

Science – Topics and Opportunities

	<u>Biology</u>	<u>Chemistry</u>	<u>Physics</u>	<u>Opportunities</u>
Year 1	<p style="text-align: center;"><u>Understand Plants</u></p> <ul style="list-style-type: none"> -Naming common plants and classifying deciduous and evergreen -Basic structure of flowering plants <p style="text-align: center;"><u>Understand Animals and Humans</u></p> <ul style="list-style-type: none"> -Identify birds, fish, amphibians, reptiles, mammals and invertebrates -Identify carnivores, herbivores and omnivores -Basic parts of the human body -Offspring growing into adults <p style="text-align: center;"><u>Investigate Living Things</u></p> <ul style="list-style-type: none"> -Living, dead, never been alive -What habitats provide -Plants, animals and habitats 	<p style="text-align: center;"><u>Investigate Materials</u></p> <ul style="list-style-type: none"> -Objects and the material it is made from -Identify and name everyday materials -Physical Properties of everyday materials 	<p style="text-align: center;"><u>Investigate sound and hearing</u></p> <ul style="list-style-type: none"> -Name a variety of sources of sound <p style="text-align: center;"><u>Understand the Earth’s movement in space</u></p> <ul style="list-style-type: none"> -The apparent movement of the Sun -Changes across the four seasons 	<ul style="list-style-type: none"> • Marwell Zoo • Visit HMS Victory • ‘Bug man’- Insect week
Year 2	<p style="text-align: center;"><u>Understand Plants</u></p> <ul style="list-style-type: none"> -Observe and describe seeds and bulbs growing -Conditions for plants to grow <p style="text-align: center;"><u>Understand Animals and Humans</u></p> <ul style="list-style-type: none"> -Structure of common animals Basic needs of animals for survival -Importance of exercise, diet and hygiene <p style="text-align: center;"><u>Investigate Living Things</u></p> <ul style="list-style-type: none"> -Food chains <p style="text-align: center;"><u>Understand evolution and inheritance</u></p> <ul style="list-style-type: none"> -Humans resemble their parents 	<p style="text-align: center;"><u>Investigate Materials</u></p> <ul style="list-style-type: none"> -Compare and group everyday materials -Squashing, bending, twisting and stretching -Suitability of everyday materials 	<p style="text-align: center;"><u>Understand movement, forces and magnets</u></p> <ul style="list-style-type: none"> -Describe how things move -Compare how different things move (Height of ramp= further distance) <p style="text-align: center;"><u>To understand light and seeing</u></p> <ul style="list-style-type: none"> -Sources of light <p style="text-align: center;"><u>Understand electrical circuits</u></p> <ul style="list-style-type: none"> -Common electrical appliances -Construct simple electrical circuit <p style="text-align: center;"><u>Understand the Earth’s movement in space</u></p> <ul style="list-style-type: none"> -Weather associated with the seasons and the length of a day 	<ul style="list-style-type: none"> • Exploring environmental area • ‘Bug man’ for insect week • Visit to New Forest Wildlife Park?

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Year 3</p>	<p style="text-align: center;"><u>Understand Plants</u> <i>-Functions of different plants</i> <i>-Requirements of plants for life</i> <i>-Transportation of water within plants</i></p> <p style="text-align: center;"><u>Understand Animals and Humans</u> <i>-Skeletons</i> <i>-Teeth</i> <i>-Food chains</i></p> <p style="text-align: center;"><u>Investigate Living Things</u> <i>-Grouping living things</i> <i>-Classification keys</i></p> <p style="text-align: center;"><u>Understand evolution and inheritance</u> <i>-Fossils</i></p>	<p style="text-align: center;"><u>Investigate Materials</u> <i>-Physical properties of rocks</i> <i>-Rock formations</i> <i>-How fossils are formed</i> <i>-How soils are made</i></p>	<p style="text-align: center;"><u>Understand movement, forces and magnets</u> <i>-Describe how things move</i> <i>-Forces and magnetic forces</i> <i>-Magnets- attracting and repelling</i> <i>-Identifying magnetic materials</i> <i>-Two poles of the magnets</i> <i>-Magnets – attract or repel?</i></p> <p style="text-align: center;"><u>To understand light and seeing</u> <i>-Using light to see</i> <i>-Light is reflected from surfaces</i> <i>-Dangers of sunlight</i></p> <p style="text-align: center;"><u>Investigate sound and hearing</u> <i>-How sounds are made</i> <i>-Vibrations and the ear</i></p> <p style="text-align: center;"><u>Understand electrical circuits</u> <i>-Common electrical appliances</i> <i>- Construct simple series electrical circuit</i> <i>-Will the lamp light up?</i></p>	<ul style="list-style-type: none"> • School Nurse (dental focus) • ‘Bug man’ • Tupenny Barn visit • Grow your own veg • Making fossils
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Year 4</p>	<p style="text-align: center;"><u>Understand Plants</u> <i>-Pollination, seed formation and seed dispersal</i></p> <p style="text-align: center;"><u>Understand Animals and Humans</u> <i>-Nutrition</i> <i>-Food webs</i> <i>-Digestive system</i></p> <p style="text-align: center;"><u>Investigate Living Things</u> <i>-Changing Environments</i></p> <p style="text-align: center;"><u>Understand evolution and inheritance</u> <i>-Plants and animals resemble their parents</i> <i>-Adaptation to animals’ environments</i></p>	<p style="text-align: center;"><u>Investigate Materials</u> <i>-Solids, liquids and gases</i> <i>-Changing state of materials</i> <i>-Water Cycle</i></p>	<p style="text-align: center;"><u>To understand light and seeing</u> <i>-How shadows are formed</i> <i>-How shadows change</i></p> <p style="text-align: center;"><u>Understand electrical circuits</u> <i>-Role of the switch</i> <i>-Conductors and insulators</i></p> <p style="text-align: center;"><u>Understand the Earth’s movement in space</u> <i>-Movement of the Earth</i> <i>-Movement of the Moon</i></p>	<ul style="list-style-type: none"> • Farm visit • Tech Deck • ‘Bug man’

Understand Animals and Humans

- Describe the changes as humans develop to old age
 - Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
 - Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions
- Describe the ways in which nutrients and water are transported within animals, including humans

Understand evolution and inheritance

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- Identify how animals and plants are adapted to suit their environment in different ways and how that adaptation may lead to evolution

Investigate Materials

- 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
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, oxidation and the action of acid on bicarbonate of soda


To understand 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
- Identify the effect of drag forces such as, water resistance and friction that act 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

Understand electrical circuits

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- Compare and give reasons for vibrations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- Used recognised symbols when representing a simple circuit in a diagram

- Planetarium trip - Winchester
- STEM Fair
- Planetarium Dome

			<p><u>Understand the Earth’s movement in space</u></p> <ul style="list-style-type: none"> -Describe the movement of the Earth relative to the Sun in the solar system -Describe the movement of the Moon relative to the Earth -Describe the Sun, Earth and Moon as approximately spherical bodies -Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the Sun across the sky 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">* (2022/23)</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Year 5/6</p>	<p><u>Understand Plants</u></p> <ul style="list-style-type: none"> -Relate knowledge of plants to studies of evolution and inheritance -Relate knowledge of plants to studies of all living things <p><u>Investigate Living Things</u></p> <ul style="list-style-type: none"> -Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird -Describe the life processes of reproduction in some plants and animals -Describe how living things are classified into broad groups according to common observable characteristics -Give reasons for classifying plants and animals on specific characteristics <p><u>Understand evolution and inheritance</u></p>	<p><u>Investigate Materials</u></p> <ul style="list-style-type: none"> -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 -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 	<p><u>To understand movement, forces and magnets</u></p> <ul style="list-style-type: none"> -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 <p><u>To understand light and seeing</u></p> <ul style="list-style-type: none"> -Understand that light appears to travel in straight lines -Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes -Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes 	<ul style="list-style-type: none"> • ‘Bug man’ • STEM Fair • Planetarium Dome • Marwell Zoo

			<p><i>-Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</i></p> <p><u>To investigate sound and hearing</u></p> <p><i>-Find patterns between the pitch of a sound and features of the object that produced it</i></p> <p><i>-Find patterns between the volume of a sound and the strength of the vibrations that produced it</i></p> <p><i>-Recognise that sound gets fainter as the distance from the sound source increases</i></p>	
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*Year 5 and 6 will work on a two year rolling programme