Science KS₃ Learning Journey WEST GRANTHAM Church of England Secondary Academy The structure of the atom and periodic table. How Revisit motion graphs and Understand the processes of chemical reactions occur and the conservation of investigate factors that diffusion, osmosis and active mass. Discover how atoms form ions to bond and affect stopping distances and transport move substances form new compounds. Understand how bonding collision safety features. through cells. Know how cells KS4 science either relates to properties. become specialised to perform Trilogy or Separate functions. route. Speed and **Atoms and Energy** Summer **Summer Stopping** and Work **Elements** Cell Biology Know the different energy stores and how energy can be Know how fossil fuels were transferred between them. Energy cannot be created or formed and how oil is used in destroyed, use equations to calculate energy changes. modern life. Understand how **Spring** the structure of hydrocarbons Discover the properties of waves including affect the properties of the light and sound waves. Investigate reflection, substances they make. refraction and how lenses work. **Start of GCSE Organic Content** Waves Chemistry Develop skills in measuring Discover how the carbon cycle moves Investigate how pathogens spread carbon around our planet, how plants play populations in an disease and how the body has a major part in this cycle. Understand how ecosystem, understand natural defenses against different Discover what the Earth's atmosphere evolved and how organisms interact pathogens. Find out how vaccines radioactivity is, its with the use of food chains humans actions are changing the boost the bodies immune system. dangers and uses. atmosphere and climate. and webs. **Spring** Understand that different isotopes have **Chemistry of the** half-lives where activity **Autumn Ecology** decreases over time. Atmosphere Investigate forces and Discover how plants make food **Health and** Understand how energy transfers such as motion, looking at through photosynthesis and what radiation, conduction and convection single forces and paired affects how quickly can happen. Know **Disease** move energy from one place to another. forces. Calculate how plants gather and transport the Investigate the thermal properties of resultant force when nutrients needed for photosynthesis. materials and know how conductors and forces are combined. Know how farming methods can be Radioactivity insulators work. Use distance/time used to maximize production of crops. graphs and velocity/time graphs to Year Summer describe journeys. **Energy Plants** 2 Summer 9 Introduction to the atom and sub-atomic Investigate current and particles. Identify elements, mixtures and voltage in series and parallel **Forces** compounds and investigate ways to circuits, use current and separate them by filtering, evaporation voltage to calculate and chromatography. resistance in circuits. Know what magnetic fields look like and the rules of attraction **Materials** and repulsion of magnets. **Spring Electricity and** Inheritance **Spring 1 Magnetism** Investigate how humans develop during **Autumn** puberty and how the reproductive 2 system works. Find out how Know that some diseases characteristics are past on through DNA occur because of a lack of when organisms reproduce. Understand **Chemical** nutrients. Describe how how selective breeding works in animals nutrients are absorbed by **Reactions** and plants to produce specific traits. the digestive system and transported for the Year circulatory system. **Summer Atoms Summer Space** 8 Through practical and theory investigate chemical reactions **Body** such as combustion, exothermic The building blocks of everything, and endothermic, reactions of How the Earth fits in the solar system Systems be able to define elements, metals, reactions of acids and and galaxy. Our sun is a star and what mixtures and compounds. Explain alkalis. Building knowledge to will happen to the sun in its lifecycle. Spring 2 how the idea of the atom has construct word and symbol What might happen to Earth in the changed over time to our current equations to represent reactions. future because of climate change. model. **Energy Particle Theory Key Skills Spring Autumn** Year Separation 2 **Cell Theory** Recall the different **Techniques** energy stores and that energy cannot be Lab equipment and What are particles like in created or destroyed. where to find it. How to solids, liquids and gases. Describe how energy carry out a reliable The properties of solids can be transferred experiment. liquids and gases. and calculate how Liquid Gaseous What is a cell? What efficient transfers are. Know the difference are the different parts between a pure substance of a cell called and what and a mixture. Know how do they do. How can we to separate mixtures by see cells and how do filtration, evaporation and cells specialise. chromatography.

Conceptual

Procedural