



SCIENCE Y7 CURRICULUM AND ASSESSMENT MILESTONES DOCUMENT

YEAR 7 CURRICULUM MILESTONES: SCIENCE

Engaging in Science	Students will be introduced to health and safety in science which will help prepare them to safely carry out practical's in KS3. Students will learn about lab safety, how to use a Bunsen burner and how to use scientific equipment. These skills will be applied in topic 1 when they engage in practical's related to particle models.
Topic 1: Particle model	<p>Students will develop their observational skills in a series of experiments to explore the three states of matter. This builds upon the foundations they formed in Year 4 and 5 as they explored water and the effects of heat on it.</p> <p>Students will learn about the particulate nature of matter and the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including pressure and how changes of state happen using the particle model.</p>
Topic 2: Cells	Students will build on the concepts introduced in KS1 and KS2 and begin to develop the ideas that cells are the fundamental unit of life. Students will investigate living things using scientific equipment such as microscopes and explore cell structures independently. These structures are expanded on, and their functions explored in more detail. This will then lead into discussions on the hierarchical organisation of multicellular organisms from cells to tissues, to organs, to organ systems to the entire organism, building on the concrete concepts encountered in primary school.
Topic 3: What do forces do?	Students will learn about forces being a push or pull, arising from the interaction between 2 objects. Students will then explore using examples what balanced and unbalanced forces are in physics. Students will take part in a practical based on measuring the size and distance of forces using an object e.g. the egg drop challenge.
Topic 4: Structure and history of the atom	<p>Students will learn about the atom, its structure and sub-atomic particles. Students will apply their understanding of the structure of an atom to explain the development of the atom.</p> <p>Students will explore and learn how different scientists were involved in contributing to the existence of the atom and how the modern-day atomic structure was discovered.</p>
Topic 5: Organ systems	Students will learn about the structure and functions of different human organ systems and the role they play in helping to keep us alive. Students will apply their understanding to various examples of organs and will be able to explain which organ system each organ in the human body belongs too.
Topic 6: Our solar system	Students will explore what the universe is made up of, learn about the planets in our solar system and use this understanding to explain the concept of day and night. They will also spend some time consolidating their learning ready for their upcoming summative assessment before the Christmas break.
Topic 7: Elements, compounds and mixtures	Students will build on prior knowledge on the particle model from topic 1 to explain how elements, compounds and mixtures are different and use this to explain pure substances and solutions.
Topic 8: Pandemic STEM project	This topic gives students the opportunity to go beyond the national curriculum and engage in working scientifically skills surrounding the pandemic. Students will complete a STEM project based on infectious diseases and carry out a practical on the use of aseptic techniques.

Topic 9: States of matter	Students will develop their observational skills in a series of experiments to explore how changes of state occur. It also builds on topic 1 based on the particle model. Students are then introduced to changes of states, physical and chemical states. This leads students to then explore the elements and meet the Periodic table for the first time.
Topic 10: The periodic table	Students will revisit prior knowledge from topic 9 to explore how substances can be classified and the difference between metals and non-metals. Students will gain more confidence in being able to independently use the periodic table, look for specific elements and identify the different groups in the periodic table.
Topic11: Photosynthesis	Students build on the concepts introduced in KS1 and KS2. They will explore in more detail the interactions of living things in different ecosystems. Students will engage in practical related to testing a leaf for the presence of starch. They will unpick this practical knowledge to explain why plants need starch, where it comes from and introduce the idea of photosynthesis. This will also involve a STEM based school trip which some students will have the opportunity to go on which will help develop a passion and love for learning science.
Science STEM week	Students are given an opportunity to go above and beyond the national curriculum and engage in working scientifically to formulate a hypothesis, plan an investigation, carry out the investigation and analyse and conclude their findings by producing a presentation based on topics specific to year 7. This will also involve a STEM based school trip which some students will have the opportunity to go on. The purpose of this is to help students develop a passion and love for learning science, hoping they would want to discover a STEM based career upon leaving school.
Topic12: Energy	Students will unpick the observations they made in Years 1-6. They explore why things happen through a series of experiments building on their knowledge from Year 4 and 5. In addition they deepen their scientific vocabulary and apply it to new situations.
Topic13: Conservation of mass	Students will use their understanding from the chemistry topics studied till date in Year 7 to build on their understanding of chemical formula, what is conservation of mass and how to balance equations which will stretch and challenge all students. They will complete a practical which will develop their working scientifically skills to explain what happened to the mass to explore the concept of conservation of mass.
Topic14: Light and sound	Students will explore what is a wave and look at examples of waves in everyday use. They will explore the concept of reflection and refraction by engaging in practical work using ray boxes and drawing ray diagrams. They will also produce a scientific report to expand their working scientifically skills.
Topic 15: Forensic science	This topic gives students an opportunity to go beyond the national curriculum and explore the use of filtration, chromatography and chemical analysis to help solve a crime in the science department. They will use their results from this practical to present their data to an audience.
Topic 16: Electricity	Students first meet electricity as a subject in primary school where they start to construct simple circuit diagrams. We will build upon this understanding by revisiting circuit symbols and circuit diagrams. Students will explore how to make a complete circuit by engaging in practical work and use circuit equipment to explain what can cause a circuit to become incomplete.
Topic 17: Health	Students go above and beyond the national curriculum and explore about the use of medicinal and other types of drugs and what impact this has on the human body. Students also look at the impact smoking has on our health, unhealthy diet and obesity. This is a vital topic as it educates students on what makes us unhealthy and how making positive lifestyle choices impacts our health. Students use everyday examples and specific situations through modelling and case studies to learn about unhealthy and healthy lifestyle choices.

YEAR 7 ASSESSMENT MILESTONES: SCIENCE

<p>Engaging in Science</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p> <p>At the end of this topic students will complete a science baseline assessment (second week of the term) which will help provide us with a starting point on students' knowledge of science from primary school. This will be used to adapt the curriculum so that gaps in understanding can be covered to bridge the gap in education between primary and secondary science.</p>
<p>Topic 1: Particle model</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>
<p>Topic 2: Cells</p>	<p>Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topic 1 and 2.</p>
<p>Topic 3: What do forces do?</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>
<p>Topic 4: Structure and history of the atom</p>	<p>Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 3 and 4.</p>
<p>Topic 5: Organ systems</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>
<p>Topic 6: Our solar system</p>	<p>Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 5 and 6.</p>
<p>Topic 7: Elements, compounds and mixtures</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>
<p>Topic 8: Pandemic STEM project</p>	<p>Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 7 and 8.</p>
<p>Topic 9: States of matter</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>
<p>Topic 10: The periodic table</p>	<p>Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 9 and 10.</p>
<p>Topic11: Photosynthesis</p>	<p>Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.</p>

Topic12: Energy	Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 11 and 12.
Topic13: Conservation of mass	Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.
Topic14: Light and sound	Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 13 and 14.
Topic 15: Forensic science	Students to complete in class formative assessment which assesses learning in the lesson using extensive TLAC techniques. Students also complete knowledge recall starter questions which acts as formative assessment to check for gaps in understanding from the previous lesson.
Topic 16: Electricity	Students to complete an end of term summative assessment which is made up of 3 sections including knowledge recall from last year and assessing students understanding of topics 15 and 16.
Topic 17: Health	Students complete formative assessment to check understanding of this topic. Some time is allocated for consolidation week to help students prepare for their upcoming end of year assessment based on topics studied throughout this academic year.