Year 8

Science Understanding

Biological sciences

Content Descriptor	Lesson Names
Cells are the basic units of living things; they have specialised structures and functions	*Introduction to Cells* • Size of Cells • The Size of Cells • What is a Cell? *Microscopes* • Magnification • Parts and Function of a Microscope • Types of Microscopes • Using a Microscope *Types of Cells* • Introduction to Types of Cells: Pond Water Investigation • Bacterial Cell Structure • Eukaryotic Cells • Prokaryotic Cells • Animal Cell Structure • Plant Cell Structure • Fungal Cell Structure • Animal and Plant Cells • Animal vs. Plant Cells • Comparing Plant and Animal Cells • Prokaryotic vs. Eukaryotic • The Origin of Mitochondria *Cell Division* • Cell Division in Bacteria • Cell Division in Humans - Mitosis • Cell Division in Humans - Meiosis *Levels of Organisation* • Specialised Animal Cells I • Specialised Animal Cells II • Specialised Plant Cells - Photosynthetic and Guard Cells • Specialised Plant Cells - Root Hairs and Conducting Cells

	• Types of Tissue • Levels of Organisation • Diffusion • Diffusion and Cell Size *How Cells Have Shaped Biology* • Cell Theory • Stem Cells • Stem Cell Therapy • History of Microscopes *Treating and Preventing Disease* • Pasteur & Koch • Antibiotics • Disease Treatment and Control • Food Safety and Salmonella • Vaccination
Multi-cellular organisms contain systems of organs carrying out specialised functions that enable them to survive and reproduce	*Introduction to Body Systems* • Extension: Adapting to Extreme Climates • Exercise and the Body • Introduction to Body Systems • Organ Systems *Digestive System* • Digestive System As A Whole • Food Groups • Mouth and Oesophagus • Stomach and Small Intestine • Large Intestine and Rectum • Comparing Digestion in Other Animals • The Microbes That Control What We Do *Respiratory System* • Introduction to Respiration • Breathing • Gas Exchange • Comparing Respiration • Diffusion • Diffusion and Body Systems • Respiration in Cells • Respiratory System *Circulatory System* • Introduction to the Circulatory System • Heart • Blood Vessels • Blood • Ancient Anatomy

	• Relative Heart Size *Excretory System* • Introduction to Excretory System • Excretory Organs • Kidney Disease • The Kidneys & Urine Production *Musculoskeletal System* • Musculoskeletal System • Bones & Joints • Muscles • Injuries • Stress Effects on the Body • Trapped in a Cave *Reproductive System* • Puberty • Sexual Reproduction in Animals • Asexual Reproduction in Animals • Male Reproduction • Female Reproduction • Pregnancy • Birth • Infertility • Contraception • Lamb in a Bag *Plant System* • Photosynthesis • Sexual Reproduction in Plants • Plant Systems • Pollination • Asexual Reproduction in Plants • Maple Syrup: Xylem and Phloem • Plant Cloning • Seed Dispersal & Germination *Organ Transplants* • Ctrl + X, Ctrl + V • Ethical Issues of Organ Transplants • Organ Transplants

Chemical sciences

Content Descriptor	Lesson Names
Properties of the different states of matter can be explained in terms of the motion and arrangement of particles	*Matter Basics and States of Matter* • States of Matter • Particle Model of Matter • Solids • Liquids • Gases • Introduction to Particles *Changing States* • Changing States • Melting and Freezing • Boiling, Evaporation and Condensation • Sublimation and Deposition • Heating and Cooling Curves *NEW* • Energy In Matter • What is the Matter? *Properties of Matter* • Density • Mass and Volume • Newtonian and Non-Newtonian Fluids • Pressure *Matter in Nature* • Melting Polar Ice • States of Matter in Space • The Water Cycle and Weather • When Water Freezes *Matter in Technology* • Air Conditioners • Refrigerators and Refrigerants
Chemical change involves substances reacting to form new substances	*Physical Properties* • Physical Change • Physical Properties • Physical Properties of Metals and Non-Metals *Chemical Reactions and Properties* • Chemical Changes • Chemical Reactions • Writing Word Reactions • Chemical Properties • Physical and Chemical Changes • Turning Observations Into Facts

	• Writing Symbol Equations *Chemical Compounds* • Alchemy • By Our Powers Combined • Recycling • Synthetic Materials • Using Substances Based on their Properties • Working In Chemistry

Earth and space sciences

Content Descriptor	Lesson Names
Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales	*Structure of the Earth* • Earth's Structure • Extension: Dissecting the Earth • Mechanical Layers of the Earth *Earth's Processes* • The Geological Timescale • Australian Landforms formed by Physical Weathering, Erosion and Sedimentation • Australian Landforms formed by Volcanism and Chemical Weathering • Developing the Geological Timescale • Earth Processes • Erosion and Sedimentation • Hot Rocks of the Cosgrove Hotspot Track • Weathering *Minerals* • Comparing Minerals • Identifying Minerals • Introduction to Minerals • Zircons are Forever *Rock Types* • Metamorphic Rocks • Australian Fossils • Baked Rocks in the Lachlan Fold Belt • Feathery Dinosaurs • Fossils • Igneous Rocks • Minerals and Rocks • Rock Density • Sedimentary Rocks • The Rock Cycle

	Exploring Earth and Beyond • Martian Geology • Minerals and Rocks as Resources • Mining and Mineral Exploration • Volcanology

Physical sciences

Content Descriptor	Lesson Names
Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems	*Introduction to Energy and Units of Energy* • Identifying KE or PE • Potential Energy • Units of Energy • What is Energy? • Converting between Joules (J) & Kilojoules (kJ) • Kinetic Energy • Converting between Kilojoules (kJ) & Megajoules (MJ) • Energy Calculations • Qualitative and Quantitative Data *Energy Transfer and Transformation* • Energy Transformation and Food • Energy Transformations • Introduction to Heat Transfer • Conductors and Insulators • Displaying Energy Transformations • Cars of the Future • Law of Conservation of Energy • Types of Energy *Energy Efficiency* • Cogeneration and Engines • Energy Efficiency • Energy Efficient Houses • The Development of Flight • The Power Grid and You • Useful and Wasted Energy *Electrical Energy* • Electricity • Circuits in Parallel • Comparing Circuits • Electric Circuits • Current • Voltage

	• Resistance • Introduction to Ohm's Law • Batteries • Electrical Conductors and Insulators • Circuits in Series • A Bright Idea