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| **Science****Core Learning** **Class 4****YEAR B** |
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|  | **Autumn Term**  | **Spring term**  | **Summer Term**  |
| **Unit of work**  | Living Things and Their HabitatsProperties and their Materials | Animals including HumansLight | ElectricityMedical Manoeuvres |
| **Prior Learning**  | Grouping and classification Children can name and locate different environmentsChildren can recognise that changes can be made. Pupils should build a more systematicunderstanding of materials by exploring and comparing the properties of a broad range of materials, relating these to what they learnt about magnetism in year 3 and about electricity in year 4. | In KS1 and SRE children will have noticed thatanimals, including humans, have offspring whichgrow into adultsPupils have been taught to describe the simple functions of the basicparts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions.Pupils should build on the work on light inyear 3, where they explored the way thatlight behaves, including light sources,reflection and shadows | Building on their work in year 4, pupilsshould recap how to construct simpleseries circuits, to help them to answerquestions about what happens when they try different components. |
| **Key essential knowledge** **(Nuggets)** | Living things and their habitats* What are the parts of a plant?
* How are seeds dispersed and why is this important?
* What parts of the plant are important for reproduction and play a role in their own life cycle?
* Are all life cycles the same?
* What is similar or different in the reproduction of plants and animals?

Properties and their materials* Are all materials the same?
* How can materials be changed from one state to another and back again?
* Why are some states irreversible?
* How can I use my knowledge of states to separate mixtures?

. | Animals including humans* How do humans change over time?.
* What is the circulatory system and how does it work?
* How do lifestyle choices affect the human body?
* When I eat, why is a balanced diet important?
* How does my body use the food I eat?

Light* How does light travel?
* Why is light important to see?
* What is a shadow?
 | Electricity* Why are some lights brighter than others?
* How can I make electrical components work?
* What happens when I change my circuit? Why does/doesn’t it work?
* How do you show a working circuit without taking a picture?
* How many ways can circuits continue to function?

Medical manoeuvres* How can insects help create medicine?
* What materials are used in medicine?
* How can lifestyle choices affect our health?
* How can I keep myself healthy?
* How can light be useful in treatment?
* Does electricity play a role in medicine?
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| **Core Learning****Knowledge** | * Can I explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal explore and use classification keys to help group?
* Can I identify and name a variety of living things in their local environment?
* Can I describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird and compare their differences?
* Can I describe the life process of reproduction in some plants and animals
* Can I compare and group together everyday materials based on evidence from comparative and fair tests?
* Do I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution?
* Can I use knowledge of solids, liquids and gases to decide how mixtures might be separated?
* Can I demonstrate dissolving, mixing and changes of state as reversible changes?
* Can I explain that some changes result in the formation of new materials?
 | * Can I describe the changes as humans develop to old age?
* Can I draw a timeline to indicate stages in the growth and development of humans?
* Can I identify and name the main parts of the human circulatory system?
* Can I describe the functions of the heart, blood vessels and blood? (including the pulse and clotting).
* Can I understand the impact of diet, exercise, drugs and lifestyle on the way bodies function?
* Can I describe the content of a healthy human diet? carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water,
* Can I describe the ways in which nutrients and water are transported within animals, including humans
* 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
 | * Can I recognise that t the brightness of a lamp or the volume of a buzzer depends on the number and voltage of cells used in the circuit?
* Can I compare and give reasons for variations in how components function? including: a) the brightness of bulbs, the loudness of b)the loudness of buzzer c)the on/off position of switches
* Can I use symbols when representing a simple circuit in a diagram?
* Can I construct a simple electrical circuit?

identifying and naming the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers * Can I understand and discuss the impact of medicine?
* Can I investigate materials and their uses?
* Can I investigate the human life cycle and the effect lifestyle choices have on our health?
* Can I explain the circulatory system?
* Can I show the importance of light and the jobs it is used for?
* Can I explore how circuits are used within medical equipment?
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| **Core Learning****Skills** | knowing parts of plants and their function in reproducing.  | developing the knowledge of the human body and how it functions. Use of ray model to explain imaging in mirrorsDescribe the transmission of light through materials; absorption, diffuse scattering and specular reflection at a surfaceExplain colours and the different frequencies of light, white light and prisms (qualitative only) |  |
| **Vocabulary** | Thermal conductorElectrical conductorsolute and solubleinsolublesolventsolutionreversible/physical changeirreversible/chemical changeRecap: properties of material vocab, burning,dissolvepollinationfertilisation including internal andexternalsexual reproductionAsexual reproductionmetamorphosislarvadispersalgestationRecap: sperm, egg, bulb | light ray iris pupil cornea lens incident and reflected rays recap words: reflect, reflection, transparent, translucent, opaque, shadowWhite and red blood cellsplasmaplateletcirculatory systemoxygenated/deoxygenatedveins and arteriesrespiratoryrecap words: nutrients, health |  |
| Quick quiz | Name two natural materials. Write the meaning of these properties of materials: a. permeable b. absorbent c. flexible What does it mean if a change is reversible? Can you give on example? What does it mean if a change is irreversible? Can you give an example?What is the difference between a chemical and physical change? What is the correct scientific words for: a. Something that does not dissolve in water b. Water or another liquid that has something already dissolved into it  Name two things that would make something dissolve quicker in water. Tick all the changes below that are irreversible I have a mixture of salt water, fine sand and gravel. If I didn’t want to keep the water at the end, what three steps could I take to separate them and in what order? Name two properties of each of these materials that make them good for doing their jobs. | What are the 2 types of variation called? What is the difference between genetic and environmental variation?  Can you name one animal that lives in a hot climate and explain how it is adapted to its environment? Explain in your own words how light travels.Can you explain how a shadow is formed? Are all shadows the same size? Why? What is meaning of the words reflection? What are the parts of the eye called? What is an incident ray?  | What components do you need to make a simple circuit?. Can you draw a diagram of a simple circuit using the correct symbols? Using the equipment on your table, make the bulb light up. Explain to your partner why this works. What parts of the body make up the circulatory system? What is the function of the red blood cells? What is the function of the white blood cells? 4. What is the function of plasma?What is the function of a platelet?How many chambers does the heart have and what are their names? Do veins carry only deoxygenated blood? Explain how you know. How are nutrients transported around the body? Describe in 2 ways how excercise can have a positive impact on your body’s function.  Describe how diet can have a: a)positive impact b)negative impact |