Year 5 Science
Age Related Expectations

All children are assessed against the Age Related Expectations (ARE) within the different curriculum subjects. The ARE's are taken from the National Curriculum but are consolidated to reflect what *we* expect of a child. For example, three or four national curriculum targets might be summarised in one ARE. Judgements are generally based on a variety of different sources but will generally be a combination of on-going formative assessment in class, book work and formal summative testing.

The curriculum for science aims to ensure that all pupils: develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics; develop understanding of the nature, processes and methods of science through different types of science enquiries. Pupils will become confident and competent in planning and carrying out scientific investigations. They will improve their scientific knowledge and understanding which will be demonstrated in written and verbal explanations, solving problems and reporting scientific findings.

	Key Performance Indicators	**Age Related Expectations**
Working scientifically	- Plan enquiries, including recognising variables. Use appropriate techniques during investigations. - Take measurements, using a range of scientific equipment, with increasing accuracy and precision. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. - Report findings from enquiries, including oral and written explanations of results. - Present findings in written form, displays and other presentations. - Use simple models to describe scientific ideas.	A child should follow methods and suggest their own simple methods for investigations; including identifying and making necessary safety precautions. They should predict the results using previous experiences and other test results. A child should measure temperature, mass, length using simple equipment and record measurements and observations in a variety of ways that have been given to them. They should plot data on bar and line graphs labelling the axis. A child should identify and carry out a fair test describing their observations with reasons for patterns found.
Chemistry **Investigating Materials**	- Compare and group together everyday materials based on evidence from comparative and fair tests., including their hardness, solubility, conductivity (electrical and thermal) and response to magnets. - Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. - Demonstrate that dissolving, mixing and changes of state are reversible changes. - Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.	A child will work scientifically to identify the properties of a variety of materials using their findings to suggest uses for materials and to answer questions about the materials. For example: Investigate absorbency to answer, 'Which materials would be most effective for making mopping up a split drink? A child will be able to identify a material as a solid, liquid or gas and the processes melt, freeze, condense and evaporate to change from one to another. A child will be able to explain that when solids dissolve a clear solution is formed and select the correct process for separating mixtures, with reasons. A child will recognise that burning or bubbling indicates a non-reversible change.
Physics **Movement, forces and magnets**	- Describe magnets as having two poles. - Predict whether two magnets will attract or repel each other, depending on which poles are facing. - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - Identify the effect of drag forces, such as air resistance, water resistance and friction that acts between moving surfaces. - Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. - Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. - Understand that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	A child will describe the behaviour of magnets and their effects on magnetic and nonmagnetic objects. They will use a force meter accurately to measure forces and describe and compare the size direction and names of forces acting on objects. A child will describe the effect of gravity on a objects like parachutes. They will describe the effects of air resistance on moving objects like sycamore leaves. A child will identify where friction is useful and where lubrication may be needed to reduce friction; recognising that some forces (air resistance, water resistance, friction) involve contact between objects and others (gravitational and magnetic) do not. A child will describe how simple mechanisms (at least: pulleys, levers, gears) increase the effects of a force.

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Physics **Earth and Space**	- Describe the Sun, Earth and Moon as approximately spherical bodies. - Use the idea of the Earth's rotation to explain day and night.	A child will be able to describe the sun, moon and earth. They should be able to describe and model how the earth, sun and moon move in relation to each other and use this to explain the seasons and day and night. They will describe and sequence the changes in the appearance of the Moon over a period of 28 days. A child will explain rotation of the earth effects shadow length. They will show that different parts of the Earth face the sun during 24 hours causing length of day and night. A child will describe the solar system including the movement of the Earth and other planets around the Sun.
Biology **Living things**	- Describe the differences in the life cycles of a mammal, amphibian, an insect and a bird. - Describe the life process of reproduction in some plants and animals. - Describe the changes as humans develop to old age.	A child will be able to recognise stages in the growth and development of animals. They will be able to compare the gestation periods of animals and humans. A child will be able to order/draw a timeline to indicate/ stages in the growth and development of humans; describing the differences in capabilities of newly born humans and other animals They will be able to understand the changes that occur at puberty. A child will be able to name and explain the functions of some parts of a flower; including for reproduction and the transport of water and nutrients. They will describe the processes of pollination, fertilisation, seed dispersal and germination. They will be able to describe how plants are affected by their environment and changes togrowing conditions.