



BOA Digital

Subject Curriculum Map Science

Year Group

7

Term	Autumn 1 (6 weeks)	Autumn 2 (7 weeks)	Spring 1 (7 weeks)	Spring 2 (5 weeks)	Summer 1 (6 weeks)	Summer 2 (7 weeks)
Topic	Welcome to BOA HSW 1	Matter 1 Organisms 1	Movement Matter 2	World at Risk	Organisms 2	HSW 2
Big Question	How do we construct a scientifically valid investigation?	How do the particles in solids, liquids and gases behave and interact? How do cells group to form an organism?	What effect can forces have on an object's motion? How can we develop our ideas of what particles are?	In what ways are we affecting the earth and how can this be reduced?	How does our body get the resources it needs to function?	How do we carry out, present and write up an investigation?
Content	<ul style="list-style-type: none"> Evaluate risks pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience make predictions using scientific knowledge and understanding select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate 	<p>Matter 1</p> <ul style="list-style-type: none"> the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure changes of state in terms of the particle model. the concept of a pure substance mixtures, including dissolving diffusion in terms of the particle model simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography the identification of pure substances. <p>Organisms 1</p> <ul style="list-style-type: none"> using a light microscope the functions of the cell wall, cell 	<p>Movement</p> <ul style="list-style-type: none"> forces as pushes or pulls, arising from the interaction between two objects using force arrows in diagrams adding forces in one dimension moment as the turning effect of a force Using simple machines to give bigger force stretching and squashing measurements of stretch or compression (Hooke's Law) work done and energy changes on deformation non-contact forces opposing forces and equilibrium atmospheric pressure, pressure in liquids floating and sinking speed = distance ÷ time distance-time 	<ul style="list-style-type: none"> the structure of the Earth the rock cycle and the formation of igneous, sedimentary and metamorphic rocks gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only) our Sun as a star, other stars in our galaxy, other galaxies the seasons and the Earth's tilt, day length at different times of year, in different hemispheres the light year as a unit of astronomical distance. 	<ul style="list-style-type: none"> content of a healthy human diet and why each is needed calculation s of energy requirements consequences of imbalances in the diet the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food bacteria in the human digestive system the structure and functions of the gas exchange system in humans the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases the impact of exercise, asthma and smoking on the human gas 	<ul style="list-style-type: none"> use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements present observations and data using appropriate methods, including tables and graphs interpret observations and data, including identifying patterns and using observations, measurements and

		<p>membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts</p> <ul style="list-style-type: none"> • Comparing plant and animal cells • diffusion in the movement of materials in and between cells • structural adaptations of some unicellular organisms • the hierarchical organisation of multicellular organisms • the structure and functions of the human skeleton • biomechanics – the interaction between skeleton and muscles 	<p>graphs Matter 2</p> <ul style="list-style-type: none"> • a simple (Dalton) atomic model • differences between atoms, elements and compounds • chemical symbols and formulae for elements and compounds • conservation of mass • changes of state and chemical reactions. • physical and chemical properties of different elements the principles underpinning the Mendeleev Periodic Table • the Periodic Table: periods and groups; metals and non-metals • how patterns in reactions can be predicted with reference to the Periodic Table • the properties of metals and non-metals 		<p>exchange system.</p>	<p>data to draw conclusions</p> <ul style="list-style-type: none"> •
<p>Digital skills</p>	<p>Communication and ways of using technology to show data</p> <p>Technology and how this has supported science and developments (through seeing this at the think tank)</p> <p>Filming/use of media to present scientific findings</p> <p>Accessibility of information online – how</p>	<p>Digital security needed in labs to protect certain chemical compounds</p> <p>Digital health and use of scans and hospital equipment to identify bone, tissue etc.</p> <p>Microscopes and use of imaging software</p> <p>Creating 3D and 2D representations of organisms and cells</p>	<p>Digital simulation of forces and using technology to measure forces and the impact</p> <p>Recording information – periodic table and accessing information on use and characteristics</p> <p>Patterns and codes in digital programs (DNA and link to Binary Code in Autumn 2 of Maths curriculum)</p>	<p>Retrieving information – research on the environmental impact of humans and our behaviour</p> <p>Environmental/Historical implications – considering how technology has changed and the impact it's had on science, medicine and how technology has developed this</p> <p>Exploring the universe and digital technology use here</p>	<p>Media and technology used to promote 'healthy' living and understanding the information communicated</p> <p>Scientific and health use of technology to measure the impact of habits on health</p> <p>Smart watch/tracking devices to consider physical activity and impact</p> <p>Citizenship – monitoring</p>	<p>Interaction and collaboration through technology</p> <p>Use of technology to carry out experiment and record and analyse data collected</p> <p>Collecting research to compare with own investigation</p> <p>Publishing data and research and ethical</p>

	valid/reliable are experiments and data published				health through use of booking appointments	guidelines scientists must consider
Cross-curriculum themes & Birmingham theme	Commonwealth Games Themes (and Visit to Think Tank)	Harry Potter	Culture and Museums (Museum trip)	Architecture in Birmingham and beyond (HS2?)	Industry in Birmingham (Cadbury World)	Birmingham Canal network
How will the subject use this in the content and skills?	Project on what they have learnt – constructing hypotheses and describing scientific discoveries – research into this Planning investigation and presenting findings Ethics in science and digitally	Potions and compounds – considering the elements and experiments with different solutions and categorisation Plant and animal cells – thinking about this in the wizarding world with fictional animals and what they are made up of	Discovery of elements, historical discovery such as Newton's law and gravity etc. Museums and how they capture these milestones in history for science Where can we see the science in everything around us?	HS2 project – using Spring 1 work on forces and movement (speed/time) to apply these skills in context of transport Considering Birmingham and the location and the key features (above sea level/rocks/landscape etc) Properties needed in building and materials in the local architecture	Nutrition (link to Cadburys) and looking at healthy diets Medicine and its development over time Health and how health conditions have changed over time (day in the life of industrial workers back when Bournville was established – link to history?)	Investigation into the environment and conditions of Birmingham canal (or students drive their own project/investigation) How would they collect data and represent this to support their hypothesis
Assessment	Autumn 1 – no formal assessment Autumn 2 – low stakes end of topic and termly assessment		Spring 1 – low stakes end of topic	Spring 2 – low stakes end of topic Spring End of Term Test	Summer 1 – low stakes end of topic	Summer 2 – low stakes end of topic Spring End of Term Test