

| Subject | Year 7 Threshold Concepts – Spring Term | How to support students' learning |
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| Chemical reactions | <p><u>Elements and the periodic table</u></p> <ul style="list-style-type: none"> • Define an element • Recognise chemical symbols and formula for elements and compounds • Describe principles underpinning the Mendeleev Periodic Table • Understand how the periodic table is arranged: periods and groups; metals and non-metals • State that elements are arranged in order of increasing atomic number • Describe the properties of metals and non-metals <p><u>Forming compounds</u></p> <ul style="list-style-type: none"> • Give the definitions for atoms, elements and compounds • Describe what happens in chemical reactions as the rearrangement of atoms • Represent chemical reactions using formula and equations • Name common compounds <p><u>Elements, compounds and mixtures</u></p> <ul style="list-style-type: none"> • Be able to use chemical symbols and formula for elements and compounds • Describe the differences between atoms, elements and compounds • Describe how the properties of elements and the compounds they form are different • Identify elements, compounds and mixtures from diagrams <p><u>Indicators of chemical reactions</u></p> <ul style="list-style-type: none"> • Describe evidence for a chemical reaction • Apply conservation of mass to simple chemical changes • Explain why, in terms of particles, mass stays the same in a reaction | <p>Encourage your child to watch this video about how the periodic table is arranged (1525) KS3 - The Periodic Table - YouTube</p> <p>Encourage your child to use BBC bitesize to read about elements, compounds and mixtures, watch a short video and complete the quiz Elements, compounds and mixtures - BBC Bitesize</p> <p>Here is a video to help summarise the difference between elements, compounds, mixtures and their properties What Is An Element, Mixture And Compound? Properties of Matter Chemistry FuseSchool - YouTube</p> <p>Here is a video summarising conservation of mass Conservation of mass - YouTube</p> |

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| | <p><u>Physical and chemical changes</u></p> <ul style="list-style-type: none"> • Give examples of physical changes and chemical reactions • Describe what happens in both a chemical and physical changes <p><u>Oxidation</u></p> <ul style="list-style-type: none"> • Define oxidation reactions • Write word equations for chemical reactions • Apply conservation of mass to oxidation reactions <p><u>Combustion</u></p> <ul style="list-style-type: none"> • State the difference between complete and incomplete combustion • State a health hazard associated with incomplete combustion <p><u>Acids and alkalis</u></p> <ul style="list-style-type: none"> • describe the colour change of litmus indicator with different substances • Explain the difference between acids and alkalis. • Define a neutral substance <p><u>pH scale</u></p> <ul style="list-style-type: none"> • Classify substances as strong or weak acids and alkalis based on their pH • Explain why it is better to use universal indicator over other indicators <p><u>Indicators</u></p> <ul style="list-style-type: none"> • Name a selection of indicators • Extract red dye from cabbage to use to make indicator <p><u>Neutralisation</u></p> <ul style="list-style-type: none"> • Describe what happens to the pH when an acid is added to an alkali or vice versa • Represent the reactions of acids and alkalis using word equations | <p>Encourage your child to visit BBC bitesize to learn about combustion and burning fuels What is combustion? - BBC Bitesize</p> <p>Here is a task that can be used to stretch and challenge your child Unit05.indd (ttsonline.net)</p> <p>Encourage your child to visit the BBC bitesize website to learn about acids, alkalis and neutralisation reactions Acids and alkalis - KS3 Chemistry - BBC Bitesize</p> <p>Encourage your child to watch this video covering the basics about pH scale, universal indicator and litmus paper What Is The pH Scale Acids, Bases & Alkalis Chemistry FuseSchool - YouTube</p> |
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| <p>Humans</p> | <p><u>Investigation – antacid</u></p> <ul style="list-style-type: none"> • Write a method, identify variables, design a table to collect results • Check results for reproducibility <p><u>The respiratory system and breathing</u></p> <ul style="list-style-type: none"> • Describe the structure and functions of the gas exchange system in humans, including adaptations to function • Explain the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume • Describe the impact of exercise, asthma and smoking on the human gas exchange system <p><u>Effects of exercise on the respiratory system</u></p> <ul style="list-style-type: none"> • Explain the impact of exercise, asthma and smoking on the human gas exchange system <p><u>The skeleton, joints and muscles</u></p> <ul style="list-style-type: none"> • State the structure and functions of the human skeleton, to include support, protection, movement and making blood cells • Have an understanding of biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles • Describe the function of muscles and examples of antagonistic muscles | <p>Use these resources to refresh your child’s knowledge of planning an investigation 20210914075053 Welcome to science D and E for isolating students.pptx (live.com)</p> <p>Encourage your child to take this quiz to learn key terminology and facts for this topic KS3 Respiratory System - Quizizz</p> <p>Encourage your child to read through the information here: Effects of training and exercise - Effects of exercise and training - GCSE Physical Education Revision - BBC Bitesize</p> <p>Encourage your child to do this quiz to identify misunderstandings within this topic: Skeleton, Joints and Muscles - revise KS3 science with fun quizzes (educationquizzes.com)</p> <p>Encourage your child to do this quiz to identify misunderstandings within this topic: Skeleton, Joints and</p> |
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| <p>Photosynthesis and respiration</p> | <p><u>Aerobic respiration</u></p> <ul style="list-style-type: none"> • Understand Aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life • Summarize aerobic respiration <p><u>Anaerobic respiration</u></p> <ul style="list-style-type: none"> • Differentiate aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life • Describe the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration • Explain the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism <p><u>Plant organisation, adaptation and reproduction</u></p> <ul style="list-style-type: none"> • Understand plants make carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots • Describe the role of leaf stomata in gas exchange in plants • Describe the adaptations of leaves for photosynthesis • Explain reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit | <p>Muscles - revise KS3 science with fun quizzes (educationquizzes.com)</p> <p>Encourage your child to read through the information and complete the topic quiz: Respiration and gas exchange - KS3 Biology - BBC Bitesize - BBC Bitesize</p> <p>Encourage your child to watch this video to better understand anaerobic respiration Anaerobic Respiration - Biology - KS3 - Key Stage 3 - Mr Deeping - YouTube</p> <p>Encourage your child to read through and complete the quiz for the following information Adaptations of plants - Ecosystems and habitats - KS3 Biology - BBC Bitesize - BBC Bitesize</p> |
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| Electricity | <p>formation and dispersal, including quantitative investigation of some dispersal mechanisms</p> <p><u>Plants and photosynthesis</u></p> <ul style="list-style-type: none"> • Name the reactants in, and products of, photosynthesis, and a word summary for photosynthesis • Explain the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere <p><u>Electrical circuits and symbols</u></p> <ul style="list-style-type: none"> • Recognise and draw correct circuit symbols • Select the correct equipment to measure current and voltage in a circuit • Draw a circuit correctly <p><u>Series and Parallel Circuits</u></p> <ul style="list-style-type: none"> • Identify a series circuit | <p>Encourage your child to read through this and complete the test at the end of the section Climate change - Impact of human activity - KS3 Chemistry Revision - BBC Bitesize</p> <p>Encourage your child to watch the following vide: Photosynthesis and Leaf Adaptations - Biology - KS3 - Key Stage 3 - Mr Deeping - YouTube</p> <p>Encourage your child to watch the video here: The effects of recreational drugs on health and behaviour - Health and disease - KS3 Biology - BBC Bitesize - BBC Bitesize</p> <p>Students can practise drawing circuit symbols and circuits correctly using this online lesson: Drawing electrical circuits (thenational.academy)</p> |
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| Matter | <ul style="list-style-type: none"> • Identify a parallel circuit • Describe how current behaves in both series and parallel circuits <p><u>Resistance</u></p> <ul style="list-style-type: none"> • Describe how resistance effects current in a circuit • Calculate resistance using voltage and current <p><u>Magnetism</u></p> <ul style="list-style-type: none"> • Understand how magnets interact with other magnets • Draw magnetic fields using plotting compasses • Apply understanding of magnetic fields to Earth’s magnetism <p><u>Physical changes</u></p> <ul style="list-style-type: none"> • Conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation and dissolving • Similarities and differences between solids, liquids and gases • Brownian motion in gases • Diffusion in liquids and gases driven by differences in concentration • The difference between physical and chemical changes | <p>Watch the videos below to understand the difference between a series and parallel circuit and how current moves around these circuits.</p> <p>Series and parallel circuits - KS3 Physics - BBC Bitesize Circuits - YouTube</p> <p>Work through this online lesson with your child to help them understand resistance.</p> <p>Lesson: Resistance Teacher Hub Oak National Academy (thenational.academy)</p> <p>Encourage your child to investigate what materials are magnetic in your house. Use a simple fridge magnet to test different items to see which are attracted to the magnet.</p> <p>Watch this video to help understand Brownian motion</p> <p>What Is Brownian Motion? Properties of Matter Chemistry FuseSchool - YouTube</p> |
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| | <p><u>Particle model</u></p> <ul style="list-style-type: none">• The differences in arrangements in motion and in closeness of particles• explaining changes of state, shape, and density, the anomaly of ice-water transition• atoms and molecules as particles <p><u>Energy in matter</u></p> <ul style="list-style-type: none">• changes with temperature in motion and spacing of particles• internal energy stored in materials | <p>Use this learners guid to help understanding of changes of state Changes of state - BBC Bitesize</p> |
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