

YEAR 8/9	Bronze	Bronze/Silver	Gold	Platinum	Platinum +
Microbes and keeping healthy	<p>SK - describe how some infectious diseases are transmitted, point out some patterns in data and use these to draw conclusions</p> <p>KK - name some infectious diseases and describe how they can be transmitted; describe immunisation as a way of protecting against infectious disease</p>	<p>SK - describe how some infectious diseases are transmitted, point out some patterns in data and use these to draw conclusions</p> <p>KK - name some infectious diseases and describe how they can be transmitted; describe immunisation as a way of protecting against infectious disease</p>	<p>SK - describe how understanding of how some infectious diseases are transmitted has developed as knowledge about micro-organisms has increased; point out trends and patterns in first-hand and secondary data, draw conclusions from these and relate them to scientific knowledge and understanding</p> <p>KK - classify bacteria, fungi and viruses as micro-organisms, name diseases they can cause and describe how they can be transmitted; describe the defences the body has against disease describe immunisation as a way of improving immunity;</p>	<p>SK - describe how scientists' interpretation of evidence has led to new ideas about the transmission of disease and to new drugs</p> <p>KK - explain how immunisation can improve immunity and describe how antibiotics may be effective across a wide spectrum or against specific bacteria; recognise that antibiotics are effective against bacteria but not against viruses</p>	<p>SK - describe how scientists' interpretation of evidence has led to new ideas about the transmission of disease and to new drugs</p> <p>KK - explain how immunisation can improve immunity and describe how antibiotics may be effective across a wide spectrum or against specific bacteria</p>

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Simple Chemical Reactions	<p>SK - obtain and present qualitative results, describe some hazards of acids and of burning; work safely with acids and when burning materials; test an idea about burning and present results</p> <p>KK - identify some products of chemical reactions and state that oxygen or air is needed for burning</p>	<p>SK - obtain and present qualitative results, describe some hazards of acids and of burning; work safely with acids and when burning materials; test an idea about burning and present results</p> <p>KK - identify some products of chemical reactions and state that oxygen or air is needed for burning</p>	<p>SK - obtain and present qualitative results, describe some hazards of acids and of burning; work safely with acids and when burning materials; test an idea about burning and present results</p> <p>KK - identify some products of chemical reactions and state that oxygen or air is needed for burning</p>	<p>SK - obtain and present qualitative results, identifying patterns in these; work safely with acids and when burning materials; suggest how to test an idea about burning, obtaining results which can be represented as a line graph</p> <p>KK - identify that some new materials are formed during a chemical reaction and generalise that hydrogen is formed when acids react with metals, carbon dioxide when acids react with carbonates, and oxides when materials burn; describe tests for carbon dioxide and hydrogen and describe burning as a reaction with oxygen</p>	<p>SK - evaluate how well ideas about burning match the data collected</p> <p>KK - predict that carbon dioxide and water will be made when a hydrocarbon burns and use word equations to represent reactions in which materials burn</p>

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Sound	<p>SK - measure sound levels and describe a range of sounds; describe what they found out from an investigation into hearing; compare sound levels, and report on loudness of sound in common situations</p> <p>KK -relate sound to vibration and identify a range of sources or vibrations; recognise that sound travels but cannot travel through a vacuum; explain that sound waves cause our eardrums to vibrate and that this enables us to hear; state that loud sounds can damage hearing</p>	<p>SK - measure sound levels and describe a range of sounds; describe what they found out from an investigation into hearing; compare sound levels, and report on loudness of sound in common situations</p> <p>KK -relate sound to vibration and identify a range of sources or vibrations; recognise that sound travels but cannot travel through a vacuum; explain that sound waves cause our eardrums to vibrate and that this enables us to hear; state that loud sounds can damage hearing</p>	<p>SK -identify patterns in qualitative data about sound and describe sound qualities; frame a question about hearing which can be investigated; identify and control key variables; identify limitations in their data; compare sound levels, and report on a loudness enquiry; describe a current issue related to sound</p> <p>KK -relate changes in pitch and loudness of sounds to changes in vibrations; explain how musical instruments can make these changes and relate these to the oscilloscope representations of waves; recognise that sound needs a medium to travel through and that it travels at different speeds</p>	<p>SK - select an appropriate approach to investigating a question about hearing; present a reasoned argument about a current issue in the science of hearing</p> <p>KK -relate pitch to frequency of sounds and loudness to amplitude; use particle theory to explain how sound travels through materials; use a model of the ear to discuss possible causes of hearing impairment</p>	<p>SK - select an appropriate approach to investigating a question about hearing; present a reasoned argument about a current issue in the science of hearing</p> <p>KK -relate pitch to frequency of sounds and loudness to amplitude; use particle theory to explain how sound travels through materials; use a model of the ear to discuss possible causes of hearing impairment, explain how animals use hearing to detect and hunt prey.</p>

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			through different media; explain simply how the ear works and give examples of hearing ranges; describe ways in which hearing can be impaired and how noise pollution can be reduced		

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Food and digestion	<p>SK - find information from selected secondary sources about food and diet; generate graphs or displays relevant to questions asked; with help, control relevant variables when investigating the action of an enzyme</p> <p>KK - name some groups of nutrients and identify some examples of foods in which they are found; describe a balanced diet; recognise that blood transports products of digestion around the body</p>	<p>SK - find information from selected secondary sources about food and diet; generate graphs or displays relevant to questions asked; with help, control relevant variables when investigating the action of an enzyme</p> <p>KK - name some groups of nutrients and identify some examples of foods in which they are found; describe a balanced diet; recognise that blood transports products of digestion around the body</p>	<p>SK - find information from selected secondary sources about food and diet; generate graphs or displays relevant to questions asked; with help, control relevant variables when investigating the action of an enzyme</p> <p>KK - name some groups of nutrients and identify some examples of foods in which they are found; describe a balanced diet; recognise that blood transports products of digestion around the body</p>	<p>SK - use secondary sources of information to generate graphs or displays relevant to questions asked; recognise that interpretation of evidence about questions of health and diet may be difficult; identify and control relevant variables when investigating the action of an enzyme</p> <p>KK - name nutrients, fibre and water as part of a balanced diet, identifying examples of foods in which they are found, and describe the role of the main nutrients in the body; use a model to describe how molecules are broken down during digestion</p>	<p>SK - choose secondary sources to provide the information needed about food and diet; explain why interpretation of evidence about questions of health and diet may be difficult</p> <p>KK - explain why some nutrients have to be broken down before they can be used by the body and why some foods cannot be digested by humans; describe the role of blood in transporting products of digestion around the body</p>

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Rocks and Weathering	<p>SK - describe changes in rocks or rock fragments over time; with help, identify a question about movement of sediment to be investigated and use ICT to make and record observations related to the question</p> <p>KK- describe rock specimens and recognise that different rocks have different textures; describe some effects of weathering and recognise sedimentary layers</p>	<p>SK - describe changes in rocks or rock fragments over time; with help, identify a question about movement of sediment to be investigated and use ICT to make and record observations related to the question</p> <p>KK- describe rock specimens and recognise that different rocks have different textures; describe some effects of weathering and recognise sedimentary layers</p>	<p>SK -describe evidence for a sequence of geological events; suggest a question to be investigated about the movement of sediment and, with help, identify an appropriate approach; use ICT to make and record observations and explain these using scientific knowledge and understanding</p> <p>KK- describe rock specimens in terms of texture and relate this to properties such as porosity; describe the physical and chemical processes by which rocks are weathered and transported and relate these to features of the environment; describe and explain the processes by which layers of sediments are produced</p>	<p>SK - use evidence from several sources to describe a sequence of geological events</p> <p>KK- relate processes of chemical weathering to the reactions of particular grains with acids; relate sedimentary layers to the processes by which they were produced</p>	<p>SK - use evidence from several sources to describe a sequence of geological events</p> <p>KK- relate processes of chemical weathering to the reactions of particular grains with acids; relate sedimentary layers to the processes by which they were produced</p>

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Light	<p>SK-classify materials as opaque, transparent, translucent, reflectors or absorbers, on the basis of data from light sensors or visually; identify patterns in angular measurements of reflected rays of light; with help, investigate a question about colour and light</p> <p>KK-describe how light is reflected at plane surfaces and describe reflected images; describe the effect of a prism on white light and recognise that filters and coloured objects absorb some colours and transmit or reflect others</p>	<p>SK-classify materials as opaque, transparent, translucent, reflectors or absorbers, on the basis of data from light sensors or visually; identify patterns in angular measurements of reflected rays of light; with help, investigate a question about colour and light</p> <p>KK-describe how light is reflected at plane surfaces and describe reflected images; describe the effect of a prism on white light and recognise that filters and coloured objects absorb some colours and transmit or reflect others</p>	<p>SK-make measurements of light intensity using a light sensor and compare the effects of materials on light; make predictions about the reflection of light at plane surfaces, measure angles with precision and make generalisations from the data; frame a question about light and colour and plan how to investigate it</p> <p>KK-recognise that light travels in straight lines at very high speed; represent the path of light by rays; describe how light is reflected and refracted at plane surfaces; explain the origin of colour in the dispersion of white light and describe the effects of coloured filters and different</p>	<p>SK-draw conclusions from their data, informed by scientific understanding about reflection and refraction of light at plane surfaces; make predictions about image formation using the law of reflection or the patterns of behaviour from refraction; make sufficient observations when investigating colour to draw valid conclusions</p> <p>KK- explain the appearance of coloured objects in coloured lights</p>	<p>SK-draw conclusions from their data, informed by scientific understanding about reflection and refraction of light at plane surfaces; make predictions about image formation using the law of reflection or the patterns of behaviour from refraction; make sufficient observations when investigating colour to draw valid conclusions</p> <p>KK- calculate the time for light to travel, <i>eg from the Sun;</i></p>

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			coloured lights on the appearance of coloured objects; give an example of how colour is important in everyday life		
Magnets	SK -suggest how to carry out a test to	SK -suggest how to carry out a test to	SK -suggest how to carry out a test to	SK - make predictions about the behaviour	SK - use a model of the magnetic field to

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	<p>distinguish between magnets and magnetic materials; make changes to vary the strength of an electromagnet</p> <p>KK - identify steel, iron and iron oxide as magnetic materials; make a magnet and electromagnet; describe the use of an electromagnet in sorting metals</p>	<p>distinguish between magnets and magnetic materials; make changes to vary the strength of an electromagnet</p> <p>KK - identify steel, iron and iron oxide as magnetic materials; make a magnet and electromagnet; describe the use of an electromagnet in sorting metals</p>	<p>distinguish between magnets and magnetic materials; make changes to vary the strength of an electromagnet</p> <p>KK - identify steel, iron and iron oxide as magnetic materials; make a magnet and electromagnet; describe the use of an electromagnet in sorting metals</p>	<p>of magnets and magnetic materials and draw conclusions from patterns in evidence; identify factors affecting the strength of electromagnets, make sufficient observations in an investigation of electromagnets to draw conclusions</p> <p>KK - distinguish between magnetic and non-magnetic materials; describe magnetic shielding; make a permanent magnet and an electromagnet; describe how the Earth's magnetic field can be used for navigation; describe the shape and direction of a magnetic field</p>	<p>explain phenomena; ; give examples of the use of magnets and electromagnets</p> <p>KK - explain how magnetic materials can be magnetised using a simple particle/domain model; identify similarities in the magnetic fields of a bar magnet, the Earth and a straight coil; describe the shape of the field around a straight current-carrying conductor</p>

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Respiration and circulation	<p><u>SK</u>- recognise that ideas about circulation have changed; with help, identify variables relevant to a question; make observations and recognise patterns in data</p> <p><u>KK</u>- recognise that oxygen is required for aerobic respiration and that oxygen and glucose are transported in the blood; describe differences between inhaled and exhaled air</p>	<p><u>SK</u>- recognise that ideas about circulation have changed; with help, identify variables relevant to a question; make observations and recognise patterns in data</p> <p><u>KK</u>- recognise that oxygen is required for aerobic respiration and that oxygen and glucose are transported in the blood; describe differences between inhaled and exhaled air</p>	<p><u>SK</u>- recognise that ideas about circulation have changed; with help, identify variables relevant to a question; make observations and recognise patterns in data</p> <p><u>KK</u>- recognise that oxygen is required for aerobic respiration and that oxygen and glucose are transported in the blood; describe differences between inhaled and exhaled air</p>	<p><u>SK</u>-describe an earlier model of circulation indicating how it does not match present-day evidence; explain why control experiments and sample size are important when investigating living organisms; make appropriate observations, recording them accurately and identifying patterns in data obtained</p> <p><u>KK</u>-describe the role of blood in transporting carbon dioxide from, and oxygen to, the lungs and explain why tissues need a good blood supply; describe aerobic respiration as a reaction with oxygen; describe some effects of an inadequate oxygen supply;</p>	<p><u>SK</u>- describe and explain some of the evidence leading to present-day ideas about how and why blood circulates</p> <p><u>KK</u>-represent the process of aerobic respiration as a word and/or symbol equation and identify similarities with the burning of fuels; describe the features of alveoli and explain how damaged alveoli result in less gas exchange; describe and explain differences between inhaled and exhaled air and identify similarities in aerobic respiration in plants and animals</p>

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Using Chemistry	<p><u>SK</u> - make measurements of temperature and mass; identify some products that have recently been developed</p> <p><u>KK</u> - name some products produced by chemical reactions and identify burning as a reaction which produces energy</p>	<p><u>SK</u> - make measurements of temperature and mass; identify some products that have recently been developed</p> <p><u>KK</u> - name some products produced by chemical reactions and identify burning as a reaction which produces energy</p>	<p><u>SK</u> - make measurements of temperature and mass; identify some products that have recently been developed</p> <p><u>KK</u> - name some products produced by chemical reactions and identify burning as a reaction which produces energy</p>	<p><u>SK</u> - make measurements of temperature and mass; identify some products that have recently been developed</p> <p><u>KK</u> - name some products produced by chemical reactions and identify burning as a reaction which produces energy</p>	<p><u>SK</u> - explain the stages of development of a new product</p> <p><u>KK</u> - reconcile observations in which mass appears to be lost with the principle of conservation of mass, and represent some reactions by symbol equations</p>

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Earth and Beyond	<p>SK - describe a phenomenon of the solar system using some scientific terms; describe patterns in seasonal variation, <i>eg day length, climate</i>; use simple secondary sources to collect information about a planet</p> <p>KK - describe how the Moon orbits the Earth and the Earth spins while orbiting the Sun; identify some differences between features of the Earth and other planets; recognise that the Sun and stars are light sources but the Moon reflects light</p>	<p>SK - describe a phenomenon of the solar system using some scientific terms; describe patterns in seasonal variation, <i>eg day length, climate</i>; use simple secondary sources to collect information about a planet</p> <p>KK - describe how the Moon orbits the Earth and the Earth spins while orbiting the Sun; identify some differences between features of the Earth and other planets; recognise that the Sun and stars are light sources but the Moon reflects light</p>	<p>SK - describe a phenomenon of the solar system using some scientific terms; describe patterns in seasonal variation, <i>eg day length, climate</i>; use simple secondary sources to collect information about a planet</p> <p>KK - describe how the Moon orbits the Earth and the Earth spins while orbiting the Sun; identify some differences between features of the Earth and other planets; recognise that the Sun and stars are light sources but the Moon reflects light</p>	<p>SK - describe and explain a phenomenon of the solar system, <i>eg solar eclipse</i>; describe ways in which evidence about the solar system has been collected; interpret patterns in data with respect to a model of the solar system, <i>eg the tilt of the Earth causing seasonal variation</i>; select information from secondary sources to present a report about a planet and evaluate the strength of evidence from data</p> <p>KK - relate eclipses, phases of the Moon and seasonal changes to a simple model of the Sun, Earth and Moon system; describe the relative positions of the planets and their conditions compared to Earth; state that</p>	<p>SK - describe and explain a phenomenon of the solar system, showing that explanations have changed over time; use a model of the Earth, Moon, Sun system to explain patterns in data, <i>eg seasonal variations</i>, and relate this to real observations; use a range of secondary sources in finding information to report on aspects of the solar system</p> <p>KK - explain, using models, patterns or associations in data about the Earth and other planets in the solar system, <i>eg relationship between distance from Sun and orbital period</i>; use large numbers appropriate to these; make comparisons</p>

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				the Sun is a star and that stars are light sources, while planets and other objects in the solar system reflect light	between the Sun and other stars

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Variation and Evolution	<p>SK -make suggestions about data to be collected to answer questions about variation and, with help, present data using ICT and identify patterns or associations</p> <p>KK-identify similarities and differences between organisms of the same species and classify organisms into plants and animals; identify a few taxonomic groups of animals</p>	<p>SK -make suggestions about data to be collected to answer questions about variation and, with help, present data using ICT and identify patterns or associations</p> <p>KK-identify similarities and differences between organisms of the same species and classify organisms into plants and animals; identify a few taxonomic groups of animals</p>	<p>SK -make suggestions about data to be collected to answer questions about variation and, with help, present data using ICT and identify patterns or associations</p> <p>KK-identify similarities and differences between organisms of the same species and classify organisms into plants and animals; identify a few taxonomic groups of animals</p>	<p>SK -use observation to identify questions to investigate about variation between individuals; suggest data to collect to answer the questions; present and analyse the data; identify associations or correlations in their data</p> <p>KK -identify similarities and differences in organisms of the same species and begin to attribute these to environmental or inherited factors; explain the importance of classifying living things; identify some of the main taxonomic groups of animals and describe some features of these</p>	<p>SK-evaluate graphs and tables of data in relation to sample size and describe how strongly any association or correlation is supported</p> <p>KK-recognise that inherited and environmental causes of variation cannot be completely separated; name some organisms which are not readily classified as plant or animal</p>

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Environmental chemistry and Living Things	<p>Environmental Chemistry SK - select information from secondary sources relating plants to soil type and record findings using ICT; describe how some sources provide evidence about environmental change</p> <p>KK - describe some of the consequences of acid rain and of other forms of pollution; identify why it is important to monitor and control pollution</p> <p>Feeding Relationships SK - make measurements of environmental variables appropriate to the task and make suggestions about investigating the Activity of an invertebrate</p>	<p>Environmental Chemistry SK - select information from secondary sources relating plants to soil type and record findings using ICT; describe how some sources provide evidence about environmental change</p> <p>KK - describe some of the consequences of acid rain and of other forms of pollution; identify why it is important to monitor and control pollution</p> <p>Feeding Relationships SK - make measurements of environmental variables appropriate to the task and make suggestions about investigating the Activity of an invertebrate</p>	<p>Environmental Chemistry SK - select information from secondary sources relating plants to soil type and record findings using ICT; describe how some sources provide evidence about environmental change</p> <p>KK - describe some of the consequences of acid rain and of other forms of pollution; identify why it is important to monitor and control pollution</p> <p>Feeding Relationships SK - make measurements of environmental variables appropriate to the task and make suggestions about investigating the Activity of an invertebrate</p>	<p>Environmental Chemistry SK - make effective use of secondary sources of information about the relationship of soil type to plant growth and record their findings using ICT; identify and describe possible sources of information about the environment and select from these evidence about environmental change over time, identifying some strengths and weaknesses in the evidence</p> <p>KK - describe in terms of chemical reactions how acid rain arises and how it affects rocks, building materials and living things; describe how air and water pollution are monitored and how they might be controlled; distinguish between different environmental problems</p>	<p>Environmental Chemistry SK - identify and explain the strengths and weaknesses of the evidence about environmental change obtained from secondary sources</p> <p>KK - describe a variety of environmental issues and explain the implications of these</p> <p>Feeding Relationships SK - describe, in terms of approach and sample size, how strongly any patterns or associations identified are supported by the evidence</p> <p>KK - explain why a variety of habitats is needed in a community; describe how different organisms contribute</p>

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	<p>KK - identify differences between different habitats and describe how familiar organisms are suited to the habitat in which they are found; describe some simple food chains</p>	<p>KK - identify differences between different habitats and describe how familiar organisms are suited to the habitat in which they are found; describe some simple food chains</p>	<p>KK - identify differences between different habitats and describe how familiar organisms are suited to the habitat in which they are found; describe some simple food chains</p>	<p>Feeding Relationships SK -make a series of measurements of environmental variables appropriate to the task; identify a question to investigate about the Activity of an invertebrate, suggesting a suitable approach and sample size; use their results to relate animal and plant Activity to environmental changes KK - identify differences between different habitats and relate these to the organisms found in them; describe ways in which organisms are adapted to daily or seasonal changes in their environment and to their mode of feeding; describe food chains within an environment and combine these into food webs</p>	<p>to the community in which they are found and relate food chains to energy transfer</p>