

Subject: Science

Year: 8 Teaching block: 2

Topic: Magnetism, Ecosystems, Adaptations, Metals

Assessment week: w/c 3rd December

Prior knowledge/learning

From KS2 (Year 4 POS) students should know about forces and magnetism, the living things in their habitats and properties and changes of materials.

Content

Students will learn:-

the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops

how organisms affect, and are affected by, their environment, including the accumulation of toxic materials

the properties of metals and non-metal

magnetic poles, attraction and repulsion

magnetic fields by plotting with compass, representation by field lines

Earth's magnetism, compass and navigation

Skills (linked to A.O and PLTS)

Students will learn how to work together, manage their time effectively, reflect on their learning so that their work improves.

They will learn specific scientific and maths skills involved in planning investigations and analysing data.

Assessment strategies:

Students will be given one homework task approximately every 6 lessons. This will specifically cover work they have done to show their understanding of the topic so far.

Students will carry out an assessment on magnetism at the end of December and Ecosystems and adaptations at the end of February. This will take the form of exam style questions with the aim to develop exam technique.

In Assessment week students will sit a test which will cover magnetism, ecosystems, adaptations and metals.

What the best student will understand/be able to do at the end of the teaching block? Explain how objects can become charged, describe how charged objects interact and describe what is meant by an electric field. Describe what is meant by and how to measure current and potential difference. Describe what is meant by rating of a battery and bulb. Describe the difference between series and parallel circuits and how current and potential difference vary in them. Describe what is meant by resistance and how to calculate resistance in a component and of a circuit. Describe the difference between conductors and insulators in terms of resistance. Describe how magnets interact and how they are represented by fields. Describe the Earth's magnetic field. Describe how to make an electromagnet, how to change the strength of an electromagnet, the uses of an electromagnets and how a simple motor works. Describe the process of photosynthesis, aerobic and anaerobic respiration and state the word equations for each. Describe the structure and function of the main components of the leaf and the distribution of chloroplasts in a leaf cell. Describe how a plant uses minerals for growth and explain the role of nitrates in plant growth. Describe where chemosynthesis occurs and the process. Describe the differences between aerobic and anaerobic respiration. Describe what food chains and food webs show. Describe the interdependence of organisms and how toxic chemicals can accumulate in a food web. Describe how different organisms co-exist within an ecosystem and identify niches within an ecosystem. Describe resources that animals and plants compete for and how they are adapted to their environments. Describe the adaptations that make animals and plants better adapted and how competition can lead to adaptation. Describe how variation occurs in a species and the difference between environmental and inherited variation. Describe the difference between continuous and discontinuous variation and represent these in graphs. Describe how characteristics are inherited and how scientists work together to develop DNA model. Describe the process of natural selection and how organisms evolve over time. Describe some factors that may lead to extinction and the purpose of gene banks. Compare the reactions of different metals with dilute acids, oxygen, water and state symbols in balanced formula equations and explain the test for hydrogen gas. Use reactivity series to predict reactions with water, as well as pairs of substances that react in displacement reactions and explain displacement reactions. Use the reactivity series to decide which metals can be extracted from the ores by heating with carbon and calculate the amounts of metals in ores. Describe the ceramic, polymer and composite properties and explain why these properties make them suitable for their uses.