	Working towards Y7 Expected Standards	Y7 Expected Standards	Y8 Expected Standards	Y9 Expected Standards	Working above Y9 Expected Standards	Working well above Y9 Expected Standards
Working Scientifically	Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks and can identify control actions with help. They make relevant observations and measure quantities such as length or mass, selecting and using a range of equipment. They carry out fair tests, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts and begin to plot points to form simple graphs. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work, giving reasons.	Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks and can identify control actions with help. They make relevant observations and measure quantities such as length or mass, selecting and using a range of equipment. They carry out fair tests, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts and begin to plot points to form simple graphs. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work, giving reasons.	Pupils decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus from that provided, using a provided hypothesis. They select and use methods to obtain data systematically, they recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to themselves and others. They use line graphs to present data, interpret numerical data and draw conclusions from them. They related conclusions to patterns in data, including graphs, and to scientific knowledge and understanding. They communicate these using scientific and mathematical conventions and terminology. They evaluate their working methods to make practical suggestions for improvements. They are aware of the development of scientific theories and the need for evidence to support the theories.	Pupils identify an appropriate approach in investigatory work, selecting and using sources of information and apparatus, and begin to develop their own hypothesis. They select and use methods to collect adequate data for the task, including the use of field work and sampling techniques, measuring with precision and identify the need to repeat measurements and observations. They recognise a range of familiar risks and take action to control them. They record data and features effectively, choosing scales for graphs and diagrams. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them and account for any inconsistencies in the evidence. They manipulate numerical data to make valid comparisons and draw valid conclusions. They communicate qualitative and quantitative data effectively, suing scientific knowledge and terminology. They evaluate evidence, making reasoned suggestions about how their working methods could be improved. They are aware of the development of scientific theories and can describe the evidence to support the theories.	Pupils plan appropriate approaches and procedures based on their own hypothesis, using information from a range of sources and identifying key factors and in which variables cannot readily be controlled. They select and use methods to obtain reliable data, including making systematic observations and measurements with precision, using a range of apparatus and techniques. They recognise the need for a risk assessment and consult sources of information which they follow. They record data in graphs, using lines of best fit. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain these conclusions and begin to identify possible limitations in primary and secondary data. They use quantitative relationships between variables. They communicate effectively using a wide range of scientific and technical conventions and terminology, including symbols and flow diagrams. They begin to consider whether the data they have collected are sufficient for the conclusions they have drawn and the development of a new hypothesis. They are aware of the development of scientific theories and can describe the evidence to support the theories. They are able to identify issues relating to bias and ethics in the development of new scientific processes/ideas and the need for peer review.	Pupils recognise that different strategies are required to investigate different kinds of scientific questions, and use scientific knowledge and understanding to select an appropriate strategy. In consultation with their teacher they adapt their approach to practical work to control risk. They record data that are relevant and sufficiently detailed, and choose methods that will obtain these data with the precision and reliability needed. They analyse data and begin to explain, and allow for, anomalies. They carry out multi-step calculations and use compound measures appropriately. They communicate findings and arguments, showing awareness of a range of views. They evaluate whether the data they have collected are sufficient for the conclusions they have drawn and the development of a new hypothesis. They evaluate evidence critically and suggest how inadequacies can be remedied. They can describe the process of the development of scientific theories and can describe the evidence to support the theories. They can describe issues relating to bias and ethics in the development of new scientific processes/ideas and the importance of peer review.
Biology	Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example lack of light or water affecting plant growth and the ways in which animals or plants are suited to their environments. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives.	Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example the ways in which animals or plants are adapted to their environments. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives.	Pupils describe some processes and phenomena related to organisms, their behaviour and the environment, drawing on scientific knowledge and understanding and using appropriate terminology, for example the effects of alcohol and smoking on human health; the main functions of the human skeletal system and how antagonistic muscles are essential for movement. They explain processes and phenomena, in more than one step such as the main stages of asexual and sexual reproduction. They apply and use knowledge and understanding in familiar contexts, such as variation within humans and also between different species. They recognise that evidence can support or refute scientific ideas e.g. the effect of smoking on the rates of lung cancer. They recognise some applications and implications of science, such as the health implications of having an unbalanced diet.	Pupils describe processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology, for example the processes of photosynthesis and respiration. They take account of a number of factors in their explanations of processes and phenomena, such as factors affecting the population size of organisms. They apply and use knowledge and understanding in unfamiliar contexts, such as interpreting unfamiliar food webs. They describe some evidence for some accepted scientific ideas, such as the idea that plants convert glucose to starch when carrying out photosynthesis.	Pupils describe a wide range of processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology and sequencing a number of points, for example respiration and photosynthesis. They make links between different areas of science in their explanations. They apply and use knowledge and understanding, in a range of contexts, such as inherited and environmental variation. They explain how evidence supports some accepted scientific ideas, such as the structure and function of cells. They explain, where appropriate, the importance of some applications and implications of science, such as gene banks and fermentation.	Pupils demonstrate extensive knowledge and understanding related to organisms, their behaviour and the environment. They use and apply this effectively in their descriptions and explanations, identifying links between topics, for example relating cellular structure of organs to their associated life processes. They interpret, evaluate and synthesise data from a range of sources and in a range of contexts, for example variation. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed, for example the short-term and long-term effects of environmental change on ecosystems. They describe and explain the importance of a wide range of applications and implications of science, such as relating photosynthesis and respiration to changes in the atmosphere and growth of crops.
Chemistry	Pupils use knowledge and understanding of states of matter and the particle model. They understand the difference between pure and impure substances. They can apply this knowledge to understand how substances are made e.g. dissolving, and the separation techniques used to separate mixtures e.g. chromatography. They can use this knowledge to help the suggest ways to identify an unknown compound. They recognise that evidence can support or refute scientific ideas, such as the classification of reactions as reversible and irreversible. They can list the properties of acids and alkalis and understand the efficiency of using the pH scale of measuring their acidity/alkalinity. They can recognise a metal oxide by its pH number. They	Pupils use knowledge and understanding of states of matter and the particle model. They understand the difference between pure and impure substances. They can apply this knowledge to understand how substances are made e.g. dissolving, and the separation techniques used to separate mixtures e.g. chromatography. They can use this knowledge to help the suggest ways to identify an unknown compound. They recognise that evidence can support or refute scientific ideas, such as the classification of reactions as reversible and irreversible. They can list the properties of acids and alkalis and understand the efficiency of using the pH scale of measuring their acidity/alkalinity. They can recognise a metal oxide by its pH number. They	Pupils describe some processes and phenomena related to materials, their properties and the Earth, drawing on scientific knowledge and understanding and using appropriate terminology, for example explaining the difference in formation of metamorphic, sedimentary and igneous rocks. They explain processes and phenomena, in more than one step or using a model, such as the deposition of sediments and their formation into rocks. They can also describe the structure of the Earth and explain why the Earth has layers. They can begin to explain the implications of using the rocks, linking to their composition of the Earth and explain why burning fossil fuels is effecting the environment. Pupils can explain metal extraction from the rocks in the Earth and link to their uses e.g. when describing properties of ceramics, polymers and composites. The pupils can also	Pupils describe processes and phenomena related to materials, their properties and the Earth, drawing on abstract ideas and using appropriate terminology, for example the rock cycle. They apply and use knowledge and understanding in familiar contexts, such as identifying changes of state and the use of evaporation. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as basing separation methods for mixtures on physical and chemical properties. They explain how evidence supports some accepted scientific ideas, such as the reactivity series of metals. They describe applications and implications of science, such as the uses of metals based on their specific properties or the benefits and drawbacks of the use of fossil fuels in terms of energy stored in them. They are able to understand how reactions can be chemical or physical and predict their	Pupils describe a wide range of processes and phenomena related to materials, their properties and the Earth, using abstract ideas and appropriate terminology and sequencing a number of points, for example the particle model applied to solids, liquids and gases. Pupils can recognise the physical changes between the three states of matter and describe its physical properties using particle theory. They take account of a number of factors or use abstract ideas or models in their explanations of processes and phenomena, such as Brownian motion in gases and word equations. They can explain the differences between simple separation techniques like fractional distillation and simple distillation. They apply and use knowledge and understanding in unfamiliar contexts, such as relating changes of state to energy transfers in a range of contexts such endothermic and exothermic reactions. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They describe some evidence for some accepted scientific ideas, such as the patterns in the reactions of acids with metals and the reactions of a	Pupils demonstrate extensive knowledge and understanding related to materials, their properties and the Earth. They apply and use more abstract knowledge and understanding, in a range of contexts, such as the particle model of matter e.g. Brownian motion in gases, and symbols and formulae for elements and compounds. They can use particle theory to explain the suitability of different separation techniques. They use and apply this effectively in their descriptions and explanations, identifying links between topics, for example relating conservation of mass to evidence in chemical symbol equations. They can explain how the chemical properties of metals are linked to their position in the reactivity series. They represent common compounds by chemical formulae and use these formulae to form balanced symbol equations for reactions. Pupils can explain how hydrogen ions give rise to the properties of acids and it can combine with hydroxide ions in

	can recognise some applications and implications of science, such as the safe use of acids and alkalis and neutralisation reactions. They can also use simple word equations to represent reactions e.g. acids with metals to form a salt plus hydrogen. Pupils can also explain the composition of air and perhaps go to link this knowledge to global warming.	can recognise some applications and implications of science, such as the safe use of acids and alkalis and neutralisation reactions. They can also use simple word equations to represent reactions e.g. acids with metals to form a salt plus hydrogen. Pupils can also explain the composition of air and perhaps go to link this knowledge to global warming.	describe different types of chemical reactions e.g. energy changes when state changes. They can also explain the properties and reactivity of different elements e.g. metal oxides. Pupils are able to explain how the periodic table was ordered using the Mendeleev principle and how to predict reactions in reference to the periodic table.	outcomes, writing word and balanced symbol equations.	variety of substances with oxygen. They can write a word equation to represent a chemical reaction. They can describe how an element behaves can be predicted by its position in the periodic table. Pupil to explain why mass appears to decrease when a carbonate reacts with acids and use symbol equations for all reactions that produce a salt. They explain the importance of some applications and implications of science, such as the production of new materials with specific desirable properties e.g. polymers and ceramics. They can explain why global warming is occurring and what human activities are contributing to this phenomena.	neutralisation reactions. They interpret, evaluate and synthesise and extrapolate data from a range of sources and in a range of contexts, such as describing and predicting chemical reactions, classifying them and suggesting how new substances could be made under various conditions. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed. They describe and explain the importance of a wide range of applications and implications of science, such as the need to consider the availability of resources, and environmental effects, in the production of energy and materials.
Physics	Pupils use their knowledge and understanding of energy, forces and electromagnetism to link cause and effect in their observations of the properties and effects of forces, and electromagnetism, such as a bulb failing to light because of a break in an electrical circuit or a push or pull changing the speed or direction of a moving object. They being to make generalisations such as insulators can reduce heat loss. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example investigating what affects the strength of an electromagnet, the transfer of energy by light, sound or electricity. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example streamlining and air resistance. They recognise some applications and implications of science, such as the responsible use of unsustainable sources of energy.	Pupils use their knowledge and understanding of energy, forces and electromagnetism to link cause and effect in their observations of the properties and effects of forces, and electromagnetism, such as a bulb failing to light because of a break in an electrical circuit or a push or pull changing the speed or direction of a moving object. They being to make generalisations such as insulators can reduce heat loss. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example investigating what affects the strength of an electromagnet, the transfer of energy by light, sound or electricity. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example streamlining and air resistance. They recognise some applications and implications of science, such as the responsible use of unsustainable sources of energy	Pupils describe processes and phenomena that relate to light and sound and space, drawing on abstract ideas and using appropriate terminology, for example 'compression and rarefaction' when describing longitudinal waves. They explain processes and phenomena, in more than one step or using a model, for example how the tilt of Earth affects the seasons, the relative brightness of stars at different distances. They apply and use knowledge and understanding in familiar contexts for example sound getting fainter the further the listener is from the source. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as objects being seen when light enters them from the eye. They describe applications and implications of science, such as the way sound can be produced and controlled, for example in musical instruments and loudspeakers. They understand that gravity pulls all objects together and what the size of the gravitational force depends on.	Pupils describe processes and phenomena related to energy, forces, electricity and space, using abstract ideas and appropriate terminology, for example linking the movement of molecules to pressure in fluids. They take account of a number of factors in their explanations of processes and phenomena, for example in explaining how the length of a lever affects the turning effect of a force. They also use abstract ideas or models, for example explaining how hydraulic machines work. They apply and use knowledge and understanding in unfamiliar contexts. They describe some evidence for some accepted scientific ideas, such as how the depth of a fluids changes the pressure exerted. They explain the importance of some applications and implications of science, such as they explain simple machines transfer energy to give a bigger forces but at the expense of smaller distances moved.	Pupils describe a wide range of processes and phenomena related to energy, forces electricity and space, using abstract ideas and appropriate terminology and sequencing a number of points, for example how energy is transferred by radiation or conduction. They make links between different areas of science in their explanations, such as between electricity and magnetism. They apply and use more abstract knowledge and understanding in a range of contexts, such as the appearance of objects in different colours of light. They explain how evidence supports some accepted scientific ideas, such as the role of gravitational attraction in determining the motion of bodies in the solar system. They explain, using abstract ideas where appropriate, the importance of some applications and implications of science, such as the uses of electromagnets.	Pupils demonstrate extensive knowledge and understanding related to energy, forces electricity and space, for example the passage of sound waves through a medium. They use and apply this effectively in their descriptions and explanations, identifying links between topics. They interpret, evaluate and synthesise data from a range of sources and in a range of contexts. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed. They describe and explain the importance of a wide range of applications and implications of science, such as relating the dissipation of energy during energy transfer to the need to conserve limited energy resources.

	Working towards Y7 Expected standards	Y7 Expected Standards *MEETING*	Working above Y7 Expected Standards	Working well above Y7 Expected Standards
Working Scientifically	Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks and can identify control actions with help. They make relevant observations and measure quantities such as length or mass, selecting and using a range of equipment. They carry out fair tests, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts and begin to plot points to form simple graphs. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work, giving reasons.	Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks and can identify control actions with help. They make relevant observations and measure quantities such as length or mass, selecting and using a range of equipment. They carry out fair tests, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts and begin to plot points to form simple graphs. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work, giving reasons.	Pupils decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus from that provided, using a provided hypothesis. They select and use methods to obtain data systematically, they recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to themselves and others. They use line graphs to present data, interpret numerical data and draw conclusions from them. They related conclusions to patterns in data, including graphs, and to scientific knowledge and understanding. They communicate these using scientific and mathematical conventions and terminology. They evaluate their working methods to make practical suggestions for improvements. They are aware of the development of scientific theories and the need for evidence to support the theories.	Pupils identify an appropriate approach in investigatory work, selecting and using sources of information and apparatus, and begin to develop their own hypothesis. They select and use methods to collect adequate data for the task, including the use of field work and sampling techniques, measuring with precision and identify the need to repeat measurements and observations. They recognise a range of familiar risks and take action to control them. They record data and features effectively, choosing scales for graphs and diagrams. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them and account for any inconsistencies in the evidence. They manipulate numerical data to make valid comparisons and draw valid conclusions. They communicate qualitative and quantitative data effectively, suing scientific knowledge and terminology. They evaluate evidence, making reasoned suggestions about how their working methods could be improved. They are aware of the development of scientific theories and can describe the evidence to support the theories.
Biology	Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example lack of light or water affecting plant growth and the ways in which animals or plants are suited to their environments. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives.	Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example the ways in which animals or plants are adapted to their environments. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives.	Pupils describe some processes and phenomena related to organisms, their behaviour and the environment, drawing on scientific knowledge and understanding and using appropriate terminology, for example the effects of alcohol and smoking on human health; the main functions of the human skeletal system and how antagonistic muscles are essential for movement. They explain processes and phenomena, in more than one step such as the main stages of asexual and sexual reproduction. They apply and use knowledge and understanding in familiar contexts, such as variation within humans and also between different species. They recognise that evidence can support or refute scientific ideas e.g. the effect of smoking on the rates of lung cancer. They recognise some applications and implications of science, such as the health implications of having an unbalanced diet.	Pupils describe processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology, for example the processes of photosynthesis and respiration. They take account of a number of factors in their explanations of processes and phenomena, such as factors affecting the population size of organisms. They apply and use knowledge and understanding in unfamiliar contexts, such as interpreting unfamiliar food webs. They describe some evidence for some accepted scientific ideas, such as the idea that plants convert glucose to starch when carrying out photosynthesis.
Chemistry	Pupils use knowledge and understanding of states of matter and the particle model. They understand the difference between pure and impure substances. They can apply this knowledge to understand how substances are made e.g. dissolving, and the separation techniques used to separate mixtures e.g. chromatography. They can use this knowledge to help the suggest ways to identify an unknown compound. They recognise that evidence can support or refute scientific ideas, such as the classification of reactions as reversible and irreversible. They can list the properties of acids and alkalis and understand the efficiency of using the pH scale of measuring their acidity/alkalinity. They can recognise a metal oxide by its pH number. They can recognise some applications and implications of science, such as the safe use of acids and alkalis and neutralisation reactions. They can also use simple word equations to represent reactions e.g. acids with metals to form a salt plus hydrogen. Pupils can also explain the composition of air and perhaps go to link this knowledge to global warming.	Pupils use knowledge and understanding of states of matter and the particle model. They understand the difference between pure and impure substances. They can apply this knowledge to understand how substances are made e.g. dissolving, and the separation techniques used to separate mixtures e.g. chromatography. They can use this knowledge to help the suggest ways to identify an unknown compound. They recognise that evidence can support or refute scientific ideas, such as the classification of reactions as reversible and irreversible. They can list the properties of acids and alkalis and understand the efficiency of using the pH scale of measuring their acidity/alkalinity. They can recognise a metal oxide by its pH number. They can recognise some applications and implications of science, such as the safe use of acids and alkalis and neutralisation reactions. They can also use simple word equations to represent reactions e.g. acids with metals to form a salt plus hydrogen. Pupils can also explain the composition of air and perhaps go to link this knowledge to global warming.	Pupils describe some processes and phenomena related to materials, their properties and the Earth, drawing on scientific knowledge and understanding and using appropriate terminology, for example explaining the difference in formation of metamorphic, sedimentary and igneous rocks. They explain processes and phenomena, in more than one step or using a model, such as the deposition of sediments and their formation into rocks. They can also describe the structure of the Earth and explain why the Earth has layers. They can begin to explain the implications of using the rocks, linking to their composition of the Earth and explain why burning fossil fuels is effecting the environment. Pupils can explain metal extraction from the rocks in the Earth and link to their uses e.g. when describing properties of ceramics, polymers and composites. The pupils can also describe different types of chemical reactions e.g. energy changes when state changes. They can also explain the properties and reactivity of different elements e.g. metal oxides. Pupils are able to explain how the periodic table was ordered using the Mendeleev principle and how to predict reactions in reference to the periodic table.	Pupils describe processes and phenomena related to materials, their properties and the Earth, drawing on abstract ideas and using appropriate terminology, for example the rock cycle. They apply and use knowledge and understanding in familiar contexts, such as identifying changes of state and the use of evaporation. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as basing separation methods for mixtures on physical and chemical properties. They explain how evidence supports some accepted scientific ideas, such as the reactivity series of metals. They describe applications and implications of science, such as the uses of metals based on their specific properties or the benefits and drawbacks of the use of fossil fuels in terms of energy stored in them. They are able to understand how reactions can be chemical or physical and predict their outcomes, writing word and balanced symbol equations.
Physics	Pupils use their knowledge and understanding of energy, forces and electromagnetism to link cause and effect in their observations of the properties and effects of forces, and electromagnetism, such as a bulb failing to light because of a break in an electrical circuit or a push or pull changing the speed or direction of a moving object. They being to make generalisations such as insulators can reduce heat loss. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example investigating what affects the strength of an electromagnet, the transfer of energy by light, sound or electricity. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example streamlining and air resistance. They recognise some applications and implications of science, such as the responsible use of unsustainable sources of energy.	Pupils use their knowledge and understanding of energy, forces and electromagnetism to link cause and effect in their observations of the properties and effects of forces, and electromagnetism, such as a bulb failing to light because of a break in an electrical circuit or a push or pull changing the speed or direction of a moving object. They being to make generalisations such as insulators can reduce heat loss. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example investigating what affects the strength of an electromagnet, the transfer of energy by light, sound or electricity. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives, for example streamlining and air resistance. They recognise some applications and implications of science, such as the responsible use of unsustainable sources of energy	Pupils describe processes and phenomena that relate to light and sound and space, drawing on abstract ideas and using appropriate terminology, for example 'compression and rarefaction' when describing longitudinal waves. They explain processes and phenomena, in more than one step or using a model, for example how the tilt of Earth affects the seasons, the relative brightness of stars at different distances. They apply and use knowledge and understanding in familiar contexts for example sound getting fainter the further the listener is from the source. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as objects being seen when light enters them from the eye. They describe applications and implications of science, such as the way sound can be produced and controlled, for example in musical instruments and loudspeakers. They understand that gravity pulls all objects together and what the size of the gravitational force depends on.	Pupils describe processes and phenomena related to energy, forces, electricity and space, using abstract ideas and appropriate terminology, for example linking the movement of molecules to pressure in fluids. They take account of a number of factors in their explanations of processes and phenomena, for example in explaining how the length of a lever affects the turning effect of a force. They also use abstract ideas or models, for example explaining how hydraulic machines work. They apply and use knowledge and understanding in unfamiliar contexts. They describe some evidence for some accepted scientific ideas, such as how the depth of a fluids changes the pressure exerted. They explain the importance of some applications and implications of science, such as they explain simple machines transfer energy to give a bigger forces but at the expense of smaller distances moved.

	Working towards Y8 Expected standards	Y8 Expected Standards *MEETING*	Working above Y8 Expected Standards	Working well above Y8 Expected Standards
Working Scientifically	Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks and can identify control actions with help. They make relevant observations and measure quantities such as length or mass, selecting and using a range of equipment. They carry out fair tests, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts and begin to plot points to form simple graphs. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work, giving reasons.	Pupils decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus from that provided, using a provided hypothesis. They select and use methods to obtain data systematically, they recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to themselves and others. They use line graphs to present data, interpret numerical data and draw conclusions from them. They related conclusions to patterns in data, including graphs, and to scientific knowledge and understanding. They communicate these using scientific and mathematical conventions and terminology. They evaluate their working methods to make practical suggestions for improvements. They are aware of the development of scientific theories and the need for evidence to support the theories.	Pupils identify an appropriate approach in investigatory work, selecting and using sources of information and apparatus, and begin to develop their own hypothesis. They select and use methods to collect adequate data for the task, including the use of field work and sampling techniques, measuring with precision and identify the need to repeat measurements and observations. They recognise a range of familiar risks and take action to control them. They record data and features effectively, choosing scales for graphs and diagrams. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them and account for any inconsistencies in the evidence. They manipulate numerical data to make valid comparisons and draw valid conclusions. They communicate qualitative and quantitative data effectively, suing scientific knowledge and terminology. They evaluate evidence, making reasoned suggestions about how their working methods could be improved. They are aware of the development of scientific theories and can describe the evidence to support the theories.	Pupils plan appropriate approaches and procedures based on their own hypothesis, using information from a range of sources and identifying key factors and in which variables cannot readily be controlled. They select and use methods to obtain reliable data, including making systematic observations and measurements with precision, using a range of apparatus and techniques. They recognise the need for a risk assessment and consult sources of information which they follow. They record data in graphs, using lines of best fit. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain these conclusions and begin to identify possible limitations in primary and secondary data. They use quantitative relationships between variables. They communicate effectively using a wide range of scientific and technical conventions and terminology, including symbols and flow diagrams. They begin to consider whether the data they have collected are sufficient for the conclusions they have drawn and the development of a new hypothesis. They are aware of the development of scientific theories and can describe the evidence to support the theories. They are able to identify issues relating to bias and ethics in the development of new scientific processes/ideas and the need for peer review.
Biology	Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example the ways in which animals or plants are adapted to their environments. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday lives.	Pupils describe some processes and phenomena related to organisms, their behaviour and the environment, drawing on scientific knowledge and understanding and using appropriate terminology, for example the effects of alcohol and smoking on human health; the main functions of the human skeletal system and how antagonistic muscles are essential for movement. They explain processes and phenomena, in more than one step such as the main stages of asexual and sexual reproduction. They apply and use knowledge and understanding in familiar contexts, such as variation within humans and also between different species. They recognise that evidence can support or refute scientific ideas e.g. the effect of smoking on the rates of lung cancer. They recognise some applications and implications of science, such as the health implications of having an unbalanced diet.	Pupils describe processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology, for example the processes of photosynthesis and respiration. They take account of a number of factors in their explanations of processes and phenomena, such as factors affecting the population size of organisms. They apply and use knowledge and understanding in unfamiliar contexts, such as interpreting unfamiliar food webs. They describe some evidence for some accepted scientific ideas, such as the idea that plants convert glucose to starch when carrying out photosynthesis.	Pupils describe a wide range of processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology and sequencing a number of points, for example respiration and photosynthesis. They make links between different areas of science in their explanations. They apply and use knowledge and understanding, in a range of contexts, such as inherited and environmental variation. They explain how evidence supports some accepted scientific ideas, such as the structure and function of cells. They explain, where appropriate, the importance of some applications and implications of science, such as gene banks and fermentation.
Chemistry	Pupils use knowledge and understanding of states of matter and the particle model. They understand the difference between pure and impure substances. They can apply this knowledge to understand how substances are made e.g. dissolving, and the separation techniques used to separate mixtures e.g. chromatography. They can use this knowledge to help the suggest ways to identify an unknown compound. They recognise that evidence can support or refute scientific ideas, such as the classification of reactions as reversible and irreversible. They can list the properties of acids and alkalis and understand the efficiency of using the pH scale of measuring their acidity/alkalinity. They can recognise a metal oxide by its pH number. They can recognise some applications and implications of science, such as the safe use of acids and alkalis and neutralisation reactions. They can also use simple word equations to represent reactions e.g. acids with metals to form a salt plus hydrogen. Pupils can also explain the composition of air and perhaps go to link this knowledge to global warming.	Pupils describe some processes and phenomena related to materials, their properties and the Earth, drawing on scientific knowledge and understanding and using appropriate terminology, for example explaining the difference in formation of metamorphic, sedimentary and igneous rocks. They explain processes and phenomena, in more than one step or using a model, such as the deposition of sediments and their formation into rocks. They can also describe the structure of the Earth and explain why the Earth has layers. They can begin to explain the implications of using the rocks, linking to their composition of the Earth and explain why burning fossil fuels is effecting the environment. Pupils can explain metal extraction from the rocks in the Earth and link to their uses e.g. when describing properties of ceramics, polymers and composites. The pupils can also describe different types of chemical reactions e.g. energy changes when state changes. They can also explain the properties and reactivity of different elements e.g. metal oxides. Pupils are able to explain how the periodic table was ordered using the Mendeleev principle and how to predict reactions in reference to the periodic table.	Pupils describe processes and phenomena related to materials, their properties and the Earth, drawing on abstract ideas and using appropriate terminology, for example the rock cycle. They apply and use knowledge and understanding in familiar contexts, such as identifying changes of state and the use of evaporation. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as basing separation methods for mixtures on physical and chemical properties. They explain how evidence supports some accepted scientific ideas, such as the reactivity series of metals. They describe applications and implications of science, such as the uses of metals based on their specific properties or the benefits and drawbacks of the use of fossil fuels in terms of energy stored in them. They are able to understand how reactions can be chemical or physical and predict their outcomes, writing word and balanced symbol equations.	Pupils describe a wide range of processes and phenomena related to materials, their properties and the Earth, using abstract ideas and appropriate terminology and sequencing a number of points, for example the particle model applied to solids, liquids and gases. Pupils can recognise the physical changes between the three states of matter and describe its physical properties using particle theory. They take account of a number of factors or use abstract ideas or models in their explanations of processes and phenomena, such as Brownian motion in gases and word equations. They can explain the differences between simple separation techniques like fractional distillation and simple distillation. They apply and use knowledge and understanding in unfamiliar contexts, such as relating changes of state to energy transfers in a range of contexts such endothermic and exothermic reactions. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They describe some evidence for some accepted scientific ideas, such as the patterns in the reactions of acids with metals and the reactions of a variety of substances with oxygen. They can write a word equation to represent a chemical reaction. They can describe how an element behaves can be predicted by its position in the periodic table. Pupil to explain why mass appears to decrease when a carbonate reacts with acids and use symbol equations for all reactions that produce a salt. They explain the importance of some applications and implications of science, such as the production of new materials with specific desirable properties e.g. polymers and ceramics. They can explain why global warming is occurring and what human activities are contributing to this phenomena.
Physics	Pupils use their knowledge and understanding of energy, forces and electromagnetism to link cause and effect in their observations of the properties and effects of forces, and electromagnetism, such as a bulb failing to light because of a break in an electrical circuit or a push or pull changing the speed or direction of a moving object. They being to make generalisations such as insulators can reduce heat loss. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example investigating what affects the strength of an electromagnet, the transfer of energy by light, sound or electricity. They recognise and explain the purpose of a variety of scientific and technological developments in their everyday	Pupils describe processes and phenomena that relate to light and sound and space, drawing on abstract ideas and using appropriate terminology, for example 'compression and rarefaction' when describing longitudinal waves. They explain processes and phenomena, in more than one step or using a model, for example how the tilt of Earth affects the seasons, the relative brightness of stars at different distances. They apply and use knowledge and understanding in familiar contexts for example sound getting fainter the further the listener is from the source. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as objects being seen when light enters them from the eye. They describe applications and implications of science, such as the way sound can be produced and controlled, for example in musical instruments and loudspeakers. They understand that gravity pulls	Pupils describe processes and phenomena related to energy, forces, electricity and space, using abstract ideas and appropriate terminology, for example linking the movement of molecules to pressure in fluids. They take account of a number of factors in their explanations of processes and phenomena, for example in explaining how the length of a lever affects the turning effect of a force. They also use abstract ideas or models, for example explaining how hydraulic machines work. They apply and use knowledge and understanding in unfamiliar contexts. They describe some evidence for some accepted scientific ideas, such as how the depth of a fluids changes the pressure exerted. They explain the importance of some applications and implications of science, such as they explain simple	Pupils describe a wide range of processes and phenomena related to energy, forces electricity and space, using abstract ideas and appropriate terminology and sequencing a number of points, for example how energy is transferred by radiation or conduction. They make links between different areas of science in their explanations, such as between electricity and magnetism. They apply and use more abstract knowledge and understanding in a range of contexts, such as the appearance of objects in different colours of light. They explain how evidence supports some accepted scientific ideas, such as the role of gravitational attraction in determining the motion of bodies in the solar system. They explain, using abstract ideas where appropriate, the importance of some applications and implications of science, such as the uses of electromagnets.

	lives, for example streamlining and air resistance. They recognise some applications and implications of science, such as the responsible use of unsustainable sources of energy	all objects together and what the size of the gravitational force depends on.	machines transfer energy to give a bigger forces but at the expense of smaller distances moved.	

	Working towards Y9 Expected standards	Y9 Expected Standards *MEETING*	Working above Y9 Expected Standards	Working well above Y9 Expected Standards
Working Scientifically	Pupils decide appropriate approaches to a range of tasks, including selecting sources of information and apparatus from that provided, using a provided hypothesis. They select and use methods to obtain data systematically, they recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to themselves and others. They use line graphs to present data, interpret numerical data and draw conclusions from them. They related conclusions to patterns in data, including graphs, and to scientific knowledge and understanding. They communicate these using scientific and mathematical conventions and terminology. They evaluate their working methods to make practical suggestions for improvements. They are aware of the development of scientific theories and the need for evidence to support the theories.	Pupils identify an appropriate approach in investigatory work, selecting and using sources of information and apparatus, and begin to develop their own hypothesis. They select and use methods to collect adequate data for the task, including the use of field work and sampling techniques, measuring with precision and identify the need to repeat measurements and observations. They recognise a range of familiar risks and take action to control them. They record data and features effectively, choosing scales for graphs and diagrams. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain them and account for any inconsistencies in the evidence. They manipulate numerical data to make valid comparisons and draw valid conclusions. They communicate qualitative and quantitative data effectively, suing scientific knowledge and terminology. They evaluate evidence, making reasoned suggestions about how their working methods could be improved. They are aware of the development of scientific theories and can describe the evidence to support the theories.	Pupils plan appropriate approaches and procedures based on their own hypothesis, using information from a range of sources and identifying key factors and in which variables cannot readily be controlled. They select and use methods to obtain reliable data, including making systematic observations and measurements with precision, using a range of apparatus and techniques. They recognise the need for a risk assessment and consult sources of information which they follow. They record data in graphs, using lines of best fit. They analyse findings to draw conclusions that are consistent with the evidence and use scientific knowledge and understanding to explain these conclusions and begin to identify possible limitations in primary and secondary data. They use quantitative relationships between variables. They communicate effectively using a wide range of scientific and technical conventions and terminology, including symbols and flow diagrams. They begin to consider whether the data they have collected are sufficient for the conclusions they have drawn and the development of a new hypothesis. They are aware of the development of scientific theories and can describe the evidence to support the theories. They are able to identify issues relating to bias and ethics in the development of new scientific processes/ideas and the need for peer review.	Pupils recognise that different strategies are required to investigate different kinds of scientific questions, and use scientific knowledge and understanding to select an appropriate strategy. In consultation with their teacher they adapt their approach to practical work to control risk. They record data that are relevant and sufficiently detailed, and choose methods that will obtain these data with the precision and reliability needed. They analyse data and begin to explain, and allow for, anomalies. They carry out multi-step calculations and use compound measures appropriately. They communicate findings and arguments, showing awareness of a range of views. They evaluate whether the data they have collected are sufficient for the conclusions they have drawn and the development of a new hypothesis. They evaluate evidence critically and suggest how inadequacies can be remedied. They can describe the process of the development of scientific theories and can describe the evidence to support the theories. They can describe issues relating to bias and ethics in the development of new scientific processes/ideas and the importance of peer review.
Biology	Pupils describe some processes and phenomena related to organisms, their behaviour and the environment, drawing on scientific knowledge and understanding and using appropriate terminology, for example the effects of alcohol and smoking on human health; the main functions of the human skeletal system and how antagonistic muscles are essential for movement. They explain processes and phenomena, in more than one step such as the main stages of asexual and sexual reproduction. They apply and use knowledge and understanding in familiar contexts, such as variation within humans and also between different species. They recognise that evidence can support or refute scientific ideas e.g. the effect of smoking on the rates of lung cancer. They recognise some applications and implications of science, such as the health implications of having an unbalanced diet.	Pupils describe processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology, for example the processes of photosynthesis and respiration. They take account of a number of factors in their explanations of processes and phenomena, such as factors affecting the population size of organisms. They apply and use knowledge and understanding in unfamiliar contexts, such as interpreting unfamiliar food webs. They describe some evidence for some accepted scientific ideas, such as the idea that plants convert glucose to starch when carrying out photosynthesis.	Pupils describe a wide range of processes and phenomena related to organisms, their behaviour and the environment and appropriate terminology and sequencing a number of points, for example respiration and photosynthesis. They make links between different areas of science in their explanations. They apply and use knowledge and understanding, in a range of contexts, such as inherited and environmental variation. They explain how evidence supports some accepted scientific ideas, such as the structure and function of cells. They explain, where appropriate, the importance of some applications and implications of science, such as gene banks and fermentation.	Pupils demonstrate extensive knowledge and understanding related to organisms, their behaviour and the environment. They use and apply this effectively in their descriptions and explanations, identifying links between topics, for example relating cellular structure of organs to their associated life processes. They interpret, evaluate and synthesise data from a range of sources and in a range of contexts, for example variation. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed, for example the short-term and long-term effects of environmental change on ecosystems. They describe and explain the importance of a wide range of applications and implications of science, such as relating photosynthesis and respiration to changes in the atmosphere and growth of crops.
Chemistry	Pupils describe some processes and phenomena related to materials, their properties and the Earth, drawing on scientific knowledge and understanding and using appropriate terminology, for example explaining the difference in formation of metamorphic, sedimentary and igneous rocks. They explain processes and phenomena, in more than one step or using a model, such as the deposition of sediments and their formation into rocks. They can also describe the structure of the Earth and explain why the Earth has layers. They can begin to explain the implications of using the rocks, linking to their composition of the Earth and explain why burning fossil fuels is effecting the environment. Pupils can explain metal extraction from the rocks in the Earth and link to their uses e.g. when describing properties of ceramics, polymers and composites. The pupils can also describe different types of chemical reactions e.g. energy changes when state changes. They can also explain the properties and reactivity of different elements e.g. metal oxides. Pupils are able to explain how the periodic table was ordered using the Mendeleev principle and how to predict reactions in reference to the periodic table.	Pupils describe processes and phenomena related to materials, their properties and the Earth, drawing on abstract ideas and using appropriate terminology, for example the rock cycle. They apply and use knowledge and understanding in familiar contexts, such as identifying changes of state and the use of evaporation. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as basing separation methods for mixtures on physical and chemical properties. They explain how evidence supports some accepted scientific ideas, such as the reactivity series of metals. They describe applications and implications of science, such as the uses of metals based on their specific properties or the benefits and drawbacks of the use of fossil fuels in terms of energy stored in them. They are able to understand how reactions can be chemical or physical and predict their outcomes, writing word and balanced symbol equations.	Pupils describe a wide range of processes and phenomena related to materials, their properties and the Earth, using abstract ideas and appropriate terminology and sequencing a number of points, for example the particle model applied to solids, liquids and gases. Pupils can recognise the physical changes between the three states of matter and describe its physical properties using particle theory. They take account of a number of factors or use abstract ideas or models in their explanations of processes and phenomena, such as Brownian motion in gases and word equations. They can explain the differences between simple separation techniques like fractional distillation and simple distillation. They apply and use knowledge and understanding in unfamiliar contexts, such as relating changes of state to energy transfers in a range of contexts such endothermic and exothermic reactions. They make links between different areas of science in their explanations, such as between the nature and behaviour of materials and their particles. They describe some evidence for some accepted scientific ideas, such as the patterns in the reactions of acids with metals and the reactions of a variety of substances with oxygen. They can write a word equation to represent a chemical reaction. They can describe how an element behaves can be predicted by its position in the periodic table. Pupil to explain why mass appears to decrease when a carbonate reacts with acids and use symbol equations for all reactions that produce a salt. They explain the importance of some applications and implications of science, such as the production of new materials with specific desirable properties e.g. polymers and ceramics. They can explain why global warming is occurring and what human activities are contributing to this phenomena.	Pupils demonstrate extensive knowledge and understanding related to materials, their properties and the Earth. They apply and use more abstract knowledge and understanding, in a range of contexts, such as the particle model of matter e.g. Brownian motion in gases, and symbols and formulae for elements and compounds. They can use particle theory to explain the suitability of different separation techniques. They use and apply this effectively in their descriptions and explanations, identifying links between topics, for example relating conservation of mass to evidence in chemical symbol equations. They can explain how the chemical properties of metals are linked to their position in the reactivity series. They represent common compounds by chemical formulae and use these formulae to form balanced symbol equations for reactions. Pupils can explain how hydrogen ions give rise to the properties of acids and it can combine with hydroxide ions in neutralisation reactions. They interpret, evaluate and synthesise and extrapolate data from a range of sources and in a range of contexts, such as describing and predicting chemical reactions, classifying them and suggesting how new substances could be made under various conditions. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed. They describe and explain the importance of a wide range of applications and implications of science, such as the need to consider the availability of resources, and environmental effects, in the production of energy and materials.

Physics	Pupils describe processes and phenomena that relate to light and sound and space, drawing on abstract ideas and using appropriate terminology, for example 'compression and rarefaction' when describing longitudinal waves. They explain processes and phenomena, in more than one step or using a model, for example how the tilt of Earth affects the seasons, the relative brightness of stars at different distances. They apply and use knowledge and understanding in familiar contexts for example sound getting fainter the further the listener is from the source. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as objects being seen when light enters them from the eye. They describe applications and implications of science, such as the way sound can be produced and controlled, for example in musical instruments and loudspeakers. They understand that gravity pulls all objects together and what the size of the gravitational force depends on.	Pupils describe processes and phenomena related to energy, forces, electricity and space, using abstract ideas and appropriate terminology, for example linking the movement of molecules to pressure in fluids. They take account of a number of factors in their explanations of processes and phenomena, for example in explaining how the length of a lever affects the turning effect of a force. They also use abstract ideas or models, for example explaining how hydraulic machines work. They apply and use knowledge and understanding in unfamiliar contexts. They describe some evidence for some accepted scientific ideas, such as how the depth of a fluids changes the pressure exerted. They explain the importance of some applications and implications of science, such as they explain simple machines transfer energy to give a bigger forces but at the expense of smaller distances moved.	Pupils describe a wide range of processes and phenomena related to energy, forces electricity and space, using abstract ideas and appropriate terminology and sequencing a number of points, for example how energy is transferred by radiation or conduction. They make links between different areas of science in their explanations, such as between electricity and magnetism. They apply and use more abstract knowledge and understanding in a range of contexts, such as the appearance of objects in different colours of light. They explain how evidence supports some accepted scientific ideas, such as the role of gravitational attraction in determining the motion of bodies in the solar system. They explain, using abstract ideas where appropriate, the importance of some applications and implications of science, such as the uses of electromagnets.	Pupils demonstrate extensive knowledge and understanding related to energy, forces electricity and space, for example the passage of sound waves through a medium. They use and apply this effectively in their descriptions and explanations, identifying links between topics. They interpret, evaluate and synthesise data from a range of sources and in a range of contexts. They show they understand the relationship between evidence and scientific ideas, and why scientific ideas may need to be changed. They describe and explain the importance of a wide range of applications and implications of science, such as relating the dissipation of energy during energy transfer to the need to conserve limited energy resources.