

## Year 8 Science

The topics in the Year 8 Science exam are:

1. investigating science
2. Chemical changes
3. Life, body systems and cells
4. Forces everywhere
5. Solutions and separation
6. Human reproduction
7. Acids and alkalis
8. Switch on to electricity

There are revision checklists in each of the pupil booklets.

These are repeated below.

Investigating science	Can you?	😊	😐	😞
<b>What is Science?</b>	State the names of the main areas of Science.			
	List some activities which are carried out in Science.			
	Give examples of jobs Scientists do			

<b>Bunsen Burners</b>	Label and correctly spell the parts of a Bunsen burner.			
	Light a Bunsen burner safely.			
	Draw a conclusion from the observations in an experiment.			

<b>Apparatus</b>	Accurately draw the symbols for apparatus used in KS3 Science.			
	Correctly spell the names for this apparatus.			

<b>Measurements</b>	Understand the importance of units when recording measurements.			
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	Choose appropriate scientific apparatus to make basic measurements.			
	Use basic measurement apparatus to make accurate measurements.			

<b>Thinking like Scientists</b>	List in order the main processes of the scientific method			
	Plan a simple experiment using the scientific method			
	Discuss the meaning of a <i>fair test</i> and plan a fair test experiment			

<b>Investigating Boiling Water</b>	List the main things to be included in an experiment write up.			
	Briefly describe an experiment to investigate how water boils.			

<b>How to draw a line graph</b>	Know when to use a line graph to represent our results			
	Successfully draw a line graph			

<b>How to draw a bar graph</b>	Know when to use a bar graph to represent our results			
	Successfully draw a bar graph			

<b>Safety</b>	State 10 safety rules of a Science lab			
	Identify Hazard symbols			
	Carry out a risk assessment			

<b>Chemical changes</b>				
<b>Changes</b>	Describe what happens when some substances are heated or cooled			
	Explain the idea of reversible change			
	Distinguish between reversible and irreversible changes			

<b>Dissolving or melting?</b>	List some substances are soluble and some that are insoluble			
	Explain that insoluble substances can be separated by filtering			
	Explain how soluble substances can be recovered by evaporation			
	Explain that these changes are reversible			
	List the steps necessary to obtain pure salt from rock salt			
	Give the definitions of the words used in the preparation of pure salt			

<b>Changing materials</b>	Explain that when materials are mixed changes can happen			
	Describe the relevance of chemical changes in everyday products.			

<b>Heating or burning?</b>	Explain that when materials burn a flame can be seen			
	Explain how heat causes chemical changes			
	Explain that new substances are formed in a chemical change, some of which may be invisible			

<b>What is needed to make things burn?</b>	Explain that fire happens when a material burns			
	Describe the fire triangle - fire needs oxygen, fuel and heat energy and that fires can be put out by removing one of these essential things			

<b>Fire safety</b>	Describe the importance of sensible precautions when dealing with anything which may cause a fire to go out of control			
	Have you an awareness of the dangers of unsafe practices with fireworks			

.Life, body systems and cells		☺	☹	☹
<b>What is a living thing?</b>	Recognise living things			
	List the seven characteristics of living things			

<b>Cells</b>	Know that all living things are made of cells			
	Label the parts of an animal and a plant cell and describe their functions			
	Identify similarities and differences between plant and animal cells			
	Prepare an onion slide			
	Label a microscope and develop practical skills using microscopes			

<b>What type of cell?</b>	List and describe some specialised animal and plant cells			
	Work out the magnification of a microscope			

<b>Tissues, organs and organ systems</b>	Recognise that similar cells make up tissues, tissues make up structures called organs and they work together in organ systems			
	Identify the main organs of the organ systems and describe their functions			

	Relate the body systems to the characteristics of life.			

Forces everywhere				
<b>Introduction to Physics and Forces</b>	Understand what Physics is and what physicists do			
	Research about two important Physicists (Albert Einstein and Sir Isaac Newton)			

<b>Observations and Measurements</b>	That physics involves observations and measurements			
	That units are vital for all quantities			
	That physics ranges from the extremely small to the extremely large			

<b>Forces</b>	Forces are pushes and pulls			
	Define what a force is and its units			
	List different forces and observe their effect			
	Know the four possible effects of forces on an object			
	How to measure forces			
	Investigate the extension of a loaded spring			

<b>Gravity and Forces</b>	Give a definition for gravity			
	Know the difference between mass and weight			
	Know how to calculate weight on different planets			

<b>Density Floating and Sinking</b>	to compare materials using their density			
	to calculate the density of materials using the Density equation			
	to explain floating and sinking			

Solutions and separation				
<b>Solutions</b>	What is a solvent?			
	What is a solute?			
	What is a solution?			
	What is dissolving?			
	What does soluble mean?			
	How does temperature affect the solubility of a solid?			
	How does stirring affect the temperature of a solid?			
<b>Separating techniques</b>	How to separate Immiscible liquids			
	How to separate miscible liquids			
	How to separate pigments			
	How to separate a soluble substance from an insoluble substance			
	How to separate pure water from salt water			

	What is a Liebig Condenser			
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Acids and alkalis	<b>We are learning:</b>			
What are acids and alkalis	That acids are present in many substances that we use in everyday life			
	That alkalis are present in many cleaning products			
	To recognise hazard symbols			

Thinking skills - how to compare and contrast	To compare and contrast scientific ideas which have similarities and differences			
	To summarise information			

Indicators	How to make an indicator and use it to identify acids and alkalis			
	That the pH value gives an indication of the strength of an acid or alkali			
	That strong acids are hazardous and must be handled with care			
	That some people have to use strong acids and alkalis as part of their daily work			

Neutralisation	That when an acid is added to an alkali the pH is lowered			
	To use an indicator to make a neutral solution			
	That you can get useful information from advertisements			

Switch on to electricity	<b>We are learning to:</b>			
Energy	State the definition of energy and give its unit of measurement.	☺	☹	☹
	List the different types of energy.			
	Identify energy changes in different energy transducers.			

Principle of	State the principle of conservation of energy.			
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<b>Conservation of Energy</b>	Apply the principle to calculate input, output or wasted energy in transducer diagrams.			
<b>Electrical energy</b>	Discuss why electrical energy is so important in our society.			
	Draw and label the apparatus used to generate electricity in a lab			
	Label the main equipment used to generate our electricity			
<b>Renewable and Non-Renewable Energy Resources</b>	State the definition of renewable and non-renewable energy resources			
	Give examples of renewable and non-renewable energy resources			
	Briefly discuss the present energy crisis			
<b>Fossil fuels</b>	Give examples of fossil fuels			
	List the energy changes taking place in a coal-fired power station			
	Discuss the problems with using coal			
<b>Nuclear energy – is it the alternative?</b>	Discuss how nuclear energy is presently used to generate electricity			
	Consider different viewpoints relating to nuclear energy			
	Develop an informed opinion about the use of nuclear energy in Northern Ireland			
<b>Renewable energy resources</b>	Briefly state how different renewable energy resources are used to generate electricity			
	Give advantages and disadvantages for each renewable energy resource			
<b>What has all this got to do with me?</b>	List three reasons why we should reduce our electricity use			
	List five ways in which we can reduce our personal <b>electricity</b> use			



## Reproduction

Topic	We are learning:	😊	😐	😞
<b>Changes</b>	To identify the physical changes that happen in puberty			
	To compare the changes of males and females at puberty			
	To identify the emotional changes that happen in puberty			
<b>Sex cells</b>	To identify the different parts of sperm cells			
	To identify the different parts of ovum cells			
	To understand the different functions of the cells' parts			
<b>Reproductive systems</b>	To identify the different parts of the female reproductive system			
	To identify the different parts of the male reproductive system			
	To understand the different functions of both reproductive systems			
<b>Fertilisation and implantation</b>	To understand the events that occur that lead to fertilisation			
	To identify the changes in the uterus			
<b>Characteristics</b>	To identify different characteristics between people			
	To understand what influences different characteristics			
<b>Development of the baby</b>	To identify the stages of foetal development			
	To understand how the foetus survives in the uterus			
<b>Birth</b>	To identify the three stages of birth			

