interactive activity: Match forces to the masses; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 6 | **1** | **1 Cells – the building blocks of life** | 1.1.9 | Comparing flowering plants | Describe the structure and function of parts in the flowering plant; explain why different plants have such diverse structures; evaluate the differences between wind-pollinated and insect-pollinated plants. | Reproduction in plants, including flower structure, wind and insect pollination | Worksheet 1.1.9 | Quick starter; Interactive activity: Reproductive organs of flowers; Video: Attracting insects: bees collecting pollen |
| Year 7 | Term 1 | 6 | **1** | **3 Mixing, dissolving and separating** | 1.3.10 | Understanding distillation | Use distillation to separate substances; explain why distillation can purify substances. | Simple techniques for separating mixtures: distillation | Worksheet 1.3.10a  Worksheet 1.3.10b  Practical sheet 1.3.10  Technician’s notes 1.3.10 | Quick starter; Interactive activity: Order the steps for distillation; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 6 | **1** | **5 Forces and their effects** | 1.5.9 | Exploring the benefits of friction | Describe applications that make use of friction; design procedures for investigating the force of friction. | Rubbing and friction forces between surfaces | Worksheet 1.5.9 | Quick starter; Slideshow: Get a grip; Video: Situations where sliding is bad; Interactive activity: Friction |
| Year 7 | Term 1 | 7 | **1** | **1 Cells – the building blocks of life** | 1.1.10 | Knowing how pollination leads to fertilisation | Describe the processes of pollination and fertilisation; analyse and present data on the growth of pollen tubes; explain factors that affect the growth of pollen tubes. | Reproduction in plants, including flower structure, wind and insect pollination, fertilisation | Worksheet 1.1.10  Practical sheet 1.1.10a  Practical sheet 1.1.10b  Technician’s notes 1.1.10 | Quick starter ; Interactive activity: How the fertilisation of a plant takes place |
| Year 7 | Term 1 | 7 | **1** | **3 Mixing, dissolving and separating** | 1.3.12 | Finding out what air is made of | Describe the composition of air; separate gases from air. | Simple techniques for separating mixtures: distillation  The composition of the atmosphere | Worksheet 1.3.12 | Quick starter; Slideshow: Discovering the gases that make up air; Interactive activity: What is air made of?; Video: Ash cloud from Iceland volcano |
| Year 7 | Term 1 | 7 | **1** | **5 Forces and their effects** | 1.5.10 | Understanding air and water resistance | Link frictional forces between surfaces to ‘drag’ between objects in a fluid; discuss examples of frictional drag in air and in water; consider the effects of friction on sky divers. | Forces: pushing things out of the way; resistance to motion of air and water | Worksheet 1.5.10 | Quick starter; Slideshow: How about that: Galileo and his thought experiment; Interactive activity: Describe terminal velocity |
| Year 7 | Term 1 | 8 | **1** | **1 Cells – the building blocks of life** | 1.1.11 | Understanding the changes facing pollinators | Describe the role of insects in crop production, using data; explain why bee populations are declining; make suggestions for increasing insect populations and hence crop production. | The importance of plant reproduction through insect pollination in human food security | Worksheet 1.1.11 | Quick starter; Video: What causes hay fever?; Interactive activity: Problems for Bees; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 11 | 8 | **1** | **3 Mixing, dissolving and separating** | 1.3.13 | Exploring chromatography | Use chromatography to separate dyes. | Simple techniques for separating mixtures: chromatography  The identification of pure substances | Worksheet 1.3.13 | Quick starter; Interactive activity: Chromatography; Slideshow: Useful chromatography |
| Year 7 | Term 1 | 8 | **1** | **5 Forces and their effects** | 1.5.13 | Exploring forces and motion | Recognise that for an object to start moving there must be a force applied; describe the effects of balanced and unbalanced forces; explain the significance of balanced and unbalanced forces on a moving object. | Forces being needed to cause objects to stop or start moving, or to change their speed or direction  Balanced and unbalanced forces | Worksheet 1.5.13  Practical sheet 1.5.13 | Quick starter; Interactive activity: Match the descriptions about speed |
| Year 7 | Term 1 | 9 | **1** | **1 Cells – the building blocks of life** | 1.1.12 | Understanding how seeds are dispersed by the wind | Recognise the variety of different structures shown by different seeds; describe the need for plants to disperse their seed; plan an investigation into seed dispersal by wind. | Reproduction in plants, including seed and fruit formation and dispersal | Worksheet 1.1.12a  Worksheet 1.1.12b | Quick starter; Interactive activity: Seed dispersal; Video: A dandelion opens up and the seeds disperse |
| Year 7 | Term 1 | 9 | **1** | **3 Mixing, dissolving and separating** | 1.3.14 | Using chromatography | Use chromatography to identify unknown substances; draw conclusions from evidence. | Simple techniques for separating mixtures: chromatography | Worksheet 1.3.14  Practical sheet 1.3.14  Technician’s notes 1.3.14 | Quick starter; Video: Chromatography and King Richard III |
| Year 7 | Term 1 | 9 | **1** | **5 Forces and their effects** | 1.5.14 | Exploring how forces affect speed and direction | Recognise that the size of a force determines the effect; recognise that the direction of a force determines the effect; provide examples to illustrate where a force of precise strength and direction is needed. | Change depending on direction of force and its size | Worksheet 1.5.14 | Quick starter; Slideshow: May the force be with you; Video: The arrow and the apple; Interactive activity: Drag the forces into the correct group |
| Year 7 | Term 1 | 10 | **1** | **1 Cells – the building blocks of life** | 1.1.13 | Understanding how fruits disperse seeds | Describe how fruits are used in seed dispersal; compare evidence about seed dispersal by wind and by fruit formation; use data to evaluate different seed dispersal mechanisms. | Reproduction in plants, including seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms | Worksheet 1.1.13 | Quick starter |
| Year 7 | Term 1 | 10 | **1** | **3 Mixing, dissolving and separating** | 1.3.16 | Modelling mixtures and separation | Explain what happens to mass during dissolving; use a circle model to explain dissolving and separation. | Mixtures, including dissolving  Conservation of mass, changes of state and chemical reactions | Worksheet 1.3.16 | Quick starter; Slideshow: Dissolving: A simple model; Interactive activity: Modelling dissolving; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 10 | **1** | **5 Forces and their effects** | 1.5.15 | Understanding speed calculations | List the factors involved in defining speed; explain a simple method to measure speed; use the speed formula. | Change depending on direction of force and its size  Speed and the quantitative relationship between average speed, distance and time  (speed = distance ÷ time) | Worksheet 1.5.15  Practical sheet 1.5.15 | Quick starter; Slideshow: What is speed and how is it measured?; Interactive activity: Order the objects from fastest to slowest; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 11 | **1** | **1 Cells – the building blocks of life** | 1.1.14 | Understanding the male reproductive system | Describe the structure and function of different parts of the male reproductive system; compare plant and human male reproductive structures; summarise the strengths and weaknesses of the human and plant male reproductive systems. | Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems | Worksheet 1.1.14a  Worksheet 1.1.14b | Quick starter |
| Year 7 | Term 1 | 11 | **1** | **4 Elements, compounds and reactions** | 1.4.2 | Finding elements and building the Periodic Table | Identify where and how different elements were found; recognise differences between elements; recognise that the Periodic Table has changed over time. | Chemical symbols and formulas for elements and compounds | Worksheet 1.4.2 | Quick starter; Slideshow: When were elements discovered?; Interactive activity: Abundance by mass in the Earth’s crust; The Naked Scientist: What are atoms and elements? |
| Year 7 | Term 1 | 11 | **1** | **5 Forces and their effects** | 1.5.16 | Understanding turning forces | Describe the forces acting on a see-saw; understand that the forces turn about the fulcrum; explain how to balance different weights on a see-saw. | Moment as the turning effect of a force | Worksheet 1.5.16  Practical sheet 1.5.16  Technician’s notes 1.5.16 | Quick starter; Interactive activity: Turning forces; Video: Seesaw tricks and a 949 seesaw |
| Year 7 | Term 1 | 12 | **1** | **1 Cells – the building blocks of life** | 1.1.15 | Understanding the female reproductive system and fertility | Describe the structure and function of different parts of the female reproductive system; explain the process of fertilisation; explain problems of infertility and how they might be treated. | Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth | Worksheet 1.1.15a  Worksheet 1.1.15b | Quick starter; Interactive activity: The process of fertilisation in humans; Interactive activity: In vitro fertilisation; Video: IVF ethics; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 1 | 12 | **1** | **4 Elements, compounds and reactions** | 1.4.3 | Looking at the Periodic Table of elements | Navigate the Periodic Table and identify some of the elements; identify features of the Periodic Table and describe how it is organised; explain why the Periodic Table is useful. | The principles underpinning the Mendeleev Periodic Table  The Periodic Table: periods and groups; metals and non-metals | Worksheet 1.4.3a  Worksheet 1.4.3b  Practical sheet 1.4.3  Technician’s notes 1.4.3 | Quick starter; Interactive activity: Match elements to their chemical symbol |
| Year 7 | Term 1 | 12 | **1** | **5 Forces and their effects** | 1.5.17 | Discovering moments | State and use the law of moments; describe how turning forces can be increased; list some examples of levers used as force multipliers. | Moment as the turning effect of a force | Worksheet 1.5.17  Practical sheet 1.5.17  Technician’s notes 1.5.17 | Quick starter; Interactive activity: Order the size of the moments |
| Year 7 | Term2 | 13 | **1** | **1 Cells – the building blocks of life** | 1.1.16 | Learning about changes in puberty | Recognise changes in the male and female body during puberty; describe the process of menstruation; explain how some problems with menstruation occur. | Reproduction in humans (as an example of a mammal), including the menstrual cycle (without details of hormones) | Worksheet 1.1.16 | Quick starter; Interactive activity: What changes happen in puberty?; Slideshow: Infertility problems and solutions |
| Year 7 | Term2 | 13 | **1** | **4 Elements, compounds and reactions** | 1.4.4 | Understanding elements and atoms | Interpret chemical symbols; explain what is meant by ‘element’ and ‘atom’; work out the composition of different substances based on their names. | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds | Worksheet 1.4.4  Practical sheet 1.4.4  Technician’s notes 1.4.4 | Quick starter; Interactive activity: Match elements to their atomic number; Slideshow: Names, symbols, numbers and masses; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 13 | **1** | **5 Forces and their effects** | 1.5.18 | Understanding the application of moments | Link the law of moments to the design of cranes; explain why counterweights are needed by cranes; investigate the lifting capacity of a crane. | Moment as the turning effect of a force | Worksheet 1.5.18  Practical sheet 1.5.18  Technician’s notes 1.5.18 | Quick starter; Interactive activity: Counterweights; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 14 | **1** | **1 Cells – the building blocks of life** | 1.1.17 | Learning how a foetus develops | Recognise the process of growth; use data to show how the embryo grows during gestation; compare and contrast the pregnant uterus with normal uterus. | Reproduction in humans (as an example of a mammal), fertilisation, gestation and birth | Worksheet 1.1.17 | Quick starter; Interactive activity: Different stages of human development; Slideshow: The menstrual cycle |
| Year 7 | Term2 | 14 | **1** | **4 Elements, compounds and reactions** | 1.4.5 | Understanding metals | Recognise the properties and uses of metals; identify differences between metals. | The varying physical and chemical properties of different elements  The properties of metals and non-metals | Worksheet 1.4.5  Practical sheet 1.4.5  Technician’s notes 1.4.5 | Quick starter; Video; Interactive activity: Match each element to how it reacts with air and water |
| Year 7 | Term2 | 14 | **1** | **6 Energy transfers and sound** | 1.6.2 | Exploring energy transfers | Recognise what energy is and its unit; describe a range of energy transfers using simple diagrams; use a Sankey diagram as a model to represent simple energy changes. | Other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, burning fuels  Energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change | Worksheet 1.6.2 | Quick starter; Slideshow: Most of our energy comes from the Sun, but how?; Interactive activity: Energy transfers in a washing machine; Video: How does home insulation reduce energy use?; How do thunder and lightning work? |
| Year 7 | Term2 | 15 | **1** | **1 Cells – the building blocks of life** | 1.1.18 | Understanding factors affecting a developing foetus | Describe the effects of different factors on the developing foetus; evaluate the strength of data. | Reproduction in humans (as an example of a mammal), to include the effect of maternal lifestyle on the foetus through the placenta | Worksheet 1.1.18 | Quick starter; Slideshow: The effects of substances on the foetus; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 15 | **1** | **4 Elements, compounds and reactions** | 1.4.6 | Understanding non-metals | Identify uses of common non-metals; describe the properties of non-metals. | The varying physical and chemical properties of different elements  The properties of metals and non-metals | Worksheet 1.4.6  Practical sheet 1.4.6  Technician’s notes 1.4.6 | Quick starter; Slideshow: Allotropes of sulfur; Interactive activity: Drag the non-metals into the correct groups |
| Year 7 | Term2 | 15 | **1** | **6 Energy transfers** | 1.6.3 | Understanding potential energy and kinetic energy | Recognise energy transfers due to falling objects; describe factors affecting energy transfers related to falling objects; explain how energy is conserved when objects fall. | Other processes that involve energy transfer: changing motion, dropping an object | Worksheet 1.6.3 | Quick starter; Slideshow: How do roller coasters work?; Interactive activity: Energy true and false |
| Year 7 | Term2 | 16 | **1** | **2 Eating, drinking and breathing** | 22  1.2.2 | Exploring a healthy diet | Describe the components of a healthy diet; examine the importance of each component of a healthy diet; evaluate the quality of evidence contained in advertising about a healthy diet. | Content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed | Worksheet 1.2.2 | Quick starter  Slideshow: The seven food groups; Interactive activity: Drag the foods into the correct food groups;  The Naked Scientist: How does the digestive system work? |
| Year 7 | Term2 | 16 | **1** | **4 Elements, compounds and reactions** | 1.4.9 | Choosing elements for a purpose | Recognise the elements and their differences from physical data; use data and the properties of elements to choose suitable materials. | The varying physical and chemical properties of different elements | Worksheet 1.4.9 | Quick starter; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 16 | **1** | **6 Energy transfers** | 1.6.4 | Doing work | Recognise situations where work is done; describe the relationship work done = force × distance; apply the equation for work done to different situations. | Work done; simple machines give bigger force but at the expense of smaller movement (and vice versa): product of force and displacement unchanged | Worksheet 1.6.4 | Quick starter; Interactive activity: Order the work done from largest to smallest |
| Year 7 | Term2 | 17 | **1** | **2 Eating, drinking and breathing** | 1.2.4 | Comparing energy needs | Describe how we use energy from food; compare the energy requirements of people of different ages and lifestyles; analyse numerical data about energy contents of foods. | Calculations of energy requirements in a healthy daily diet  Comparing energy values of different foods (from labels) (kJ) | Worksheet 1.2.4 | Quick starter; Interactive activity: How much energy? ; Video: Sugary drinks |
| Year 7 | Term2 | 17 | **1** | **4 Elements, compounds and reactions** | 1.4.11 | Combining elements | Explain what is meant by a compound; recognise how compounds are formed and named; interpret the ratio of atoms and formula of compounds. | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds | Worksheet 1.4.11  Practical sheet 1.4.11  Technician’s notes 1.4.11 | Quick starter; Interactive activity: Chlorides, oxides or carbonates; Interactive activity: Match the compounds to the correct atom ratio |
| Year 7 | Term2 | 17 | **1** | **6 Energy transfers** | 1.6.6 | Understanding elastic potential energy | Describe different situations that use the energy stored in compressing and stretching elastic materials; describe how elastic potential energy in different materials can be compared; explain how elastic potential energy is transferred. | Other processes that involve energy transfer: stretching a spring.  Work done and energy changes on deformation Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy in elastic distortions | Worksheet 1.6.6  Practical sheet 1.6.6  Technician’s notes 1.6.6 | Quick starter; Interactive activity: Complete the sentences about elastic potential energy; Slideshow: Springs and clockwork; Video: The world’s oldest bungee jumper is 96!; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 18 | **1** | **2 Eating, drinking and breathing** | 1.2.5 | Exploring obesity and starvation | Describe the physical effects of eating too much and eating too little; explain the physical effects of obesity and starvation; compare how deaths from obesity and starvation have changed over time. | The consequences of imbalances in the diet including obesity, starvation and deficiency diseases | Worksheet 1.2.5 | Quick starter; Interactive activity: Starvation and obesity; Video: Eating disorders |
| Year 7 | Term2 | 18 | **1** | **4 Elements, compounds and reactions** | 1.4.12 | Using models to understand chemistry | Use a simple model to show the differences between atoms and molecules; use models to represent compounds. | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds | Worksheet 1.4.12  Practical sheet 1.4.12 | Quick starter; Interactive activity: Match the oxide to its coloured circle model |
| Year 7 | Term2 | 18 | **1** | **6 Energy transfers** | 1.6.7 | Knowing the difference between heat and temperature | Recognise what we mean by temperature; describe how temperature differences lead to energy transfer; explain the difference between heat and temperature. | Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with temperatures | Worksheet 1.6.7  Practical sheet 1.6.7  Technician’s notes 1.6.7 | Quick starter; Interactive activity: Order the temperatures from highest to lowest |
| Year 7 | Term2 | 19 | **1** | **2 Eating, drinking and breathing** | 1.2.6 | Understanding deficiency diseases | Identify the causes and effects of some deficiencies in the diet; suggest which foods could prevent well-known deficiencies; plan ways of communicating ideas about preventing deficiency diseases | The consequences of imbalances in the diet including obesity, starvation and deficiency diseases | Worksheet 1.2.6 | Quick starter; Slideshow: Vitamin and mineral deficiencies; Interactive activity: Deficiency diseases; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 19 | **1** | **4 Elements, compounds and reactions** | 1.4.13 | Understanding what happens when an element burns | Make observations during chemical reactions; write word equations to demonstrate chemical changes; explain chemical changes using a model. | Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulae and using equations  Combustion | Worksheet 1.4.13  Practical sheet 1.4.13  Technician’s notes 1.4.13 | Quick starter; Interactive activity: Elements and compounds |
| Year 7 | Term2 | 19 | **1** | **6 Energy transfers** | 1.6.8 | Thinking about fuels | Identify examples of fuels and their uses; describe combustion of fuels and recognise that different fuels transfer different amounts of energy; describe the advantages and disadvantages of using different fuels. | Fuels and energy resources; other processes that involve energy transfer: burning fuels, metabolism of food | Worksheet 1.6.8  Technician’s notes 1.6.8 | Quick starter; Slideshow: How fuels got their energy; Interactive activity: Gas, liquid or solid; Video: Green cars |
| Year 7 | Term2 | 20 | **1** | **2 Eating, drinking and breathing** | 1.2.7 | Understanding the human digestive system | Identify the organs of the human digestive system; explain the role of digestion; analyse links between digestion and the circulatory system. | The tissues and organs of the digestive system, including adaptations to function | Worksheet 1.2.7 | Quick starter; Interactive activity: Foods' journey through the body; Video: Rotating model of the human digestion system |
| Year 7 | Term2 | 20 | **1** | **4 Elements, compounds and reactions** | 1.4.14 | Observing how elements react in different ways | Draw conclusions to explain observations; use symbols and models to describe a chemical reaction. | The varying physical and chemical properties of different elements  Representing chemical reactions using formulae and using equations  The chemical properties of metal and non-metal oxides with respect to acidity | Worksheet 1.4.14a  Worksheet 1.4.14b  Practical sheet 1.4.14  Technician’s notes 1.4.14 | Quick starter; Video; Interactive activity: Reversible or irreversible; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 20 | **1** | **6 Energy transfers** | 1.6.9 | Investigating fuels | Describe how to measure the energy of fuels; collect evidence to investigate the energy of different fuels; present data using appropriate graphs and evaluate the quality of evidence collected. | Fuels and energy resources; other processes that involve energy transfer: burning fuels  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy in chemical compositions | Worksheet 1.6.9  Practical sheet 1.6.9  Technician’s notes 1.6.9 | Quick starter; Interactive activity: Match the fuels to their correct uses; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 21 | **1** | **2 Eating, drinking and breathing** | 1.2.8 | Investigating the start of digestion | Describe what is meant by chemical and physical digestion; explain how teeth and saliva are adapted to digestion; suggest how results can demonstrate that digestion begins in the mouth. | The tissues and organs of the digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts) | Worksheet 1.2.8 | Quick starter; Slideshow: Types of teeth; Interactive activity: Match the type of teeth to their function |
| Year 7 | Term2 | 21 | **1** | **4 Elements, compounds and reactions** | 1.4.16 | Understanding oxidation | Describe oxidation; recognise the effects of oxidation; use data to support conclusions | Representing chemical reactions using formulae and using equations  Oxidation | Worksheet 1.4.16  Practical sheet 1.4.16a  Practical sheet 1.4.16b  Technician’s notes 1.4.16 | Quick starter; Interactive activity: Most to least reactive |
| Year 7 | Term2 | 21 | **1** | **6 Energy transfers** | 1.6.12 | Describing sound | Describe how the pitch of a sound wave can be changed; apply the terms frequency, wavelength and amplitude to different waveforms. | Sound produced by vibrations of objects, in loudspeakers; detected by their effect on microphone diaphragm and the ear drum  Frequencies of sound waves, measured in hertz (Hz) | Worksheet 1.6.12  Technician’s notes 1.6.12 | Quick starter; Slideshow: Tuning up an orchestra: What does 'in tune' mean?; Interactive activity: Match the 'sound' term to the correct definition |
| Year 7 | Term2 | 22 | **1** | **2 Eating, drinking and breathing** | 1.2.9 | Understanding the roles of the digestive system | Describe the roles of the oesophagus, stomach, intestine and pancreas in digestion; explain how the structure of each of the organs is adapted to its function. | The tissues and organs of the digestive system, including adaptations to function | Worksheet 1.2.9  Technician’s notes 1.2.9 | Quick starter; Slideshow: Movement of food through the digestive system; Interactive activity: Drag the adaptation into the correct organ; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 22 | **1** | **4 Elements, compounds and reactions** | 1.4.17 | Investigating carbonates | Describe the composition and uses of carbonate compounds; recognise and explain thermal decomposition reactions; identify carbon dioxide. | Conservation of mass changes of state and chemical reactions  Combustion**,** thermal decomposition,oxidation  Chemical symbols and formulae for elements and compounds  Thermal decomposition | Worksheet 1.4.17  Practical sheet 1.4.17a  Practical sheet 1.4.17b  Technician’s notes 1.4.17 | Quick starter; Slideshow: Modelling the thermal decomposition of carbonates |
| Year 7 | Term2 | 22 | **1** | **6 Energy transfers** | 1.6.13 | Measuring the speed of sound | Describe what an echo is; describe how the speed of sound can be measured using echoes; calculate distances using ideas about echoes. | Echoes; the speed of sound in air | Worksheet 1.6.13  Practical sheet 1.6.13 | Quick starter; Interactive activity: Sound' statements; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 23 | **1** | **2 Eating, drinking and breathing** | 1.2.11 | Introducing enzymes | Describe role of different enzymes in digestion; analyse a model of the digestive system; explain observations of a practical activity to explore the role of enzymes. | How the digestive system digests food (enzymes simply as biological catalysts) | Worksheet 1.2.11  Practical sheet 1.2.11  Technician’s notes 1.2.11 | Quick starter; Slideshow: The role of enzymes in digestion; Interactive activity: Digestive enzymes |
| Year 7 | Term2 | 23 | **1** | **4 Elements, compounds and reactions** | 1.4.18 | Explaining changes | Observe and explain mass changes; use scientific terms and simple models to explain chemical processes. | Differences between atoms, elements and compounds  Chemical symbols and formulae for elements and compounds  Conservation of mass changes of state and chemical reactions  Chemical reactions as the rearrangement of atoms  Thermal decomposition, oxidation | Worksheet 1.4.18 | Quick starter; Interactive activity: Oxidation, thermal decomposition or dissolving; Interactive activity: Match the missing mass to the chemical equation; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 23 | **1** | **6 Energy transfers** | 1.6.14 | Understanding how sounds travels through materials | Recognise how the speed of sound changes in different substances; use the particle model to explain why there are differences when sound travels through solids, liquids and gases. | Sound needs a medium to travel; the speed of sound in air, in water, in solids | Worksheet 1.6.14  Practical sheet 1.6.14  Technician’s notes 1.6.14 | Quick starter; Interactive activity: Speed of sound; Slideshow: Mach numbers and air density |
| Year 7 | Term2 | 24 | **1** | **2 Eating, drinking and breathing** | 1.2.12 | Recognising the role of bacteria | Describe the role of bacteria in our digestive system; explain how the natural flora of bacteria can be disturbed; analyse data about the effects of antibiotics on gut bacteria. | The importance of bacteria in the human digestive system | Worksheet 1.2.12 | Quick starter; Interactive activity: Bacteria in the gut; Video: Fighting the superbugs; Ice-cream splat: Key vocabulary game |
| Year 7 | Term2 | 24 | **2** | **3 Explaining physical changes** | 2.3.2 | Using particles to explain matter | Recognise differences between solids, liquids and gases  Describe solids, liquids and gases in terms of the particle model | The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure | Worksheet 2.3.2; Practical sheet 2.3.2 (the last page copied onto card); Technician’s notes 2.3.2 | Quick starter; Interactive activity: Drag the solid, liquid or gas to the correct group when at 25°C and at atmospheric pressure; Interactive activity: Place the elements in order, from strongest to weakest forces between the elements |
| Year 7 | Term2 | 24 | **1** | **6 Energy transfers** | 1.6.15 | Learning about the reflection and absorption of sound | Recognise which materials affect the quality of sound; analyse the effects of different materials on sound waves; use ideas about energy transfer to explain how soundproofing works. | Echoes, reflection and absorption of sound | Worksheet 1.6.15  Practical sheet 1.6.15  Technician’s notes 1.6.15 | Quick starter; Interactive activity: Good absorbers of sound? |
| Year 7 | Term 3 | 25 | **1** | **2 Eating, drinking and breathing** | 1.2.13 | Understanding how we breathe | Describe the mechanism of breathing in and out; evaluate a model of breathing; calculate changes in pressure and explain how these help us breathe. | The mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases | Worksheet 1.2.13  Technician’s notes 1.2.13 | Quick starter; Slideshow: How do you breathe in and out?; Interactive activity: Breathing in and out; Interactive activity: A bell jar model to demonstrate breathing |
| Year 7 | Term 3 | 25 | **2** | **3 Explaining physical changes** | 2.3.3 | Understanding solids | Describe solids, liquids and gases in terms of the particle model  Describe the properties of solids  Relate the properties and behaviour of solids to the particle model | The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure | Worksheet 2.3.3; Practical sheet 2.3.3 (last page copied onto card); Technician’s notes 2.3.3 | Quick starter; Slideshow: Explaining properties of gases, liquids and solids |
| Year 7 | Term 3 | 25 | **1** | **6 Energy transfers** | 1.6.16 | Hearing sounds | Describe the structure and function of different parts of the ear; explain how the ear is able to hear and detect sounds. | Sound produced by vibrations of objects, detected by their effects on microphone diaphragm and the ear drum  Waves transferring information for conversion to electrical signals by microphone | Worksheet 1.6.16  Practical sheet 1.6.16  Technician’s notes 1.6.16 | Quick starter; Interactive activity: The passage of sound through the ear |
| Year 7 | Term 3 | 26 | **1** | **2 Eating, drinking and breathing** | 1.2.14 | Measuring breathing | Describe what is meant by lung volume and identify some simple methods to measure it; identify independent, dependent and control variables in a lung-volume investigation; interpret and evaluate data linked to lung volume. | The mechanism of breathing to move air in and out of the lungs, including simple measurements of lung volume | Worksheet 1.2.14  Technician’s notes 1.2.14  Practical sheet 1.2.14 | Quick starter; Interactive activity: A method you can use to measure lung volume |
| Year 7 | Term 3 | 26 | **2** | **3 Explaining physical changes** | 2.3.4 | Exploring Brownian motion | Describe how theories develop  Describe and explain Brownian motion in terms of particles | Brownian motion in gases | Worksheet 2.3.4; Practical sheet 2.3.4; Technician’s notes 2.3.4 | Quick starter; Interactive activity: Re-order the statements about the movement of a drop of red dye in water |
| Year 7 | Term 3 | 26 | **1** | **6 Energy transfers** | 1.6.18 | Finding out about sounds we cannot hear | Recognise what is meant by ultrasound and infrasound; describe some applications for ultrasound and infrasound; explain how some applications work. | Auditory range of humans and animals  Pressure waves transferring energy; use for cleaning and physiotherapy by ultrasound | Worksheet 1.6.18 | Quick starter; Interactive activity: Ultrasound; Video: Using ultrasound to examine a pregnant woman; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 3 | 27 | **1** | **2 Eating, drinking and breathing** | 1.2.15 | Evaluating gas exchange in humans | Describe the features of the human gas exchange system; explain how the features enable gases to be exchanged; evaluate how well adapted the human gas exchange system is to its function. | The structure and functions of the gas exchange system in humans, including adaptations to function | Worksheet 1.2.15 | Quick starter ; Interactive activity: How oxygen gets into the bloodstream; Video: Our gas exchange system |
| Year 7 | Term 3 | 27 | **2** | **3 Explaining physical changes** | 2.3.5 | Understanding liquids and gases | Describe solids, liquids and gases in terms of the particle model  Compare different properties of liquids and gases  Relate the properties and behaviour of liquids and gases to the particle model | The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure | Worksheet 2.3.5; Practical sheet 2.3.5; Technician’s notes 2.3.5 | Quick starter; Interactive activity: Place the fluids in order of most to least viscous at room temperature; Slideshow: Volume and compression; How much air is in a scuba tank?; Hangman: Key vocabulary game |
| Year 7 | Term 3 | 27 | **2** | **5 Exploring contact and non-contact forces** | 2.5.2 | Exploring magnets | Explain magnetic attraction and repulsion  Apply the concept of poles and laws of attraction and repulsion  Predict the effects of arrangements of magnetic poles | Non-contact forces: forces between magnets  Magnetic poles, attraction and repulsion | Worksheet 2.5.2; Practical sheet 2.5.2; Technician’s notes 2.5.2 | Quick starter; Slideshow: Magnetic levitation: A look at the use of magnetic repulsion and attraction in the operation of Maglev trains; Interactive activity: Drag the statements about magnets into the correct true or false groups |
| Year 7 | Term 3 | 28 | **1** | **2 Eating, drinking and breathing** | 1.2.16 | Investigating diffusion | Explain how diffusion makes breathing possible; observe the effects of diffusion; apply diffusion to our breathing system and ask questions to develop understanding. | The structure and functions of the gas exchange system in humans, including adaptations to function  Diffusion in liquids and gases driven by differences in concentration  Diffusion in terms of the particle model | Worksheet 1.2.16  Technician’s notes 1.2.16 | Quick starter; Interactive activity: Diffusion: Match the term to its meaning; Slideshow: Diffusion: An explanation |
| Year 7 | Term 3 | 28 | **2** | **3 Explaining physical changes** | 2.3.6 | Changing state | Recognise changes of state as being reversible changes  Use scientific terminology to describe changes of state  Explain changes of state using the particle model and ideas of energy transfer | Changes of state in terms of the particle model | Worksheet 2.3.6; Practical sheet 2.3.6; Technician’s notes 2.3.6 | Quick starter; Interactive activity: Drag the examples of change in state to the correct group – melting, condensing or sublimation; Video |
| Year 7 | Term 3 | 28 | **2** | **5 Exploring contact and non-contact forces** | 2.5.3 | Understanding magnetic fields | Describe magnetic fields  Explore the field around a magnet  Explain the shape, size and direction of magnetic fields | Magnetic poles, attraction and repulsion  Magnetic fields by plotting with compass, representation by field lines  Earth’s magnetism | Worksheet 2.5.3; Practical sheet 2.5.3; Technician’s notes 2.5.3 | Quick starter; Interactive activity: Complete the sentences about magnetic fields |
| Year 7 | Term 3 | 29 | **1** | **2 Eating, drinking and breathing** | 1.2.17 | Exploring the effects of disease and lifestyle | Describe the physical effects of disease and lifestyle on the breathing system; explain the physical effects of disease and lifestyle on the breathing system; describe how our understanding of the effects of smoking has changed over time. | The impact of exercise, asthma and smoking on the human gas exchange system | Worksheet 1.2.17  Technician’s notes 1.2.17 | Quick starter; Interactive activity: The symptoms caused by smoking and asthma; Video: Hospital patients smoking; Ice-cream splat: Key vocabulary game |
| Year 7 | Term 3 | 29 | **2** | **3 Explaining physical changes** | 2.3.7 | Understanding evaporation | Investigate factors affecting evaporation  Explain the differences between boiling and evaporation using the particle model | Changes of state in terms of the particle model  Energy changes on changes of state (qualitative) | Worksheet 2.3.7; Practical sheet 2.3.7; Technician’s notes 2.3.7 | Quick starter; Interactive activity: Drag the items to the correct group – boiling point less or greater than water; Slideshow: Factors affecting evaporation: Why does nail varnish remover dry more quickly than water? |
| Year 7 | Term 3 | 29 | **2** | **5 Exploring contact and non-contact forces** | 2.5.4 | Investigating static charge | Recognise the effects of static charge  Explain how static charge can be generated  Use evidence to develop ideas about static charge | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects | Worksheet 2.5.4; Practical sheet 2.5.4; Technician’s notes 2.5.4 | Quick starter; Interactive activity: Drag the materials to classify them as conductors or insulators |
| Year 7 | Term 3 | 30 | **2** | **1 Getting the energy your body needs** | 2.1.2 | Exploring the human skeleton | Identify bones of the human skeleton  Explain why we have different shapes and sizes of bones  Communicate effectively to investigate the structure and function of bones | The structure and functions of the human skeleton, to include support, protection, movement and making blood cells | Worksheet 2.1.2 | Quick starter; Interactive activity: drag the bones to the correct part of the body; Slideshow: An introduction to the human skeleton, its evolution and uniqueness |
| Year 7 | Term 3 | 30 | **2** | **3 Explaining physical changes** | 2.3.8 | Exploring thermal expansion | Identify how heat affects the arrangement and movement of particles  Use the particle model to explain the effects of heat on expansion | Changes with temperature in motion and spacing of particles | Worksheet 2.3.8; Practical sheet 2.3.8; Technician’s notes 2.3.8 | Quick starter; Video |
| Year 7 | Term 3 | 30 | **2** | **5 Exploring contact and non-contact forces** | 2.5.5 | Explaining static charge | Explain static charge in terms of electron transfer  Apply this explanation to various examples | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects | Worksheet 2.5.5; Practical sheet 2.5.5;Technician’s notes 2.5.5 | Quick starter; Slideshow: Atoms and ions: How electron transfer between atoms forms ions, which assemble into alternating lattices due to electrostatic attractions; Interactive activity: Arrange the sentences on static charge into the correct order; Hangman: Key vocabulary game |
| Year 7 | Term 3 | 31 | **2** | **1 Getting the energy your body needs** | 2.1.3 | Analysing the skeleton | Describe the roles of the skeleton  Explain the evidence for each of the roles of the skeleton  Estimate height using bone measurement calculations and suggest reasons for differences between people | The structure and functions of the human skeleton, to include support, protection, movement and making blood cells | Worksheet 2.1.3; Practical sheet 2.1.3; Technician’s notes 2.1.3 | Quick starter; Interactive activity: drag the functions to the correct bone(s); Video |
| Year 7 | Term 3 | 31 | **2** | **3 Explaining physical changes** | 2.3.11 | Explaining density of solids and liquids | Use the particle model to explain density differences between solids and liquids  Use the particle model to explain anomalies between ice and water | The differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice–water transition  Similarities and differences, including density differences, between solids, liquids and gases | Worksheet 2.3.11; Technician’s notes 2.3.11 | Quick starter; Slideshow: What is density?; Interactive activity: Drag the items to the correct group – density less or greater than water? |
| Year 7 | Term 3 | 31 | **2** | **5 Exploring contact and non-contact forces** | 2.5.6 | Understanding electric fields | Explain static electricity in terms of fields  Explain how charged objects affect other objects | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects  The idea of electric field, forces acting across the space between objects not in contact | Worksheet 2.5.6; Technician’s notes 2.5.6 | Quick starter; Interactive activity: Drag the sentences into the correct order, to explain why a statically charged balloon sticks to a wall |
| Year 7 | Term 3 | 32 | **2** | **1 Getting the energy your body needs** | 2.1.4 | Understanding the role of skeletal joints | Describe the roles of tendons, ligaments, joints and muscles  Compare different joints within the human skeleton  Collaborate effectively to interpret how we use joints | Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles | Worksheet 2.1.4; Practical sheet 2.1.4; Technician’s notes 2.1.4 | Quick starter; Interactive activity: Drag the example of joints to the correct group; Slideshow: Introduction to the joints of the thumb, a new born baby and the pelvis; Hangman: Key vocabulary game |
| Year 7 | Term 3 | 32 | **2** | **3 Explaining physical changes** | 2.3.12 | Explaining the density of gases | Use the particle model to explain differences in the density of gases  Evaluate a method of measuring density | The differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice–water transition  Similarities and differences, including density differences, between solids, liquids and gases | Worksheet 2.3.12a; Worksheet 2.3.12b; Practical sheet 2.3.12; Technician’s notes 2.3.12 | Quick starter; Interactive activity: Place the gases in order, from highest to lowest density at standard room temperature; Video |
| Year 7 | Term 3 | 32 | **2** | **5 Exploring contact and non-contact forces** | 2.5.7 | Applying what we know about electrostatics | Apply an understanding of static electricity to various situations  Explain how static electricity can be useful and can be dangerous | Non-contact forces: forces due to static electricity  Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects  The idea of electric field, forces acting across the space between objects not in contact | Worksheet 2.5.7 | Quick starter; Slideshow: Antistatic devices: Problems (as opposed to applications) of electrostatic attraction, and practical solutions to such problems; Interactive activity: Drag the sentences into the correct order, to explain electrostatic paint spraying; Video |
| Year 7 | Term 3 | 33 | **2** | **1 Getting the energy your body needs** | 2.1.7 | Examining interacting muscles | Describe antagonistic muscles and give examples  Explain how antagonistic muscles bring about movement  Evaluate a model of antagonistic muscles | The structure and functions of the human skeleton, to include support, protection, movement and making blood cells  Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles | Worksheet 2.1.7; Practical sheet 2.1.7 (second page copied onto card); Technician’s notes 2.1.7 | Quick starter; Interactive activity: Match the muscles that work together in pairs |
| Year 7 | Term 3 | 33 | **2** | **3 Explaining physical changes** | 2.3.13 | Explaining concentration and pressure | Describe what is meant by concentration and pressure.  Use the particle model to explain differences in concentration and pressure | The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure | Worksheet 2.3.13; Practical sheet 2.3.13; Technician’s notes 2.3.13 | Quick starter; Slideshow: Working out concentration: A fizzy drink example |
| Year 7 | Term 3 | 33 | **2** | **5 Exploring contact and non-contact forces** | 2.5.8 | Exploring gravity on Earth | Explain the effects of gravity  Compare gravity to other non-contact forces  Use the concept of a gravitational field  Apply ideas about gravity on Earth to other places | Non-contact forces: gravity forces acting at a distance on Earth and in space | Worksheet 2.5.8; Practical sheet 2.5.8 | Quick starter; Slideshow: Weightlessness: Creating zero-gravity/weightlessness for astronaut training using a parabolic flight path; Interactive activity; Link the statement about gravitational fields with its correct description; Interactive activity: Are the statements about space travel true or false? |
| Year 7 | Term 3 | 34 | **2** | **1 Getting the energy your body needs** | 2.1.10 | Understanding how our muscles get energy | Recall the equation for respiration and describe what it shows  Explain the importance of respiration  Apply what we know about respiration | Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life  The word equation for aerobic respiration | Worksheet 2.1.10; Practical sheet 2.1.10; Technician’s notes 2.1.10 | Quick starter; Interactive activity: Match the words that are associated with proteins or carbohydrates; Slideshow: A comparison of the two essential life processes – photosynthesis and respiration |
| Year 7 | Term 3 | 34 | **2** | **3 Explaining physical changes** | 2.3.14 | Exploring diffusion | Use the particle model to explain observations involving diffusion | Diffusion in liquids and gases driven by differences in concentration  Diffusion in terms of the particle model | Worksheet 2.3.14; Practical sheet 2.3.14; Technician’s notes 2.3.14 | Quick starter; Slideshow: Observing diffusion with bromine gas; Interactive activity: Drag the items to the correct group – speeds up or slows down diffusion of particles; Hangman: Key vocabulary game |
| Year 7 | Term 3 | 34 | **2** | **5 Exploring contact and non-contact forces** | 2.5.11 | Exploring pressure on a solid surface | Explain how pressure can be applied on a solid surface  Describe some effects of varying pressure | Pressure measured by ratio of force over area – acting normal to any surface | Worksheet 2.5.11a (copied onto card); Worksheet 2.5.11b | Quick starter; Slideshow: Pressure, ice and snow: Effects of increasing and decreasing pressure on ice and snow. Applications to winter activities; Interactive activity: Drag the descriptions which represent high or low pressure; Video |
| Year 7 | Term 3 | 35 | **2** | **1 Getting the energy your body needs** | 2.1.11 | Investigating respiration | Recall that respiration takes place in plants and animals  Describe some experimental evidence for respiration  Consider the quality of evidence for respiration | Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life  The word equation for aerobic respiration | Cards from Worksheet 2.1.10 (as used in the previous lesson); Worksheet 2.1.11; Practical sheets 2.1.11a–d; Technician’s notes 2.1.11 | Quick starter; Interactive activity: Drag the respiration and photosynthesis phrases to the correct boxes |
| Year 7 | Term 3 | 35 | **2** | **3 Explaining physical changes** | 2.3.15 | Conserving mass | Use the particle model to explain the Law of Conservation of Mass | Conservation of mass  Changes of state  Conservation of material and mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving | Worksheet 2.3.15; Practical sheet 2.3.15a; Practical sheet 2.3.15b; Technician’s notes 2.3.15 | Quick starter; Interactive activity: Which of the statements about chemical reactions are true, and which are false? |
| Year 7 | Term 3 | 35 | **2** | **5 Exploring contact and non-contact forces** | 2.5.12 | Calculating pressure | Identify the factors that determine the size of pressure on a solid  Calculate the size of pressure exerted | Pressure measured by ratio of force over area – acting normal to any surface | Worksheet 2.5.12; Practical sheet 2.5.12; Technician’s notes 2.5.12 | Quick starter; Interactive activity: Order the pressures, from highest to lowest |
| Year 7 | Term 3 | 36 | **2** | **1 Getting the energy your body needs** | 2.1.14 | Exploring respiration in sport | Describe what is meant by anaerobic respiration  Explain why some sports involve more aerobic or more anaerobic respiration  Explain what is meant by oxygen debt | Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life | Worksheet 2.1.14 | Quick starter; Interactive activity: Match the sport to the main type of respiration that occurs; Interactive activity: Place into the correct order to describe how the body obtains and stores glucose; Video |
| Year 7 | Term 3 | 36 | **2** | **3 Explaining physical changes** | 2.3.17 | Explaining the properties of mixtures | Use the particle model to explain the differences between physical and chemical changes  Use the particle model to explain the properties of mixtures | Mixtures, including dissolving  The difference between chemical and physical changes  The properties of different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure | Worksheet 2.3.17; Practical sheet 2.3.17; Technician’s notes 2.3.17 | Quick starter; Slideshow: Changes that are easily reversed and changes that are not easily reversed; Interactive activity: Drag the change into the correct group – physical or chemical change? Interactive activity: Match the terms about mixtures and changing states to their correct definition; Video |
| Year 8 | Term 1 | 37 | **2** | **1 Getting the energy your body needs** | 2.1.15 | Understanding anaerobic respiration | Recall that microbes carry out anaerobic respiration  Describe some evidence to show that anaerobic respiration produces carbon dioxide  Construct a method to show what is produced in anaerobic respiration | The process of anaerobic respiration in humans and micro-organisms, including fermentation, and the word equation for anaerobic respiration | Worksheet 2.1.15; Practical sheet 2.1.15; Technician’s notes 2.1.15 | Quick starter |
| Year 8 | Term 1 | 37 | **2** | **4 Explaining chemical changes** | 2.4.2 | Exploring acids | Recognise acids used in everyday life  Describe what all acids have in common  Evaluate the hazards that acids pose | Defining acids and alkalis | Worksheet 2.4.2 | Quick starter; Interactive activity: Match the foods to the main acid(s) they contain; Interactive activity: Match the hazard to the symbol; Slideshow: What do acids have in common?; Video |
| Year 8 | Term 1 | 37 | **2** | **5 Exploring contact and non-contact forces** | 2.5.13 | Exploring pressure in a liquid | Describe how pressure in a liquid alters with depth  Explain pressure increases in relation to particles and gravity | Pressure in liquids, increasing with depth; upthrust effects, floating and sinking | Worksheet 2.5.13; Technician’s notes 2.5.13 | Quick starter; Interactive activity: Complete the sentences about pressure in liquids |
| Year 8 | Term 1 | 38 | **2** | **1 Getting the energy your body needs** | 2.1.16 | Investigating fermentation | Describe some applications of fermentation  Identify dependent, independent and control variables in an investigation  Analyse data and identify next steps | The process of anaerobic respiration in humans and micro-organisms, including fermentation, and the word equation for anaerobic respiration | Worksheet 2.1.16; Practical sheet 2.1.16; Technician’s notes 2.1.16 | Quick starter; Slideshow: A look at how humans use yeast cells; Interactive activity: Match the products which are made by fermentation with the microbe involved; Interactive activity: Drag the phrase to the correct box – does it speed up reactions, slow them down, or both?; Video |
| Year 8 | Term 1 | 38 | **2** | **4 Explaining chemical changes** | 2.4.3 | Exploring alkalis | Recognise alkalis used in everyday life  Describe what all alkalis have in common  Evaluate the hazards that alkalis pose | Defining acids and alkalis | Worksheet 2.4.3 | Quick starter; Interactive activity: Drag the products to the correct group: acidic or alkaline?; Slideshow: What do alkalis have in common? |
| Year 8 | Term 1 | 38 | **2** | **5 Exploring contact and non-contact forces** | 2.5.14 | Explaining floating and sinking | Explain why some objects float and others sink  Relate floating and sinking to density, displacement and upthrust  Explain the implications of these ideas | Pressure in liquids, increasing with depth; upthrust effects, floating and sinking | Worksheet 2.5.14; Practical sheet 2.5.14; Technician’s notes 2.5.14 | Quick starter; Slideshow: Balloons: Hot-air, hydrogen and helium balloons – to emphasise that buoyancy isn’t limited to water; Interactive activity: Define the key terms about floating and sinking; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 39 | **2** | **2 Looking at plant and ecosystems** | 2.2.2 | Understanding the importance of plants | Identify the importance of plants to life on Earth  Use evidence to explain that plants do not use soil to grow  Evaluate secondary data to start to explain how plants make food | The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store, and to maintain levels of oxygen and carbon dioxide in the atmosphere | Worksheet 2.2.2; Practical sheet 2.2.2; Technician’s notes 2.2.2 | Quick starter; Interactive activity: Sort trees into the products they are used for; Slideshow: Looking at the discovery of photosynthesis; Video |
| Year 8 | Term 1 | 39 | **2** | **4 Explaining chemical changes** | 2.4.4 | Using indicators | Use indicators to identify acids and alkalis  Analyse data from different indicators  Compare the effectiveness of different indicators | The pH scale for measuring acidity/alkalinity; and indicators | Worksheet 2.4.4; Practical sheet 2.4.4; Technician’s notes 2.4.4 | Quick starter; Slideshow: What are indicators? A look at different types of indicator; Interactive activity: Drag the acids to the correct group – strong or weak |
| Year 8 | Term 1 | 39 | **2** | **5 Exploring contact and non-contact forces** | 2.5.15 | Exploring gas pressure | Explore how the pressure in a gas varies with height  Explain the implications of this changing pressure  Give examples of how pressure affects our lives | Atmospheric pressure; decreases with increase of height as weight of air above decreases with height | Worksheet 2.5.15; Technician’s notes 2.5.15 | Quick starter; Interactive activity: Drag the descriptions which represent high or low atmospheric pressure; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 40 | **2** | **2 Looking at plant and ecosystems** | 2.2.3 | Exploring how plants make food | Identify the reactants and products of photosynthesis  Plan and predict the results of investigations  Evaluate the risks of a procedure | The reactants in, and products of, photosynthesis, and a word summary for photosynthesis  Plants making carbohydrates in their leaves by photosynthesis | Worksheet 2.2.3; Practical sheet 2.2.2; Practical sheet 2.2.3; Technician’s notes 2.2.3 | Quick starter; Interactive activity: Rearrange the steps in a method to explain how to test a leaf for the presence of starch |
| Year 8 | Term 1 | 40 | **2** | **4 Explaining chemical changes** | 2.4.5 | Using universal indicator | Describe what the pH scale measures  Measure and record pH values  Identify the advantages of universal indicator | The pH scale for measuring acidity/alkalinity; and indicators | Worksheet 2.4.5; Practical sheet 2.4.5; Technician’s notes 2.4.5 | Quick starter; Interactive activity: Match the colour given from universal indicator paper to the correct product; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 40 | **2** | **6 Magnetism and electricity** | 2.6.3 | Exploring magnetic materials | Investigate magnetism in materials  Explain magnetism using the domain theory | Magnetic poles, attraction and repulsion | Worksheet 2.6.3; Practical sheet 2.6.3; Technician’s notes 2.6.3 | Quick starter; Interactive activity: Classify the statements into those which can magnetise or demagnetise a magnetic material |
| Year 8 | Term 1 | 41 | **2** | **2 Looking at plant and ecosystems** | 2.2.4 | Looking at leaves | Relate the size of a leaf to the availability of light  Relate the function of the leaf to its structure and the types of cell  Evaluate the structure of a cell related to its function | The adaptations of leaves for photosynthesis | Worksheet 2.2.4; Practical sheet 2.2.4; Technician’s notes 2.2.4 | Quick starter; Slideshow: A detailed look at the different components of a leaf; Interactive activity: Match the adaptations of the leaf to its function; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 41 | **2** | **4 Explaining chemical changes** | 2.4.6 | Exploring neutralisation | Describe examples of neutralisation  Use indicators to identify chemical reactions  Explain colour changes in terms of pH and neutralisation | Defining acids and alkalis in terms of neutralisation reactions  The pH scale for measuring acidity/alkalinity; and indicators | Worksheet 2.4.6; Practical sheet 2.4.6; Technician’s notes 2.4.6 | Quick starter; Interactive activity: Match the everyday neutralisation reactions together; Video |
| Year 8 | Term 1 | 41 | **2** | **6 Magnetism and electricity** | 2.6.5 | Describing the Earth’s magnetic field | Explain evidence for the Earth’s magnetic field  Explain the impact the Earth’s magnetic field has on our planet | Earth’s magnetism, compass and navigation | Worksheet 2.6.5 | Quick starter; Interactive activity: Complete the sentences about the Earth’s magnetic field; Slideshow: Solar wind: The effects on the atmosphere (aurora) and electrical storms |
| Year 8 | Term 1 | 42 | **2** | **2 Looking at plant and ecosystems** | 2.2.5 | Exploring the role of stomata | Describe how stomata control gas exchange  Explain how gas exchange occurs in leaves  Analyse how stomata density is affected by different conditions | The adaptations of leaves for photosynthesis  The role of leaf stomata in gas exchange in plants | Worksheet 2.2.5a; Worksheet 2.2.5b (second page copied onto card); Practical sheet 2.2.5a; Practical sheet 2.2.5b; Technician’s notes 2.2.5 | Quick starter; Interactive activity: Which of the sentences about stomata are true, and which are false? |
| Year 8 | Term 1 | 42 | **2** | **4 Explaining chemical changes** | 2.4.7 | Explaining neutralisation | Recall the equation for a neutralisation reaction  Explain how water is made during a neutralisation reaction  Apply a model to explain neutralisation | Defining acids and alkalis in terms of neutralisation reactions  Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulas and using equations  Reactions of acids with alkalis to produce a salt plus water | Worksheet 2.4.7 | Quick starter; Interactive activity: Drag the chemicals to the correct group – product or reactant; Slideshow: A model for neutralisation |
| Year 8 | Term 1 | 42 | **2** | **6 Magnetism and electricity** | 2.6.6 | Investigating electromagnetism | Describe what an electromagnet is  Investigate the factors affecting the strength of electromagnets | The magnetic effect of a current, electromagnets | Worksheet 2.6.6; Practical sheet 2.6.6; Technician’s notes 2.6.6 | Quick starter; Interactive activity: Classify the statements into those which will increase, or decrease, the strength of an electromagnet; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 43 | **2** | **2 Looking at plant and ecosystems** | 2.2.6 | Investigating photosynthesis | Identify the factors that can affect photosynthesis  Predict the results of the investigations  Interpret secondary data about photosynthesis | The reactants in, and products of, photosynthesis, and a word summary for photosynthesis | Worksheet 2.2.6a; Worksheet 2.2.6b; Practical sheet 2.2.6a; Practical sheet 2.2.6b; Technician’s notes 2.2.6 | Quick starter; Interactive activity: Complete the sentences about photosynthesis |
| Year 8 | Term 1 | 43 | **2** | **4 Explaining chemical changes** | 2.4.8 | Understanding salts | Name examples of salts  Describe the uses of common salts  Predict the reactants used in and the salts made by different neutralisation reactions | Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulas and using equations  Reactions of acids with alkalis to produce a salt plus water | Worksheet 2.4.8 | Quick starter; Interactive activity: Match the salts to their uses |
| Year 8 | Term 1 | 43 | **2** | **6 Magnetism and electricity** | 2.6.8 | Exploring D.C. motors | Describe the magnetic effect of a current and how this is applied to D.C. motors | Other processes that involve energy transfer: completing an electrical circuit  The magnetic effect of a current, D.C. motors (principles only) | Worksheet 2.6.8; Practical sheet 2.6.8; Technician’s notes 2.6.8 | Quick starter; Slideshow: Motors large and small: Robots, trains and toothbrushes; Interactive activity: Classify the statements into those which will increase, or decrease the forces produced by an electric motor; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 44 | **2** | **2 Looking at plant and ecosystems** | 2.2.7 | Exploring the movement of water and minerals in plants | Identify how water and minerals move through a plant  Explain how water and minerals move through a plant  Evaluate the cell structures that allow the movement of water and minerals through a plant | Plants gain mineral nutrients and water from the soil via their roots | Worksheet 2.2.7a, Worksheet 2.2.7b; Technician’s notes 2.2.7 | Quick starter; Interactive activity: Rearrange the sentences to describe the movement of water through a plant |
| Year 8 | Term 1 | 44 | **2** | **4 Explaining chemical changes** | 2.4.9 | Exploring the reactions of acids with metals | Describe the reaction between acids and metals  Explain the reaction between acids and metals  Compare the reactivity of different metals | Reactions of acids with metals to produce a salt plus hydrogen | Worksheet 2.4.9; Practical sheet 2.4.9; Technician’s notes 2.4.9 | Quick starter; Interactive activity: Drag the metal to the correct group, depending on how it reacts with acid |
| Year 8 | Term 1 | 44 | **2** | **6 Magnetism and electricity** | 2.6.10 | Investigating batteries | Describe the link between chemical energy and electricity.  Investigate how fruit batteries work | Other processes that involve energy transfer: completing an electrical circuit | Worksheet 2.6.10; Technician’s notes 2.6.10 | Quick starter; Slideshow: Inside batteries: The similarities and differences between types of cell; Interactive activity: Complete the sentences about batteries; Video |
| Year 8 | Term 1 | 45 | **2** | **2 Looking at plant and ecosystems** | 2.2.11 | Understanding food webs | Describe how food webs are made up of a number of food chains  Make predictions about factors affecting plant and animal populations  Analyse and evaluate changes in a food web | The interdependence of organisms in an ecosystem, including food webs | Worksheet 2.2.11a; Worksheet 2.2.11b copied on to card and cut up; Worksheet (teacher) 2.2.11c; Worksheet (teacher) 2.2.11d | Quick starter; Interactive activity: Organise organisms into a food chain |
| Year 8 | Term 1 | 45 | **2** | **4 Explaining chemical changes** | 2.4.10 | Exploring the reactions of acids with carbonates | Describe the reaction between acids and carbonates  Explain the reaction between acids and carbonates  Write word equations for the reactions between acids and carbonates | Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulas and using equations | Worksheet 2.4.10; Practical sheet 2.4.10; Technician’s notes 2.4.10 | Quick starter; Slideshow: Summarising the reactions of acids with carbonates; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 45 | **2** | **6 Magnetism and electricity** | 2.6.11 | Describing electric circuits | Describe and draw circuit diagrams  Explain what is meant by current  Explain how materials allow current to flow | Other processes that involve energy transfer: completing an electrical circuit  Electric current, measured in amperes, in circuits | Worksheet 2.6.11 (the second page printed onto card); Practical sheet 2.6.11; Technician’s notes 2.6.11 | Quick starter; Interactive activity: Match the statements about electric current |
| Year 8 | Term 1 | 46 | **2** | **2 Looking at plant and ecosystems** | 2.2.12 | Exploring the importance of insects | Describe the impact of low pollination on fruit production  Explain why artificial pollination is used for some crops  Evaluate the risks of monoculture on world food security | The interdependence of organisms in an ecosystem, including insect-pollinated crops  The importance of plant reproduction through insect pollination in human food security | Worksheet 2.2.12; Practical sheet 2.2.12; Technician’s notes 2.2.12 | Quick starter; Slideshow: A description of how bees pollinate plants and how honey is made; Interactive activity: Define the conditions required for enhancing bee populations; Video |
| Year 8 | Term 1 | 46 | **2** | **4 Explaining chemical changes** | 2.4.14 | Exploring combustion | Explain the terms fuel and combustion  Recall what is needed for combustion  Analyse the fire triangle and apply it to putting out fires  Identify fuels used in different applications | Combustion  Fuels and energy resources | Worksheet 2.4.14; Technician’s sheet 2.4.14 | Quick starter; Interactive activity: Match the method of putting out a fire to what it removes from the fire triangle; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 46 | **2** | **6 Magnetism and electricity** | 2.6.12 | Understanding energy in circuits | Describe what the voltage does in a circuit  Explain voltage using different analogies | Other processes that involve energy transfer: completing an electrical circuit  Electric current, measured in amperes, in circuits  Potential difference, measured in volts, battery and bulb ratings | Worksheet 2.6.12; Technician’s notes 2.6.12 | Quick starter; Interactive activity: Select the statements which describe current or voltage in an electric circuit; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 47 | **2** | **2 Looking at plant and ecosystems** | 2.2.13 | Looking at other examples of interdependence | Describe examples of the interdependence of organisms  Explain how organisms help other organisms to survive  Explain ideas about habitat destruction | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials | Worksheet 2.2.13a; Worksheet 2.2.13b copied on to card and cut up | Quick starter; Slideshow: Some examples of interdependence; Interactive activity: Match the key interdependence terms to their definition; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 47 | **2** | **4 Explaining chemical changes** | 2.4.16 | Exploring the effects of burning | * Summarise combustion using an equation * Compare complete and incomplete combustion   Explain what is meant by the conservation of mass | Combustion  Chemical reactions as the rearrangement of atoms  Representing chemical reactions using formulas and using equations  The production of carbon dioxide by human activity | Worksheet 2.4.16 (with the second page copied onto card); Practical sheet 2.4.16; Technician’s notes 2.4.16 | Quick starter; Interactive activity: Drag the substances to the correct group – hydrocarbon or not |
| Year 8 | Term 1 | 47 | **2** | **6 Magnetism and electricity** | 2.6.13 | Explaining resistance | Explain what resistance is and how it affects the circuit  Investigate and identify the relationship between voltage and current  Explain factors affecting resistance | Potential difference, measured in volts, battery and bulb ratings  Resistance, measured in ohms, as the ratio of potential difference (p.d.) to current | Worksheet 2.6.13; Practical sheet 2.6.13; Technician’s notes 2.6.13 | Quick starter; Slideshow: Measuring electricity: A look at multimeters and measuring V, I and R; Interactive activity: Complete the sentences about resistance in an electric circuit |
| Year 8 | Term 1 | 48 | **2** | **2 Looking at plant and ecosystems** | 2.2.14 | Understanding interactions in the environment | Describe some effects of human activity on the environment  Explain why a range of species is endangered  Analyse and evaluate secondary data and recommend solutions for species survival | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials | Worksheet 2.2.14 | Quick starter; Slideshow: A look at some British species which are endangered; Interactive activity: Order the level of risk scientists assign to a species, from most to least threatened; Video |
| Year 8 | Term 1 | 48 | **2** | **4 Explaining chemical changes** | 2.4.17 | Understanding acid rain | Describe how combustion can cause acid rain  Describe the effects of acid rain  Explain the effects of acid rain | Combustion  The composition of the atmosphere | Worksheet 2.4.17 | Quick starter; Slideshow: How does burning affect rain?; Interactive activity: Re-order the process of acid rain formation from sulfur dioxide; Hangman: Key vocabulary game |
| Year 8 | Term 1 | 48 | **2** | **6 Magnetism and electricity** | 2.6.16 | Describing series and parallel circuits | Understand how voltage and current vary in a series circuit  Understand how voltage and current vary in a parallel circuit | Series and parallel circuits, currents add where branches meet and current as flow of charge | Worksheet 2.6.16; Technician’s notes 2.6.16 | Quick starter; Interactive activity: Choose the statements which best describe series circuits, and those which best describe parallel circuit; Slideshow: Splitters and multi-sockets: The dangers of overloading; Video |
| Year 8 | Term 2 | 49 | **2** | **2 Looking at plant and ecosystems** | 2.2.15 | Learning about ecological balance | Describe ways in which organisms affect their environment  Explain why prey populations affect predator populations  Evaluate a model of predator–prey populations and explain the importance of predators | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials | Worksheet 2.2.15a; Worksheet 2.2.15b | Quick starter; Slideshow: A look at the predator-prey relationship between a Canadian lynx and a Snowshoe hare; Interactive activity: Sort the statements into those which refer to predators and those which refer to prey organisms |
| Year 8 | Term 2 | 49 | **3** | **3 Obtaining useful materials** | 3.3.2 | Obtaining metals from ores | Recognise how abundant common ores are in the Earth  Explain how ores are extracted from the Earth | Earth as a source of limited resources | Worksheet 3.3.2 | Quick starter; interactive activity; video, interactive activity |
| Year 8 | Term 2 | 49 | **2** | **6 Magnetism and electricity** | 2.6.17 | Comparing series and parallel circuits | Investigate and explain current and voltage in series and parallel circuits  Explain the circuits in our homes | Electric current, measured in amperes, in circuits  Series and parallel circuits, currents add where branches meet and current as flow of charge  Potential difference, measured in volts, battery and bulb ratings | Worksheet 2.6.17; Practical sheet 2.6.17; Technician’s notes 2.6.17 | Quick starter; Interactive activity: Order the circuits from the one with the highest current, to the one with the lowest |
| Year 8 | Term 2 | 50 | **2** | **2 Looking at plant and ecosystems** | 2.2.16 | Understanding the effects of toxins in the environment | Describe how toxins pass along the food chain  Explain how toxins enter and accumulate in food chains  Evaluate the advantages and disadvantages of using pesticides | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials | Worksheet 2.2.16 | Quick starter; Interactive activity: Match the farming chemical to its use; Slideshow: A look at bioaccumulation of mercury |
| Year 8 | Term 2 | 50 | **3** | **3 Obtaining useful materials** | 3.3.3 | Understanding reactivity | Use evidence to identify the reactivity series of metals  Represent reactions using formulas and equations | The order of metals and carbon in the reactivity series  Representing chemical reactions using formulas and using equations  Thermal decomposition | Worksheet 3.3.3; Practical sheet 3.3.3; Technician’s notes 3.3.3 | Quick starter; interactive activity; slideshow |
| Year 8 | Term 2 | 50 | **2** | **6 Magnetism and electricity** | 2.6.18 | Applying circuits | Describe how circuits are arranged in common appliances | Series and parallel circuits, currents add where branches meet and current as flow of charge | Worksheet 2.6.18, the second page copied onto card | Quick starter; Interactive activity: Complete the sentence about series and parallel circuits; Hangman: Key vocabulary game |
| Year 8 | Term 2 | 51 | **2** | **2 Looking at plant and ecosystems** | 2.2.17 | Exploring how organisms co-exist | Describe the role of niches  Explain the concept of resource partitioning  Analyse and evaluate the role of variation in enabling organisms to co-exist | How organisms affect, and are affected by, their environment, including the accumulation of toxic materials | Worksheet 2.2.17; Practical sheet 2.2.17; Technician’s notes 2.2.17 | Quick starter; Interactive activity: Define four key ecological terms; Hangman: Key vocabulary game |
| Year 8 | Term 2 | 51 | **3** | **3 Obtaining useful materials** | 3.3.4 | Making use of displacement reactions | Represent and explain displacement reactions using formulas and equations  Make inferences about reactivity from displacement reactions | The order of metals and carbon in the reactivity series  Representing chemical reactions using formulas and using equations  Displacement reactions  Conservation of mass changes of state and chemical reactions | Worksheet 3.3.4; Practical sheet 3.3.4; Technician’s notes 3.3.4 | Quick starter; interactive activity |
| Year 8 | Term 2 | 51 | **3** | **5 Motion on Earth and in space** | 3.5.2 | Describing journeys with distance–time graphs | Gather relevant data to describe a journey  Use the conventions of a distance–time graph  Display the data on a distance–time graph | The representation of a journey on a distance–time graph | Worksheet 3.5.2; Practical sheet 3.5.2; Technician’s notes 3.5.2 | Quick starter; Slideshow |
| Year 8 | Term 2 | 52 | **3** | **1 Variation for survival** | 3.1.2 | Exploring differences | Identify differences between different species  Explain the importance of diversity | Differences between species  The importance of maintaining biodiversity | Worksheet 3.1.2a; 3.1.2b | Quick starter; slideshows, video |
| Year 8 | Term 2 | 52 | **3** | **3 Obtaining useful materials** | 3.3.6 | Extracting copper, lead and zinc | Explain how copper, lead and zinc are extracted from their ores  Calculate the yield of the extraction process  Describe the environmental impacts of metal extraction | The use of carbon in obtaining metals from metal oxides  Representing chemical reactions using formulas and using equations  Earth as a source of limited resources and the efficacy of recycling | Worksheet 3.3.6; Practical sheet 3.3.6; Technician’s notes 3.3.6 | Quick starter; interactive activity |
| Year 8 | Term 2 | 52 | **3** | **5 Motion on Earth and in space** | 3.5.3 | Exploring journeys on distance–time graphs | Interpret distance–time graphs to learn about the journeys represented  Relate distance–time graphs to different situations and describe what they show | The representation of a journey on a distance-time graph  Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time) | Worksheet 3.5.3; Practical sheet 3.5.3; Technician’s notes 3.5.3 | Quick starter; video; interactive activity |
| Year 8 | Term 2 | 53 | **3** | **1 Variation for survival** | 3.1.3 | Looking more closely at variation | Explain the difference between continuous and discontinuous variation  Investigate variation within a species  Evaluate the importance of variation in organisms | The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation | Worksheet 3.1.3 | Quick starter;  Interactive activity:  Drag the statement to  the correct correlation |
| Year 8 | Term 2 | 53 | **3** | **3 Obtaining useful materials** | 3.8.9 | Understanding exothermic reactions | Describe examples of exothermic reactions  Explain the energy changes taking place during an exothermic reaction | Internal energy stored in materials  Exothermic chemical reactions (qualitative)  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with chemical compositions | Worksheet 3.3.9;  Practical sheet 3.3.9;  Technician's notes 3.3.9 | Quick starter;  Interactive activity:  Reorder the  sentences to  describe what  happens when  substances react |
| Year 8 | Term 2 | 53 | **3** | **5 Motion on Earth and in space** | 3.5.4 | Understanding relative motion | Describe the motion of objects in relation to each other  Explain the concept of relative motion  Apply the concept of relative motion to various situations | Relative motion: trains and cars passing one another | Worksheet 3.5.4; Practical sheet 3.5.4; Technician’s notes 3.5.4 | Quick starter interactive activity |
| Year 8 | Term 2 | 54 | **3** | **1 Variation for survival** | 3.1.4 | Exploring the causes of variation | Identify some features of organisms that are inherited and some that are determined by their environment  Understand that offspring from the same parents may show considerable variation  Evaluate the importance of genetic and environmental variation to the survival of the organism | Heredity as the process by which genetic information is transmitted from one generation to the next | Worksheet 3.1.4;  Practical sheet 3.1.4;  Technician's notes 3.1.4 | Quick starter;  Slideshow: The  causes of variation: A look at genetic and  environmental  factors; Interactive  activity: Drag the  characteristics to the  correct group -  caused by genetic  factors,  environmental  factors, or both; Video |
| Year 8 | Term 2 | 54 | **3** | **3 Obtaining useful materials** | 3.3.10 | Comparing endothermic and exothermic reactions | Describe examples of endothermic reactions  Compare the energy changes during exothermic and endothermic reactions | Exothermic and endothermic chemical reactions (qualitative)  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with chemical compositions | Worksheet 3.3.10;  Practical sheet 3.3.10;  Technician's notes 3.3.10 | Quick starter;  Interactive activity:  Drag the statements  to the correct group - exothermic or  endothermic change |
| Year 8 | Term 2 | 54 | **3** | **5 Motion on Earth and in space** | 3.5.5 | Analysing equilibrium | Analyse situations to identify the various forces that are acting  Explore static situations in which objects are held in equilibrium and the nature of the forces involved | Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface  Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces | Worksheet 3.5.5; Practical sheet 3.5.5; Technician’s notes 3.5.5 | Quick starter; video; interactive activity |
| Year 8 | Term 2 | 55 | **3** | **1 Variation for survival** | 3.1.6 | Finding out how organisms survive | Describe how variation causes competition for resources, and drives natural selection  Explain the theories of Lamarck, Wallace and Darwin  Evaluate the importance of Darwin’s work | The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection | Worksheet 3.1.6;  Practical sheet 3.1.6 | Quick starter;  Interactive activity:  Reorder the  sentences to describe  the process of  evolution by natural  selection; Slideshow:  How life on Earth  evolved: A look at  Charles Darwin's  theory of evolution;  Hangman: Key  vocabulary game |
| Year 8 | Term 2 | 55 | **3** | **3 Obtaining useful materials** | 3.3.11 | Explaining the use of catalysts | Describe what a catalyst is  Explain how catalysts work | What catalysts do | Worksheet 3.3.11;  Practical sheet 3.3.11;  Technician's notes 3.3.11 | Quick starter;  Slideshow: Catalysis  of hydrogen peroxide  decomposition – a  method to compare  catalytic  effectiveness;  Interactive activity:  Match the catalyst to  its use |
| Year 8 | Term 2 | 55 | **3** | **5 Motion on Earth and in space** | 3.5.6 | Exploring motion and equilibrium | Explore dynamic situations which may involve equilibrium  Apply ideas about equilibrium to a situation in which an object is moving | Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface  Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces  Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) | Worksheet 3.5.6; Practical sheet 3.5.6; Technician’s notes 3.5.6 | Quick starter; video; interactive activity |
| Year 8 | Term 2 | 56 | **3** | **1 Variation for survival** | 3.1.8 | Understanding why siblings are different | Identify inherited features in plants and animals that vary between offspring  Explain how inherited differences arise by genetic material from both parents combining  Describe how identical twins occur and analyse data about their features | Heredity as the process by which genetic information is transmitted from one generation to the next | Worksheet 3.1.8;  Practical sheet 3.1.8 | Quick starter; Video;  Interactive activity:  Drag the statements  about twins to the  correct group |
| Year 8 | Term 2 | 56 | **3** | **3 Obtaining useful materials** | 3.3.13 | Matching properties of ceramics to their uses | Describe the properties of ceramics  Explain how the properties of ceramics determine their uses | Properties of ceramics (qualitative) | Worksheet 3.3.13 | Quick starter;  Slideshow: Ceramic  materials – what are  they, and where are  they used?;  Interactive activity:  Place the materials,  in order, from  highest to lowest  melting point |
| Year 8 | Term 2 | 56 | **3** | **5 Motion on Earth and in space** | 3.5.8 | Understanding gravitational fields | Describe gravity as a non-contact force  Explore the concept of gravitational field and weight  Relate this concept to life on Earth  Apply the concept of gravity causing weight to other situations | Gravity force, weight = mass × gravitational field strength (*g*), on Earth *g* = 10 N/kg, different on other planets and stars | Worksheet 3.58 | Quick starter; video; interactive activity; slideshow |
| Year 8 | Term 2 | 57 | **3** | **1 Variation for survival** | 3.1.9 | Looking inside a cell’s nucleus | Identify that the nucleus contains chromosomes which carry inherited genetic information  Explain that chromosomes are made of genes containing DNA, and describe the structure of DNA  Assess the work of Watson, Crick, Wilkins and Franklin on DNA structure | A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model | Worksheet 3.1.9a;  Worksheet 3.1.9b;  Practical sheet 3.1.9 | Quick starter;  Interactive activity:  Complete the  sentences about DNA |
| Year 8 | Term 2 | 57 | **3** | **3 Obtaining useful materials** | 3.3.14 | Exploring natural polymers | Explain what a polymer is  Describe examples of natural polymers | Properties of polymers (qualitative) | Worksheet 3.3.14;  Technician's notes 3.3.14 | Quick starter;  Interactive activity:  Match the monomer  to the polymer;  Slideshow: Some  natural polymers –  examples |
| Year 8 | Term 2 | 57 | **3** | **5 Motion on Earth and in space** | 3.5.10 | Looking at motion in the Solar System | Relate ideas about gravitational fields to the Sun–Earth–Moon system  Use these ideas to explain position and motion of these bodies | Gravity forces between Earth and Moon, and between Earth and Sun (qualitative only) | Worksheet 3.5.10 | Quick starter;  Interactive activity:  Order the planets of  the Solar System,  from the furthest  from the Sun to the  nearest; Slideshow:  Orbital motion – a  look at how we put  satellites into space |
| Year 8 | Term 23 | 58 | **3** | **1 Variation for survival** | 3.1.11 | Exploring human chromosomes | Identify that, at fertilisation, one chromosome in each pair comes from each parent  Explain how fertilisation results in each new individual being genetically unique  Explain how some genetic disorders arise | A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model | Worksheet 3.1.11a;  Worksheet 3.1.11b;  Practical sheet 3.1.11 | Quick starter;  Interactive activity:  Reorder the  sentences to describe  the process of sexual  reproduction in  humans; Interactive  activity: Drag the  symptoms to the  correct genetic  disorder - Down's  syndrome or cystic  fibrosis; Slideshow:  Chromosomal  disorders:  Explanation and  examples |
| Year 8 | Term 2 | 58 | **3** | **3 Obtaining useful materials** | 3.3.15 | Using human-made polymers | Describe how human-made polymers are made in simple terms  Describe uses for human-made polymers | Properties of polymers (qualitative) | Worksheet 3.3.15 | Quick starter; Video;  Interactive activity:  Reorder the  sentences to  describe how to  make polypropene  film; Interactive  activity: Match the  polymer to its use |
| Year 8 | Term 2 | 58 | **3** | **5 Motion on Earth and in space** | 3.5.11 | Describing stars and galaxies | Describe the characteristics of a star  Relate our Sun to other stars  Explain the concept of galaxies and the position of our galaxy compared to others | Our Sun as a star, other stars in our galaxy, other galaxies | Worksheet 3.5.11 | Quick starter;  Interactive activity:  Match the  statements about  stars, galaxies and  the Universe |
| Year 8 | Term 2 | 59 | **3** | **1 Variation for survival** | 3.1.12 | Understanding cloning | Define cloning and describe some natural cloning processes  Explain how organisms may be artificially cloned  Explore ethical issues around artificial cloning  Compare and contrast asexual and sexual reproduction | A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model | Worksheet 3.1.12;  Practical sheet 3.1.12;  Technician's notes 3.1.12 | Quick starter;  Interactive activity:  Reorder the  sentences to describe  how to clone a spider  plant; Interactive  activity: Reorder the  sentences to describe  how Dolly the sheep  was cloned; Video |
| Year 8 | Term 2 | 59 | **3** | **3 Obtaining useful materials** | 3.3.16 | Explaining composites | Explain what is meant by the term ‘composite’  Describe some uses of natural composites | Properties of composites (qualitative) | Worksheet 3.3.16;  Practical sheet 3.3.16;  Technician's notes 3.3.16 | Quick starter;  Slideshow:  Composites –  examples of use;  Interactive activity:  Drag the statements  to the correct group -  human-made  composites, natural  composites, binder  or reinforcer |
| Year 8 | Term 2 | 59 | **3** | **5 Motion on Earth and in space** | 3.5.12 | Explaining the effects of the Earth's motion | Describe variation in length of day, apparent position of the Sun and seasonal variations  Compare these with changes in the opposite hemisphere  Explain these changes with reference to the motion of the Earth | The seasons and the Earth’s tilt, day length at different times of year, in different hemispheres | Worksheet 3.5.12;  Practical sheet 3.5.12;  Technician's notes 3.5.12 | Quick starter; Video;  Slideshow: The  effects of rotation  and tilt – the Sun  shines by day, and  the moon shines by  night … don't they?;  Interactive activity:  Reorder the  sentences to explain  the effect of the  Earth's tilted axis |
| Year 8 | Term 2 | 60 | **3** | **1 Variation for survival** | 3.1.13 | Explaining extinction | Identify changes which can cause a species to become extinct  Explain the use of gene banks to preserve hereditary material before a species becomes extinct  Analyse and evaluate theories of what caused the extinction of the dinosaurs | Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction  The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material | Worksheet 3.1.13 | Quick starter;  Hangman: Key  vocabulary game |
| Year 8 | Term 2 | 60 | **3** | **3 Obtaining useful materials** | 3.3.17 | Using human-made composites | Explain how human-made composites were developed  Describe the properties and uses of human-made composites | Properties of composites (qualitative) | Worksheet 3.3.17;  Practical sheet 3.3.17;  Technician's notes 3.3.17 | Quick starter;  Interactive activity:  Place the materials,  in order, from least  to most dense;  Interactive activity:  Matching metals and  composites to their  tensile strength:mass  ratio; Hangman: Key  vocabulary game |
| Year 8 | Term 2 | 60 | **3** | **5 Motion on Earth and in space** | 3.5.13 | Measuring distances in the Universe | Recall that the light year is used to measure astronomical distances  Explain the limitation of units such as km in describing astronomical distances  Describe a technique for measuring the distance to distant objects | The light year as a unit of astronomical distance | Worksheet 3.5.13;  Practical sheet 3.5.13 | Quick starter;  Interactive activity:  Match the  descriptions to the  correct astronomical  distances; Hangman:  Key vocabulary  game |
| Year 8 | Term 3 | 61 | **3** | **2 Our health and the effects of drugs** | 3.2.2 | Exploring types of drugs | State examples of the four main groups of drugs  Describe the effects of different types of drugs on the body  Explain the effects of each type of drug on the body | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes | Worksheet 3.2.2 | Quick starter;  Slideshow: Exploring  types of drugs –  information about the  four main types of  drug; Interactive  activity: Drag the  statements into the  correct group -  stimulant,  depressant,  painkiller or  hallucinogen; Video |
| Year 8 | Term 3 | 61 | **3** | **4 Using our Earth sustainably** | 3.4.2 | Understanding our atmosphere | Describe the composition of our atmosphere  Describe how the atmosphere has changed over time  Explain why the atmosphere has changed | The composition of the atmosphere | Worksheet 3.4.2;  Practical sheet 3.4.2;  Technician's notes 3.4.2 | Quick starter;  Interactive activity:  Drag the statements  to the correct group -  element in clean air,  compound in clean  air, or pollutant in air;  Interactive activity:  Match the  components of air to  the percentages  present |
| Year 8 | Term 3 | 61 | **3** | **6 Waves and energy transfer** | 3.6.2 | Making waves | Describe the movement of waves in water  Understand reflection of waves  Understand superposition of waves | Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition | Worksheet 3.6.2;  Practical sheet 3.6.2;  Technician's notes 3.6.2 | Quick starter;  Slideshow: Making  waves – a look at the  up and down  movement of waves;  Video; Interactive  activity: Define the  key terms about  waves and wave  motion |
| Year 8 | Term 3 | 62 | **3** | **2 Our health and the effects of drugs** | 3.2.3 | Understanding the impact of smoking | Describe the effects of smoking on the body  Explain the risks of smoking on the body  Examine the link between smoking and cancer | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes  The impact of exercise, asthma and smoking on the human gas exchange system | Worksheet 3.2.3 | Quick starter;  Interactive activity:  Match the  component of  tobacco to its  harmful effect on the  body |
| Year 8 | Term 3 | 62 | **3** | **4 Using our Earth sustainably** | 3.4.3 | Exploring the effects of human activity | Describe examples of human activity that cause air pollution  Explain the effects of smog, acid rain and damage to the ozone layer | The production of carbon dioxide by human activity and the impact on climate | Worksheet 3.4.3a;  Worksheet 3.4.3b;  Practical sheet 3.4.3;  Technician's notes 3.4.3 | Quick starter;  Slideshow: Effects of  air pollution – carbon  dioxide, UV, ozone  and acid rain; Video |
| Year 8 | Term 3 | 62 | **3** | **6 Waves and energy transfer** | 3.6.3 | Exploring light waves | Describe light as travelling in waves  Understand the similarities and differences between water waves and light waves  Explain the frequency of a wave | The similarities and differences between light and waves in matter  Light waves travelling through a vacuum; speed of light | Worksheet 3.6.3 | Quick starter;  Interactive activity:  Drag the statements  about light and  sound into the  correct group - true  or false |
| Year 8 | Term 3 | 63 | **3** | **2 Our health and the effects of drugs** | 3.2.4 | Considering the dangers of cannabis | Describe the medicinal uses for cannabis  Describe the negative effects of cannabis on the body  Give a balanced argument about whether cannabis should be legalised | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes  The impact of exercise, asthma and smoking on the human gas exchange system | Worksheet 3.2.4 | Quick starter;  Interactive activity:  Drag the statements  into the correct  group - for or against  the legalisation of  cannabis |
| Year 8 | Term 3 | 63 | **3** | **4 Using our Earth sustainably** | 3.4.4 | Understanding the global warming debate | Describe the effects of global warming  Explain the consequences of global warming for living things  Evaluate the arguments for human activity impacting on global warming | The production of carbon dioxide by human activity and the impact on climate | Worksheet 3.4.4 | Quick starter;  Interactive activity:  Reorder the  sentences to  describe how we  receive energy from  the Sun; Interactive  activity: Match the  sea surface  temperature to the  year |
| Year 8 | Term 3 | 63 | **3** | **6 Waves and energy transfer** | 3.6.4 | Explaining properties of light waves | Describe how light passes through different materials  Understand how light can be absorbed by materials  Explain the difference between diffuse scattering and specular reflection | The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface | Worksheet 3.6.4;  Practical sheet 3.6.4;  Technician's notes 3.6.4 | Quick starter;  Slideshow: Windows,  shadows and  mirrors; Interactive  activity: Order the  materials, from the  most transparent to  the most opaque |
| Year 8 | Term 3 | 64 | **3** | **2 Our health and the effects of drugs** | 3.2.5 | Understanding the effects of alcohol | Describe the short-term effects of alcohol on the body  Explain the long term effects of alcohol  Suggest how alcoholism affects society | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes | Worksheet 3.2.5 | Quick starter;  Interactive activity:  Reorder the  sentences to  describe what  happens to the body  if a person continues  to drink alcohol;  Slideshow:  Understanding the  effects of alcohol:  Information about  alcohol and the  dangers of long-term  use; Video |
| Year 8 | Term 3 | 64 | **3** | **4 Using our Earth sustainably** | 3.4.5 | Understanding how carbon is recycled | Describe the carbon cycle  Explain how human activity increases the amount of carbon in the atmosphere  Explain what is meant by a ‘carbon footprint’ | The carbon cycle | Worksheet 3.4.5;  Practical sheet 3.4.5 | Quick starter;  Interactive activity:  Drag the statements  to the correct group -  decomposers or  green plants;  Slideshow – carbon  cycle: releasing  carbon dioxide;  Interactive activity:  Match the changes  in the carbon cycle  to the correct term |
| Year 8 | Term 3 | 64 | **3** | **6 Waves and energy transfer** | 3.6.5 | Using the ray model | Describe the ray model of light  Explain how the direction of light rays can be changed  Explain how a pinhole camera and the eye work | Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and convex lens in focusing (qualitative); the human eye | Worksheet 3.6.5;  Practical sheet 3.6.5 | Quick starter;  Interactive activity:  Reorder the  sentences to  describe how light  enters the eye |
| Year 8 | Term 3 | 65 | **3** | **2 Our health and the effects of drugs** | 3.2.6 | Exploring the effects of other drugs | * Describe the effects of different drugs on the body   Compare the dangers of different drugs | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes | Worksheet 3.2.6 | Quickstarter;  Interactive activity:  Drag the drugs into  the correct group -  legal or illegal |
| Year 8 | Term 3 | 65 | **3** | **4 Using our Earth sustainably** | 3.4.7 | Considering the importance of recycling | Describe examples of recycling  Explain the benefits and limitations of recycling schemes  Compare the efficiency of recycling methods | Earth as a source of limited resources and the efficacy of recycling | Worksheet 3.4.7;  Practical sheet 3.4.7;  Technician's notes 3.4.7 | Quick starter;  Interactive activity:  Place the materials  in order, from the  fastest to  decompose to the  slowest; Slideshow:  Recycling issues – a  look at some issues  of recycling,  including its  problems; Hangman:  Key vocabulary  game |
| Year 8 | Term 3 | 65 | **3** | **6 Waves and energy transfer** | 3.6.6 | Understanding energy transfer by light | Describe light as a way of transferring energy  Give examples of chemical and electrical effects when materials absorb light  Explain changes that happen when materials absorb light | Light transferring energy from source to absorber, leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras | Worksheet 3.6.6;  Practical sheet 3.6.6;  Technician's notes 3.6.6 | Quick starter;  Interactive activity:  Drag the objects into  the correct group -  source of light, or  reflector of light;  Slideshow: Making  use of light energy;  Video |
| Year 8 | Term 3 | 66 | **3** | **2 Our health and the effects of drugs** | 3.2.7 | Learning about addiction | Define addiction  Describe how drugs affect the brain  Explain the effects of withdrawal on the body | The effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes | Worksheet 3.2.7 | Quick starter;  Interactive activity:  Drag the withdrawal  symptoms into the  correct group -  emotional or  physical; Hangman:  Key vocabulary  game |
| Year 8 | Term 3 | 66 | **3** | **4 Using our Earth sustainably** | 3.4.9 | Understanding the structure of the Earth | Describe the layers of the Earth  Describe the characteristics of the different layers  Explain how volcanoes change the Earth | The composition of the Earth  The structure of the Earth | Worksheet 3.4.9a;  Worksheet 3.4.9b | Quick starter;  Interactive activity:  Drag the statements  to the correct group -  inner core, outer  core, mantle or crust;  Video; Interactive  activity: Reorder the  sentences to  describe how  volcanoes form and  erupt |
| Year 8 | Term 3 | 66 | **3** | **6 Waves and energy transfer** | 3.6.7 | Exploring coloured light | Describe how a spectrum can be produced from white light  Compare the properties of light of different frequencies  Explain how light of different wavelengths can be split and recombined | Colour and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection | Worksheet 3.6.7;  Practical sheet 3.6.7;  Technician's notes 3.6.7 | Quick starter;  Slideshow:  Separating and  combining colours;  Interactive activity:  Order the colours of  the spectrum, from  the shortest  wavelength to the  longest; Slideshow:  Explaining refraction;  Hangman: Key  vocabulary game |
| Year 8 | Term 3 | 67 | **3** | **2 Our health and the effects of drugs** | 3.2.9 | Understanding how diseases are spread | Describe how diseases are spread  Consider ways of reducing the spread of specific diseases | *This part of this chapter is intended to embed and develop ideas from earlier in the Key Stage 3 course, including cell structure and function, micro-organisms and body systems.* | Worksheet 3.2.9 | Quick starter;  Slideshow:  Preventing the  spread of disease –  a look at how  infectious diseases  are spread and how  this can be  prevented;  Interactive activity:  Match the way a  disease is spread to  the mechanism by  which it can be  prevented; Video |
| Year 8 | Term 3 | 67 | **3** | **4 Using our Earth sustainably** | 3.4.10 | Exploring igneous rocks | Describe how igneous rocks are formed  Explain how the pH of the magma affects the formation of rocks  Investigate the effect of cooling rate on the formation of crystals | The rock cycle and the formation of igneous, sedimentary and metamorphic rocks | Worksheet 3.4.10;  Practical sheet 3.4.10a;  Practical sheet 3.4.10b;  Technician's notes 3.4.10 | Quick starter;  Interactive activity:  Drag the statements  to the correct group -  volcanoes producing  acidic magma or  alkaline magma;  Interactive activity:  Match the cooling  rate to the crystal  size |
| Year 8 | Term 3 | 67 | **3** | **6 Waves and energy transfer** | 3.6.9 | Understanding energy transfer and change | Describe the ways in which energy is stored  Describe the ways that energy can be transferred from one store to another  Explain that any change – physical or chemical – results in a transfer of energy | Energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change  Comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in chemical compositions  Using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes | Worksheet 3.6.9 | Quick starter;  Interactive activity:  Match the  description to the  type of energy store;  Video |
| Year 8 | Term 3 | 68 | **3** | **2 Our health and the effects of drugs** | 3.2.11 | Comparing microbes | Describe the characteristics of different types of microbe  Recall examples of diseases caused by bacteria, viruses and fungi  Evaluate a model of a microbe | *This part of this chapter is intended to embed and develop ideas from earlier in the Key Stage 3 course, including cell structure and function, micro-organisms and body systems.* | Worksheet 3.2.11;  Practical sheet 3.2.11;  Technician's notes 3.2.11 | Quick starter;  Slideshow: Types of  microbe – a look at  the features of fungi,  viruses and bacteria;  Video; Interactive  activity: Drag the  statements into the  correct group -  bacteria, virus or  fungi |
| Year 8 | Term 3 | 68 | **3** | **4 Using our Earth sustainably** | 3.4.11 | Studying sedimentary rocks | Describe how sedimentary rocks are formed  Explain how fossils give clues about the past  Explain the properties of sedimentary rocks | The rock cycle and the formation of igneous, sedimentary and metamorphic rocks | Worksheet 3.4.11;  Practical sheet 3.4.11a;  Practical sheet 3.4.11b;  Technician's notes 3.4.11 | Quick starter; Video;  Slideshow: Clues  from fossils – what  do fossils tell us?;  Interactive activity:  Reorder the  sentences to  describe the freezethaw  process |
| Year 8 | Term 3 | 68 | **3** | **6 Waves and energy transfer** | 3.6.10 | Explaining thermal conduction and radiation | Describe the warming and cooling of objects  Explain the relationship between energy transfer and temperature change  Compare the transfer of energy by thermal conduction and by radiation | Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference: use of insulators | Worksheet 3.6.10;  Practical sheet 3.6.10;  Technician's notes 3.6.10 | Quick starter;  Slideshow: Energy  transfers around the  home; Interactive  activity: Drag the  statements and  descriptions into the  correct group -  energy transfer by  conduction, or  energy transfer by  radiation |
| Year 8 | Term 3 | 69 | **3** | **2 Our health and the effects of drugs** | 3.2.12 | Investigating the growth of bacteria | Describe what bacteria need to survive  Investigate bacterial growth in different conditions  Analyse bacterial growth data | *This part of this chapter is intended to embed and develop ideas from earlier in the Key Stage 3 course, including cell structure and function, micro-organisms and body systems.* | Worksheet 3.2.12;  Practical sheet 3.2.12;  Technician's notes 3.2.12 | Quick starter;  Interactive activity:  Order the surfaces  based on the amount  of bacteria present,  from lowest to  highest |
| Year 8 | Term 3 | 69 | **3** | **4 Using our Earth sustainably** | 3.4.12 | Using metamorphic rocks | Name some examples of metamorphic rocks  Describe how metamorphic rocks are formed  Explain why metamorphic rocks are suited to their uses | The rock cycle and the formation of igneous, sedimentary and metamorphic rocks | Worksheet 3.4.12;  Practical sheet 3.4.12;  Technician's notes 3.4.12 | Quick starter;  Interactive activity:  Drag the statements  to the correct group -  metamorphic or  rocks of other types;  Interactive activity:  Match the materials  before and after  metamorphic change |
| Year 8 | Term 3 | 69 | **3** | **6 Waves and energy transfer** | 3.6.12 | Comparing rates of energy transfer | Describe what is meant by ‘rate of energy transfer’  Recall and use the correct units for rate of energy transfer  Calculate quantities of energy transferred when change happens | Comparing power ratings of appliances in watts (W, kW)  Comparing amounts of energy transferred (J, kJ, kW hour) | Worksheet 3.6.12 | Quick starter;  Interactive activity:  Match the calculated  quantity to the  correct description |
| Year 8 | Term 3 | 70 | **3** | **2 Our health and the effects of drugs** | 3.2.13 | Understanding how antibiotics work | Investigate the effect of antibiotics on bacteria  Explain how bacteria can become immune to antibiotics  Evaluate the impact of superbugs on our health | *This part of this chapter is intended to embed and develop ideas from earlier in the Key Stage 3 course, including cell structure and function, micro-organisms and body systems.* | Worksheet 3.2.13;  Practical sheet 3.2.13;  Technician's notes 3.2.13 | Quick starter;  Interactive activity:  Match the bacteriakilling  chemical to its  purpose; Slideshow:  Antibiotics: A look at  how antibiotics work  and how you can test  the effectiveness of  an antibiotic |
| Year 8 | Term 3 | 70 | **3** | **4 Using our Earth sustainably** | 3.4.13 | Understanding the rock cycle | Describe the rock cycle  Explain how rocks can change from one type to another | The rock cycle and the formation of igneous, sedimentary and metamorphic rocks | Worksheet 3.4.13a;  Worksheet 3.4.13b;  Practical sheet 3.4.13;  Technician's notes 3.4.13 | Quick starter;  Interactive activity:  Place the processes  of the rock cycle and  the types of rock in  the correct  sequence, starting  with 'Weathering and  erosion'; Slideshow:  Layers and folds – a  look at how rocks are  weathered;  Hangman: Key  vocabulary game |
| Year 8 | Term 3 | 70 | **3** | **6 Waves and energy transfer** | 3.6.13 | Looking at the cost of energy use in the home | Describe the information a typical fuel bill provides  Explain and use the units used on a fuel bill  Explain how the cost of energy used can be calculated | Comparing power ratings of appliances in watts (W, kW)  Comparing amounts of energy transferred (J, kJ, kW hour)  Domestic fuel bills, fuel use and costs | Worksheet 3.6.13 | Quick starter;  Interactive activity:  Match the  descriptions to the  numbers and units  found on household  electricity bills;  Hangman: Key  vocabulary game |

**This Three-Year Scheme of Work for Years 9 to 11 is made up of lessons in Collins AQA GCSE Biology / Chemistry / Physics and is matched to the AQA Biology, Chemistry and Physics GCSE specifications. It offers a flexible approach for KS4 based on eight science lessons per fortnight in Year 9 (usually three each of Biology and Chemistry, and two of Physics) followed by nine science lessons per fortnight in Years 10 and 11 (usually three each of Biology, Chemistry and Physics). Lessons can be used for 40-60 minute sessions. Lessons are scheduled to finish in the second term of Year 11 to allow time for revision and GCSE examinations in the summer term.**

|  |  |  | **Collins AQA GCSE Biology / Chemistry / Physics** | | | |  |  | |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Term** | **Week** | **Chapter** | **Student Book spread number** | | **Lesson title** | **Lesson objectives** | **AQA GCSE specification reference** | | **Lesson resources on Collins AQA GCSE Biology / Chemistry / Physics CD-ROM** | **Collins *Connect* resources** |
| Year 9 | Term 1 | 1/2 | **B: 1 Cell biology** | 1.1 | | Looking at cells | * Describe the structure of eukaryotic cells. * Recognise the order of magnitude of cells. * Explain how the main sub-cellular structures are related to their functions. | 4.1.1.1; 4.1.1.2 | | Worksheets 1.1.1, 1.1.2 and 1.1.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 1/2 | **B: 1 Cell biology** | 1.2 | | The light microscope | * Describe how to use a microscope. * Observe plant and animal cells with a light microscope. * Understand the limitations of light microscopy. | 4.1.1.5 | | Worksheet 1.2; Practical sheet 1.2; Technician’s notes 1.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 1/2 | **B: 1 Cell biology** | 1.3 | | Looking at cells in more detail | * Identify the differences in the magnification and resolving power of light and electron microscopes. * Describe simply how electron microscopes work in comparison to light microscopes. * Explain how electron microscopy has increased our understanding of sub-cellular structures. | 4.1.1.2; 4.1.1.5 | | Worksheet 1.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 1/2 | **C: 1 Atomic structure and the periodic table** | 1.1 | | Elements and compounds | * Identify symbols of elements from the periodic table. * Recognise compounds from their formula. * Identify the elements in a compound | 4.1.1.1 | | Practical sheet 1.1.1, Worksheet 1.1.1, Worksheet 1.1.2, Technician’s notes 1.1.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 1/2 | **C: 1 Atomic structure and the periodic table** | 1.2 | | Atoms, formulae and equations | * Explain that an element consists of the same type of atoms. * Explain that atoms join together to make molecules. * Explain how formulae represent elements and compounds. | 4.1.1.1 | | Practical sheet 1.2; Worksheets 1.2.1, 1.2.2 and 1.2.3; Technician’s notes 1.2; Presentation1.2.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 1 | 1/2 | **C: 1 Atomic structure and the periodic table** | 1.3 | | Mixtures | * Recognise that all substances are chemicals. * Understand that all substances are either mixtures, compounds or elements. * Explain that mixtures can be separated. | 4.1.1.2, 4.8.1.1 | | Practical sheet 1.3.1; Worksheets 1.3.1 and 1.3.2; Technician’s notes 1.3.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 1/2 | **P: 1 Energy** | 1.1 | | Potential energy | * Consider what happens when a spring is stretched. * Describe what is meant by gravitational potential energy. * Calculate the energy stored by an object raised above ground level. | 4.1.1.1  4.1.1.2 | | Worksheet 1.1; Practical sheet 1.1; Technician’s notes 1.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 1/2 | **P: 1 Energy** | 1.2 | | Investigating kinetic energy | * Describe how the kinetic energy store of an object changes as its speed changes * Calculate kinetic energy. * Consider how energy is transferred. | 4.1.1.1  4.1.1.2 | | Worksheet 1.2; Practical sheet 1.2.1 and 1.2.2; Technician’s notes 1.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 3/4 | **B: 1 Cell biology** | 1.4 | | Required practical: Using a light microscope to observe and record animal and plant cells | * Apply knowledge to select techniques, instruments,   apparatus and materials to observe cells.   * Make and record observations and measurements. * Present observations and other data using appropriate   methods. | 4.1.1.2  Prac 1 | | Worksheets 1.4.1 and 1.4.2; Practical sheets 1.4.1 and 1.4.2; Technician’s notes 1.4; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 1 | 3/4 | **B: 1 Cell biology** | 1.5 | | Primitive cells | * Describe and explain the differences between prokaryotic cells and eukaryotic cells. * Explain how prokaryotic and eukaryotic cells evolved over time. | 4.1.1.1; 4.1.1.2;  4.6.4 | | Worksheet 1.5; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 3/4 | **B: 1 Cell biology** | 1.6 | | Cell division | * Describe the process of mitosis in growth, and mitosis as part of the cell cycle. * Describe how the process of mitosis produces cells that are identical genetically to the parent cell. | 4.1.2.1; 4.1.2.2 | | Worksheets 1.6.1 and 1.6.2; Technician’s notes 1.6; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 3/4 | **C: 1 Atomic structure and the periodic table** | 1.4 | | Changing ideas about atoms | * Describe how the atomic model has changed over time. * Explain why the atomic model has changed over time. * Understand that a theory is provisional until the next piece of evidence is available. | 4.1.1.3 | | Worksheets 1.4.1, 1.4.2 and 1.4.3; Technician’s notes 1.4.1; Presentation 1.4.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 1 | 3/4 | **C: 1 Atomic structure and the periodic table** | 1.5 | | Modelling the atom | * Describe the atom as a positively charged nucleus surrounded by negatively charged electrons. * Explain that most of the mass of an atom is in the nucleus. * Explain that the nuclear radius is much smaller than that of the atom and with most of the mass in the nucleus. | 4.1.1.4; 4.1.1.5 | | Worksheet 1.5.1; Technician’s notes 1.5.1; Presentation 1.5.1 ‘Helium’;Graph plotter 1.5.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier |
| Year 9 | Term 1 | 3/4 | **C: 1 Atomic structure and the periodic table** | 1.6 | | Relating charges and masses | * Describe the structure of atoms. * Recall the relative masses and charges of protons, neutrons and electrons. * Explain why atoms are neutral. | 4.1.1.4, 4.1.1.6 | | Worksheet 1.6.1; Technician’s notes 1.6.1; Presentation1.6.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 3/4 | **C: 1 Atomic structure and the periodic table** | 1.7 | | Sub-atomic particles | * Use the definitions of atomic number and mass number. * Calculate the number of protons, neutrons and electrons in *atoms.* * Calculate the number of sub-atomic particles in isotopes and ions. | 4.1.1.5 | | Worksheets 1.7.1 and 1.7.2; Presentation 1.7.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 3/4 | **P: 1 Energy** | 1.3 | | Work done and energy transfer | * Understand what is meant by work done. * Explain the relationship between work done and force applied. * Identify the transfers between energy stores when work is done against friction. | 4.1.1.1  4.5.2 | | Worksheet 1.3; Practical sheet 1.3.1 and 1.3.2; Technician’s notes 1.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 3/4 | **P: 1 Energy** | 1.4 | | Understanding power | * Define power. * Compare the rate of energy transfer by various machines and electrical appliances. * Calculate power. | 4.1.1.4 | | Worksheet 1.4; Practical sheet 1.4.1 and 1.4.2; Technician’s notes 1.4.1 and 1.4.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 3/4 | **P: 1 Energy** | 1.13 | | Maths skills: Calculations using significant figures | * Substitute numerical values into equations and use appropriate units. * Change the subject of an equation. * Give an answer to an appropriate number of significant figures | 4.1.1.1, 4.1.1.2, 4.1.1.4 | | Worksheet 1.13 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **B: 1 Cell biology** | 1.7 | | Cell differentiation | * Explain the importance of cell differentiation. * Understand size and scale in relation to cells, tissues,   organs and body systems.   * Describe how cells, tissues, organs and organ systems are organised to make up an organism. | 4.1.1.3; 4.1.1.4; 4.2.1 | | Worksheet 1.7; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **B: 1 Cell biology** | 1.8 | | Cancer | * Describe cancer as a condition resulting from changes in cells that lead to their uncontrolled growth, division and spread. * Understand some of the risk factors that trigger cells to become cancerous. | 4.2.2.7 | | Worksheets 1.8.1, 1.8.2 and 1.8.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 1 | 5/6 | **B: 1 Cell biology** | 1.9 | | Stem cells | * Identify cells as being differentiated, or as stem cells. * Describe the function of stem cells in embryonic and adult animals. * Explain how stem cells can be useful. | 4.1.2.3 | | Worksheets 1.9.1 and 1.9.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **C: 1 Atomic structure and the periodic table** | 1.8 | | Electronic structure | * Explain how electrons occupy ‘shells’ in an order. * Describe the pattern of the electrons in shells for the first 20 elements. | 4.1.1.7 | | Worksheets 1.8.1, 1.8.2 and 1.8.3; Technician’s notes 1.8.1; Presentation 1.8.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **C: 1 Atomic structure and the periodic table** | 1.9 | | The periodic table | * Explain how the electronic structure of atoms follows a pattern. * Recognise that the number of electrons in an element’s atoms outer shell corresponds to the element’s group number. * Explain that the electronic structures of transition metals position the elements into the transition metal block. | 4.1.2.1 | | Worksheet 1.9.1, Worksheet 1.9.2, Worksheet 1.9.3, Presentation 1.9.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 1 | 5/6 | **C: 1 Atomic structure and the periodic table** | 1.10 | | Developing the periodic table | * Describe the steps in the development of the periodic table. * Explain how Mendeleev left spaces for undiscovered elements. * Explain why the element order in the modern periodic table was changed. * Explain how testing a prediction can support or refute a new scientific idea. | 4.1.2.2 | | Worksheets 1.10.1 and 1.10.2; Technician’s notes 1.10.1; Presentation 1.10.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **P: 1 Energy** | 1.5 | | Specific heat capacity | * Understand how things heat up. * Find out about heating water. * Find out about specific heat capacity. | 4.1.1.3 | | Worksheet 1.5; Practical sheet 1.5; Technician’s notes 1.5 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 5/6 | **P: 1 Energy** | 1.6 | | Required practical: Investigating specific heat capacity | * Use theories to develop a hypothesis. * Evaluate a method and suggest improvements. * Perform calculations to support conclusions. | 4.1.1.3  Prac 1 | | Worksheet 1.6; Practical sheet 1.6; Technician’s notes 1.6 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 7/8 | **B: 1 Cell biology** | 1.10 | | Stem cell banks | * Explore the use of stem cells in medicine. * Identify the risks in using stem cells. * Evaluate the benefits and disadvantages of using stem cells. | 4.1.2.3 | | Worksheet 1.10; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 1 | 7/8 | **B: 1 Cell biology** | 1.11 | | Key concept: Cell development | * Revise ideas about cell structure, cell division and stem cells. * Apply ideas about cells to unfamiliar contexts. * Describe how plant meristems can be used in cloning. | 4.1.1.4; 4.1.2.2; 4.1.2.3 | | Worksheets 1.11.1 and 1.11.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 1 | 7/8 | **B: 1 Cell biology** | 1.12 | | Cells at work | * Recognise that all organisms respire. * Explain respiration as the process of making energy. * Describe aerobic respiration as an exothermic reaction. | 4.4.2.1 | | Worksheet 1.12; Practical sheet 1.12; Technician’s notes 1.12; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 7/8 | **C: 1 Atomic structure and the periodic table** | 1.11 | | Comparing metals and non-metals | * Recall a number of physical properties of metals and non-metals. * Describe some chemical properties of metals and non-metals. * Explain the differences between metals and non-metals on the basis of their characteristic physical and chemical properties. | 4.1.2.3 | | Practical sheet 1.11.1; Worksheet 1.11.1; Technician’s notes 1.11.1; Presentations 1.11.1 and 1.11.2.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 7/8 | **C: 1 Atomic structure and the periodic table** | 1.12 | | Metals and non-metals | * Describe why metals are found on the left of the periodic table and non-metals on the right. * Explain the differences between metals and non-metals based on their physical and chemical properties. * Explain why metals form positive ions and non-metals do not. | 4.1.1.7  4.1.2.3 | | Worksheets 1.12.1 and 1.12.2; Technician’s notes 1.12.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 1 | 7/8 | **C: 1 Atomic structure and the periodic table** | 1.13 | | Key concept: The outer electrons | * Recognise when electrons transfer. * Recognise when atoms share electrons. * Predict when electrons are transferred most easily. | 4.1.1.7 | | Worksheet 1.13.1; Technician’s notes 1.13.1; Presentation 1.13.1 ‘ | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 7/8 | **P: 1 Energy** | 1.7 | | Dissipation of energy | * Explain ways of reducing unwanted energy transfer. * Describe what affects the rate of cooling of a building. * Understand that energy is dissipated. | 4.1.2.1 | | Worksheet 1.7; Practical sheet 1.7.1, 1.7.2 and 1.7.3; Technician’s notes 1.7 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 7/8 | **P: 1 Energy** | 1.8 | | Energy efficiency | * Explain what is meant by energy efficiency. * Calculate the efficiency of energy transfers. * Find out about conservation of energy. | 4.1.2.2 | | Worksheet 1.8; Practical sheet 1.8.1, 1.8.2, 1.8.3, 1.8.4 and 1.8.5; Technician’s notes 1.8.1 and 1.8.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 9/10 | **B: 1 Cell biology** | 1.13 | | Living without oxygen | * Describe the process of anaerobic respiration. * Compare the processes of aerobic and anaerobic respiration. * Explain how the body removes lactic acid produces during anaerobic respiration. | 4.4.2.1; 4.4.2.2 | | Worksheet 1.13; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 1 | 9/10 | **B: 1 Cell biology** | 1.14 | | Growing microorganisms | * Describe the techniques used to produce uncontaminated cultures of microorganisms. * Describe how bacteria reproduce by binary fission. * Calculate the number of bacteria in a population. | 4.1.1.6 | | Worksheet 1.14; Practical sheet 1.14; Technician’s notes 1.14; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 9/10 | **B: 1 Cell biology** | 1.15 | | Testing new antibiotics | * Use appropriate apparatus to investigate the effect of antibiotics on bacterial growth. * Use microorganisms safely. * Apply sampling techniques to ensure that samples are representative. | 4.1.1.6; 4.3.1.8 | | Worksheets 1.15.1, 1.15.2 and 1.15.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 9/10 | **C: 1 Atomic structure and the periodic table** | 1.14 | | Exploring Group 0 | * Describe the unreactivity of the noble gases. * Predict and explain the trends of boiling point of the noble gases (going down the group). * Explain how properties of the elements in Group 0 depend on the outer shell of electrons of their atoms. | 4.1.2.4 | | Worksheet 1.14.1; Graph plotter 1.14.1; Presentations 1.14.1 and 1.14.2 ‘Group 0’ | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 9/10 | **C: 1 Atomic structure and the periodic table** | 1.15 | | Exploring Group 1 | * Explain why Group 1 metals are known as the alkali metals. * Predict the properties of other Group 1 metals from trends down the group. * Relate the properties of the alkali metals to the number of electrons in their outer shell. | 4.1.2.5 | | Worksheets 1.15.1, 1.15.2 and 1.15.3; Technician’s notes 1.14.1; Presentation 1.15.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 9/10 | **C: 1 Atomic structure and the periodic table** | 1.16 | | Exploring Group 7 | * Recall that fluorine, chlorine, bromine and iodine are non-metals called halogens. * Describe that they react vigorously with alkali metals. * Construct balanced symbol equations for the reactions of metals with halogens. | 4.1.2.6 | | Worksheets 1.16.1, 1.16.2 and 1.16.3; Technician’s notes 1.16.1 and 1.16.2; Presentation 1.16.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 9/10 | **P: 1 Energy** | 1.9 | | Required practical: Investigating ways of reducing the unwanted energy transfers in a system | * Use scientific ideas to make predictions. * Analyse data to identify trends. * Evaluate an experimental procedure. | 4.1.2.1  Prac 2 | | Worksheet 1.9; Practical sheet 1.9; Technician’s notes 1.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 9/10 | **P: 1 Energy** | 1.12 | | Key concept: Energy transfer | * Understand why energy is a key concept in science. * Use ideas about energy stores and energy transfers to explain what energy does. * Understand why accounting for energy transfers is a useful idea. | 4.1 | | Worksheet 1.12; Practical sheet 1.12.1 and 1.12.2; Technician’s notes 1.12.1 and 1.12.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 11/12 | **B: 1 Cell biology** | 1.16 | | Required practical: Investigating disinfectants | * Carry out experiments with due regard to health and safety. * Present and process data, identifying anomalous results. * Evaluate methods and suggest further investigations | 4.1.1.6  Prac 2 | | Worksheet 1.16; Practical sheet 1.16; Technician’s notes 1.16 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 11/12 | **B: 1 Cell biology** | 1.17 | | Maths skills: Size and number | * To make estimates of the results of simple calculations, without using a calculator. * To use ratio and proportion to calibrate a microscope. * To recognise and use numbers in decimal and standard form. | 4.1.1.1; 4.1.1.2; 4.1.1.5 | | Worksheets 1.17.1 and 1.17.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 1 | 11/12 | **B: 1 Cell biology** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment |  | |  | End of chapter test |
| Year 9 | Term 1 | 11/12 | **C: 1 Atomic structure and the periodic table** | 1.17 | | Reaction trends and predicting reactions | * Explain why the trends down the group in Group 1 and in Group 7 are different. * Explain the changes across a period. * Predict the reactions of elements with water, dilute acid or oxygen from their position in the periodic table. | | 4.1.2.1 | Worksheet 1.17.1; Presentation 1.17.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 11/12 | **C: 1 Atomic structure and the periodic table** | 1.18 | | Transition metals | * Compare the properties of transition metals with Group 1 metals. * Describe the formation of coloured ions with different charges. * Explore the properties of Cr, Mn, Fe, Co, Ni and Cu. | | 4.1.3.1, 4.1.3.2 | Worksheet 1.18.1; Technician’s notes 1.18.1; Presentation 1.18.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 1 | 11/12 | **C: 1 Atomic structure and the periodic table** | 1.19 | | Maths skills: Standard form and making estimates | * Recognise the format of standard form. * Convert decimals to standard form and vice versa. * Make estimates without calculators so the answer in standard form seems reasonable. | |  | Worksheet 1.19.1; Technician’s notes 1.19.1; Presentation 1.19.1 | Homework quiz |
| Year 9 | Term 1 | 11/12 | **C: 1 Atomic structure and the periodic table** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 9 | Term 1 | 11/12 | **P: 1 Energy** | 1.10 | | Using energy resources | * Describe the main energy sources available for use on Earth. * Distinguish between renewable and non-renewable sources. * Explain the ways in which the energy resources are used. | | 4.1.3 | Worksheet 1.10; Practical sheet 1.10; Technician’s notes 1.10 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 1 | 11/12 | **P: 1 Energy** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 9 | Term 2 | 13/14 | **B: 2 Photosynthesis** | 2.1 | | Explaining photosynthesis | * Identify the raw materials and products of photosynthesis. * Describe photosynthesis by an equation. * Explain gas exchange in leaves. | | 4.4.1.1 | Worksheet 2.1; Practical sheet 2.1; Technician’s notes 2.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 13/14 | **B: 2 Photosynthesis** | 2.2 | | Looking at photosynthesis | * Explain the importance of photosynthesis. * Explain how plants use the glucose they produce. | | 4.4.1.1; 4.4.1.3; 4.2.3.2 | Worksheet 2.2; Technician’s notes 2.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 13/14 | **B: 2 Photosynthesis** | 2.3 | | Investigating leaves | * Identify the internal structures of a leaf. * Explain how the structure of a leaf is adapted for photosynthesis. * Recall that chlorophyll pigments in chloroplasts absorb light energy for photosynthesis. | | 4.2.3.1; 4.2.3.2 | Worksheets 2.3.1, 2.3.2 and Technician’s notes 2.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 13/14 | **C: 2 Structure, bonding and the properties of matter** | 2.1 | | Chemical bonds | * Describe the three main types of bonding. * Explain how electrons are used in the three main types of bonding. * Explain how bonding and properties are linked. | | 4.2.1.1 | Worksheets 2.1.1 and 2.1.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier |
| Year 9 | Term 2 | 13/14 | **C: 2 Structure, bonding and the properties of matter** | 2.2 | | Ionic bonding | * Represent an ionic bond with a diagram. * Draw dot and cross diagrams for ionic compounds. * Work out the charge on the ions of metals from the group number of the element (1, 2, 6 & 7). | | 4.2.1.2 | Practical sheet 2.2.1; Worksheet 2.2.1; Technician’s notes 2.2.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 13/14 | **C: 2 Structure, bonding and the properties of matter** | 2.3 | | Ionic compounds | * Identify ionic compounds from structures. * Explain the limitations of diagrams and models. * Work out the empirical formula of an ionic compound. | | 4.2.1.3 | Practical sheet 2.3.1; Worksheets 2.3.1, 2.3.2 and 2.3.3; Technician’s notes 2.3.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier |
| Year 9 | Term 2 | 13/14 | **P: 1 Energy** | 1.11 | | Global energy supplies | * Analyse global trends in energy use. * Understand what the issues are when using energy resources. | | 4.1.3 | Worksheet 1.11; Practical sheet 1.11; Technician’s notes 1.11 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 13/14 | **P: 1 Energy** | 1.14 | | Maths skills: Handling data | * Recognise the difference between mean, mode and median. * Explain the use of tables and frequency tables. * Explain when to use scatter diagrams, bar charts and histograms. | |  | Worksheet 1.14 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 15/16 | **B: 2 Photosynthesis** | 2.4 | | Required practical: Investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed | * Identify and manage variables. * Process data and identify outliers. * Evaluate an experimental process. | | 4.4.1.2  Prac 6 | Worksheet 2.4; Practical sheets 2.4.1, 2.4.2 and 2.4.3; Technician’s notes 2.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 15/16 | **B: 2 Photosynthesis** | 2.5 | | Increasing photosynthesis | * Identify factors that affect the rate of photosynthesis. * Interpret data about the rate of photosynthesis. * Explain the interaction of factors in limiting the rate of photosynthesis. | | 4.4.1.2 | Worksheet 2.5; Technician’s notes 2.5 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 15/16 | **B: 2 Photosynthesis** | 2.6 | | Increasing food production | * Explain how factors that increase food production can be controlled. * Evaluate the benefits of manipulating the environment to increase food production. * Understand use inverse square law and light intensity in the context of photosynthesis. | | 4.4.1.2 | Worksheet 2.6; Technician’s notes 2.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 2 | 15/16 | **C: 2 Structure, bonding and the properties of matter** | 2.4 | | Covalent bonding | * Recognise substances made of small molecules from their formula. * Draw dot and cross diagrams for small molecules. * Deduce molecular formulae from models and diagrams. | | 4.2.1.4 | Worksheets 2.4.1 and 2.4.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 2 | 15/16 | **C: 2 Structure, bonding and the properties of matter** | 2.5 | | Metallic bonding | * Describe why metals form giant structures. * Explain how metal ions are held together. * Explain the delocalisation of electrons. | | 4.2.1.5 | Practical sheet 2.5.1; Worksheets 2.5.1 and 2.5.2; Technician’s notes 2.5.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 15/16 | **C: 2 Structure, bonding and the properties of matter** | 2.6 | | Three states of matter | * Use data to predict the states of substances. * Explain the changes of state. * Use state symbols in chemical equations. | | 4.2.2.1, 4.2.2.2 | Practical sheet 2.6.1; Worksheets 2.6.1 and 2.6.2: Technician’s notes 2.6.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Slideshow  Video |
| Year 9 | Term 2 | 15/16 | **P: 2 Electricity** | 2.1 | | Static electricity | * Describe how insulating materials can become charged. * Know that there are two kinds of electric charge. * Explain these observations in terms of electron transfer. | | 4.2.5.1 | Worksheet 2.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 15/16 | **P: 2 Electricity** | 2.2 | | Electric fields | * Explain what an electric field is. * Draw an electric field pattern for a charged sphere. * Use the idea of an electric field to explain electrostatic attraction and sparking. | | 4.2.5.2 | Worksheets 2.2.1, 2.2.2 and 2.2.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 17/18 | **B: 2 Photosynthesis** | 2.7 | | Key concept: Diffusion in living systems | * Use concentration gradients to explain the direction of diffusion. * Apply the principles of diffusion to movement of different substances in plants. | | 4.1.3.1 | Worksheets 2.7.1, 2.7.2 and 2.7.3; Practical sheet 2.7; Technician’s notes 2.7 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 2 | 17/18 | **B: 2 Photosynthesis** | 2.8 | | Looking at stomata | * Describe transpiration in plants. * Explain the structure and function of stomata. * Explain the relationship between transpiration and leaf structure. | | 4.2.3.1; 4.2.3.2 | Worksheet 2.8; Practical sheet 2.8; Technician’s notes 2.8 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 2 | 17/18 | **B: 2 Photosynthesis** | 2.9 | | Moving water | * Describe the structure and function of xylem and roots. * Describe how xylem and roots are adapted to absorb water. * Explain why plants in flooded or waterlogged soil die. * Explain how wilting occurs. | | 4.2.3.1; 4.2.3.2 | Worksheets 2.9.1, 2.9.2 and 2.9.3; Practical sheet 2.9; Technician’s notes 2.9 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 2 | 17/18 | **C: 2 Structure, bonding and the properties of matter** | 2.7 | | Properties of ionic compounds | * Describe the properties of ionic compounds. * Relate their melting points to forces between ions. * Explain when ionic compounds can conduct electricity. | | 4.2.2.3 | Practical sheets 2.7.1 and 2.7.2; Worksheet 2.7.1; Technician’s notes 2.7.1 and 2.7.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 17/18 | **C: 2 Structure, bonding and the properties of matter** | 2.8 | | Properties of small molecules | * Identify small molecules from formulae. * Explain the strength of covalent bonds. * Relate the intermolecular forces to the bulk properties of a substance. | | 4.2.2.4 | Worksheets 2.8.1 and 2.8.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 17/18 | **C: 2 Structure, bonding and the properties of matter** | 2.9 | | Polymer structures | * Identify polymers from diagrams showing their bonding and structure. * Explain why some polymers can stretch. * Explain why some plastics do not soften on heating. | | 4.2.2.5 | Practical sheet 2.9.1; Worksheet 2.9.1; Technician’s notes 2.9.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier |
| Year 9 | Term 2 | 17/18 | **P: 2 Electricity** | 2.3 | | Electric current | * Know circuit symbols. * Recall that current is a rate of flow of electric charge. * Recall that current (*I*) depends on resistance (*R*) and potential difference (*V*) * Explain how an electric current passes round a circuit. | | 4.2.1.1  4.2.1.2  4.2.1.3 | Worksheets 2.3.1, 2.3.2 and 2.3.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 17/18 | **P: 2 Electricity** | 2.4 | | Series and parallel circuits | * Recognise series and parallel circuits. * Describe the changes in the current and potential difference in series and parallel circuits. | | 4.2.2 | Worksheets 2.4.1, 2.4.2 and 2.4.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 19/20 | **B: 2 Photosynthesis** | 2.10 | | Investigating transpiration | * Describe how transpiration is affected by different factors. * Explain the movement of water in the xylem. | | 4.2.3.2 | Worksheet 2.10; Practical sheet 2.10; Technician’s notes 2.10 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 19/20 | **B: 2 Photosynthesis** | 2.11 | | Moving sugar | * Describe the movement of sugar in a plant as translocation. * Explain how the structure of phloem is adapted to its function in the plant. * Explain the movement of sugars around the plant. | | 4.2.3.2 | Worksheet 2.11; Technician’s notes 2.11 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 19/20 | **B: 2 Photosynthesis** | 2.12 | | Maths skills: Surface area to volume ratio | * Calculate surface area and volume. * Calculate surface-area to volume ratio. * Know how to apply ideas about surface area and volume. | | 4.2.3.2 | Worksheet 2.12 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 2 | 19/20 | **B: 2 Photosynthesis** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 9 | Term 2 | 19/20 | **C: 2 Structure, bonding and the properties of matter** | 2.10 | | Giant covalent structures | * Recognise giant covalent structures from bonding and structure diagrams. * Explain the properties of giant covalent structures. * Recognise the differences in different forms of carbon. | | 4.2.2.6 | Practical sheet 2.10.1; Worksheets 2.10.1 and 2.10.2; Technician’s notes 2.10.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 19/20 | **C: 2 Structure, bonding and the properties of matter** | 2.11 | | Properties of metals and alloys | * Identify metal elements and their properties, and metal alloys. * Describe the purpose of a tin-lead alloy. * Explain why alloys are harder than pure metals. | | 4.2.2.7, 4.2.2.8 | Practical sheet 2.11.1; Worksheets 2.11.1 and 2.11.2; Technician’s notes 2.11.1 | Quick starter  Homework worksheet  Homework quiz  Slideshows |
| Year 9 | Term 2 | 19/20 | **C: 2 Structure, bonding and the properties of matter** | 2.12 | | Diamond | * Identify why diamonds are so hard. * Explain how the properties relate to the bonding structure in diamond. * Explain why diamond differs from graphite. | | 4.2.3.1 | Worksheet 2.12.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Slideshow  Video |
| Year 9 | Term 2 | 19/20 | **P: 2 Electricity** | 2.5 | | Investigating circuits | * Use series circuits to test components and make measurements. * Carry out calculations on series circuits. | | 4.2.2 | Worksheets 2.5.1, 2.5.2 and 2.5.3; Practical sheet 2.5; Technician’s notes 2.5 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 19/20 | **P: 2 Electricity** | 2.6 | | Circuit components | * Set up a circuit to investigate resistance. * Investigate the changing resistance of a filament lamp. * Compare the properties of a resistor and filament lamp. | | 4.2.1.4 | Practical sheet 2.6; Technician’s notes 2.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 21/22 | **B: 3** **Moving and changing materials** | 3.1 | | Explaining water movement | * Describe how water moves by osmosis in living tissues. * Identify factors that affect the rate of osmosis. * Explain what the term ‘partially permeable membrane’ means. | | 4.1.3.2 | Worksheet 3.1; Practical sheet 3.1; Technician’s notes 3.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 21/22 | **B: 3** **Moving and changing materials** | 3.2 | | Required practical: Investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue | * Use scientific ideas to develop a hypothesis. * Plan experiments to test a hypothesis. * Draw conclusions from data and compare these with hypotheses made. | | 4.1.3.2  Prac 3 | Worksheet 3.2; Practical sheets 3.2.1 and 3.2.2; Technician’s notes 3.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 21/22 | **B: 3** **Moving and changing materials** | 3.3 | | Learning about active transport | * Describe active transport. * Explain how active transport is different from diffusion and osmosis. * Explain why active transport is important. | | 4.1.3.3 | Worksheet 3.3; Technician’s notes 3.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 21/22 | **C: 2 Structure, bonding and the properties of matter** | 2.13 | | Graphite | * Describe the structure and bonding of graphite. * Explain the properties of graphite. * Explain the similarity to metals. | | 4.2.3.2 | Worksheets 2.13.1 and 2.13.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 21/22 | **C: 2 Structure, bonding and the properties of matter** | 2.14 | | Graphene and fullerenes | * Explain the properties of graphene by its structure and bonding. * Recognise graphene and fullerenes from their bonding and structure. * Describe the uses of fullerenes, including carbon nanotubes. | | 4.2.3.3 | Worksheets 2.14.1 and 2.14.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher tier  Video |
| Year 9 | Term 2 | 21/22 | **C: 2 Structure, bonding and the properties of matter** | 2.15 | | Nanoparticles, their properties and uses | * Relate the sizes of nanoparticles to atoms and molecules. * Explain that there may be risks associated with nanoparticles. * Evaluate the use of nanoparticles for specific purposes. | | 4.2.4.1, 4.2.4.2 | Worksheets 2.15.1, 2.15.2 and 2.15.3; Technician’s notes 2.15.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 21/22 | **P: 2 Electricity** | 2.7 | | Required practical: Investigate, using  circuit diagrams to construct circuits,  the *I–V* characteristics of a filament  lamp, a diode and a resistor at constant  temperature | * Understand how an experiment can be designed to test an idea. * Evaluate how an experimental procedure can yield more accurate data. * Interpret and explain graphs using scientific ideas. | | 4.2.1.4  Prac 4 | Practical sheet 2.7; Technician’s notes 2.7 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 21/22 | **P: 2 Electricity** | 2.9 | | Control circuits | * Use a thermistor and light-dependent resistor (LDR). * Investigate the properties of thermistors, LDRs and diodes. | | 4.2.1.4 | Worksheet 2.9; Practical sheet 2.9; Technician’s notes 2.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 23/24 | **B: 3** **Moving and changing materials** | 3.4 | | Key concept: Investigating the need for transport systems | * Describe how the size of an organism affects the rate of diffusion. * Explain how changes in conditions affects the rate of diffusion. * Explain the need for exchange surfaces and transport systems using surface area to volume ratio. | | 4.1.3.1 | Worksheet 3.4; Practical sheet 3.4; Technician’s notes 3.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 2 | 23/24 | **B: 3** **Moving and changing materials** | 3.5 | | Explaining enzymes | * Describe what enzymes are and how they work. * Explain the lock-and-key theory. * Use the collision theory to explain enzyme action. | | 4.2.2.1; 4.4.2.3 | Worksheet 3.5; Practical sheet 3.5; Technician’s notes 3.5 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 23/24 | **B: 3** **Moving and changing materials** | 3.6 | | Required practical: Investigate the effect of pH on the rate of reaction of amylase enzyme | * Describe how safety is managed, apparatus is used and accurate measurements are made. * Explain how representative samples are taken. * Make and record accurate observations. * Draw and interpret a graph from secondary data using knowledge and observations. | | 4.2.2.1  Prac 5 | Worksheets 3.6.1, 3.6.2 and 3.6.3; Practical sheet 3.6; Technician’s notes 3.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 2 | 23/24 | **C: 2 Structure, bonding and the properties of matter** | 2.16 | | Key concept: Sizes of particles and orders of magnitude | * Identify the scale and measurements of length. * Explain the conversion of small lengths to metres. * Explain the relative sizes of electrons, nuclei and atoms. | | 4.1.1.5 | Practical sheet 2.16.1; Worksheets 2.16.1 and 2.16.2; Technician’s notes 2.16.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 2 | 23/24 | **C: 2 Structure, bonding and the properties of matter** | 2.17 | | Maths skills: Visualise and represent 2D and 3D shapes | * Use 2D diagrams and 3D models to:   ○ represent atoms, molecules and ionic structures  ○ represent giant covalent structures  ○ calculate empirical formulae of ionic structures. | | 4.2 | Worksheets 2.17.1, 2.17.2 and 2.17.3 |  |
| Year 9 | Term 2 | 23/24 | **C: 2 Structure, bonding and the properties of matter** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 9 | Term 2 | 23/24 | **P: 2 Electricity** | 2.8 | | Required practical: Use circuit diagrams  to set up and check appropriate circuits  to investigate the factors affecting  the resistance of electrical circuits,  including the length of a wire at constant  temperature and combinations of  resistors in series and parallel | * Use a circuit to determine resistance. * Gather valid data to use in calculations. * Apply the circuit to determine the resistance of combinations of components. | | 4.2.1.3, 4.2.2,  Prac 3 | Worksheet 2.8; Practical sheets 2.8.1, 2.8.2, 2.8.3; Technician’s notes 2.8 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 2 | 23/24 | **P: 2 Electricity** | 2.10 | | Electricity in the home | * Recall that the domestic supply in the UK is a.c. at 50 Hz and about 230 V. * Describe the main features of live, neutral and earth wires. | | 4.2.3.1,  4.2.3.2 | Worksheets 2.10.1, 2.10.2 and 2.10.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 25/26 | **B: 3** **Moving and changing materials** | 3.7 | | Learning about the digestive system | * Identify and locate the organs in the digestive system, and describe their functions. * Describe how the products of digestion are absorbed into the body. * Explain why the small intestine is an efficient exchange surface. | | 4.2.2.1; 4.4.2.3 | Worksheet 3.7; Practical sheet 3.7 (teacher demonstration); Technician’s notes 3.7 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 25/26 | **B: 3** **Moving and changing materials** | 3.8 | | Explaining digestion | * Describe how physical digestion helps to increase the rate of chemical digestion. * Name the sites of production and action of specific enzymes. * Interpret data about digestive enzymes. | | 4.2.2.1 | Worksheet 3.8 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 25/26 | **B: 3** **Moving and changing materials** | 3.9 | | Required practical: Use qualitative reagents to test for a range of carbohydrates, lipids and proteins | * Suggest appropriate apparatus for the procedures. * Describe how safety is managed and apparatus is used. * Describe how accurate measurements are made. * Interpret observations and make conclusions. | | 4.2.2.1  Prac 4 | Practical sheets 3.9.1 and 3.9.2; Technician’s notes 3.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 25/26 | **C: 3 Chemical quantities and calculations** | 3.1 | | Key concept: Conservation of mass and balanced equations | * Explain the law of conservation of mass. * Explain why a multiplier appears as a subscript in a formula. * Explain why a multiplier appears in equations before a formula. | | 4.3.1.1 | Worksheet 3.1.1; Technician’s notes 3.1.1; Presentation 3.1.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 3 | 25/26 | **C: 3 Chemical quantities and calculations** | 3.2 | | Relative formula mass | * Identify the relative atomic mass of an element from the periodic table. * Calculate relative formula masses from atomic masses. * Verify the law of conservation of mass in a balanced equation. | | 4.3.1.2 | Worksheets 3.2.1, 3.2.2 and 3.2.3; Technician’s notes 3.2.1; Presentation 3.2.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 25/26 | **C: 3 Chemical quantities and calculations** | 3.3 | | Mass changes when gases are in reactions | * + Explain any observed changes in mass in a chemical reaction.   + Identify the mass changes using a balanced symbol equation.   + Explain these changes in terms of the particle model. | | 4.3.1.3 | Worksheet 3.3.1; Practical sheet 3.3.1; Technician’s notes 3.3.1; Presentations 3.3.1 and 3.3.2; Graph Plotter 3.3.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 25/26 | **P: 2 Electricity** | 2.11 | | Transmitting electricity | * Describe how electricity is transmitted using the National Grid. * Explain why electrical power is transmitted at high potential differences. * Understand the role of transformers. | | 4.2.4.3 | Worksheet 2.11 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 25/26 | **P: 2 Electricity** | 2.12 | | Power and energy transfers | * Describe the energy transfers in different domestic appliances. * Describe power as a rate of energy transfer. * Calculate the energy transferred. | | 4.2.4.2 | Worksheets 2.12.1, 2.12.2 and 2.12.3; Practical sheet 2.12; Technician’s notes 2.12 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 27/28 | **B: 3** **Moving and changing materials** | 3.10 | | Looking at more exchange surfaces | * Identify the structures responsible for gas exchange in fish, amphibians and insects. * Describe the adaptations of different gas exchange surfaces. * Explain the gas exchange surfaces in amphibians. | | 4.1.3.1 | Worksheets 3.10.1, 3.10.2 and 3.10.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 27/28 | **B: 3** **Moving and changing materials** | 3.11 | | Learning about plants and minerals | * Describe how mineral ions from the soil help plants to grow. * Explain how root hair cells are adapted for efficient osmosis. * Describe the function of different mineral ions in a plant. | | 4.1.3.3; 4.2.3.2 | Worksheet 3.11 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 27/28 | **B: 3** **Moving and changing materials** | 3.12 | | Investigating how plants use minerals | * Describe why plants need different mineral ions. * Explain the effects of mineral deficiencies on plant growth. * Explain the importance of fertilisers. | | 4.3.3.1 | Worksheet 3.12; Practical sheet 3.12; Technician’s notes 3.12 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 27/28 | **C: 3 Chemical quantities and calculations** | 3.4 | | Chemical measurements and uncertainty | * Understand that all measurements have a degree of uncertainty. * Estimate the uncertainty from the distribution of results. * Measure uncertainty from the range of a set of measurements and their mean. | | 4.3.1.4 | Technician’s notes 3.4.1; Presentation 3.4.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 27/28 | **C: 3 Chemical quantities and calculations** | 3.5 | | Moles (Higher tier only) | * Describe the measurements of amounts of substances in moles. * Calculate the number of moles in a given mass. * Calculate the mass of a given number of moles. | | 4.3.2.1 | Worksheets 3.5.1 and 3.5.2; Technician’s notes 3.5.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 27/28 | **C: 3 Chemical quantities and calculations** | 3.6 | | Amounts of substances in equations (Higher tier only) | * Calculate the masses of substances in a balanced symbol equation. * Calculate the masses of reactants and products from balanced symbol equations. * Calculate the mass of a given reactant or product. | | 4.3.2.2 | Worksheet 3.6.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 27/28 | **P: 2 Electricity** | 2.13 | | Calculating power | * Calculate power. * Use power equations to solve problems. * Consider power ratings and changes in stored energy. | | 4.2.4.1  4.1.1.1  4.1.1.2  4.1.1.3 | Worksheets 2.13.1, 2.13.2 and 2.13.3; Practical sheet 2.13; Technician’s notes 2.13 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 27/28 | **P: 2 Electricity** | 2.14 | | Key concept: What’s the difference between potential difference and current? | * Understand and apply the concepts of current and potential difference. * Use these concepts to explain various situations. | | 4.2.1 | Worksheet 2.14; Practical sheets 2.14.1, 2.14.2 and 2.14.3; Technician’s notes 2.14 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 27/28 | **P: 2 Electricity** | 2.15 | | Maths skills: Using formulae and understanding graphs | * Recognise how algebraic equations define the relationships between variables. * Solve simple algebraic equations by substituting numerical values. * Describe relationships expressed in graphical form. | | 4.2 | Worksheets 2.15.1, 2.15.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 29/30 | **B: 3** **Moving and changing materials** | 3.13 | | Learning about the circulatory system | * Identify the parts of the circulatory system. * Describe the functions of the parts of the circulatory system. * Explain how the structure of each part of the circulatory system relates to its function. | | 4.2.2.2; 4.2.2.3 | Worksheets 3.13.1, 3.13.2 and 3.13.3; Practical sheets 3.13.1 and 3.13.2; Technician’s notes 3.13 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 29/30 | **B: 3** **Moving and changing materials** | 3.14 | | Exploring the heart | * Describe the structure and functions of the heart. * Identify the functions and adaptations of the parts of the heart. * Explain the movement of blood around the heart. | | 4.2.2.2 | Worksheet 3.14; Practical sheet 3.14; Technician’s notes 3.14 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Videos |
| Year 9 | Term 3 | 29/30 | **B: 3** **Moving and changing materials** | 3.15 | | Studying blood | * Identify the parts of the blood and their functions. * Explain the adaptations of red blood cells. * Explain how red blood cells and haemoglobin transport oxygen efficiently. | | 4.2.2.3 | Worksheets 3.15.1 and 3.15.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 29/30 | **C: 3 Chemical quantities and calculations** | 3.7 | | Using moles to balance equations (Higher tier only) | * Convert masses in grams to amounts in moles. * Balance an equation given the masses of reactants and products. * Change the subject of a mathematical equation. | | 4.3.2.3, 4.3.2.4 | Worksheet 3.7.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 29/30 | **C: 3 Chemical quantities and calculations** | 3.8 | | Concentration of solutions | * Relate mass, volume and concentration. * Calculate the mass of solute in solution. * Relate concentration in mol/dm3 to mass and volume. | | 4.3.2.5 | 3.8.1, Worksheet 3.8.1, Technician’s notes 3.8.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 29/30 | **C: 3 Chemical quantities and calculations** | 3.9 | | Key concept: Percentage yield | * Calculate the percentage yield from the actual yield. * Identify the balanced equation for calculating yields. * Calculate theoretical product amounts from reactant amounts. | | 4.3.3.1 | Practical sheet 3.9.1; Worksheet 3.9.1; Technician’s notes 3.9.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 29/30 | **P: 2 Electricity** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 9 | Term 3 | 29/30 | **P: 3 Particle model of matter** | 3.1 | | Density | * Use the particle model to explain the different states of matter and differences in density. * Calculate density. | | 4.3.1.1 | Worksheet 3.1; Practical sheet 3.1; Technician’s notes 3.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 31/32 | **B: 3** **Moving and changing materials** | 3.16 | | Investigating gas exchange | * Identify the parts of the human gas exchange system and know their functions. * Explain how gas exchange occurs in humans. * Explain the adaptations of the gas exchange surfaces. | | 4.1.3.1; 4.2.2.2 | Worksheet 3.16; Practical sheet 3.16; Technician’s notes 3.16 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 31/32 | **B: 3** **Moving and changing materials** | 3.17 | | Learning about coronary heart disease | * Identify the causes and symptoms of coronary heart disease and heart failure. * Describe possible treatments of coronary heart disease and heart failure. * Evaluate the possible treatments of coronary heart disease and heart failure. | | 4.2.2.4 | Worksheets 3.17.1, 3.17.2 and 3.17.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 31/32 | **B: 3** **Moving and changing materials** | 3.18 | | Maths skills: Extracting and interpreting information | * Extract and interpret information from tables, charts and graphs. | |  | Worksheets 3.18.1, 3.18.2 and 3.18.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 3 | 31/32 | **B: 3** **Moving and changing materials** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 9 | Term 3 | 31/32 | **C: 3 Chemical quantities and calculations** | 3.10 | | Atom economy | * Identify the balanced equation of a reaction. * Calculate the atom economy of a reaction to form a product. * Explain why a particular reaction pathway is chosen. | | 4.3.3.2 | Worksheets 3.10.1 and 3.10.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 9 | Term 3 | 31/32 | **C: 3 Chemical quantities and calculations** | 3.11 | | Using concentrations of solutions | * Describe how to carry out titrations. * Calculate concentrations in titrations in mol/dm3 and in g/dm3. * Explain how the concentration of a solution in mol/dm3 is related to the mass of the mass of the solute and the volume of the solution. | | 4.3.4, 4.4.2.5 | Practical sheet 3.11.1, Worksheet 3.11.1 Technician’s notes 3.11.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 9 | Term 3 | 31/32 | **C: 3 Chemical quantities and calculations** | 3.12 | | Amounts of substance in volumes of gases (Higher tier only) | * Explain that the same amount of any gas occupies the same volume at room temperature and pressure (rtp). * Calculate the volume of a gas at rtp from its mass and relative formula mass. * Calculate volumes of gases from a balanced equation and a given volume of a reactant or product. | | 4.3.5 | Practical sheet 3.12.1; Worksheet 3.12.1; Technician’s notes 3.12.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 31/32 | **P: 3 Particle model of matter** | 3.2 | | Required practical: To investigate the densities of regular and irregular solid objects and liquids | * Interpret observations and data. * Use spatial models to solve problems. * Plan experiments and devise procedures. * Use an appropriate number of significant figures in measurements and calculations. | | 4.3.1.1  Prac 5 | Worksheet 3.2; Practical sheet 3.2; Technician’s notes 3.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 31/32 | **P: 3 Particle model of matter** | 3.3 | | Changes of state | * Describe how, when substances change state, mass is conserved. * Describe energy transfer in changes of state. * Explain changes of state in terms of particles. | | 4.3.1.2 | Worksheet 3.3; Practical sheet 3.3; Technician’s notes 3.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 33/34 | **B: 4** **Health matters** | 4.1 | | Learning about health | * Recall the difference between health and disease. * Explain how some diseases interact. * Evaluate data about lifestyle and health. | | 4.2.2.5; 4.2.2.6; 4.2.2.7 | Worksheets 4.1.1, 4.1.2 and 4.1.3; Practical sheet 4.1; Technician’s notes 4.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 33/34 | **B: 4** **Health matters** | 4.2 | | Key concept: Looking at risk factors | * Recall the causes of some non-communicable diseases. * Describe the impact of lifestyle on non-communicable diseases. * Explain the impact of lifestyle on non-communicable diseases. | | 4.2.2.6 | Worksheets 4.2.1 and 4.2.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 9 | Term 3 | 33/34 | **B: 4** **Health matters** | 4.3 | | Exploring non-communicable diseases | * Identify risk factors for cancer. * Explain the differences between types of tumours. * Explain the impact of non-communicable diseases | | 4.2.2.6; 4.2.2.7 | Worksheet 4.3; Practical sheet 4.3; Technician’s notes 4.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 33/34 | **C: 3 Chemical quantities and calculations** | 3.13 | | Key concept: Amounts in chemistry | * Use atomic masses to calculate formula mass. * Explain how formula mass relates to the number of moles. * Explain how the number of moles relates to other quantities. | | 4.3 | Worksheets 3.13.1 and 3.13.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow  Video |
| Year 9 | Term 3 | 33/34 | **C: 3 Chemical quantities and calculations** | 3.14 | | Maths skills: Change the subject of an equation | * Use an equation to demonstrate conservation. * Rearrange the subject of an equation. * Carry out a multi-step calculation. | |  | Worksheet 3.14.1; PowerPoint 3.14.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 9 | Term 3 | 33/34 | **C: 3 Chemical quantities and calculations** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 9 | Term 3 | 33/34 | **P: 3 Particle model of matter** | 3.4 | | Internal energy | * Describe the particle model of matter. * Understand what is meant by the internal energy of a system. * Describe the effect of heating on the energy stored within a system. | | 4.3.2.1 | Worksheet 3.4; Practical sheets 3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5, 3.4.6; Technician’s notes 3.4 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 33/34 | **P: 3 Particle model of matter** | 3.5 | | Specific heat capacity | * Describe the effect of increasing the temperature of a system in terms of particles. * State the factors that are affected by an increase in temperature of a substance. * Explain specific heat capacity. | | 4.3.2.2 | Worksheet 3.5; Practical sheet 3.5; Technician’s notes 3.5 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 35/36 | **B: 4** **Health matters** | 4.4 | | Analysing and evaluating data | * Translate information between graphical and numerical forms. * Use scatter diagrams to identify correlations. * Evaluate the strength of evidence. | | 4.2.2.5; 4.2.2.6 | Worksheets 4.4.1, 4.4.2 and 4.4.3; Practical sheet 4.4; Technician’s notes 4.4 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 35/36 | **B: 4** **Health matters** | 4.5 | | Studying pathogens | * Recall the definition of a pathogen. * Explain how communicable diseases can be controlled. * Distinguish between epidemics and pandemics. | | 4.3.1.1 | Worksheets 4.5.1 and 4.5.2 | Quick starter  Homework worksheet  Homework quiz  Videos |
| Year 9 | Term 3 | 35/36 | **B: 4** **Health matters** | 4.6 | | Learning about viral diseases | * Describe the symptoms of some viral diseases. * Describe the transmission and control of some viral diseases. * Explain how some viral diseases are spread. | | 4.3.1.2 | Worksheets 4.6.1, 4.6.2 and 4.6.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 35/36 | **C: 4 Chemical changes** | 4.1 | | Metal oxides | * Identify that metals react with oxygen to form metal oxides. * Explain oxidation by gain of oxygen. * Identify metal oxides as bases. | | 4.4.1.1 | Practical sheet 4.1.1; Worksheets 4.1.1, 4.1.2 and 4.1.3; Presentation 4.1.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 9 | Term 3 | 35/36 | **C: 4 Chemical changes** | 4.2 | | Reactivity series | * Describe the reactions, if any, of metals with water or dilute acids. * Deduce an order of reactivity of metals based on experimental results. * Explain how the reactivity is related to the tendency of the metal to form its positive ion. | | 4.4.1.2 | Practical sheet 4.2.1; Worksheet 4.2.1; Technician’s notes 4.2.1; Presentations 4.2.1 and 4.2.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 9 | Term 3 | 35/36 | **C: 4 Chemical changes** | 4.3 | | Extraction of metals | * Identify substances reduced by loss of oxygen. * Explain how extraction methods depend on metal reactivity. * Interpret or evaluate information on specific metal extraction processes. | | 4.4.1.3 | Practical sheet 4.3.1; Worksheet 4.3.1; Technician’s notes 4.3.1; Presentation 4.3.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 9 | Term 3 | 35/36 | **P: 3 Particle model of matter** | 3.6 | | Latent heat | * Explain what is meant by latent heat. * Describe that when a change of state occurs it changes the energy stored but not the temperature. * Perform calculations involving specific latent heat. | | 4.3.2.3 | Worksheet 3.6; Practical sheet 3.6; Technician’s notes 3.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 9 | Term 3 | 35/36 | **P: 3 Particle model of matter** | 3.9 | | Key concept: Particle model and changes of state | * Use the particle model to explain states of matter. * Use ideas about energy and bonds to explain changes of state. * Explain the relationship between temperature and energy. | | 4.3 | Worksheet 3.9; Practical sheet 3.9; Technician’s notes 3.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 35/36 | **P: 3 Particle model of matter** | 3.10 | | Maths skills: Drawing and interpreting graphs | * Plot a graph of temperature against time. * Draw a line of best fit (which may be a curve). * Interpret a graph of temperature against time. | | 4.3.2.3 | Worksheet 3.10; Practical sheet 3.10; Technician’s notes 3.10 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 37/38 | **B: 4** **Health matters** | 4.7 | | Studying bacterial diseases | * Describe the symptoms of some bacterial diseases. * Explain how some bacterial diseases can be controlled. * Compare and contrast bacterial and viral diseases. | | 4.3.1.3 | Worksheets 4.7.1, 4.7.2 and 4.7.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 37/38 | **B: 4** **Health matters** | 4.8 | | Looking at fungal diseases | * Recall the name and symptoms of a fungal disease. * Describe the transmission and treatment of rose black spot. * Explain how rose black spot affects the growth of the plant. | | 4.3.1.4 | Worksheet 4.8 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 37/38 | **B: 4** **Health matters** | 4.9 | | Learning about malaria | * Recall that malaria is a protist disease. * Describe the lifecycle of the malarial vector. * Evaluate control methods for the spread of malaria. | | 4.3.1.5 | Worksheets 4.9.1 and 4.9.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 37/38 | **C: 4 Chemical changes** | 4.4 | | Oxidation and reduction in terms of electrons | * Use experimental results of displacement reactions to confirm the reactivity series. * Write ionic equations for displacement reactions. * Identify in a half equation which species are oxidised and which are reduced. | | 4.4.1.2,  4.4.1.4 | Practical sheet 4.4.1; Worksheet 4.4.1; Technician’s notes 4.4.1; Presentations 4.4.1 and 4.4.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 37/38 | **C: 4 Chemical changes** | 4.5 | | Reaction of metals with acids | * Describe how to make salts from metals and acids. * Write full balanced symbol equations for making salts. * Use half equations to describe oxidation and reduction. | | 4.4.2.1 | Practical sheet 4.5.1; Worksheets 4.5.1 and 4.5.2; Technician’s notes 4.5.1; Presentations 4.5.1 and 4.5.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 37/38 | **C: 4 Chemical changes** | 4.6 | | Neutralisation of acids and salt production | * Describe ways that salts can be made. * Predict products from given reactants. * Deduce the formulae of salts from the formulae of common ions. | | 4.4.2.2 | Practical sheet 4.6.1; Worksheets 4.6.1 and 4.6.2; Technician’s notes 4.6.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 1 | 37/38 | **P: 3 Particle model of matter** | 3.7 | | Particle motion in gases | * Relate the temperature of a gas to the average kinetic energy of the particles. * Explain how a gas has a pressure. * Explain that changing the temperature of a gas held at constant volume changes its pressure. | | 4.3.3.1 | Worksheet 3.7; Practical sheet 3.7; Technician’s notes 3.7 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 37/38 | **P: 3 Particle model of matter** | 3.8 | | Increasing the pressure of a gas | * Describe the relationship between the pressure and volume of a gas at constant temperature. * Calculate the change in the pressure or volume of a gas held at constant temperature when either the pressure or volume is increased or decreased. * Explain how doing work on a gas can increase its temperature. | | 4.3.3.2,  4.3.3.3 | Worksheet 3.8; Practical sheet 3.8; Technician’s notes 3.8 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 37/38 | **P: 3 Particle model of matter** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 10 | Term 1 | 39/40 | **B: 4** **Health matters** | 4.10 | | Protecting the body | * Describe how the body protects itself from pathogens. * Explain how the body protects itself from pathogens. * Explain how communicable diseases can be spread. | | 4.3.1.6 | Worksheets 4.10.1, 4.10.2 and 4.10.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 39/40 | **B: 4** **Health matters** | 4.11 | | Exploring white blood cells | * Describe phagocytosis. * Explain how antibody production can lead to immunity. * Explain the specificity of immune system responses | | 4.3.1.6 | Worksheet 4.11 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 39/40 | **B: 4** **Health matters** | 4.12 | | Using antibiotics and painkillers | * Describe the uses of antibiotics and painkillers. * Explain how antibiotics and painkillers can be used to treat diseases. * Explain the limitations of antibiotics. | | 4.3.1.8 | Worksheet 4.12; Practical sheet 4.12; Technician’s notes 4.12 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 39/40 | **C: 4 Chemical changes** | 4.7 | | Soluble salts | * Describe how to make pure, dry samples of soluble salts. * Explain how to name a salt. * Derive the formula for a salt from its ions. | | 4.4.2.3 | Practical sheet 4.7.1; Worksheets 4.7.1 and 4.7.2; Technician’s notes 4.7.1; Presentations 4.7.1 and 4.7.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 1 | 39/40 | **C: 4 Chemical changes** | 4.8 | | Required practical: Preparing a pure, dry sample of a salt from an insoluble oxide or carbonate | * Describe a practical procedure for producing a salt from a solid and an acid. * Explain the apparatus, materials and techniques used for making the salt. * Describe how to safely manipulate apparatus and accurately measure melting points. | | 4.4.2.3  Prac 1 | Practical sheet 4.8.1; Technician’s notes 4.8.1; Presentations 4.8.1 and 4.8.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 39/40 | **C: 4 Chemical changes** | 4.9 | | pH and neutralisation | * Describe the use of universal indicator to measure pH. * Use the pH scale to identify acidic or alkaline solutions. * Investigate pH changes when a strong acid neutralises a strong alkali. | | 4.4.2.4 | Practical sheet 4.9.1; Worksheet 4.9.1; Technician’s notes 4.9.1, 4.9.2 and 4.9.3; Presentation 4.9.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 39/40 | **P: 4 Atomic structure** | 4.1 | | Atomic structure | * Describe the structure of the atom. * Use symbols to represent particles. * Describe ionisation. | | 4.4.1.1,  4.4.1.2 | Worksheets 4.1.1, 4.1.2 and 4.1.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 39/40 | **P: 4 Atomic structure** | 4.2 | | Radioactive decay | * Describe radioactive decay. * Describe the types of nuclear radiation. * Understand the processes of alpha decay and beta decay. | | 4.4.2.1 | Worksheets 4.2.1, 4.2.2 and 4.2.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 39/40 | **P: 4 Atomic structure** | 4.3 | | Background radiation | * Recall sources of background radiation. * Describe how different types of radiation have different ionising power. * Justify the selection of sources for particular applications. | | 4.4.2.1, 4.4.3.1 | Worksheets 4.3.1, 4.3.2 and 4.3.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 41/42 | **B: 4** **Health matters** | 4.13 | | Building immunity | * Recall how vaccinations prevent infection. * Explain how mass vaccination programmes reduce the spread of a disease. * Evaluate the global use of vaccination. | | 4.3.1.7 | Worksheets 4.13.1, 4.13.2 and 4.13.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 1 | 41/42 | **B: 4** **Health matters** | 4.14 | | Making new drugs | * Recall some traditional drugs and their origins. * Describe how new drugs are developed. * Explain why ‘double-blind’ trials are conducted. | | 4.3.1.9 | Worksheets 4.14.1 and 4.14.2; Practical sheet 4.14; Technician’s notes 4.14 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 1 | 41/42 | **B: 4** **Health matters** | 4.15 | | Investigating monoclonal antibodies (Higher tier only) | * Describe uses of monoclonal antibodies. * Explain how monoclonal antibodies are produced. * Evaluate the use of monoclonal antibodies. | | 4.3.2.1; 4.3.2.2 | Worksheet 4.15 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 41/42 | **C: 4 Chemical changes** | 4.10 | | Required practical: Finding the reacting volumes of acid and alkali by titration | * Describe how safety, the correct manipulation of apparatus and the accuracy of measurements are managed when titrations are carried out. * Make and record observations and accurate measurements using burettes. * Calculate the concentration of a solution from the concentration and volume of another. | | 4.4.2.5  Prac 2 | Practical sheet 4.10.1; Technician’s notes 4.10.1; Presentations 4.10.1 and 4.10.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 41/42 | **C: 4 Chemical changes** | 4.11 | | Strong and weak acids (Higher tier only) | * Explain weak and strong acids by the degree of ionisation. * Describe neutralisation by the effect on hydrogen ions and pH. * Explain dilute and concentrated as amounts of substance. | | 4.4.2.6 | Worksheet 4.11.1; Presentation 4.11.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 1 | 41/42 | **C: 4 Chemical changes** | 4.12 | | The process of electrolysis | * Identify reactions at electrodes during electrolysis. * Explain why a mixture is used and the anode needs constant replacement. * Write and balance half equations for the electrode reactions. | | 4.4.3.1 | Practical sheet 4.12.1; Worksheet 4.12.1; Technician’s notes 4.12.1; Presentation 4.12.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow  Video |
| Year 10 | Term 1 | 41/42 | **P: 4 Atomic structure** | 4.4 | | Nuclear equations | * Understand nuclear equations. * Write balanced nuclear equations. | | 4.4.2.2 | Worksheets 4.4.1, 4.4.2 and 4.4.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 41/42 | **P: 4 Atomic structure** | 4.5 | | Radioactive half-life | * Explain what is meant by radioactive half-life. * Calculate half-life. * Calculate the decline in activity after a number of half-lives. | | 4.4.2.3,  4.4.3.2 | Worksheets 4.5.1, 4.5.2 and 4.5.3; Practical sheet 4.5; Technician’s notes 4.5 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 41/42 | **P: 4 Atomic structure** | 4.6 | | Hazards and uses of radiation | * Describe radioactive contamination. * Give examples of how radioactive tracers can be used. | | 4.4.2.4 | Worksheets 4.6.1, 4.6.2 and 4.6.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **B: 4** **Health matters** | 4.16 | | Looking at plant diseases | * Recall the causes of plant diseases. * Describe the symptoms and identification methods of some plant diseases. * Explain the use of monoclonal antibodies in identifying plant pathogens. | | 4.3.2.1; 4.3.3.1 | Worksheets 4.16.1, 4.16.2 and 4.16.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **B: 4** **Health matters** | 4.17 | | Learning about plant defences | * Recall some physical plant defence responses. * Explain how mechanical plant defence systems help them survive. * Explain how chemical plant defence systems help them survive. | | 4.3.3.2 | Worksheet 4.17 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **B: 4** **Health matters** | 4.18 | | Maths skills: Sampling and scientific data | * Understand why sampling is used in science. * Be able to explain different sampling techniques. | | 4.2.2.5; 4.2.2.6;  4.3 | Worksheet 4.18; Practical sheet 4.18; Technician’s notes 4.18 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 1 | 43/44 | **B: 4** **Health matters** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 10 | Term 1 | 43/44 | **C: 4 Chemical changes** | 4.13 | | Electrolysis of molten ionic compounds | * Identify which ions move to the cathode and anode. * Explain how the ions of a molten electrolyte are discharged. * Predict the products of electrolysis of molten binary compounds. | | 4.4.3.2 | Worksheet 4.13.1; Presentation 4.13.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 43/44 | **C: 4 Chemical changes** | 4.14 | | Using electrolysis to extract metals | * Explain the process of the electrolysis of aluminium oxide. * Explain why a mixture is used and the anode needs constant replacement. * Write half equations for the reactions at the electrodes. | | 4.4.3.3 | Worksheet 4.14.1; Presentations 4.14.1 and 4.14.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 10 | Term 1 | 43/44 | **C: 4 Chemical changes** | 4.15 | | Electrolysis of aqueous solutions | * Explain the electrolysis of copper sulfate using inert electrodes. * Predict the products of the electrolysis of aqueous solutions. * Represent reactions at electrodes by half equations. | | 4.4.3.4, 4.4.3.5 | Practical sheet 4.15; Technician’s notes 4.15.1; Presentation 4.15.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **P: 4 Atomic structure** | 4.7 | | Irradiation | * Explain what is meant by irradiation. * Understand the distinction between contamination and irradiation. * Appreciate the importance of communication between scientists. | | 4.4.2.4 | Worksheets 4.7.1, 4.7.2 and 4.7.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **P: 4 Atomic structure** | 4.8 | | Uses of radiation in medicine | * Compare gamma rays and X-rays. * Describe some uses of nuclear radiation for medical diagnosis and therapy. | | 4.4.3.3 | Worksheets 4.8.1, 4.8.2, 4.8.3 and 4.8.4 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 43/44 | **P: 4 Atomic structure** | 4.9 | | Using nuclear radiation | * Explore the risks and benefits of using nuclear radiation. * Describe how internal organs can be explored. * Understand how nuclear radiation can control or destroy unwanted tissue. | | 4.4.3.3 | Worksheets 4.9.1, 4.9.2 and 4.9.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 45/46 | **B: 4** **Health matters** | 5.1 | | Homeostasis | * Explain the importance of homeostasis in regulating internal conditions in the body. * Recall that these control systems involve nervous or chemical responses. * Describe how control systems involve receptors, coordination centres and effectors. | | 4.5.1 | Worksheets 5.1.1 and 5.1.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 45/46 | **B: 5 Coordination and control** | 5.2 | | The nervous system | * Describe the structure and function of the nervous system. * Explain how the nervous system is adapted to its functions. * Describe the structure of sensory, motor and relay neurones. | | 4.5.2.1 | Worksheets 5.2.1 and 5.2.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 45/46 | **B: 5 Coordination and control** | 5.3 | | Reflex actions | * Explain the importance of reflex actions. * Describe the path of a reflex arc. * Explain how the structures in the reflex arc relate to their function. | | 4.5.2.1 | Worksheets 5.3.1, 5.3.2 and 5.3.3; Practical sheet 5.3; Technician’s notes 5.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 45/46 | **C: 4 Chemical changes** | 4.16 | | Required practical: Investigating what happens when aqueous solutions are electrolysed using inert electrodes | * Use scientific theories and explanations to develop hypotheses. * Plan experiments to make observations and test hypotheses. * Apply a knowledge of the apparatus needed for electrolysis including use of inert electrodes and varying electrolytes. * Make and record observations. | | 4.4.3.4  Prac 3 | Practical sheet 4.16.1; Technician’s notes 4.16.1; Presentations 4.16.1 and 4.16.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 45/46 | **C: 4 Chemical changes** | 4.17 | | Key concept: Electron transfer, oxidation and reduction | * Explain why atoms lose or gain electrons. * Explain oxidation and reduction by electron transfer. * Relate ease of losing electrons to reactivity. | | 4.2.1.2, 4.4.1.4, 4.4.1.2 | Worksheet 4.17.1; Presentation 4.17.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 1 | 45/46 | **C: 4 Chemical changes** | 4.18 | | Maths skills: Make order of magnitude calculations | * Use graphs and diagrams to apply the pH scale to acid rain distribution. * Calculate the concentration of acids. * Calculate the effect of hydrogen ion concentration on the numerical value of pH. | | 4.4.2 | Practical sheet 4.18.1; Technician’s notes 4.18.1; Presentation 4.18.1 |  |
| Year 10 | Term 1 | 45/46 | **C: 4 Chemical changes** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 10 | Term 1 | 45/46 | **P: 4 Atomic structure** | 4.10 | | Nuclear fission | * Describe nuclear fission. * Explain how a chain reaction occurs. * Explain how fission is used. | | 4.4.4.1 | Worksheets 4.10.1, 4.10.2 and 4.10.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 45/46 | **P: 4 Atomic structure** | 4.11 | | Nuclear fusion | * Explain nuclear fusion. * Describe the conditions needed for fusion. * Describe how nuclear fusion may be an attractive energy source. | | 4.4.4.2 | Worksheet 4.11.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 45/46 | **P: 4 Atomic structure** | 4.12 | | Key concept: Developing ideas for the structure of the atom | * Understand how ideas about the structure of the atom have changed. * Understand how evidence is used to test and improve models. | | 4.4.1.3 | Worksheets 4.12.1, 4.12.2, 4.12.3 and 4.12.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 47/48 | **B: 5 Coordination and control** | 5.4 | | The brain | * Recall that the brain controls complex behaviour using billions of interconnected neurones. * Identify the three main regions of the brain and describe their functions. * Describe how the regions of the brain are mapped. | | 4.5.2.2 | Worksheets 5.4.1 and 5.4.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 1 | 47/48 | **B: 5 Coordination and control** | 5.5 | | Required practical: Investigating reaction time | * Select appropriate apparatus and techniques for the measurement of biological processes. * Carry out physiological experiments safely. * Use appropriate techniques in problem-solving contexts. | | 4.5.2.1  Prac 7 | Worksheets 5.5.1,5.5.2 and 5.5.3; Practical sheet 5.5; Technician’s notes 5.5 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 47/48 | **B: 5 Coordination and control** | 5.6 | | The eye | * Relate the structures of the eye to their functions. * Explain how the eye is adapted to seeing in colour and in dim light. | | 4.5.2.3 | Worksheets 5.6.1, 5.6.2 and 5.6.3; Practical sheet 5.6; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 1 | 47/48 | **C: 5 Energy changes** | 5.1 | | Key concept: Endothermic and exothermic reactions | * Identify exothermic and endothermic reactions from temperature changes. * Evaluate the energy transfer of a fuel. * Investigate the variables that affect temperature changes in reacting solutions. | | 4.5.1.1, 4.5.1.2, 4.5.1.3 | Practical sheet 5.1.1; Worksheet 5.1.1; Technician’s notes 5.1.1; Graph plotters 5.1.1, 5.1.2, 5.1.3 and 5.1.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 47/48 | **C: 5 Energy changes** | 5.2 | | Required practical: Investigate the variables that affect temperature changes in reacting solutions, such as acid plus metals, acid plus carbonates, neutralisations, displacement of metals | * Use scientific theories and explanations to develop hypotheses. * Plan experiments to make observations and test hypotheses. * Evaluate methods to suggest possible improvements and further investigations. | | 4.5.1.1  Prac 4 | Practical sheet 5.2.1; Technician’s notes 5.2.1; Presentation5.2.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 1 | 47/48 | **C: 5 Energy changes** | 5.3 | | Reaction profiles | * Draw simple reaction profiles (energy level diagrams). * Use reaction profiles to identify reactions as exothermic or * Endothermic. * Explain the energy needed for a reaction to occur and calculate energy changes. | | 4.5.1.2 | Worksheets 5.3.1 and 5.3.2; Technician’s notes 5.3.1; Presentation 5.3.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 1 | 47/48 | **P: 4 Atomic structure** | 4.13 | | Maths skills: Using ratios and proportional reasoning | * Calculate radioactive half-life from a curve of best fit. * Calculate the net decline in radioactivity. | | 4.4.2.3 | Worksheets 4.13.1 and 4.13.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 1 | 47/48 | **P: 4 Atomic structure** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test *Collins Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 10 | Term 2 | 49/50 | **B: 5 Coordination and control** | 5.7 | | Seeing in focus | * Relate the structures of the eye to their functions. * Understand how the eye is able to focus on near or distant objects. | | 4.5.2.3 | Worksheets 5.7.1, 5.7.2 and 5.7.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 49/50 | **B: 5 Coordination and control** | 5.8 | | Eye defects | * Understand that, in myopia and hyperopia, the eye cannot focus light rays on the retina. * Demonstrate how techniques are used to correct eye defects. | | 4.5.2.3 | Worksheets 5.8.1, 5.8.2 and 5.8.3; Practical sheet 5.8 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 49/50 | **B: 5 Coordination and control** | 5.9 | | Controlling body temperature | * Understand the mechanisms by which body temperature is controlled when too hot or cold. * Explain how body temperature can be controlled in a specific context. | | 4.5.2.4 | Worksheet 5.9; Practical sheet 5.9; Technician’s notes 5.9; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 49/50 | **B: 5 Coordination and control** | 5.10 | | The endocrine system | * Recall that the endocrine system is made up of glands that secrete hormones into the blood. * Know the location of the major endocrine glands. * Understand why the pituitary gland is the ‘master gland’. | | 4.5.3.1 | Worksheets 5.10.1 and 5.10.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 49/50 | **C: 5 Energy changes** | 5.4 | | Energy change of reactions (Higher tier only) | * Describe the energy changes in bond breaking and bond making. * Explain how a reaction is endothermic or exothermic overall. * Calculate the energy transferred in chemical reactions using bond energies. | | 4.5.1.3 | Worksheets 5.4.1 and 5.4.2; Technician’s notes 5.4.1; Presentation 5.4.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 49/50 | **C: 5 Energy changes** | 5.5 | | Cells and batteries | * Explain how a voltage can be produced by metals in an electrolyte. * Evaluate the use of cells. * Interpret data for the relative reactivity of different metals. | | 4.5.2.1 | Practical sheet 5.5.1; Worksheets 5.5.1 and 5.5.2; Technician’s notes 5.5.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshows |
| Year 10 | Term 2 | 49/50 | **C: 5 Energy changes** | 5.6 | | Fuel cells | * Describe how a fuel cell works. * Explain the processes in the energy conversions. * Evaluate the use of hydrogen fuel cells in comparison with rechargeable cells and batteries. | | 4.5.2.2 | Worksheet 5.6.1; Technician’s notes 5.6.1; Presentations 5.6.1 and 5.6.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 49/50 | **C: 5 Energy changes** | 5.7 | | Maths skills: Recognise and use expressions in decimal form | * Read scales in integers and using decimals. * Calculate the energy change during a reaction. * Calculate energy transferred for comparison. | | 4.5.1 | Practical sheet 5.7.1; Worksheet 5.7.1; Technician’s notes 5.7.1; Presentation 5.7.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 49/50 | **P: 5 Forces** | 5.1 | | Forces | * Describe a force. * Recognise the difference between contact and non-contact forces. * State examples of scalar and vector quantities. | | 4.5.1.1  4.5.1.2  4.5.6.1.3 | Worksheet 5.1.1, 5.1.2 and 5.1.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 49/50 | **P: 5 Forces** | 5.2 | | Speed | * Calculate speed using distance travelled divided by time taken. * Calculate speed from a distance–time graph. * Measure the gradient of a distance–time graph at any point. | | 4.5.6.1.1  4.5.6.1.2  4.5.6.1.4 | Worksheets 5.2.1, 5.2.2 and 5.2.3; Practical sheet 5.2; Technician’s notes 5.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 49/50 | **P: 5 Forces** | 5.3 | | Acceleration | * Describe acceleration. * Calculate acceleration. * Explain motion in a circle. | | 4.5.6.1.3  4.5.6.1.5 | Worksheets 5.3.1, 5.3.2 and 5.3.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 51/52 | **B: 5 Coordination and control** | 5.11 | | Controlling blood glucose | * Recall that blood glucose is monitored and controlled by the pancreas. * Understand how insulin controls blood glucose levels. * Understand how insulin works with another hormone – glucagon – to control blood sugar levels. | | 4.5.3.2; 4.5.3.7 | Worksheets 5.11.1, 5.11.2 and 5.11.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 51/52 | **B: 5 Coordination and control** | 5.12 | | Diabetes | * Understand the causes of Type 1 and Type 2 diabetes. * Compare Type 1 and Type 2 diabetes. * Evaluate information on the relationship between obesity and diabetes, and make appropriate recommendations | | 4.5.3.2; 4.5.3.7 | Worksheets 5.12.1 and 5.12.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 51/52 | **B: 5 Coordination and control** | 5.13 | | Diabetes recommendations | * Understand the causes of Type 1 and Type 2 diabetes. * Compare Type 1 and Type 2 diabetes. * Evaluate information on the relationship between obesity and diabetes, and make appropriate recommendations | | 4.5.3.2; 4.5.3.7 | Worksheet 5.13 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 51/52 | **B: 5 Coordination and control** | 5.14 | | Water balance | * Recall the ways in which the body loses water. * Explain why cells do not function efficiently if they lose or gain too much water. * Explain how excess protein is converted to urea for excretion. | | 4.5.3.3; 4.5.3.7 | Worksheets 5.14.1, 5.14.2 and 5.14.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 51/52 | **C: 5 Energy changes** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 10 | Term 2 | 51/52 | **C: 6 The rate and extent of chemical change** | 6.1 | | Measuring rates | * Explain how to measure the amount of gas given off in a reaction. * Explain how to measure the rate of a reaction. * Read data from graphs to interpret stages of a reaction. | | 4.6.1.1 | Practical sheet 6.1.1; Worksheet 6.1.1; Technician’s notes 6.1.1; Presentations 6.1.1 and 6.1.2; Graph plotter 6.1.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 2 | 51/52 | **C: 6 The rate and extent of chemical change** | 6.2 | | Key concept: Limiting reactants and molar masses (Higher tier only) | * Identify which reactant is in excess. * Explain the effect of a limiting quantity of a reactant on the amount of products. * Calculate amount of products in moles or masses in grams. | | 4.3.2.4 | Practical sheet 6.2.1; Worksheets 6.2.1 and 6.2.2; Technician’s notes 6.2.1; Presentation 6.2.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 2 | 51/52 | **P: 5 Forces** | 5.4 | | Velocity–time graphs | * Draw velocity–time graphs. * Calculate acceleration using a velocity–time graph. * Calculate displacement using a velocity–time graph. | | 4.5.6.1.1  4.5.6.1.3  4.5.6.1.5 | Worksheets 5.4.1, 5.4.2 and 5.4.3; Practical sheet 5.4; Technician’s notes 5.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 51/52 | **P: 5 Forces** | 5.5 | | Calculations of motion | * Describe uniform motion. * Use an equation for uniform motion. * Apply this equation to vertical motion. | | 4.5.6.1.5 | Worksheets 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5 and 5.5.6 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 51/52 | **P: 5 Forces** | 5.6 | | Heavy or massive? | * Identify the correct units for mass and weight. * Explain the difference between mass and weight. * Understand how weight is an effect of gravitational fields. | | 4.5.1.3 | Worksheet 5.6.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 53/54 | **B: 5 Coordination and control** | 5.15 | | The kidneys | * Recall that excess water, ions and urea are removed from the body by the kidneys in urine. * Describe how the kidneys produce urine. * Explain how the hormone ADH regulates the amount of water in the urine, and therefore, in the body. | | 4.5.3.3 | Worksheets 5.15.1 and 4.15.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 53/54 | **B: 5 Coordination and control** | 5.16 | | Negative feedback (Higher tier only) | * Explain the role of thyroxine in the body. * Understand the principles of negative feedback, as applied to thyroxine. | | 4.5.3.7 | Worksheet 5.16; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 53/54 | **B: 5 Coordination and control** | 5.17 | | Kidney failure | * Recall that people who suffer from kidney failure can be treated by dialysis or kidney transplant. * Understand the principles of dialysis. * Evaluate the advantages and disadvantages of treating organ failure using a mechanical device or transplant. | | 4.5.3.3 | Worksheet 5.17 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 53/54 | **B: 5 Coordination and control** | 5.18 | | Dialysis or transplant? | * Recall that people who suffer from kidney failure can be treated by dialysis or kidney transplant. * Evaluate the advantages and disadvantages of treating organ failure using a mechanical device or transplant. | | 4.5.3.3 | Worksheets 5.18.1, 5.18.2 and 5.18.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 2 | 53/54 | **C: 6 The rate and extent of chemical change** | 6.3 | | Calculating rates | * Calculate the mean rate of a reaction. * Draw and interpret graphs of reaction times. * Draw tangents to the curves as a measure of the rate of reaction. | | 4.6.1.1 | Practical sheet 6.3.1; Worksheet 6.3.1; Technician’s notes 6.3.1; Presentations 6.3.1 and 6.3.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 2 | 53/54 | **C: 6 The rate and extent of chemical change** | 6.4 | | Factors affecting rates | * Identify which factors affect the rate of reactions. * Explain how changes of surface area affect rates. * Explain how rates are affected by different factors. | | 4.6.1.2 | Practical sheet 6.4.1; Worksheets 6.4.1 and 6.4.2; Technician’s notes 6.4.1; Presentation 6.4.1; Graph plotter 6.4.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 2 | 53/54 | **C: 6 The rate and extent of chemical change** | 6.5 | | Required practical: Investigate how changes in concentration affect the rates of reactions by a method involving the production of a gas and a method involving a colour change | * Use scientific theories and explanations to develop a hypothesis. * Plan experiments to test the hypothesis and check data. * Make and record measurements using gas syringes. * Evaluate methods and suggest improvements and further investigations. | | 4.6.1.2  Prac 5 | Practical sheets 6.5.1 and 6.5.2;Worksheet 6.5.1; Technician’s notes 6.5.1; Presentations 6.5.1 and 6.5.2; Graph plotters 6.5.1 and 6.5.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 2 | 53/54 | **P: 5 Forces** | 5.7 | | Forces and motion | * Understand what a force does. * Explain what happens to an object if all the forces acting on it cancel each other out. * Analyse how this applies to everyday situations. | | 4.5.6.1.5  4.5.6.2.1 | Worksheet 5.7.1, 5.7.2 and 5.7.3; Practical sheet 5.7; Technician’s notes 5.7 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 53/54 | **P: 5 Forces** | 5.8 | | Resultant forces | * Calculate the resultant of a number of forces. * Draw free-body diagrams to find resultant forces. * Understand that a force can be resolved into two components acting at right angles to each other. | | 4.5.1.3 (centre of mass),  4.5.1.4 | Worksheets 5.8.1, 5.8.2 and 5.8.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 53/54 | **P: 5 Forces** | 5.9 | | Forces and acceleration | * Explain what happens to the motion of an object when the resultant force is not zero. * Analyse situations in which a non-zero resultant force is acting. * Explain what inertia is. | | 4.5.6.2.1 (inertia),  4.5.6.2.2 | Practical sheets 5.9.1, 5.9.2 and 5.9.3; Technician’s notes 5.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **B: 5 Coordination and control** | 5.19 | | Human reproduction | * Describe the roles of hormones in sexual reproduction. * Explain how hormones interact in the menstrual cycle. | | 4.5.3.4 | Worksheets 5.19.1 and 5.19.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **B: 5 Coordination and control** | 5.20 | | IVF (Higher tier only) | * Explain the use of hormones in technologies to treat infertility. * Describe the technique of *in-vitro* fertilisation. * Evaluate the scientific, emotional, social and ethical issues of *in-vitro* fertilisation. | | 4.5.3.6 | Worksheet 5.20; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **B: 5 Coordination and control** | 5.21 | | IVF evaluation (Higher tier only) | * Describe the technique of *in-vitro* fertilisation. * Evaluate the scientific, emotional, social and ethical issues of *in-vitro* fertilisation. | | 4.5.3.6 | Worksheet 5.21 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **B: 5 Coordination and control** | 5.22 | | Systems working together (Higher tier only) | * Describe the effects of adrenaline. * Understand that automatic control systems may involve nervous responses and chemical responses. * Understand that combinations of hormones work to produce a response. | | 4.5.3.7 | Worksheet 5.22 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **C: 6 The rate and extent of chemical change** | 6.6 | | Factors increasing the rate | * Analyse experimental data on rates of reaction. * Predict the effects of changing conditions on rates of reactions. * Use ideas about proportionality to explain the effect of a factor. | | 4.6.1.2 | Practical sheet 6.6.1; Worksheet 6.6.1; Technician’s notes 6.6.1; Presentation 6.6.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 10 | Term 2 | 55/56 | **C: 6 The rate and extent of chemical change** | 6.7 | | Collision theory | * Describe a reaction by particles colliding. * Explain the effects of changes of factors on rates of reaction using collision theory. * Describe activation energy. | | 4.6.1.3 | Worksheets 6.7.1 and 6.7.2;Presentations 6.7.1 and 6.7.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 2 | 55/56 | **C: 6 The rate and extent of chemical change** | 6.8 | | Catalysts | * Identify catalysts in reactions. * Explain catalytic action. * Explain activation energy. | | 4.6.1.4 | Practical sheet 6.8.1; Worksheet 6.8.1; Technician’s notes 6.8.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 2 | 55/56 | **P: 5 Forces** | 5.10 | | Required practical: Investigating the acceleration of an object | * Plan an investigation to explore an idea. * Analyse results to identify patterns and draw conclusions. * Compare results with scientific theory. | | 4.5.6.2.2  Prac 7 | Worksheets 5.10.1, 5.10.2 and 5.10.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 55/56 | **P: 5 Forces** | 5.11 | | Newton’s third law | * Identify force pairs. * Understand and apply Newton’s third law. | | 4.5.6.2.3 | Worksheets 5.11.1, 5.11.2 and 5.11.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **B: 5 Coordination and control** | 5.23 | | Contraception | * Understand that fertility can be controlled by different hormonal and non-hormonal methods of contraception. * Evaluate the different methods of contraception. | | 4.5.3.5 | Worksheets 5.23.1 and 5.23.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **B: 5 Coordination and control** | 5.24 | | Which contraceptive? | * Understand that fertility can be controlled by different hormonal and non-hormonal methods of contraception. * Evaluate the different methods of contraception. | | 4.5.3.5 | Worksheet 5.24 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **B: 5 Coordination and control** | 5.25 | | Auxins | * Recall that plants produce hormones to coordinate and control growth, and responses to light and gravity. * Describe how unequal distributions of auxins cause unequal growth rates in plant shoots and roots. | | 4.5.4.1; 4.5.4.2 | Worksheets 5.25.1, 5.25.2 and 5.25.3; Practical sheet 5.25; Technician’s notes 5.25 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **B: 5 Coordination and control** | 5.26 | | Applications of auxins | * Explain how auxins coordinate and control responses to light and gravity. * Explain that auxins act on ‘stem cells’ in plants called meristems. * Describe some applications of auxins. | | 4.5.4.2, 4.5.4.2 | Worksheets 5.26.1, 5.26.2 and 5.26.3; Practical sheet 5.26; Technician’s notes 5.26 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **C: 6 The rate and extent of chemical change** | 6.9 | | Reversible reactions and energy changes | * Identify a reversible reaction. * Explain how energy changes occur in reversible reactions. * Consider changing the conditions of a reversible reaction. | | 4.6.2.1, 4.6.2.2 | Practical sheet 6.9.1; Worksheet 6.9.1; Technician’s notes 6.9.1; Presentation 6.9.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 10 | Term 2 | 57/58 | **C: 6 The rate and extent of chemical change** | 6.10 | | Equilibrium | * Describe how equilibrium is reached. * Explain what happens to the forward and reverse reactions. * Predict the effects of changes on systems at equilibrium. | | 4.6.2.3 | Worksheets 6.10.1; Technician’s notes 6.10.1; Presentation 6.10.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **C: 6 The rate and extent of chemical change** | 6.11 | | Changing concentration and equilibrium (Higher tier only) | * Identify reactants and products in a reversible reaction. * Explain how changing concentrations changes the position of equilibrium. * Interpret data to predict the effect of a change in concentration. | | 4.6.2.4, 4.6.2.5 | Worksheet 6.11.1; Technician’s notes 6.11.1; Presentation 6.11.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **C: 6 The rate and extent of chemical change** | 6.14 | | Maths skills: Use the slope of a tangent as a measure of rate of change | * Draw graphs from numeric data. * Draw tangents to the curve to observe how the slope changes. * Calculate the slope of the tangent to identify the rate of reaction. | | 4.6 | Worksheets 6.14.1 and 6.14.2; Presentations 6.14.1 and 6.14.2 | Video |
| Year 10 | Term 2 | 57/58 | **P: 5 Forces** | 5.12 | | Momentum (Higher tier only) | * Explain what is meant by momentum. * Apply ideas about rate of change of momentum to safety features in cars. * Use momentum calculations to predict what happens in a collision. | | 4.5.7.1,  4.5.7.2,  4.5.7.3 | Worksheets 5.12.1, 5.12.2 and 5.12.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **P: 5 Forces** | 5.13 | | Keeping safe on the road | * Explain the factors that affect stopping distance. * Explain the dangers caused by large deceleration. * Estimate the forces involved in the deceleration of a road vehicle. * Apply the idea of rate of change of momentum to explain safety features. | | 4.5.6.3.1,  4.5.6.3.2,  4.5.6.3.3,  4.5.6.3.4, 4.5.7.3 | Worksheets 5.13.1, 5.13.2 and 5.13.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 57/58 | **P: 5 Forces** | 5.20 | | Key concept: Forces and acceleration | * Recognise examples of balanced and unbalanced forces. * Apply ideas about speed and acceleration to explain sensations of movement. * Apply ideas about inertia and circular motion to explain braking and cornering. | | 4.5 | Worksheets 5.20.1, 5.20.2 and 5.20.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 59/60 | **B: 5 Coordination and control** | 5.27 | | Required practical: The effect of light and gravity on the growth of germinating seeds | * Describe how an experiment is planned for a specific purpose. * Make and record observations and translate data from one form to another. * Interpret observations and other data, identifying patterns and trends, make inferences and draw conclusions. | | 4.5.4.1  Prac 8 | Worksheet 5.27; Practical sheet 5.27; Technician’s notes 5.27 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 59/60 | **B: 5 Coordination and control** | 5.28 | | Other plant hormones (Higher tier only) | * Recall that gibberellins are important in seed germination, and ethene in cell division and ripening of fruit. * Explain the application of the plant hormones ethene and gibberellins. | | 4.5.4.2 | Worksheet 5.28 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 59/60 | **B: 5 Coordination and control** | 5.29 | | Maths skills: The spread of scientific data | * Use range bars on graphs. * Understand how box and whisker plots can be used to show the spread of data. * Understand how to use percentiles. | |  | Worksheets 5.29.1, 5.29.2 and 5.29.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 2 | 59/60 | **B: 5 Coordination and control** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 10 | Term 2 | 59/60 | **C: 6 The rate and extent of chemical change** | 6.12 | | Changing temperature and equilibrium (Higher tier only) | * Explain how exothermic reactions behave. * Explain how endothermic reactions behave. * Apply Le Chatelier’s principle to reactions in equilibrium. | | 4.6.2.6 | Worksheets 6.12.1 and 6.12.2; Technician’s 6.12.1; Presentation 6.12.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 59/60 | **C: 6 The rate and extent of chemical** | 6.13 | | Changing pressure and equilibrium (Higher tier only) | * Predict the effects of changes in pressure. * Explain why these effects occur. * Interpret data to predict the effect of a change in pressure. | | 4.6.2.7 | Worksheet 6.13.1; Presentation 6.13.1 ‘ | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 59/60 | **C: 6 The rate and extent of chemical** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 10 | Term 2 | 59/60 | **P: 5 Forces** | 5.14 | | Moments | * Describe the turning effect of a force about a pivot. * Explain and use the principle of moments. * Explain how the turning effect on an object depends on the position of its centre of mass. | | 4.5.1.3 (centre of mass),  4.5.4 | Worksheets 5.14.1, 5.14.2 and 5.14.3; Practical sheet 5.14; Technician’s notes 5.14 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 2 | 59/60 | **P: 5 Forces** | 5.15 | | Levers and gears | * Describe how levers and gears can be used to transmit the rotational effect of a force. * Explain how levers and gears transmit forces. | | 4.5.4 | Worksheets 5.15.1, 5.15.2 and 5.15.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 2 | 59/60 | **P: 5 Forces** | 5.16 | | Pressure in a fluid | * Explain how pressure acts in a fluid. * Calculate pressure at different depths in a liquid. * Explain what causes upthrust. | | 4.5.5.1.1,  4.5.5.1.2 | Worksheets 5.16.1, 5.16.2 and 5.16.3; Practical sheet 5.16; Technician’s notes 5.16 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 61/62 | **B: 6 Genetics** | 6.1 | | DNA and genes | * Describe the structure of DNA. * Describe a gene as a small section of DNA that codes for a protein. | | 4.6.1.4; 4.6.1.5 | Worksheet 6.1; Practical sheet 6.1; Technician’s notes 6.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 3 | 61/62 | **B: 6 Genetics** | 6.2 | | The human genome | * Describe a gene as a small section of DNA that codes for a protein. * Explain the importance of understanding the human genome. | | 4.6.1.4; 4.6.1.5 | Worksheet 6.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 61/62 | **B: 6 Genetics** | 6.3 | Tracing human migration | | * Explain the importance of understanding the human genome. * Discuss the use of the human genome in understanding human migration patterns. | | 4.6.1.4 | Worksheets 6.3.1 and 6.3.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 61/62 | **C: 7 Hydrocarbons** | 7.1 | | Crude oil, hydrocarbons and alkanes | * Describe why crude oil is a finite resource. * Identify the hydrocarbons in the series of alkanes. * Explain the structure and formulae of the alkanes. | | 4.7.1.1 | Worksheets 7.1.1 and 7.1.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 61/62 | **C: 7 Hydrocarbons** | 7.2 | | Fractional distillation and petrochemicals | * Describe how crude oil is used to provide modern materials. * Explain how crude oil is separated by fractional distillation. * Explain why the boiling points of the fractions are different. | | 4.7.1.2 | Practical sheet 7.2.1; Worksheets 7.2.1 and 7.2.2; Technician’s notes 7.2.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 10 | Term 3 | 61/62 | **C: 7 Hydrocarbons** | 7.3 | | Properties of hydrocarbons | * Describe how different hydrocarbon fuels have different properties. * Identify the properties that influence the use of fuels. * Explain how the properties are related to the size of the molecules. | | 4.7.1.3 | Worksheets 7.3.1 and 7.3.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 61/62 | **P: 5 Forces** | 5.17 | | Atmospheric pressure | * Show that the atmosphere exerts a pressure. * Explain variations in atmospheric pressure with height. * Describe a simple model of the Earth’s atmosphere and atmospheric pressure. | | 4.5.5.2 | Worksheets 5.17.1, 5.17.2 and 5.17.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 61/62 | **P: 5 Forces** | 5.18 | | Forces and energy in springs | * Explain why you need two forces to stretch a spring. * Describe the difference between elastic and inelastic deformation. * Calculate extension, compression and elastic potential energy. | | 4.5.3 | Worksheets 5.18.1, 5.18.2 and 5.18.3; Practical sheet 5.18; Technician’s notes 5.18 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 3 | 61/62 | **P: 5 Forces** | 5.19 | | Required practical: Investigate the relationship between force and the extension of a spring | * Interpret readings to show patterns and trends. * Interpret graphs to form conclusions. * Apply the equation for a straight line to the graph. | | 4.5.3  Prac 6 | Worksheets 5.19.1, 5.19.2 and 5.19.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 63/64 | **B: 6 Genetics** | 6.4 | | The structure of DNA | * Describe the structure of DNA as repeating nucleotide units. * Identify the four bases in DNA. * Explain that the bases A and T, and C and G, are complementary. | | 4.6.1.5 | Worksheets 6.4.1 and 6.4.2 Practical sheet 6.4; Technician’s notes 6.4 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 63/64 | **B: 6 Genetics** | 6.5 | | Proteins | * Describe how proteins are synthesised according to the DNA template of a gene. * Explain that the genetic code of a gene specifies the protein to be made. | | 4.6.1.5 | Worksheets 6.5.1 and 6.5.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 3 | 63/64 | **B: 6 Genetics** | 6.6 | | Mutations | * Model changes to the base sequences of DNA to illustrate mutations. * Describe the negative and, sometimes, positive effects of mutations. * Describe how mutations can affect protein function. | | 4.6.1.5 | Worksheet 6.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 3 | 63/64 | **C: 7 Hydrocarbons** | 7.4 | | Combustion | * Describe the process of complete combustion. * Balance equations showing the combustion of hydrocarbons. * Explain the consequences of incomplete combustion. | | 4.7.1.3 | Practical sheet 7.4.1; Worksheet 7.4.1; Technician’s notes 7.4.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 63/64 | **C: 7 Hydrocarbons** | 7.5 | | Cracking and alkenes | * Describe the usefulness of cracking. * Balance chemical equations as examples of cracking. * Explain why modern life depends on the uses of hydrocarbons. | | 4.7.1.4 | Practical sheet 7.5.1; Worksheet 7.5.1; Technician’s notes 7.5.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 63/64 | **C: 7 Hydrocarbons** | 7.6 | | Structure and formulae of alkenes | * Describe the difference between an alkane and an alkene. * Draw the displayed structural formulae for the first four members of the alkenes. * Explain why alkenes are called unsaturated molecules. | | 4.7.2.1 | Worksheets 7.6.1 and 7.6.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 63/64 | **P: 5 Forces** | 5.21 | | Maths skills: Making estimates of calculations | * Estimate the results of simple calculations. * Round numbers to make an estimate. * Calculate order of magnitude. | | 4.5 | Worksheets 5.21.1, 5.21.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 63/64 | **P: 5 Forces** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 10 | Term 3 | 63/64 | **P: 6 Waves and light** | 6.1 | | Describing waves | * Describe wave motion. * Define wavelength and frequency. * Apply the relationship between wavelength, frequency and wave velocity. | | 4.6.1.2 | Worksheets 6.6.1, 6.6.2, 6.6.3, 6.6.4, 6.6.5 and 6.6.6 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 65/66 | **B: 6 Genetics** | 6.7 | | Meiosis | * Explain how meiosis halves the number of chromosomes for gamete production. * Explain how fertilisation restores the chromosome number. * Understand that the four gametes produced by meiosis are genetically different. | | 4.6.1.1; 4.6.1.2; 4.6.1.8 | Worksheets 6.7.1 and 6.7.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 65/66 | **B: 6 Genetics** | 6.8 | | Asexual and sexual reproduction | * Understand that asexual reproduction involves just one parent and produces genetically identical offspring. * Understand that sexual reproduction leads to variety in the offspring. | | 4.6.1.1; 4.6.1.3 | Worksheets 6.8.1 and 6.8.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 3 | 65/66 | **B: 6 Genetics** | 6.9 | | Genetics | * Understand and be able to use genetics terms, such as dominant, recessive, genotype, phenotype, homozygous and heterozygous. * Know that some human conditions are caused by a recessive allele. | | 4.6.1.6; 4.6.1.7 | Worksheets 6.9.1, 6.9.2 and 6.9.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 65/66 | **C: 7 Hydrocarbons** | 7.7 | | Reactions of alkenes | * Describe the addition reactions of alkenes. * Draw the full displayed structural formulae of the products alkenes make. * Explain how alkenes react with hydrogen, water and the halogens. | | 4.7.2.2 | Practical sheet 7.7.1; Worksheets 7.7.1 and 7.7.2; Technician’s notes 7.7.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 65/66 | **C: 7 Hydrocarbons** | 7.8 | | Alcohols | * Recognise alcohols from their name or from given formulae. * Describe the conditions used for the fermentation of sugar using yeast. * Write balanced chemical equations for the combustion of alcohols. | | 4.7.2.3 | Practical sheets 7.8.1 and 7.8.2; Worksheets 7.8.1 and 7.8.2; Technician’s notes 7.8.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 65/66 | **C: 7 Hydrocarbons** | 7.9 | | Carboxylic acids | * Describe the reactions of carboxylic acids. * Recognise carboxylic acids from their formulae. * Explain the reaction of ethanoic acid with an alcohol. | | 4.7.2.4 | Practical sheet 7.9.1; Worksheets 7.9.1 and 7.9.2; Technician’s notes 7.9.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 65/66 | **P: 6 Waves and light** | 6.2 | | Transverse and longitudinal waves | * Compare the motion of transverse and longitudinal waves. * Explain why water waves are transverse waves. * Explain why sound waves are longitudinal waves. | | 4.6.1.1,  4.6.1.2 | Worksheets 6.2.1, 6.2.2 and 6.2.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 65/66 | **P: 6 Waves and light** | 6.3 | | Key concept: Transferring energy or information by waves | * Understand that all waves have common properties. * Understand how waves can be used to carry information. * Understand various applications of energy transfer by different types of electromagnetic waves. | | 4.6 | Worksheets 6.3.1, 6.3.2 and 6.3.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 65/66 | **P: 6 Waves and light** | 6.4 | | Measuring wave speeds | * Explain how the speed of sound in air can be measured. * Explain how the speed of water ripples can be measured. * Describe the use of echo sounding. | | 4.6.1.2,  4.6.1.5 (echo sounding) | Worksheets 6.4.1, 6.4.2, 6.4.3; Practical sheet 6.4; Technician’s notes 6.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 3 | 67/68 | **B: 6 Genetics** | 6.10 | | Genetic crosses | * Use the terms dominant, recessive, genotype, phenotype, homozygous and heterozygous. * Know that some human conditions, such as cystic fibrosis, are caused by a recessive allele. * Complete or construct a Punnett square to predict the outcome of a genetic cross. | | 4.6.1.6; 4.6.1.7 | Worksheets 6.10.1, 6.10.2 and 6.10.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 67/68 | **B: 6 Genetics** | 6.11 | | Tracking gene disorders | * Understand the use of a family tree to show the inheritance of a characteristic. * Explain economic, social and ethical issues concerned with embryo screening. | | 4.6.1.6; 4.6.1.7 | Worksheets 6.11.1 and 6.11.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 67/68 | **B: 6 Genetics** | 6.12 | | Gregor Mendel | * Plan experiments to explore phenomena and test hypotheses * Draw conclusions from given observations * Evaluate data in terms of reproducibility. | | 4.6.1.6 | Worksheets 6.12.1, 6.12.2 and 6.12.3 | Quick starter  Homework worksheet Homework quiz |
| Year 10 | Term 3 | 67/68 | **C: 7 Hydrocarbons** | 7.10 | | Addition polymerisation | * Recognise addition polymers and monomers from diagrams. * Draw diagrams of the formation of a polymer from an alkene. * Relate the repeating unit of the polymer to the monomer. | | 4.7.3.1 | Worksheets 7.10.1 and 7.10.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 67/68 | **C: 7 Hydrocarbons** | 7.11 | | Condensation polymerisation (Higher tier only) | * Explain the basic principles of condensation polymerisation. * Explain the role of functional groups in producing a condensation polymer. * Explain the structure of the repeating units in a condensation polymer. | | 4.7.3.2 | Practical sheet 7.11.1; Worksheets 7.11.1 and 7.11.2; Technician’s notes 7.11.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 67/68 | **C: 7 Hydrocarbons** | 7.12 | | Amino acids (Higher tier only) | * Identify the two functional groups of an amino acid. * Explain how amino acids build proteins. | | 4.7.3.3 | Worksheet 7.12.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 67/68 | **P: 6 Waves and light** | 6.5 | | Required practical: Measuring the wavelength, frequency and speed of waves in a ripple tank and waves in a solid | * Develop techniques for making observations of waves. * Select suitable apparatus to measure frequency and wavelength. * Use data to answer questions. | | 4.6.1.2  Prac 8 | Worksheets 6.5.1, 6.5.2 and 6.5.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 67/68 | **P: 6 Waves and light** | 6.6 | | Reflection and refraction of waves | * Describe reflection, transmission and absorption of waves. * Construct ray diagrams to illustrate reflection. * Construct ray diagrams to illustrate refraction. | | 4.6.1.3, 4.6.2.2 | Worksheets 6.6.1, 6.6.2 and 6.6.3; Practical sheets 6.6.1, 6.6.2 and 6.6.3; Technician’s notes 6.6.1, 6.6.2 and 6.6.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 69/70 | **B: 6 Genetics** | 6.13 | | Key concept: Genetics is simple – or is it? | * Explain how certain characteristics are controlled by a single gene. * Understand that many characteristics are the result of multiple genes which interact. * Describe the search for genes that are linked to disease. | | 4.6.1.6; 4.6.1.7 | Worksheet 6.13 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 3 | 69/70 | **B: 6 Genetics** | 6.14 | | Maths skills: Fractions, ratio, proportion and probability | * Understand and use fractions and percentages. * Understand and use ratio and proportion. * Understand and use probability when predicting the outcomes of genetic crosses. | | 4.6.1.6 | Worksheet 6.14; | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 10 | Term 3 | 69/70 | **B: 6 Genetics** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 10 | Term 3 | 69/70 | **C: 7 Hydrocarbons** | 7.13 | | DNA and other naturally occurring polymers | * Describe the components of natural polymers. * Explain the structure of proteins and carbohydrates. * Explain how a molecule of DNA is constructed. | | 4.7.3.4 | Worksheets 7.13.1 and 7.13.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 69/70 | **C: 7 Hydrocarbons** | 7.14 | | Key concept: Intermolecular forces | * Recognise the strong covalent bonds within molecules. * Recognise the weak intermolecular forces between molecules. * Describe the effects of weak intermolecular forces on properties of substances. | | 4.2.2.4, 4.2.2.5, 4.7 | Worksheets 7.14.1 and 7.14.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 69/70 | **C: 7 Hydrocarbons** | 7.15 | | Maths skills: Visualise and represent 3D models | * Use 3D models to represent hydrocarbons, polymers and large biological molecules. | | 4.2.1, 4.7.1 | Worksheets 7.15.1 and 7.15.2 |  |
| Year 10 | Term 3 | 69/70 | **P: 6 Waves and light** | 6.7 | | Required practical: Investigate the reflection of light by different types of surface and the refraction of light by different substances | * Make and record observations of how light is reflected and transmitted at different surfaces. * Measure angles and discuss the method, apparatus and uncertainty in measurements. * Draw conclusions from experimental results. | | 4.6.1.3  Prac 9 | Worksheets 6.7.1 and 6.7.2; Practical sheets 6.7.1, 6.7.2, 6.7.3 and 6.7.4; Technician’s notes 6.7 | Quick starter  Homework worksheet  Homework quiz  Slideshow 1  Slideshow 2 |
| Year 10 | Term 3 | 69/70 | **P: 6 Waves and light** | 6.8 | | Sound waves (Higher tier only) | * Describe how we hear sound and state the range of frequencies we can hear. * Explain that sound travels faster in a denser medium. * Explain about reflection, absorption and transmission of sound. | | 4.6.1.4 | Worksheets 6.8.1, 6.8.2 and 6.8.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 69/70 | **P: 6 Waves and light** | 6.9 | | Exploring ultrasound (Higher tier only) | * Explain what ultrasound is. * Describe how ultrasound is used in industry to investigate or detect hidden or buried objects. * Explain how ultrasound is used in medicine. | | 4.6.1.5 | Worksheets 6.9.1, 6.9.2 and 6.9.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 3 | 71/72 | **B: 7** **Variation and evolution** | 7.1 | | Variation | * Recall that differences in the characteristics of individuals in a population is called variation. * Understand the genetic and environmental differences leading to variation. | | 4.6.2.1 | Worksheets 7.1.1, 7.1.2 and 7.1.3; Practical sheet 7.1; Technician’s notes 7.1; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 71/72 | **B: 7** **Variation and evolution** | 7.2 | | The theory of evolution | * Recall that all species of living things have evolved from simple life forms. * Explain how evolution occurs through natural selection. | | 4.6.2.2, 4.6.3.1 | Worksheets 7.2.1, 7.2.2 and 7.2.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 10 | Term 3 | 71/72 | **B: 7** **Variation and evolution** | 7.3 | | The origin of species by natural selection | * Explain the evidence that led Darwin to propose the theory of evolution by natural selection. * Describe the process of natural selection. | | 4.6.3.1, 4.6.3.2 | Worksheets 7.3.1 and 7.3.2; Practical sheet 7.3; Technician’s notes 7.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 10 | Term 3 | 71/72 | **C: 7 Hydrocarbons** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 10 | Term 3 | 71/72 | **C: 8 Chemical analysis** | 8.1 | | Key concept: Pure substances | * Describe, explain and exemplify processes of separation. * Suggest separation and purification techniques for mixtures. * Distinguish pure and impure substances using melting point and boiling point data. | | 4.1.1.2, 4.8.1.1 | Practical sheets 8.1.1 and 8.1.2; Worksheets 8.1.1 and 8.1.2; Technician’s notes 8.1.1 and 8.1.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 71/72 | **C: 8 Chemical analysis** | 8.2 | | Formulations | * Identify formulations given appropriate information. * Explain the particular purpose of each chemical in a mixture. * Explain how quantities are carefully measured for formulation. | | 4.8.1.2 | Worksheets 8.2.1 and 8.2.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 71/72 | **P: 6 Waves and light** | 6.10 | | Seismic waves (Higher tier only) | * Describe how earthquakes are detected. * Describe the properties of P waves and S waves. * Explain how the properties of seismic waves allow us to investigate the inside of the Earth. | | 4.6.1.5 | Worksheets 6.10.1, 6.10.2, 6.10.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 71/72 | **P: 6 Waves and light** | 6.11 | | The electromagnetic spectrum | * Recognise that electromagnetic waves are transverse waves. * Describe the main groupings and wavelength ranges of the electromagnetic spectrum. | | 4.6.2.1 | Worksheets 6.11.1, 6.11.2 and 6.11.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 10 | Term 3 | 71/72 | **P: 6 Waves and light** | 6.12 | | Reflection, refraction and wave fronts (Higher tier only) | * Explain reflection and refraction and how these may vary with wavelength. * Construct ray diagrams to illustrate refraction. * Use wave front diagrams to explain refraction in terms of the difference in velocity of the waves in different substances. | | 4.6.2.2 | Worksheets 6.12.1, 6.12.2, 6.12.3; Practical sheet 6.12.1; Technician’s notes 6.12.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **B: 7** **Variation and evolution** | 7.4 | | Fossil evidence | * Understand how, and the situations in which, fossils are formed. * Understand how fossils are used as evidence for evolution of species from simpler life forms. | | 4.6.3.4; 4.6.3.5 | Worksheets 7.4.1 and 7.4.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **B: 7** **Variation and evolution** | 7.5 | | How much have organisms changed? | * Understand why the fossil record is incomplete. * Use the fossil record to understand how much, or how little, organisms have changed as life developed on Earth. | | 4.6.3.5 | Worksheets 7.5.1, 7.5.2 and 7.5.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **B: 7** **Variation and evolution** | 7.6 | | Darwin and Wallace | * Recognise how Darwin and Wallace proposed, independently, the theory of evolution. * Describe how Alfred Wallace gathered evidence for evolution, including warning coloration and mimicry. | | 4.6.3.2 | Worksheets 7.6.1, 7.6.2 and 7.6.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **C: 8 Chemical analysis** | 8.3 | | Chromatography | * Explain how to set up chromatography paper. * Distinguish pure from impure substances. * Interpret chromatograms and determine *R*f values. | | 4.8.1.3 | Practical sheet 8.3.1, Worksheet 8.3.1, Technician’s notes 8.3.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 11 | Term 1 | 73/74 | **C: 8 Chemical analysis** | 8.12 | | Maths skills: Use an appropriate number of significant figures | * Measure distances on chromatograms. * Calculate *Rf* values. * Record *Rf* values to an appropriate number of significant figures. | | 4.8.1.3 | Presentation 8.12.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **C: 8 Chemical analysis** | 8.4 | | Required practical: Investigate how paper chromatography can be used in forensic science to identify an ink mixture used in a forgery | * Describe the safe and correct manipulation of chromatography apparatus and how accurate measurements are achieved. * Make and record measurements used in paper chromatography. * Calculate *R*f values. | | 4.8.1.3  Prac 6 | Practical sheets 8.4.1 and 8.4.2; Technician’s notes 8.4.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **C: 8 Chemical analysis** | 8.5 | | Test for gases | * Recall the tests for four common gases. * Identify the four common gases using these tests. * Explain why limewater can be used for testing carbon dioxide. | | 4.8.2.1, 4.8.2.2, 4.8.2.3, 4.8.2.4 | Practical sheet 8.5.1; Technician’s notes 8.5.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **P: 6 Waves and light** | 6.13 | | Gamma rays and X-rays | * List the properties of gamma rays and X-rays. * Compare gamma rays and X-rays. | | 4.6.2.1,  4.6.2.2,  4.6.2.3,  4.6.2.4 | Worksheets 6.13.1, 6.14.2 and 6.13.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 73/74 | **P: 6 Waves and light** | 6.14 | | Ultraviolet and infrared radiation | * Describe the properties of ultraviolet and infrared radiation. * Describe some uses and hazards of ultraviolet radiation. * Describe some uses of infrared radiation. | | 4.6.2.1,  4.6.2.2,  4.6.2.3,  4.6.2.4 | Worksheet 6.14; Practical sheet 6.14; Technician’s notes 6.14 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 73/74 | **P: 6 Waves and light** | 6.15 | | Required practical: Investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface | * Explain reasons for the equipment used to carry out an investigation. * Explain the rationale for carrying out an investigation. * Apply ideas from an investigation to a range of practical contexts. | | 4.6.2.2  Prac 10 | Worksheet 6.15; Practical sheet 6.15; Technician’s notes 6.15 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 75/76 | **B: 7** **Variation and evolution** | 7.7 | | A new species | * Understand that when natural selection operates differently on populations, a new species is produced. * Understand that during evolution, new species are formed when populations become so different that they can no longer interbreed. | | 4.6.3.2 | Worksheets 7.7.1, 7.7.1 and 7.7.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **B: 7** **Variation and evolution** | 7.8 | | Evidence of natural selection and evolution? | * Understand how scientific theories develop over time. * Plan experiments to test hypotheses. | | 4.6.3.4 | Worksheet 7.8; Practical sheets 7.8.1 and 7.8.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 75/76 | **B: 7** **Variation and evolution** | 7.9 | | Key concept: Evolution: fitting the pieces of the jigsaw | * Understand the work of Mendel, Darwin and Wallace. * Appreciate that the contributions of many scientists led to gene theory being developed. | | 4.6.3.1; 4.6.3.2; 4.6.3.3 | Worksheets 7.9.1, 7.9.2 and 7.9.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **C: 8 Chemical analysis** | 8.6 | | Flame tests | * Carry out flame test procedures. * Identify the colours of flames of ions. * Identify substances from the results of the tests. | | 4.8.3.1 | Practical sheet 8.6.1; Worksheet 8.6.1; Technician’s notes 8.6.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **C: 8 Chemical analysis** | 8.7 | | Metal hydroxides | * Recognise the precipitate colour of metal hydroxides. * Explain how to use sodium hydroxide to test for metal ions. * Write balanced equations for producing insoluble metal hydroxides. | | 4.8.3.2 | Practical sheet 8.7.1; Worksheet 8.7.1; Technician’s notes 8.7.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 11 | Term 1 | 75/76 | **C: 8 Chemical analysis** | 8.8 | | Tests for anions | * Identify the tests for carbonates. * Explain the tests for halides and sulfates. * Identify anions and cations from the results of tests. | | 4.8.3.3, 4.8.3.4, 4.8.3.5 | Practical sheets 8.8.1 and 8.8.2; Worksheet 8.8.1; Technician’s notes 8.8.1 and 8.8.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **P: 6 Waves and light** | 6.16 | | Microwaves | * List some properties of microwaves. * Describe how microwaves are used for communications. | | 4.6.2.1,  4.6.2.2,  4.6.2.4 | Worksheet 6.16 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **P: 6 Waves and light** | 6.17 | | Radio and microwave communication | * Describe how radio waves are used for television and radio communications. * Describe how microwaves are used in satellite communications. * Describe how radio waves are produced and received. * Describe the reflection and refraction of radio waves. | | 4.6.2.1,  4.6.2.2,  4.6.2.3,  4.6.2.4 | Worksheets 6.17.1, 6.17.2 and 6.17.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 75/76 | **P: 6 Waves and light** | 6.18 | | Colour | * Describe what happens when light of different wavelengths lands on an object. * Explain what determines the colour of an opaque object. * Explain the effect of coloured filters. | | 4.6.2.1,  4.6.2.6 | Worksheets 6.18.1, 6.18.2 and 6.18.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 77/78 | **B: 7** **Variation and evolution** | 7.10 | | Antimicrobial resistance | * Recall that bacteria develop that are resistant to antibiotics, which is evidence of evolution. * Understand the mechanism by which antibiotic resistance develops. * Understand the effects of the development of antibiotic resistance on the treatment of disease. | | 4.6.3.7 | Worksheets 7.10.1, 7.10.2 and 7.10.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 77/78 | **B: 7** **Variation and evolution** | 7.11 | | Combatting antimicrobial resistance | * Describe how to reduce the rate of development of antibiotic resistance. * Understand the requirement for, and the impact of, new antibiotics. | | 4.6.3.7 | Worksheets 7.11.1 and 7.11.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 77/78 | **B: 7** **Variation and evolution** | 7.12 | | Selective breeding | * Describe the process of selective breeding. * Recall how selective breeding enables humans to choose desirable characteristics in animals and plants. * Explain how selective breeding can lead to inbreeding. | | 4.6.2.3 | Worksheets 7.12.1 and 7.12.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 77/78 | **C: 8 Chemical analysis** | 8.9 | | Required practical: Use chemical tests to identify the ions in unknown single ionic compounds | * Describe how to carry out experiments safely using the correct manipulation of apparatus for the qualitative analysis of ions. * Make and record observations using flame tests and precipitation methods. * Identify unknown ions in chemical compounds. | | 4.8.3  Prac 7 | Practical sheets 8.9.1 and 8.9.2, Technician’s notes 8.9.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 77/78 | **C: 8 Chemical analysis** | 8.10 | | Instrumental methods | * Identify advantages of instrumental methods compared with the chemical tests. * Describe some instrumental techniques. * Explain the data provided by instrumental techniques. | | 4.8.3.6 | Worksheets 8.10.1 and 8.10.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 11 | Term 1 | 77/78 | **C: 8 Chemical analysis** | 8.11 | | Flame emission spectroscopy | * Describe flame emission spectroscopy. * Identify the advantages of instrumental methods compared with the chemical tests. * Interpret an instrumental result using a reference set. | | 4.8.3.7 | Practical sheet 8.11.1; Worksheet 8.11.1; Technician notes 8.11.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 1 | 77/78 | **C: 8 Chemical analysis** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 11 | Term 1 | 77/78 | **P: 6 Waves and light** | 6.19 | | Lenses | * Understand what a lens does. * Draw ray diagrams to show the formation of images by lenses. * Describe the difference between a real and a virtual image. | | 4.6.2.5 | Worksheets 6.19.1, 6.19.2 and 6.19.3; Technician’s notes 6.19 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 77/78 | **P: 6 Waves and light** | 6.20 | | Images and magnification | * Draw ray diagrams to show the formation of real and virtual images by lenses. * Calculate the magnification of an image. | | 4.6.2.5 | Worksheets 6.20.1, 6.20.2 and 6.20.3; Technician’s notes 6.20 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 77/78 | **P: 6 Waves and light** | 6.21 | | Emission and absorption of infrared radiation | * Realise that all bodies emit and absorb infrared radiation. * Compare emission and absorption of radiation from different surfaces. * Define a perfect black body. * Explain that the intensity and distribution of wavelengths of any emission depend on the temperature of the body. | | 4.6.3.1,  4.6.3.2 | Worksheets 6.21.1, 6.21.2 and 6.21.3; Practical sheet 6.21; Technician’s notes 6.21 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 79/80 | **B: 7** **Variation and evolution** | 7.13 | | Producing new plant varieties | * Describe the process of selective breeding. * Recall how selective breeding enables humans to choose desirable characteristics in plants. | | 4.6.2.3 | Worksheets 7.13.1 and 7.13.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 79/80 | **B: 7** **Variation and evolution** | 7.14 | | Genetic engineering | * Explain what is meant by the term genetic engineering. * Give examples of how plant crops have been genetically engineered to improve products and describe how fungus cells are engineered to produce human insulin. | | 4.6.2.4 | Worksheets 7.14.1 and 7.14.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 1 | 79/80 | **B: 7** **Variation and evolution** | 7.15 | | Genetically modified crops: the science | * Explain the benefits of genetic modification in a range of crops. * Explain the ethical concerns about genetic engineering. | | 4.6.2.4 | Worksheet 7.15 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 79/80 | **C: 9 The atmosphere** | 9.1 | | Proportions of gases in the atmosphere | * Identify the gases of the atmosphere. * Recall the proportions of gases. * Explain how the balance of the gases is maintained. | | 4.9.1.1 | Worksheets 9.1.1 and 9.1.2; Technician’s notes 9.1.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 11 | Term 1 | 79/80 | **C: 9 The atmosphere** | 9.2 | | The Earth’s early atmosphere | * Describe ideas about the Earth’s early atmosphere. * Interpret evidence about the Earth’s early atmosphere. * Evaluate different theories about the Earth’s early atmosphere. | | 4.9.1.2 | Worksheet 9.2.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 11 | Term 1 | 79/80 | **C: 9 The atmosphere** | 9.3 | | How oxygen increased | * Identify the processes allowing oxygen levels to increase. * Explain the role of algae in the composition of the atmosphere. * Recall the equation for photosynthesis. | | 4.9.1.3 | Worksheet 9.3.1; Presentation 9.3.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 11 | Term 1 | 79/80 | **P: 6 Waves and light** | 6.22 | | Temperature of the Earth (Higher tier only) | * Describe how the atmosphere absorbs radiation in a way that varies with wavelength. * List the factors affecting the temperature of the Earth. * Explain how the temperature of an object is related to the radiation absorbed and radiation emitted. | | 4.6.3.2, 4.6.2.2 | Worksheets 6.22.1, 6.22.2, 6.22.3 and 6.22.4 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 79/80 | **P: 6 Waves and light** | 6.23 | | Maths skills: Using and rearranging equations | * Select and apply the equations *T* = 1/*f* and *v* = *f λ* * Substitute numerical values into equations using appropriate units. * Change the subject of an equation. | | 4.6.1.2 | Worksheet 6.23 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 79/80 | **P: 6 Waves and light** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test |
| Year 11 | Term 1 | 81/82 | **B: 7** **Variation and evolution** | 7.16 | | Is genetic modification safe? | * Explain the concerns that people have about genetic modification. * Explain the possible safety issues of genetic engineering in agriculture and medicine. | | 4.6.2.4 | Worksheets 7.16.1 and 7.16.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 81/82 | **B: 7** **Variation and evolution** | 7.17 | | Ethically wrong, or essential? | * Explain the benefits of, and concerns about, genetic modification. * Explain the ethical issues of genetic engineering in agriculture and medicine. | | 4.6.2.4 | Worksheets 7.17.1, 7.17.2 and 7.17.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 81/82 | **B: 7** **Variation and evolution** | 7.18 | | Cloning | * Describe how cuttings and tissue culture are used to produce new plants. * Describe the use of embryo transplants and adult cell cloning in animals. | | 4.6.2.5 | Worksheets 7.18.1, 7.18.2 and 7.18.3; Practical sheet 7.18; Technician’s notes 7.18; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 1 | 81/82 | **C: 9 The atmosphere** | 9.4 | | How carbon dioxide decreased | * Describe the main changes in the atmosphere over time. * Describe some of the likely causes of these changes. * Explain how the deposits of limestone, coal, crude oil and gas were formed. | | 4.9.1.4 | Worksheet 9.4.1; Technician’s notes 9.4.1; Presentations 9.4.1 and 9.4.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 81/82 | **C: 9 The atmosphere** | 9.5 | | Key: concept: Greenhouse gases | * Describe the greenhouse gases. * Explain the greenhouse effect. * Explain these processes as the interaction of short and long wavelength radiation with matter. | | 4.9.2.1 | Worksheet 9.5.1; Presentation 9.5.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 11 | Term 1 | 81/82 | **C: 9 The atmosphere** | 9.6 | | Human activities | * Describe two activities that increase the amounts of carbon dioxide and methane. * Evaluate the quality of evidence in a report about global climate change. * Recognise the importance of peer review of results and of communicating results to a wide range of audiences. | | 4.9.2.2 | Worksheet 9.6.1; Presentations9.6.1and Presentation 9.6.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Video |
| Year 11 | Term 1 | 81/82 | **P: 7 Electromagnetism** | 7.1 | | Magnetism and magnetic forces | * Explain what is meant by the poles of a magnet. * Plot the magnetic field around a bar magnet. * Describe magnetic materials and induced magnetism. | | 4.7.1.1,  4.7.1.2 | Worksheet 7.1; Practical sheet 7.1; Technician’s notes 7.1; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 1 | 81/82 | **P: 7 Electromagnetism** | 7.2 | | Compasses and magnetic fields | * Describe the Earth’s magnetic field. * Describe the magnetic effect of a current. | | 4.7.1.2,  4.7.2.1 | Worksheet 7.2; Practical sheet 7.2; Technician’s notes 7.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 81/82 | **P: 7 Electromagnetism** | 7.3 | | The magnetic effect of a solenoid | * Draw the magnetic field around a conducting wire and a solenoid. * Describe the force on a wire in a magnetic field. | | 4.7.2.1,  4.7.2.2 | Worksheets 7.3.1 and 7.3.2; Practical sheet 7.3; Technician’s notes 7.3; PowerPoint presentation; | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 83/84 | **B: 7** **Variation and evolution** | 7.19 | | The tree of life | * Describe how living things have been classified into groups using a system devised by Linnaeus. * Describe how new models of classification have developed. | | 4.6.4 | Worksheets 7.19.1, 7.19.2 and 7.19.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 1 | 83/84 | **B: 7** **Variation and evolution** | 7.20 | | Extinction…or survival? | * List the causes of extinction. * Explain how new predators, competitors and diseases can lead to extinctions. | | 4.6.3.6 | Worksheets 7.20.1, 7.20.2 and 7.20.3; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 11 | Term 1 | 83/84 | **B: 7** **Variation and evolution** | 7.21 | | Maths skills: Using charts and graphs to display data | * Understand when and how to use bar charts. * Understand how to show sub-groups on bar charts. * Understand how to plot histograms. | |  | Worksheets 7.21.1 and 7.21.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 11 | Term 1 | 83/84 | **B: 7** **Variation and evolution** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 11 | Term 1 | 83/84 | **C: 9 The atmosphere** | 9.7 | | Global climate change | * Describe four potential effects of global climate change. * Discuss the scale and risk of global climate change. * Discuss the environmental implications of climate change. | | 4.9.2.3 | Worksheet 9.7.1; Presentation 9.7.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 83/84 | **C: 9 The atmosphere** | 9.8 | | Carbon footprint and its reduction | * Explain that the carbon footprint can be reduced by reducing emissions of carbon dioxide and methane. * Describe how emissions of carbon dioxide can be reduced. * Describe how emissions of methane can be reduced. | | 4.9.2.4 | Worksheet 9.8.1; Presentation 9.8.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 1 | 83/84 | **C: 9 The atmosphere** | 9.9 | | Limitations on carbon footprint reduction | * Give reasons why actions to reduce levels of carbon dioxide and methane may be limited. * Give reasons why methane is difficult to reduce. | | 4.9.2.4 | Worksheets 9.9.1 and 9.9.2; Presentation 9.9.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 83/84 | **C: 9 The atmosphere** | 9.12 | | Maths skills: Use ratios, fractions and percentages | * Use fractions and percentages to describe the composition of mixtures. * Use ratios to determine the mass of products expected. * Calculate percentage yields in chemical reactions. | | 4.9.1.1; 4.3.3.1 | Worksheets 9.12.1 and 9.12.2; Technician’s notes 9.12.1; Presentation 9.12.1 | Video |
| Year 11 | Term 1 | 83/84 | **P: 7 Electromagnetism** | 7.4 | | Electromagnets in action | * Describe simple uses of electromagnets. * Explain how an electric bell works. * Interpret diagrams of other devices that use electromagnets to explain how they work. | | 4.7.2.1 | Worksheets 7.4.1, 7.4.2 and 7.4.3;Practical sheet 7.4; Technician’s notes 7.4; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 83/84 | **P: 7 Electromagnetism** | 7.5 | | Calculating the force on a conductor (Higher tier only) | * Explain the meaning of magnetic flux density, *B*. * Calculate the force on a current-carrying conductor in a magnetic field. | | 4.7.2.2 | Worksheets 7.5.1 and 7.5.2; Technician’s notes 7.5; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 1 | 83/84 | **P: 7 Electromagnetism** | 7.6 | | Electric motors (Higher tier only) | * List equipment that uses motors. * Describe how motors work. * Describe how to change the speed and direction of rotation of a motor. | | 4.7.2.3 | Worksheets 7.6.1 and 7.6.2; Practical sheet 7.6; Technician’s notes 7.6; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 85/86 | **B: 8 Ecology in action** | 8.1 | | Key concept: Learning about ecosystems | * Describe what an ecosystem is. * Explain the importance of high biodiversity. * Explain what is meant by a self-supporting ecosystem | | 4.7.1.1; 4.7.3.1 | Worksheets 8.1.1, 8.1.2 and 8.1.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 11 | Term 2 | 85/86 | **B: 8 Ecology in action** | 8.2 | | Changing abiotic factors | * Identify abiotic factors that affect ecosystems. * Explain changes in the distribution of species in an ecosystem. * Describe stable and unstable populations. | | 4.7.1.2; 4.7.1.3; 4.7.2.4 | Worksheets 8.2.1, 8.2.2 and 8.2.3; Practical sheets 8.2.1 and 8.2.2; Technician’s notes 8.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 85/86 | **B: 8 Ecology in action** | 8.3 | | Investigating predator­–prey relationships | * Describe how changes in one population affect another. * Explain interdependent relationships. * Explain how predator–prey population cycles have cyclical changes. | | 4.7.1.3; 4.7.2.1 | Worksheets 8.3.1 and 8.3.2; Practical sheet 8.3; Technician’s notes 8.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 85/86 | **B: 8 Ecology in action** | 8.4 | | Looking at trophic levels | * Explain trophic levels. * Explain and construct pyramids of biomass. * Explain the difficulties in constructing pyramids. | | 4.7.2.1; 4.7.4.1; 4.7.4.2 | Worksheets 8.4.1, 8.4.2 and 8.4.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 85/86 | **C: 9 The atmosphere** | 9.10 | | Atmospheric pollutants from fuels | * Describe how carbon monoxide, soot, sulfur dioxide and oxides of nitrogen are produced by burning fuels. * Predict the products of combustion of a fuel knowing the composition of the fuel. * Predict the products of combustion of a fuel knowing the conditions in which it is used. | | 4.9.3.1 | Worksheets 9.10.1, 9.10.2, 9.10.3 and 9.10.4; Technician’s notes 9.10.1; Presentation 9.10.1 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher  Slideshow |
| Year 11 | Term 2 | 85/86 | **C: 9 The atmosphere** | 9.11 | | Properties and effects of atmospheric pollutants | * Describe and explain the problems caused by increased amounts of oxides of carbon, sulfur and nitrogen as pollutants in the air. * Describe and explain the effects of acid rain. * Evaluate the role of particulates in damaging human health. | | 4.9.3.2 | Worksheets 9.11.1 and 9.11.2; Presentations 9.11.1 and 9.11.2, Graph plotters 9.1.1 and 9.1.2 | Quick starter  Homework worksheet  Homework quiz  Homework quiz – higher |
| Year 11 | Term 2 | 85/86 | **C: 9 The atmosphere** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 11 | Term 2 | 85/86 | **P: 7 Electromagnetism** | 7.7 | | Loudspeakers (Higher tier only) | * Describe how a moving-coil loudspeaker works. * Compare loudspeakers and headphones. | | 4.7.2.4 | Worksheets 7.7.1 and 7.7.2; Technician’s notes 7.7; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 85/86 | **P: 7 Electromagnetism** | 7.8 | | The generator effect (Higher tier only) | * Describe how a current is induced in a wire when it moves in a magnetic field. * Identify the factors that affect the size and direction of the induced current or induced potential difference. | | 4.7.3.1 | Worksheet 7.8; Practical sheet 7.8; Technician’s notes 7.8; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 85/86 | **P: 7 Electromagnetism** | 7.9 | | Key concept: The link between electricity and magnetism (Higher tier only) | * Explore how electricity and magnetism are connected. | | 4.7 | Worksheets 7.9.1 and 7.9.2; Practical sheet 7.9.1, 7.9.2, 7.9.3 and 7.9.4; Technician’s notes 7.9; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 87/88 | **B: 8 Ecology in action** | 8.5 | | Transferring biomass | * Identify how biomass is lost. * Calculate the efficiency of biomass transfers. * Explain the impact of biomass loss on the numbers of organisms. | | 4.7.4.3 | Worksheets 8.5.1, 8.5.2 and 8.5.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 87/88 | **B: 8 Ecology in action** | 8.6 | | Competing for resources | * Describe how competition impacts on populations. * Explain why animals in the same habitat are in competition. * Explain interspecific and intraspecific competition. | | 4.7.1.1; 4.7.1.3 | Worksheets 8.6.1, 8.6.2 and 8.6.3 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 87/88 | **B: 8 Ecology in action** | 8.7 | | Required practical: Measure the population size of a common species in a habitat | * Describe a suitable method to investigate a population. * Estimate the size of a population. * Explain the effect of sample size. | | 4.7.2.1  Prac 9 | Worksheet 8.7; Practical sheet 8.7; Technician’s notes 8.7 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 87/88 | **C: 10 Sustainable development** | 10.1 | | Key concept: Using the Earth’s resources and sustainable development | * Give examples of natural products replaced by synthetics. * Give examples of products replaced by agricultural products. * Distinguish between finite and renewable resources. | | 4.10.1.1 | Worksheets 10.1.1 and 10.1.2 | Quick starter  Homework worksheet  Homework quiz  Videos |
| Year 11 | Term 2 | 87/88 | **C: 10 Sustainable development** | 10.2 | | Potable water | * Distinguish between potable water and pure water. * Describe the differences in treatment of ground water and salty water. * Give reasons for the steps used to produce potable water. | | 4.10.1.2 | Worksheets 10.2.1, 10.2.2 and 10.2.3; Technician’s notes 10.2.1 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 87/88 | **C: 10 Sustainable development** | 10.3 | | Required practical: Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation | * Describe how safety is managed, apparatus is used and accurate measurements are made. * Recognise when sampling techniques need to be used and made representative. * Evaluate methods and suggest possible improvements and further investigations. | | 4.10.1.2  Prac 8 | Practical sheets 10.3.1 and 10.3.2; Worksheet 10.34.1; Technician’s notes 10.3.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 87/88 | **P: 7 Electromagnetism** | 7.10 | | Using the generator effect (Higher tier only) | * Explain how moving-coil microphones use the generator effect. * Explain how a dynamo generates direct current and an alternator generates alternating current. * For a dynamo and alternator, draw and interpret graphs of potential difference generated in the coil against time. | | 4.7.3.2,  4.7.3.3 | Worksheets 7.10.1 and 7.10.2; Practical sheet 7.10; Technician’s notes 7.10; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 87/88 | **P: 7 Electromagnetism** | 7.11 | | Transformers (Higher tier only) | * Explain how a transformer both uses and produces alternating current * Explain the relationship between the number of turns in the primary coil and the number in the secondary coil * Calculate the current that needs to be provided to produce a particular power output. | | 4.7.3.4 | Worksheet 7.11; Practical sheet 7.11; Technician’s notes 7.11; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 87/88 | **P: 7 Electromagnetism** | 7.12 | | Maths skills: Rearranging equations (content Higher tier only) | * Change the subject of an equation. | | 4.7.2.2, 4.7.3.4 | Worksheets 7.12.1 and 7.12.2; PowerPoint presentation | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 87/88 | **P: 7 Electromagnetism** | End of chapter test Student Book  End of chapter test Collins *Connect* | | | Assessment | |  |  | End of chapter test |
| Year 11 | Term 2 | 89/90 | **B: 8 Ecology in action** | 8.8 | | Adapting for survival in animals | * Recall why animals have adaptations. * Explain some adaptations. * Use surface area to volume ratios to explain some adaptations. | | 4.7.1.4 | Worksheets 8.8.1; 8.8.2 and 8.8.3; Practical sheet 8.8; Technician’s notes 8.8 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 89/90 | **B: 8 Ecology in action** | 8.9 | | Adapting for survival in plants | * Identify some adaptations of plants and bacteria. * Explain the importance of plant adaptations. * Explain a range of plant adaptations. | | 4.7.1.4 | Worksheets 8.9.1, 8.9.2 and 8.9.3; Practical sheet 8.9; Technician’s notes 8.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 89/90 | **B: 8 Ecology in action** | 8.10 | | Cycling materials | * Recall that many materials are recycled in nature. * Explain the stages in the water and decay cycles. * Explain the importance of recycling materials. | | 4.7.2.2; 4.7.2.3 | Worksheets 8.10.1 and 8.10.2; Practical sheet 8.10 (demonstration); Technician’s notes 8.10 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 89/90 | **C: 10 Sustainable development** | 10.4 | | Waste water treatment | * Explain how waste water is treated. * Describe how sewage is treated. * Compare the ease of treating waste, ground and salt water. | | 4.10.1.3 | Worksheets 10.4.1, 10.4.2 and 10.4.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 89/90 | **C: 10 Sustainable development** | 10.5 | | Alternative methods of metal extraction (Higher tier only) | * Describe the process of phytomining. * Describe the process of bioleaching. * Evaluate alternative biological methods of metal extraction. | | 4.10.1.4 | Practical sheet 10.5.1; Worksheets 10.5.1 and 10.5.2; Technician’s notes 10.5.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 89/90 | **C: 10 Sustainable development** | 10.6 | | Life cycle assessment and recycling | * Describe the components of a life cycle assessment (LCA). * Interpret LCAs of materials or products from information. * Carry out a simple comparative LCA for shopping bags. | | 4.10.2.1 | Worksheets 10.6.1 and 10.6.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 89/90 | **C: 10 Sustainable development** | 10.7 | | Ways of reducing the use of resources | * Describe ways of recycling and reusing materials. * Explain why recycling, reusing and reducing are needed. * Evaluate ways of reducing the use of limited resources. | | 4.10.2.2 | Worksheets 10.7.1 and 10.7.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 89/90 | **P: 8 Space** | 8.1 | | The Solar System | * Describe the orbits of planets and moons in the Solar System. * Distinguish between planets, dwarf planets and moons. | | 4.8.1.1,  4.8.1.3 | Worksheet 8.1; Practical sheets 8.1.1, 8.1.2 and 8.1.3; Technician’s notes 8.1 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 89/90 | **P: 8 Space** | 8.2 | | Orbits of planets, moons and artificial satellites | * Compare the orbital motion of moons, artificial satellites and planets in the Solar System. * Describe what keeps bodies in orbit around planets and stars. * Explain how, for circular orbits, an object can have a changing velocity but unchanged speed. * Explain why bodies must move at a particular speed to stay in orbit at a particular distance. | | 4.8.1.3 | Worksheet 8.2; Practical sheets 8.2.1 and 8.2.2; Technician’s notes 8.2.1 and 8.2.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 89/90 | **P: 8 Space** | 8.3 | | The Sun and other stars | * Describe how the Sun and other stars formed. * Describe the nuclear fusion reactions in the Sun. | | 4.8.1.1 | Worksheet 8.3; Practical sheets 8.3.1 and 8.3.2; Technician’s notes 8.3.1 and 8.3.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 91/92 | **B: 8 Ecology in action** | 8.11 | | Cycling carbon | * Recall that plants take in carbon as carbon dioxide. * Explain how carbon is recycled. * Interpret a diagram of the carbon cycle. | | 4.7.2.2 | Worksheets 8.11.1 and 8.11.2; Practical sheet 8.11; Technician’s notes 8.11 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 91/92 | **B: 8 Ecology in action** | 8.12 | | Investigating decay | * Recall the factors needed for decay. * Describe how different factors affect decay. * Explain extracellular digestion. | | 4.7.2.2, 4.7.2.3 | Worksheets 8.12.1, 8.12.2 and 8.12.3; Practical sheet 8.12; Technician’s notes 8.12 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 91/92 | **B: 8 Ecology in action** | 8.13 | | Required practical: Investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change | * Describe how safety is managed, apparatus is used and accurate measurements are made. * Make and record observations and make accurate measurements. * Evaluate methods and suggest possible improvements and further investigations. | | 4.7.2.3  Prac 10 | Worksheets 8.13.1, 8.13.2 and 8.13.3; Practical sheet 8.13; Technician’s notes 8.13 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 91/92 | **C: 10 Sustainable development** | 10.8 | | Corrosion and its prevention | * Show that air and water are needed for rusting. * Describe experiments and interpret results on rusting. * Explain methods for preventing corrosion. | | 4.10.3.1 | Practical sheets 10.8.1 and 10.8.2; Worksheets 10.8.1 and 10.8.2; Technician’s notes 10.8.1 and 10.8.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 91/92 | **C: 10 Sustainable development** | 10.9 | | Alloys as useful materials | * Describe the composition of common alloys. * Interpret the composition of other alloys from data. * Evaluate the uses of other alloys. | | 4.10.3.2 | Worksheets 10.9.1, 10.9.2 and 10.9.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 91/92 | **C: 10 Sustainable development** | 10.10 | | Ceramics, polymers and composites | * Compare quantitatively properties of materials. * Compare glass, ceramics, polymers, composites and metals. * Explain the difference between thermosoftening and thermosetting polymers by their structures. * Select materials by relating their properties to uses. | | 4.10.3.3 | Worksheets 10.10.1, 10.10.2 and 10.10.3 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 91/92 | **P: 8 Space** | 8.4 | | Main sequence of a star | * Describe the main sequence stage of a star’s life cycle. * Identify the forces that are in equilibrium in a stable star. | | 4.8.1.1,  4.8.1.2 | Worksheets 8.4.1 and 8.4.2; Practical sheet 8.4; Technician’s notes 8.4 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 91/92 | **P: 8 Space** | 8.5 | | Life cycles of stars | * Describe the life cycles of a star like the Sun and a massive star. | | 4.8.1.2 | Worksheets 8.5.1 and 8.5.2; Practical sheets 8.5.1, 8.5.2, 8.5.3 and 8.5.4; Technician’s notes 8.5 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 91/92 | **P: 8 Space** | 8.6 | | How the elements are formed | * Understand how new elements are produced by nuclear fusion inside a star. * Recognise that the heavier elements are made in a supernova. | | 4.8.1.2 | Worksheets 8.6.1 and 8.6.2; Practical sheet 8.6; Technician’s notes 8.6 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 93/94 | **B: 8 Ecology in action** | 8.14 | | Changing the environment | * Recall causes of environmental change. * Describe the impact of environmental change. * Explain the impact of an environmental change. | | 4.7.2.4; 4.7.3.1; 4.7.3.2 | Worksheet 8.14 | Quick starter  Homework worksheet  Homework quiz  Videos |
| Year 11 | Term 2 | 93/94 | **B: 8 Ecology in action** | 8.15 | | Learning about land use | * Identify why land use has changed. * Describe the effects of changing land use. * Evaluate a change in land use. | | 4.7.3.3 | Worksheets 8.15.1 and 8.15.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 93/94 | **B: 8 Ecology in action** | 8.16 | | Changing the landscape | * Identify the reasons for deforestation. * Describe the impact of peat bog destruction and deforestation. * Evaluate the destruction of peat bogs and forests. | | 4.7.3.3; 4.7.3.4 | Worksheets 8.16.1 and 8.16.2 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 93/94 | **B: 8 Ecology in action** | 8.24 | | Maths skills: Using graphs to show relationships | * To recognise direct proportionality in a graph. * To use the gradient of a graph to calculate the rate. | | 4.7.2.3 | Worksheet 8.24 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Video |
| Year 11 | Term 2 | 93/94 | **C: 10 Sustainable development** | 10.11 | | Haber process | * Apply the principles of dynamic equilibrium to the Haber process. * Use graphs to explain the trade-off with rate and equilibrium. * Explain how commercially used conditions relate to cost. | | 4.10.4.1 | Practical sheet 10.11.1; Worksheets 10.11.1 and 10.11.2; Technician’s notes 10.11.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 93/94 | **C: 10 Sustainable development** | 10.12 | | Production and use of NPK fertilisers | * Describe how to make a fertiliser in the laboratory. * Explain how fertilisers are produced industrially. * Compare the industrial production with laboratory preparation. | | 4.10.4.2 | Practical sheet 10.12.1; Worksheet 10.12.1; Technician’s notes 10.12.1 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 93/94 | **C: 10 Sustainable development** | 10.13 | | Maths skills: Translate information between graphical and numerical form | * Represent information from pie charts numerically. * Represent information from graphs numerically. * Represent information from numeric form graphically. | | 4.10.4.1 | Worksheets 10.13.1and 10.13.2 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 93/94 | **P: 8 Space** | 8.7 | | Red-shift | * Describe red-shift. * Describe evidence for the expanding Universe. * Explain that ideas about dark matter and dark energy are still being resolved. | | 4.8.2 | Worksheet 8.7; Practical sheets 8.7.1, 8.7.2 and 8.7.3; Technician’s notes 8.7.1, 8.7.2 and 8.7.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 93/94 | **P: 8 Space** | 8.8 | | Key concept: Gravity: the force that binds the Universe | * Understand that gravity provides the force that keeps planets and satellites in orbits. * Understand that gravity is necessary at the start of a star’s life cycle and to maintain equilibrium in a stable star. * Describe how the weight of an object depends on the gravitational field strength. * Recognise that that there is still much about the universe that is not understood, for example dark mass and dark energy. | | 4.8.1.3,  4.5.1.3 | Worksheet 8.8; Practical sheets 8.8.1 and 8.8.2; Technician’s notes 8.8.1 and 8.8.2 | Quick starter  Homework worksheet  Homework quiz  Slideshow |
| Year 11 | Term 2 | 93/94 | **P: 8 Space** | 8.9 | | Maths skills: Using scale and standard form | * Understand the scale of objects in the Universe. * Use standard form. | | 4.8 | Worksheet 8.9 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 95/96 | **B: 8 Ecology in action** | 8.17 | | Thinking about global warming | * Recall what global warming is. * Describe the causes of global warming. * Explain how global warming impacts on biodiversity. | | 4.7.3.5 | Worksheet 8.17 | Quick starter  Homework worksheet  Homework quiz  Slideshow  Videos |
| Year 11 | Term 2 | 95/96 | **B: 8 Ecology in action** | 8.18 | | Looking at waste management | * Describe how waste production is linked to human population growth. * Describe the impact of waste on ecosystems. * Explain how waste impacts on biodiversity. | | 4.7.3.2 | Worksheet 8.18 | Quick starter  Homework worksheet  Homework quiz  Video |
| Year 11 | Term 2 | 95/96 | **B: 8 Ecology in action** | 8.19 | | Investigating pollution | * Identify pollution levels using indicator species. * Explain how indicator species measure pollution. * Compare different methods of measuring pollution. | | 4.7.3.2 | Worksheets 8.19.1 and 8.19.2; Practical sheet 8.19; Technician’s notes 8.19 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 2 | 95/96 | **C: 10 Sustainable development** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect*  End of course test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test  End of course test |
| Year 11 | Term 2 | 95/96 | **P: 8 Space** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect*  End of course test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test  End of course test |
| Year 11 | Term 3 | 97/98 | **B: 8 Ecology in action** | 8.20 | | Maintaining biodiversity | * Describe some conservation measures. * Describe the impact of breeding programmes. * Explain how habitats are regenerated. | | 4.7.3.6 | Worksheets 8.20.1, 8.20.2 and 8.20.3 | Quick starter  Homework worksheet  Homework quiz  Videos |
| Year 11 | Term 3 | 97/98 | **B: 8 Ecology in action** | 8.21 | | Learning about food security | * Identify factors affecting food security. * Describe how different factors affect food security. * Interpret data to evaluate food security. | | 4.7.5.1 | Worksheets 8.21.1, 8.21.2 and 8.21.3 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 3 | 97/98 | **B: 8 Ecology in action** | 8.22 | | Maintaining food security | * Describe some intensive farming methods. * Explain ethical issues related to intensive farming. * Evaluate modern farming techniques. * Describe methods to maintain sustainable fisheries. | | 4.7.5.2; 4.7.5.3 | Worksheet 8.22 | Quick starter  Homework worksheet  Homework quiz |
| Year 11 | Term 3 | 99 | **B: 8 Ecology in action** | 8.23 | | Using biotechnology | * Describe some uses of biotechnology. * Explain the advantages of some uses of biotechnology. * Evaluate some uses of biotechnology. | | 4.7.5.4 | Worksheets 8.23.1 and 8.23.2 | Quick starter  Homework worksheet  Homework quiz  Videos |
| Year 11 | Term 3 | 99 | **B: 8 Ecology in action** | End of chapter test Student Book  End of chapter test Collins *Connect*  End of teaching block test Collins *Connect*  End of course test Collins *Connect* | | | Assessment | |  |  | End of chapter test  End of teaching block test  End of course test |