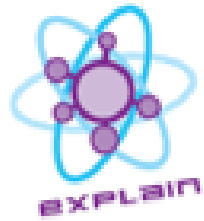
Science

Essential Characteristics of Scientists

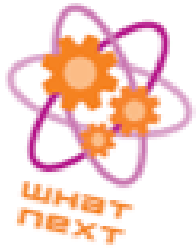
- The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.

- Confidence and competence in the full range of practical skills, initiative in, for example, planning and carrying out scientific investigations.



- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.

- High levels of originality, imagination or innovation in the application of skills.



- The ability to undertake practical work in a variety of contexts, including fieldwork.

- A passion for science and its application in past, present and future technologies.

Science Coverage Y1 & 2

Working Scientifically

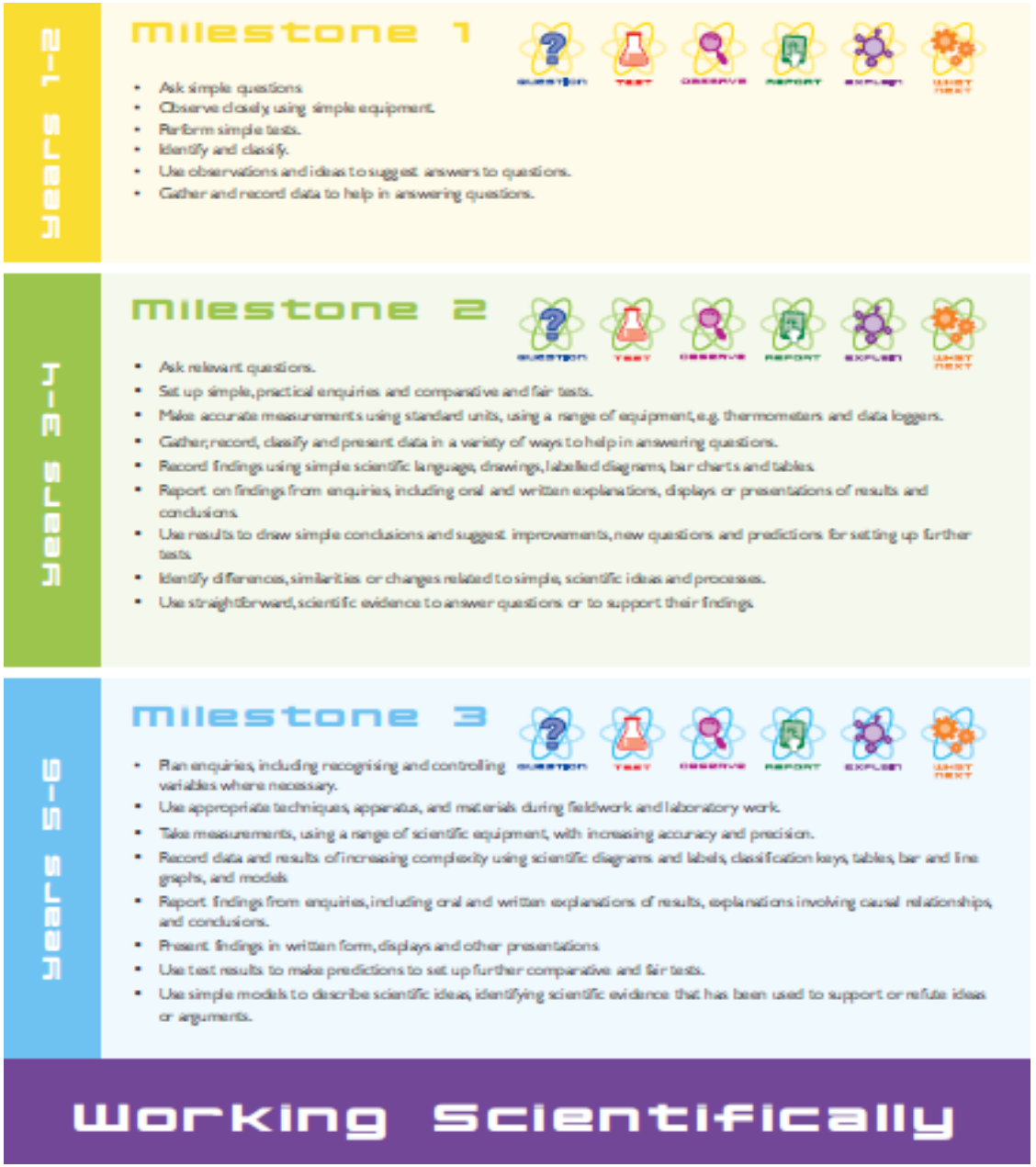
This is the first 'Key Threshold Concept' within which pupils will develop The Essential Characteristics outlined above.

In this document the 'Key Threshold Concepts' are in red font.

The Essential Characteristics above are broken down into a progression of descriptors at three 'Milestones' (the end of Year 2, Year 4 and Yr 6).

For The Working Scientifically Key Threshold Concept, the Milestone Descriptors are developed alongside the coverage identified below for the remaining 10 Key Threshold Concepts. These are the skills that are the key to scientific thinking and opportunities to develop them should be considered in all science planning.

Teachers should follow the progression of teaching 'Working Scientifically' scientific skills that is outlined in THE ESSENTIALS CURRICULUM (see poster), recording which skills have been planned into which topics by using the Science Unit Assessment Grid template. The expectation is that each of the scientific skills for the age appropriate milestone will have been covered in depth at least once in every scientific topic listed below.



‘Key Threshold Concepts’ in red font	CYCLE A			CYCLE B			CYCLE C		
Milestone Descriptors in black font	AUT 19	SPR 20	SUM 20	AUT 20	SPR 21	SUM 21	AUT 21	SPR 22	SUM 22
Investigate Living Things									
Sc2/2.1a explore and compare the differences between things that are living, dead, and things that have never been alive			✓					✓	
Sc2/2.1b identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other			✓		✓			✓	
Sc2/2.1c identify and name a variety of plants and animals in their habitats, including microhabitats			✓		✓			✓	
Sc2/2.1d describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.			✓		✓			✓	
Understand movement, forces and magnets • Notice and describe how things move, using simple comparisons such as faster and slower. • Compare how different things move.						✓			
Understand light and seeing • Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.	✓			✓					✓
Investigate sound and hearing • Observe and name a variety of sources of sound, noticing that we hear with our ears.			✓						
Understand electrical circuits • Identify common appliances that run on electricity. • Construct a simple series electrical circuit.						✓			

'Key Threshold Concepts' in red font	**CYCLE A**			**CYCLE B**			**CYCLE C**		
Milestone Descriptors in black font	**AUT 19**	**SPR 20**	**SUM 20**	**AUT 20**	**SPR 21**	**SUM 21**	**AUT 21**	**SPR 22**	**SUM 22**
Understand Plants									
Sc2/2.2a observe and describe how seeds and bulbs grow into mature plants			✓						✓
Sc2/2.2b find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.			✓						✓
Understand animals and humans									
Sc1/2.2a identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals		✓			✓			✓	
Sc1/2.2b identify and name a variety of common animals that are carnivores, herbivores and omnivores		✓			✓			✓	
Sc1/2.2c describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)		✓			✓			✓	
Sc1/2.2d identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	✓			✓			✓		
Sc2/2.3a notice that animals, including humans, have offspring which grow into adults		✓			✓			✓	
Sc2/2.3b find out about and describe the basic needs of animals, including humans, for survival (water, food and air)		✓			✓			✓	

Sc2/2.3c describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		✓						✓	
Understand evolution and inheritance Identify how humans resemble their parents in many features.	✓						✓		
Investigate Materials									
Sc1/3.1a distinguish between an object and the material from which it is made	✓			✓			✓		
Sc1/3.1b identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	✓			✓			✓		
Sc1/3.1c describe the simple physical properties of a variety of everyday materials	✓			✓			✓		
Sc1/3.1d compare and group together a variety of everyday materials on the basis of their simple physical properties	✓			✓			✓		
Sc2/3.1a identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses	✓			✓			✓		
Sc2/3.1b compare how things move on different surfaces.						✓			
Sc2/3.1c find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	✓			✓			✓		

Understand the Earth's movement in space									
Sc1/4.1a observe changes across the 4 seasons	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sc1/4.1b observe and describe weather associated with the seasons and how day length varies.	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Observe the apparent movement of the Sun during the day.			✓			✓			✓