



Year 8 - Biology			
Unit 1	Unit 2	Unit 3	Age Related Expectations (ARE)
Plants This unit explores how plants survive and grow, focusing on the essential process of photosynthesis, the adaptation and function of plant structures, and the method of reproduction via the flower. Knowledge and Understanding - Students define photosynthesis, can write the word equation, and understand how light, temperature, and carbon dioxide act as limiting factors. - Students learn the roles of major plant parts and how plant cells and organs (like the leaf) are adapted for functions such as taking in water/CO₂ and transpiration. - Students understand the roles of minerals in plant growth (and the symptoms of deficiencies) and the stages of plant reproduction, including pollination and seed dispersal.	Respiration & Circulation This unit covers the body's need for energy release through respiration and the critical role of the circulatory system in transporting the necessary oxygen and glucose to all cells. Knowledge and Understanding - Students learn the word equations for both aerobic and anaerobic respiration (in animals and yeast) and understand the conditions under which each occurs. - Students learn the structure and function of the circulatory system, including the roles of plasma and red blood cells in transport. - Students study fermentation and can explain the effect of factors like temperature on the rate of respiration. Skills Developed Investigation: Planning and conducting investigations to measure pulse rate and examine the	Ecosystems and Interdependence This unit examines the complexity of ecosystems, how organisms interact and adapt to their habitats, and the importance of biodiversity, variation, and evolution in maintaining species survival. Knowledge and Understanding - Students describe different habitats and how organisms (including predators) are adapted for survival and hunting. - Students understand the concept of competition for resources and how predator/prey cycles affect population sizes. - Students define biodiversity and understand how a lack of it impacts an ecosystem. - Students learn the concepts of variation (continuous/discontinuous) and the fundamental principles of natural selection and the theory of evolution.	1. The cellular basis of life Describe how muscle cells and red blood cells are adapted to their function and describe the structure and function of the respiratory and circulatory system. 2. Variation, Control & Lifecycles Describe genetic and environmental variation and how genetic information is passed to offspring leading to evolution. 3. Biological Transfer Describe photosynthesis, respiration and transpiration. 4. Health & Disease Describe the role of mineral deficiencies in plants.



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Skills Developed • Practical Testing: Testing a variegated leaf for the presence of starch and investigating the rate of transpiration.	effect of exercise on heart rate. • Analysis: Using data to explain how factors like temperature affect the rate of respiration.	Skills Developed • Drawing & Explanation: Drawing and explaining food chains and food webs. • Analysis: Explaining the causes of variation and the advantages/disadvantages it presents. • Evaluation: Describing the process of natural selection and identifying reasons for extinction.	
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Year 8 - Chemistry		
Unit 1	Unit 2	Age Related Expectations (ARE)
Acids & Alkalis This unit introduces common everyday acids and alkalis, highlights essential safety precautions, and lays the foundational concepts of pH, indicators, and neutralisation that are crucial for practical chemistry skills. Knowledge and Understanding • Students learn common uses of acids (including in food) and define what neutralisation is, along with examples of these reactions. • Students recall how indicators (like litmus) are used to classify substances, and how the pH scale measures the strength of acids and alkalis. • Students understand that diluting an acid or alkali brings its pH closer to 7 (neutral).	Earth & Atmosphere This unit provides an understanding of the Earth's internal structure and rock formation, the composition of the atmosphere, and the vital cycles and human impacts that affect climate change and resource management. Knowledge and Understanding • Students learn the internal structure of the Earth and the role of convection currents in crust movement. • Students describe the properties and formation of the three main rock types: igneous, metamorphic, and sedimentary. • Students describe the composition of the atmosphere and the processes (like respiration	1. Atoms & Their Arrangement 2. Chemical Reactions 3. Describe <i>neutralisation</i> reactions and represent them with simple word equations 4. Substances & Properties Identify acids and alkalis from their pH and other properties. 5. The Earth's Resources Describe the composition of the Earth & Atmosphere, including rising carbon dioxide levels



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- Students recall that metal carbonates react with acid, producing observations such as fizzing/effervescence. Skills Developed Practical Testing: Using litmus paper and the pH scale to test and measure the strength of solutions. Equation Writing: Writing word equations for the reactions of metals and metal carbonates with acids. Observation & Explanation: Describing observations when metal carbonates react with acid and explaining the concept of dilution.	and photosynthesis) that regulate carbon dioxide and oxygen levels. - Students define climate change and describe the carbon cycle, explaining how human activities increase CO₂ concentration. Skills Developed Evaluation: Assessing evidence that global warming is caused by human activity and evaluating the social, economic, and environmental impacts of exploiting metal ores.	
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Year 8 - Physics			
Unit 1	Unit 2	Unit 3	Age Related Expectations (ARE)
Energy Changes & Transfers This unit covers the fundamental principle of energy conservation (it cannot be created or destroyed), explores various forms of energy and how they transfer, and evaluates the critical need for renewable energy sources. Knowledge and Understanding Students identify and define the different forms of energy (thermal, kinetic, chemical, etc.) and understand	Forces & Motion This unit establishes that forces are essential for transferring energy, enabling students to understand motion through concepts like speed, acceleration, and the effects of forces like drag, pressure, and moments. Knowledge and Understanding Students recall the names and definitions of contact and non-contact forces and can relate them to diagrams	Waves This unit explores waves as a fundamental method of energy and information transfer without matter transfer, focusing on light (reflection, refraction, colour) and sound (travel, pitch, intensity) waves. Knowledge and Understanding Students describe what happens when a light ray meets a surface (absorption and reflection) and explain how we see objects and how shadows are formed.	1. Energy & Matter Name the different energy stores & describe how energy is transferred. 2. Forces & Motion Describe the different forces acting on objects and calculate speed.



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how energy is dissipated (wasted) in real-world situations.

- Students recall the difference between heat energy and temperature and identify materials as good insulators or conductors of heat.
- Students describe the formation of convection currents in fluids and describe the uses of infrared radiation.
- Students define non-renewable fossil fuels and understand the importance of work done and the concept of power rating in appliances.

Skills Developed

- **Practical Investigation:** Investigating and comparing the conduction rates of different metals.
- **Calculation:** Using formulae to calculate work done and understanding how to calculate energy cost using power and time (kWh).
- **Evaluation:** Evaluating the pros and cons of different energy resources (renewable vs. non-renewable).

showing balanced and unbalanced forces.

- Students define drag in terms of particles and describe what is meant by density.
- Students define the terms speed and acceleration and explain the relationship shown by a distance vs. time graph.

Skills Developed

- **Application:** Explaining the relationship between particles and drag.
- **Calculation:** Using the three core formulae: work done (distance x force), speed (distance / time), and pressure (force / area). Using the appropriate equations to calculate acceleration and moments (force x distance).

- Students recall that white light is a mixture, identify primary colours, and explain how colour filters function.
- Students label the parts of the human eye and can explain with diagrams how the eye forms an image.
- Students give examples of transverse and longitudinal waves and explain how sound waves travel.

Skills Developed

- **Ray Diagrams:** Drawing diagrams to show the law of reflection (angle of incidence equals angle of reflection) and how refraction occurs.
- **Analysis:** Describing the relationship between a wave's properties (amplitude, frequency) and sound characteristics (intensity, pitch) using an oscilloscope trace.

3. Waves

Describe different types of waves & describe how light and sound travel.

4. Electricity & Magnetism

5. Earth in Space

Describe how light and sound travel through space.