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| **Core Knowledge Map** | | | |
| Subject: Biology (C & T)  Bioenergetics, transport and ecology | Year: 10 | | Term: 1 |
| What are we learning? | | | |
| How and why organisms are adapted to their environments and how we can study them.  How do plants and animals get the energy they need for metabolism  How are substances moved around plants and animals | | | |
| How will I be assessed | | | |
| In class by your teacher  Mid topic long answer questions  End of topic tests  Mock GCSE exams | | | |
| Big questions: | | | |
| How are organisms are adapted to their environment?  How can we study the distribution of organisms in an environment?  How do plants and animals get the energy they need for metabolism and how is it used?  How are substances moved around plants and animals? | | | |
| How does this build on previous learning? | | How will this link to my future learning? | |
| At KS3 you learnt that organisms are adapted to their environment. You learnt that energy is released in the processes of respiration and photosynthesis and that plants need water and minerals to survive, just like animals. | | It will support continued learning in A levels Biology or Human Biology, BTEC Science or the new Science T Level.  This will also give you knowledge about your body, plants and the world around you to help you take your place in society. | |
| Core knowledge: | | Key vocabulary: | |
| Animals and plants have adaptations that allow them to be successful (live and breed) in their habitat.  We can use transects and quadrates to sample habitats to look at species diversity and distribution.  Photosynthesis uses water and carbon dioxide (with energy from light) to make sugars and oxygen. The sugars are used by plants to release energy, to make proteins and to make complex structural molecules.  Respiration releases the energy in the chemical bonds in sugars by reacting them with oxygen. This makes carbon dioxide and water. The energy released allows metabolic processes to happen.  In animals, the blood carries soluble chemicals around the body. The blood moves through arteries, capillaries and veins, due to the pumping action of the heart.  In plants water moves through plants from the roots to the shoots through the xylem vessels. This is a passive process. Sugars from photosynthesis move through the plants through the phloem tubes and this is an active process. | | **Abundance** - a measure of how common or rare a particular type of organism is in a given environment.  **Aerobic respiration** - an exothermic reaction in which glucose is broken down using oxygen to produce carbon dioxide and water and release energy for the cells.  **Anaerobic respiration** - an exothermic reaction in which glucose is broken down in the absence of oxygen to produce lactic acid in animals and ethanol and carbon dioxide in plants and yeast. A small amount of energy is transferred for the cells.  **Adaptations** - special features that make an organism particularly well suited to the environment where it lives.  **Arteries** - blood vessels that carry blood away from the heart. They usually carry oxygenated blood and have a pulse.  **Capillaries** - the smallest blood vessels. They run between individual cells and have a wall that is only one cell thick.  **Competition** - the process by which living organisms compete with each other for limited resources such as food, light, or reproductive partners.  **Distribution** - where particular types of organisms are found within an environment.  **Phloem** - the living transport tissue in plants that carries dissolved food (sugars) around the plant.  **Photosynthesis** - the process by which plants make food using carbon dioxide, water, and light.  **Quadrat** - a sample area used for measuring the abundance and distribution of organisms in the field.  **Transect** - a measured line or area along which ecological measurements are made.  **Xylem** - the non-living transport tissue in plants that transports water from the roots to the leaves and shoots. | |
| Need more help? | | | |
| BBC Bitesize - <https://www.bbc.co.uk/bitesize/examspecs/z8r997h>  You Tube Snap revise (scroll down the playlist to find the topic) <https://bit.ly/431gHhX>  You Tube Primrose Kitten (scroll down the playlist to find the topic) <https://bit.ly/434FKku>  Save My Exams Website - <https://bit.ly/3PDZtEy> | | | |