

Year 7 Science Assessment Criteria

Energy

	<ul style="list-style-type: none">• To be able to explain the difference between an energy transfer and an energy transformation• To be able to draw more complex energy transfer diagrams and explain the transformations involved• To be able to rearrange the GPE equation to calculate height or mass from GPE• To understand the factors affecting how quickly energy is transferred to the surroundings• To be able to draw Sankey diagrams accurately and link them to efficiency• To be able to make predictions about the effects of changing and rearranging the spring(s)• To understand how oil is found, extracted and transported• To be able to analyse the advantages and disadvantages of generating electricity using fossil fuels• To know that the Sun is the ultimate source of energy for fossil fuels and most renewables and be able to evaluate different energy sources• To assess the validity of the data from an experiment• To be able to draw and label a set of axes, plot points for a line graph, draw a line of best fit and calculate the gradient
	<ul style="list-style-type: none">• To be able to describe different energy transformations• To be able to draw simple energy transfer diagrams and discuss the transformations involved• To be able to calculate GPE, using the correct units, given the formula• To be able to describe all the energy transfers for an object moving up and down, including energy transfers to the surroundings• To be able to draw Sankey diagrams accurately• To be able to calculate extension of a spring and plot results in a graph• To describe ways to make our reserves of fossil fuels last longer• To be able to describe the energy transfers and transformations in a power station• To know that the Sun is the ultimate source of energy for fossil fuels and be able to explain in detail some advantages of renewable energy sources• To describe the energy transfers / transformations in a solar cell• To be able to draw and label a set of axes, plot points for a line graph and draw a line of best fit

	<ul style="list-style-type: none">• To know the main energy types and that Energy is measured in Joules• To be able to describe energy transformations• To be able to identify the factors affecting GPE of an object and calculate that GPE, given the formula• To be able to describe how energy is transformed between GPE and kinetic energy for an object moving up and down• To be able to explain combustion and how heat energy from fuels is transformed into other types of energy• To be able to link the concepts of mass and weight to explain changes in the length of a spring• To understand that the Sun is the ultimate source of energy in fuels• To be able to identify the types of energy in a power station• To know the difference between renewable and non-renewable energy sources and give some advantages and disadvantages of each• To understand that voltage is a measure of electrical energy• To be able to draw a set of axes and plot points for a line graph
	<ul style="list-style-type: none">• To know the main energy types• To be able to identify some basic energy transformations• To be able to identify changes in GPE in real world situations and calculate that GPE for straight forward examples, given the formula• To be able to identify GPE and kinetic energy correctly and give reasons for each• To know the difference between a fuel / energy source and an energy type and identify where energy is wasted• To know that adding mass to a spring increases its length• To understand what fossil fuels are and how they are made• To be able to identify some types of energy in a power station• To be able to name some energy sources• To understand that increasing the number of solar cells increases the voltage• To be able to plot points for a line graph on a set of axes
	<ul style="list-style-type: none">• To work well as part of a team• To recall some key words

- To explain some key words

Cells

- I can set up, make observations and calculate the magnification of a microscope
- I can include a full biological drawing of observations of a plant and animal cell, including magnification
- I can explain the role of each part of an animal cell and a plant cell and compare to each other
- I can explain differences between different specialised cells and draw labelled diagrams of cells with attention to basic structure and specialist shape from microscope slides and include magnification
- I can explain how the cell structure relates to its function for a plant and an animal cell
- I can give details on the role of different tissues in an organ, for example the stomach, the heart and organs in a plant
- I can predict the effect of specific organ failures on an organ system and how organ failure could be treated
- I can compare and contrast the use of an organ transplant and the difference to using artificial organs, giving pros and cons for each
- I can evaluate the use of artificial and transplanted organs

- I can label the main parts of a microscope and calculate the magnification
 - I can describe the structure of an animal cell and a plant cell and explain the role of each part
 - I can make microscope drawings of a plant and animal cell, including labels, title and magnification
 - I can set up microscope with an animal and a plant cell and explain each step in doing so
 - I can explain differences between different specialised cells and explain how the cell structure relates to its function
 - I can explain the difference between a tissue and an organ, giving examples and explain the need for an organ to be made up of different tissues
 - I can describe the role of the main organs in a range of organ systems, including mammalian and plant
 - I can recap the relationship between an organ and an organ system, giving examples and predict the effect of specific organ failures
 - I can predict how organ failure could be treated
 - I can describe how the use of an organ transplant is different to the use of an artificial organ
- I can describe some drawbacks of using artificial and transplanted organs

- I can set up a microscope, make observations and label all of its parts
- I can describe the function of the structures in an animal cell and a plant
- I can label and describe the structures in a plant cell and compare it to an animal cell
- I can describe differences between different specialised cells and relate these to their functions
- I can describe the different levels of organisation of cells in an organism and give examples of different cells, tissues and organs

	<ul style="list-style-type: none"> • I can state that organs work together to form an organ system and predict what organs might be found in the nervous and skeletal system and 1 system found in a plant • I can list some differences between organ transplant and the use of artificial organs and list some drawbacks of using artificial organs to treat disease
	<ul style="list-style-type: none"> • I can set up a microscope, label the main parts and use it to examine cells • I can label the structures in a plant and animal cell and match them to their function • I can describe how the structure of one cell might be different to that of another and suggest reasons for this • I can order cells, tissues and organs into size and give an example of each • I can give a definition of an organ and give some examples of ones found in the digestive and circulatory systems <p>I can give examples of organ systems and consider the role of organ transplants in treating diseases</p>

Reproduction

	<ul style="list-style-type: none"> • I can define reproduction, describe different strategies and explain the advantages and disadvantages of each • I can describe and explain the changes that occur during puberty in males and females • I can label the parts of the male and female reproductive system, explain their roles • I can identify and explain the adaptations of the sex cells • I can describe sexual intercourse and fertilisation using key terminology • I am able to label a diagram of a foetus in the uterus and explain the role of different structures throughout foetal development • I can describe and explain the birth process recognise where complications may arise • I can describe and explain the events that take place during the menstrual cycle linking the events to the action of hormones • I have a good understanding of IVF and know why it would be used. • I have an appreciation of the financial and ethical implications of its use • I know that plants can reproduce sexually and asexually and can give examples • I can label the reproductive organs of a plant and explain their role • I know what pollination is and can give examples of a range of different strategies linking the strategy to pollen structures. • I can explain the difference between pollination and fertilisation • I can describe and give reasons for different seed dispersal strategies • I can identify the independent, dependent and control variables in an investigation. • I am able to write a detailed method for an investigation • I can draw an appropriate graph to display data • I am able to draw conclusions from graphical and numerical data
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- I can define reproduction and describe different strategies considering some advantages and disadvantages of each
- I can describe the changes that occur during puberty in males and females explaining why some of them occur
- I can label the parts of the male and female reproductive system and explain some of their roles
- I can recognise adaptations of sex cells
- I can describe sexual intercourse and fertilisation using key terminology
- I am confident in labelling a diagram of a foetus in the uterus and know the role of the structures
- I am able to describe the process of giving birth
- I can describe and explain the events that take place during the menstrual cycle
- I know what IVF stands for and can give a scenario for its use understanding some of the ethical and financial implications
- I can label the reproductive organs of a plant and explain their role
- I know what pollination is and can give some examples of different strategies
- I can recognise the difference between pollination and fertilisation
- I can describe different strategies for seed dispersal
- I can choose suitable variables to investigate, measure and control
- I am able to write a method for an investigation
- I can draw a graph to display data with some few errors
- I can describe a pattern in results and write a conclusion to show this

- I know what reproduction means and can describe some different strategies
- I know some of the changes that occur during puberty in males and females
- I can label the parts of the male and female reproductive system.
- I can draw and label a sperm and egg cell
- I can describe sexual intercourse and fertilisation
- I am confident in labelling a diagram of a foetus in the uterus and know the role of some of the structures
- I am able to describe the process of giving birth
- I can describe the events that take place during the menstrual cycle and I know why they happen
- I know what IVF is and can give a scenario for its use
- I can label the reproductive organs of a plant and know what some of them are for
- I know what pollination is and can give examples of strategies
- I can describe some of the events in fertilisation
- I am able to recognise some different strategies for seed dispersal
- I can identify control, dependent and independent variables in an investigation with some help
- I am able to write a method for an investigation with some guidance

	<ul style="list-style-type: none"> • I can draw a graph to display data with some help • I can describe a pattern in results
	<ul style="list-style-type: none"> • I know what reproduction means • I know some of the changes that occur during puberty • I can label some of the parts of the male and female reproductive system • I can identify the sperm and egg cell • I know why sexual intercourse is necessary to make a baby • I can describe some of the changes that happen when a foetus develops • I know what happens in the menstrual cycle • I know why IVF would be used • I can label some of the reproductive organs of a plant • I know what pollination is • I can describe some of the events in fertilisation • I know what seed dispersal is • I can identify a control variable in an investigation • I am able to write a method for an investigation with some guidance • I can draw a graph to display data with some help • I can spot patterns in data and state what happened

Separating Mixtures

	<p>Knowledge </p> <p>I can explain dissolving confidently using correct scientific terminology.</p> <p>I can interpret solubility data (in graph or table form) to describe trends in solubility and identify and explain anomalous results.</p> <p>I can explain the changes of state involved in crystallisation and distillation.</p> <p>I can assess the hazards of using materials such as flammable solvents.</p> <p>I can compare and evaluate different methods to purify seawater.</p>
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	<p>I can explain why the separation techniques of filtration, crystallisation, distillation and chromatography are used to separate specific types of mixtures.</p> <p>Skills</p> <p>I can plan and evaluate an experiment to test factors that affect the solubility of a solute.</p> <p>I can identify and explain the safety precautions needed during specific experiments.</p> <p>I can draw accurate, labelled diagrams of the laboratory apparatus used to separate various mixtures.</p> <p>I can identify variables in an investigation plan. ☒</p> <p>I use a wide range of scientific words, accurately, when presenting scientific ideas.</p>
	<p>Knowledge</p> <p>I can explain dissolving using some scientific terminology.</p> <p>I can interpret solubility data (in graph or table form) to describe trends in solubility.</p> <p>I can explain the changes of state involved in distillation.</p> <p>I can assess the benefits and problems of using particular solvents.</p> <p>I can explain a method to purify seawater.</p> <p>I can describe why the separation techniques of filtration, crystallisation, distillation and chromatography are used to separate specific types of mixtures.</p> <p>Skills☒</p> <p>I can plan an experiment to test factors that affect the solubility of a solute.</p> <p>I can identify safety precautions used during practical work.</p> <p>I can draw accurate, labelled diagrams of the laboratory apparatus used to separate various mixtures.</p> <p>I can identify variables in an investigation plan.</p> <p>I use a wide range of scientific words, accurately, when presenting scientific ideas.</p>
	<p>Knowledge ☒</p> <p>I know what dissolving means and how to make things dissolve.</p> <p>I can compare measures of the solubility of a solute, e.g., sugar.</p> <p>I know that the impurities in rock salt are insoluble.</p> <p>I can identify the changes of state in distillation.</p> <p>I know how to test various solvents to find the best one to dissolve graffiti.</p> <p>I can describe how a condenser works.</p>

	<p>I can describe a method to purify seawater.</p> <p>I can match the separation techniques of filtration, crystallisation, distillation and chromatography to the types of mixtures they are used to separate.</p> <p>Skills ?</p> <p>I can use an investigation framework to plan an experiment to test factors that affect the solubility of a solute.</p> <p>I can identify common safety precautions used during practical work.</p> <p>I can name and draw the laboratory apparatus used to separate mixtures.</p> <p>I can identify independent, dependent and control variables in an investigation plan.</p> <p>I use a range of scientific words appropriately when presenting scientific ideas.</p>
	<p>Knowledge</p> <p>I know what dissolving means.</p> <p>I know what solubility means.</p> <p>I know that rock salt contains dirt.</p> <p>I know that graffiti is hard to remove.</p> <p>I know that special solvents are needed to dissolve graffiti.</p> <p>I know that gases can be cooled to give liquids.</p> <p>I know that seawater can be purified to produce water.</p> <p>I know the difference between filtration, crystallisation, distillation and chromatography.</p> <p>Skills ?</p> <p>I can identify the apparatus needed to investigate the solubility of a solute.</p> <p>I can safely follow a practical method to test factors that affect how quickly something dissolves.</p> <p>I can explain the reasons for safety precautions used during practical work.</p> <p>I can identify some laboratory apparatus used to separate mixtures.</p> <p>I can identify control variables in a given method.</p> <p>I use a range of scientific words when presenting scientific ideas.</p>

Safety

Knowledge	Skills	
I can identify the hazard symbols	I can suggest how risks can be reduced in the lab.	
I know how to apply the information in hazcards.	I can use my knowledge and Hazcards to minimise risk in an investigation	
I can explain temperature rise in terms of the particle model.	I can change my plan to control risk by using suitable resources and expert advice	
I know that in neutralisation, hydrogen from acids reacts with hydroxide in alkalis	I can suggest improvements to an investigation. (apparatus/equipment/method)	
I can distinguish between strong and concentrated, dilute and weak when talking about acids and alkalis	I can safely conduct an investigation	
I can explain what happens when substances combust.	I can explain how to determine the range of data needed for an investigation (preliminary investigation)	
I can write and explain formulae equations for neutralisation	I can use detailed scientific ideas to explain a valid conclusion	
I can give examples of exothermic and endothermic reactions	I can write a valid conclusion based on my results with supporting evidence.	
I can select the most appropriate type of fire extinguisher depending on the fire.	I can explain the difference between a safety flame and a roaring flame in a Bunsen burner	
I can identify differences between the lab and a normal classroom	I can safely light a Bunsen burner	
I can explain some of the rules of the lab	I can name common lab equipment and state what they are used for.	
I can explain most of the rules of The Acre	I can create a suitable table to record data in.	

	I can identify factors which might affect the setting of a jelly and predict the results.	I can write a valid method for the investigation and explain why it is valid.	
	I can use indicators to identify different groups of solutions	I can safely make an indicator	
	I can identify acids, alkali and neutral on the pH scale.	I can complete a graph of results, that has appropriately scales and labels	
	I can write a word equation for the reaction of a named carbonate with a named acid	I can explain which type of graph should be drawn following an investigation.	
	I can recall the test for carbon dioxide and its result		
	Knowledge	Skills	
	I can identify the hazard symbols	I can suggest, with assistance, how risks can be reduced in the lab.	
	I can describe what happens when substances combust.	I can determine the type of graph that should be drawn following an investigation.	
	I can spot errors (anomalies) in data on a bar graph.	I can safely conduct an investigation	
	I know the limitations of using water to put out fires.	I can give a reason for the range of data needed for an investigation	
	I can choose the correct fire extinguisher for a fire.	I can write a valid conclusion based on my results with supporting evidence.	
	I know how stings may be neutralised.	I know the difference between a safety flame and a roaring flame in a Bunsen burner	
	I know the colours produced by indicators such as litmus and red cabbage.	I can safely light a Bunsen burner	
	I know the difference between strong and weak acids and alkalis.	I can name common lab equipment and suggest what they are used for.	

	I know the importance of hazard signs on chemical tankers.	I can suggest improvements to an investigation. (apparatus/equipment/method)	
	I can describe how a fire extinguisher works		
	I can identify differences between the lab and a normal classroom	I can use Hazcards to suggest ways to reduce risk in an investigation	
	I can explain some of the rules of the lab	I can complete a graph of results, that is appropriately labelled	
	I can explain some of the rules of The Acre	I can create, with assistance, a suitable table to record data in.	
	I can identify factors which might affect the setting of a jelly.	I can write a valid method for the investigation.	
	I can use indicators to identify different groups of solutions	I can safely make an indicator	
	I can identify acids, alkali and neutral on the pH scale.		
	I can write a word equation for the reaction of a carbonate with an acid		
	I can recall the test for carbon dioxide and its result		
	Knowledge	Skills	
	I can identify the hazard symbols.	I can interpret the data on a bar graph.	
	I can explain the fire triangle in terms of combustion.	I can show that I am aware of specific risks	
	I can list different types of fire extinguishers.	I can explain why the apparatus/equipment is suitable for the investigation	
	I know that wasp stings are alkaline.	I can safely conduct an investigation	

	I know that bee stings are acidic.	I can collect a range of data for an investigation	
	I know the names of three mineral acids.	I can spot patterns in graphs and roughly say what the relationship is	
	I know that indicators can identify acids and alkalis.	I know how to safely light a Bunsen burner	
	I know that indigestion medicines rely on neutralisation.	I can identify a risk in an investigation and suggest a way to reduce that risk	
	I can explain how the fire triangle can be used to explain fire extinguishers.	I can safely light a Bunsen burner	
	I can identify differences between the lab and a normal classroom	I can name most of the common lab equipment.	
	I can recall most of the rules of the lab	I can draw a graph of my results on partially completed axis provided	
	I can recall most of the rules of The Acre	I can suggest headings for a data table	
	I can identify two factors which might affect the setting of a jelly.	I can rearrange instructions to produce a valid method.	
	I can recall the test for carbon dioxide and its result	I can write a valid conclusion based on my results and give evidence to support it.	
	I can use indicators to group solutions together.	I can safely make an indicator	
	I can identify acids, alkali and neutral on the pH scale.		
	Knowledge	Skills	
	I can identify some of the hazard symbols.	I can draw a bar graph.	
	I know the meaning of combustion.	I can identify a risk in an investigation	
	I know that wasps and bees inject chemicals when they sting.	I can say how apparatus/equipment will be used in the investigation	

	I know that there are natural acids and alkalis.	I can collect data for an investigation	
		I can spot patterns in data saying what happened and why	
	I can recall the three things needed for fire to burn (fire triangle).	I can safely conduct an investigation	
	With assistance, I can suggest factors that might affect the setting of a jelly.	I can order the steps in an investigation to produce a valid method.	
	I can identify differences between the lab and a normal classroom	I can safely light a Bunsen burner	
	I can recall some of the rules of the lab	I can name some common lab equipment.	
	I can recall two rules of The Acre	I can record data into a table provided to me.	
	I can recall the colour of acid, alkali and neutral on the pH scale.	I can write a valid conclusion based on my results.	
	I can use indicators to test different solutions	I can safely make an indicator	
	I can identify the gas produced when a carbonate reacts with an acid.	I can draw a graph of my results on axis provided	