

# Science



## KS3 Curriculum Breakdown



	<i>Year 7</i>	<i>Year 8</i>	<i>Year 9</i>
<b>TERM</b> <b>1</b>	<b>Enquiry</b> <ul style="list-style-type: none"> <li>• Risk assessments</li> <li>• Lab equipment</li> <li>• Measures</li> <li>• Scientific questions</li> <li>• Variables</li> <li>• Presenting data</li> <li>• Drawing graphs</li> <li>• Analysing data</li> <li>• Evaluating data</li> <li>• Planning a practical</li> </ul> <b>Acids &amp; Alkalis</b> <ul style="list-style-type: none"> <li>• Hazards</li> <li>• pH scale</li> <li>• Uses of acids and alkalis</li> </ul>	<b>Earth Structure</b> <ul style="list-style-type: none"> <li>• Structure of the Earth</li> <li>• Sedimentary rocks</li> <li>• Igneous &amp; metamorphic rocks</li> <li>• The rock cycle, weathering and erosion</li> <li>• Ceramics</li> <li>• Evidence of changes over time</li> </ul> <b>Sound &amp; wave properties (Light)</b> <ul style="list-style-type: none"> <li>• Longitudinal waves</li> <li>• Sound waves &amp; speed</li> <li>• Loudness &amp; amplitude</li> <li>• Frequency &amp; pitch</li> <li>• The ear &amp; hearing</li> <li>• Transverse waves</li> </ul>	<b>Breathing</b> <ul style="list-style-type: none"> <li>• The respiratory system &amp; breathing</li> <li>• Lung capacity</li> <li>• Gases in the air</li> <li>• Diffusion &amp; gas exchange</li> <li>• Exercise</li> <li>• Drugs, alcohol &amp; smoking</li> </ul> <b>Climate</b> <ul style="list-style-type: none"> <li>• Composition of the atmosphere</li> <li>• The carbon cycle</li> <li>• Human impact on the carbon cycle</li> <li>• Reducing emissions</li> <li>• Global warming</li> </ul>

- Making an indicator
- Neutralisation
- Making salts

### **Cells**

- Observing cells
- Plant & animal cells
- Specialised cells
- Movement of substances
- Uni-cellular organisms
- Organisation
- Stem cells

### **Contact forces**

- Balanced & unbalanced forces
- Force arrows
- Force calculations
- Vector arrows and scales
- Mass and weight
- Hooke's Law
- Proportional relationships
- Elasticity
- Moments and machines

### **Gravity**

- Gravity and freefall
- Gravity on the Earth
- The Planets
- Models of the Solar System
- Satellites and phases of the moon
- Weight

- Light waves & speed
- Reflection & refraction
- Interference
- Ray diagrams
- The relationship between wavelength, frequency and speed
- The eye & vision
- Colour

### **Movement**

- Levels of organisation
- The skeleton
- Joints
- Muscles
- Exercise & fatigue
- Damage
- The use of technology

### **Plant reproduction**

- Flowers & pollination
- Fertilisation
- Germination
- Seed dispersal & adaptations
- Pollinators & plant breeding
- Sexual and asexual reproduction

### **Energy transfers and stores**

- Energy stores
- Energy transfers & Sankey diagrams
- Energy cost
- Energy dissipation

- Human activity
- Carbon footprint

### **Work**

- Work done & calculations
- Friction & air resistance
- Vector
- Elastic potential & calculations
- Unit conversions
- Scale diagram construction
- Vector diagrams
- Uses in technology

### **Wave effects**

- Longitudinal and transverse waves
- Energy transfer
- Sound and ultrasound
- Effects on the body
- Audio equipment, technology & medicine
- Renewable resources: water waves & energy
- The electromagnetic spectrum and uses
- Wave calculations

		<ul style="list-style-type: none"> <li>Relationships between energy and speed, temperature, height and compression.</li> <li>Energy sources (renewable/non-renewable)</li> <li>Using the correct unit and the conversion of these units</li> </ul>	
<b>TERM 2</b>	<p><b>Separating mixtures</b></p> <ul style="list-style-type: none"> <li>Pure substances</li> <li>Solutions</li> <li>Solubility</li> <li>Filtration</li> <li>Evaporation &amp; distillation</li> <li>Chromatography</li> <li>Solubility curves</li> </ul> <p><b>Human Reproduction</b></p> <ul style="list-style-type: none"> <li>Adolescence</li> <li>Reproductive organs</li> <li>Fertilisation &amp; implantation</li> <li>Development of foetus</li> <li>Menstrual cycle</li> <li>Contraception &amp; fertility</li> <li>The effect of drugs</li> </ul> <p><b>Potential difference resistance and current</b></p> <ul style="list-style-type: none"> <li>Current</li> <li>Potential difference</li> <li>Resistance</li> <li>Series &amp; parallel circuits</li> <li>Investigating relationships</li> <li>Electrical safety</li> <li>Using formula to complete calculations</li> </ul>	<p><b>Heating and cooling</b></p> <ul style="list-style-type: none"> <li>Energy &amp; temperature</li> <li>Energy transfer: particles</li> <li>Energy transfer: radiation &amp; insulation</li> <li>Measuring energy transfer</li> <li>Specific heat capacity</li> <li>Payback time</li> </ul> <p><b>Inheritance</b></p> <ul style="list-style-type: none"> <li>Inheritance</li> <li>DNA and chromosome numbers</li> <li>Mutations</li> <li>Genetics</li> <li>Genetic modification and engineering</li> <li>Watson, Crick and Franklin</li> <li>Human Genome Project</li> <li>Punnet squares, ratios &amp; predicting genetic patterns.</li> </ul> <p><b>Elements</b></p> <ul style="list-style-type: none"> <li>Elements</li> <li>Atoms</li> <li>Compounds</li> <li>Mixtures</li> <li>Chemical formulae</li> <li>Polymers</li> </ul>	<p><b>Respiration</b></p> <ul style="list-style-type: none"> <li>Aerobic respiration</li> <li>Anaerobic respiration</li> <li>Biotechnology</li> <li>Fermentation</li> <li>Exercise</li> <li>Adaptations of cells and organelles</li> <li>Word and symbol equations</li> </ul> <p><b>Photosynthesis</b></p> <ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Word and symbol equations</li> <li>Uses of glucose</li> <li>Testing for photosynthesis</li> <li>Adaptations for effective photosynthesis</li> <li>Leaves</li> <li>Investigating limiting factors</li> <li>plant minerals</li> </ul> <p><b>Pressure</b></p> <ul style="list-style-type: none"> <li>Pressure in gases</li> <li>Pressure in liquids</li> <li>Pressure in solids</li> <li>Calculating pressure</li> <li>Floating &amp; sinking</li> </ul>

	<p><b>Particle model</b></p> <ul style="list-style-type: none"> <li>• Particle model</li> <li>• States of matter</li> <li>• Melting &amp; freezing</li> <li>• Boiling</li> <li>• Changes of state</li> <li>• Diffusion</li> <li>• Gas pressure</li> <li>• Elements, mixtures, compounds and molecules</li> </ul>	<ul style="list-style-type: none"> <li>• Particle diagrams</li> <li>• Material properties &amp; uses</li> <li>• Naming compounds</li> </ul> <p><b>Periodic table</b></p> <ul style="list-style-type: none"> <li>• The periodic table</li> <li>• Patterns and reactions within the table</li> <li>• Group 1</li> <li>• Group 7</li> <li>• Group 0</li> <li>• Physical and chemical properties</li> <li>• Using periods and groups</li> <li>• Atomic structure, RAM, atomic structure</li> </ul>	<ul style="list-style-type: none"> <li>• Prefixes, units &amp; conversions</li> <li>• Hydraulics, uses &amp; calculations</li> </ul> <p><b>Types of reaction</b></p> <ul style="list-style-type: none"> <li>• Atoms in chemical reactions</li> <li>• Combustion</li> <li>• Thermal decomposition</li> <li>• Conservation of mass</li> <li>• Word equations</li> <li>• Symbol equations &amp; balancing</li> <li>• Mass changes</li> <li>• Physical and chemical changes</li> <li>• Fuels</li> </ul>
<p><b>TERM</b> <b>3</b></p>	<p><b>Interdependence</b></p> <ul style="list-style-type: none"> <li>• Food chains &amp; webs</li> <li>• Ecosystems</li> <li>• Competition</li> <li>• Predator/prey relationships</li> <li>• The impact of environmental changes</li> <li>• Bioaccumulation</li> <li>• Insect pollinators</li> </ul> <p><b>Universe</b></p> <ul style="list-style-type: none"> <li>• The night sky</li> <li>• The Solar system</li> <li>• The Earth</li> <li>• The moon and changing ideas</li> <li>• Distance and time</li> <li>• Space exploration</li> <li>• Daylight hours and shadows</li> <li>• Using data &amp; standard form</li> </ul>	<p><b>Speed</b></p> <ul style="list-style-type: none"> <li>• Balanced and unbalanced forces</li> <li>• Distance-time graphs</li> <li>• Linear movement</li> <li>• Vector vs scalar</li> <li>• Acceleration</li> <li>• Speed formula</li> <li>• Calculating speed</li> <li>• Measuring speed</li> </ul> <p><b>Magnets and electromagnets</b></p> <ul style="list-style-type: none"> <li>• Magnets &amp; magnetic fields</li> <li>• Electromagnets &amp; magnetic fields</li> <li>• Using electromagnets</li> </ul> <p><b>Digestion</b></p> <ul style="list-style-type: none"> <li>• Nutrients and diet components</li> <li>• Balanced diet</li> </ul>	<p><b>Evolution</b></p> <ul style="list-style-type: none"> <li>• Natural selection</li> <li>• Charles Darwin</li> <li>• Extinction</li> <li>• Variation, environmental change &amp; extinction</li> <li>• Differing theories of evolution</li> <li>• Biodiversity &amp; it's preservation</li> <li>• Antibiotic resistance</li> <li>• Evolutionary trees</li> <li>• Population changes</li> </ul> <p><b>Earth resources</b></p> <ul style="list-style-type: none"> <li>• Resources</li> <li>• Extracting metals using different methods</li> <li>• The reactivity series</li> <li>• Recycling</li> </ul>

	<p><b>Variation</b></p> <ul style="list-style-type: none"> <li>• Variation</li> <li>• Causes of variation</li> <li>• Continuous &amp; discontinuous data</li> <li>• Adapting to change</li> <li>• Extinction</li> </ul> <p><b>Metals and non-metals</b></p> <ul style="list-style-type: none"> <li>• Chemical reactions between metals &amp; non metals</li> <li>• Metals &amp; acids</li> <li>• Metals &amp; oxygen</li> <li>• Metals &amp; water</li> <li>• The reactivity series</li> <li>• Displacement reactions</li> <li>• Physical &amp; chemical properties</li> <li>• Uses of materials</li> <li>• Equations</li> </ul>	<ul style="list-style-type: none"> <li>• Digestive system, organs &amp; adaptations</li> <li>• Unbalanced diet</li> <li>• Health implications</li> <li>• Food tests</li> <li>• Bacteria &amp; enzymes in digestion</li> </ul>	<p><b>Costs</b></p> <ul style="list-style-type: none"> <li>• Energy costs</li> <li>• Energy usage</li> <li>• Methods of generating electricity</li> <li>• Chemical energy in foods</li> <li>• Social, economic &amp; environmental consequences</li> <li>• Government actions</li> </ul> <p><b>Chemical energy</b></p> <ul style="list-style-type: none"> <li>• Exothermic &amp; endothermic reactions</li> <li>• Measuring temperature</li> <li>• Energy level diagrams</li> <li>• Bond energies</li> <li>• Uses of different reactions</li> </ul>
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