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| **Substantive knowledge** Our curriculum supports pupils to:* Understand concepts, themes and genres
* Acquire and apply knowledge and skill
* Develop vocabulary
 | **Disciplinary knowledge**Our curriculum supports pupils to:* Ask questions
* Investigation to find new information
* Present, organise and communicate
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| **KS2 Tier 3** |
| **Key concepts****Key vocabulary**  | **Animals inc. humans** | **Living things and their habitats** | **Light** | **Evolution and inheritance** | **Forces** |
| TIER 3 | Accessing Prior Learning?**What do our bodies do with the food we eat?** | Accessing Prior Learning:**How are animals grouped?** | Accessing Prior Learning: **When do shadows appear?** | Accessing Prior Learning: **Do all plants and animals reproduce in the same way?** | Accessing Prior Learning: **How can we move magnets?** |
| Acquiring + Attempting New Learning:* identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
* recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
* describe the ways in which nutrients and water are transported within animals, including humans
 | Acquiring + Attempting New Learning:* describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
* describe the life process of reproduction in some plants and animals
* describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
* give reasons for classifying plants and animals based on specific characteristics.
 | Acquiring + Attempting New Learning:* recognise that they need light in order to see things and that dark is the absence of light
* notice that light is reflected from surfaces
* recognise that light from the sun can be dangerous and that there are ways to protect their eyes
* find patterns in the way that the size of shadows change
* recognise that shadows are formed when the light from a light source is blocked by a solid object
* recognise 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 eye
* 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
* use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
 | Acquiring + Attempting New Learning:* 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 that adaptation may lead to evolution
 | Acquiring + Attempting New Learning:* explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
* identify the effects of air resistance, water resistance and friction, that act between moving surfaces
* recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
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| **Additional vocabulary (included in the non-statutory guidance)**\*appear in previous year groups | Skeletal system \* Muscular system \* Digestive system \* Healthy\* Substances Harmful | Local environment \* Naturalists Animal behaviourists Reproduction \* Sexual reproduction Asexual reproduction rainforest Ocean Desert areas Prehistoric times Parent plant Seeds \* Stem \* Root cuttings Tubers Bulbs \* | Classification system Invertebrates \* Insects \* Spiders \* Snails \* Worms \* Vertebrates \* Fish \* Amphibians \* Reptiles \* Mammals \* Birds \* Keys \* Unfamiliar environment Habitats \* | Mirror ReflectiveReflection Periscope Shadow puppets Coloured filters Phenomena  | CharacteristicsBreeds Variation More able to survive Less able to survive Palaeontologists Advantages Disadvantages  |  |
| Cycle A |  Elizabeth Anionwu(Sickle cell and thalassemia specialist)Barouh Berkovits(invented the pacemaker and defibrillator)Cardiologist (a doctor specialising in the heart and circulatory system)  | Malaika Vaz(National Geographic explorer)Carl Linneus(botanist and zoologist)Farmer (grows crops and raisesanimals for food)Oceanographer (studies thephysical and biological aspectsof the ocean) |  CV Raman(Physicist)Professor Colin Webb(Professor of Laser Physics)Architect (designs buildings) Ophthalmologist (a doctor specialising in vision and eye health) | Rosalind Franklin(Discovered the structure of DNA)Charles Darwin(Naturalist, developed the theory of evolution)Archeologist (studies history using artefacts)Geneticist (studies genes) |  Brahmagupta(Mathematician &Astronomer who was thefirst scientist to talk aboutgravity)Galileo Galilei(tested theories about gravity and the Solar System) |
| Cycle B |  William Harvey(Discovered how blood moves through the body)Ruth Ella Moore(Bacteriologist whoresearched immunology,blood groups andtuberculosis)Haematologist (studies blood and its diseases) | Carl Linneus(Naturalist and botanist)Nazifa Tabassum(Microbiologist and ScienceCommunicator)Microbiologist (studies tiny living things)Plant geneticist (studiesgenetics in plants - many work on developing crops to be more robust or provide more nutrition) | Ibn al-Haytham(Mathematician and astronomer)Patricia Bath(Ophthalmologist and inventor)Astronomer (studies space)Optician (a doctor specialising in vision and eye health) |  Emma Dunne(Palaeobiologist whoinvestigates how ancientclimate change affected theevolution of differentspecies)Alfred Wallace(Natural Historian whodeveloped the theory ofevolution by naturalselection)Palaeontologist (studies fossils) |  Isaac Newton(Discovered gravity)Rafsan Chowdhury(Mechanical Engineer)Aeronautical engineer (designs, develops, manufactures and maintains aircraft)Builder (builds structures)Mechanical engineer (designs, analysis and manufactures mechanical systems) |
|  | Applying Essential Learning: **How do our choices affect how our bodies work? Why does my heart beat?** | Applying Essential Learning: **In what ways can we sort living things?** | Applying Essential Learning:**Describe how light helps us to see. What is a shadow?** | Applying Essential Learning:**What is evolution?** | Applying Essential Learning: **How and why do objects move?** |
| Impact evidence: * Pupil knowledge
* Class floor books
* Displays
* English books
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