Lake Haven - Our World: Science Curriculum
A special place to learn

Intent

At Lake Haven, we understand that having a secure knowledge of science empowers our children to confidently explore, discover and reason about their surroundings; and to develop a deeper understanding of the world they live in. As part of Understanding the World, our Natural World Curriculum seeks to instil a genuine curiosity about the world – encouraging our children to keep asking "Why… ?" and giving them the knowledge, skills and confidence to find answers to their questions and to gather evidence for their ideas.

We want our children to become lifelong learners, and to have no limits to their ambitions and aspirations. We want them to feel empowered by their knowledge, and to grow up believing that they can be astronauts, vets, engineers and research scientists, etc.

Our key aims are to:

- Inspire an deep interest and curiosity about the world and its phenomena, which continuously drives our children to want to find out and understand more
- Encourage respect for all living things and instil a sense of responsibility in our children as custodians of our fragile planet and its finite resources
- Promote the role that science plays in all aspects of our lives, and the wide range of future learning and career opportunities it presents
- Provide exciting, practical hands-on experiences that encourage questioning and discussion, and make learning more meaningful and memorable
- Engineer opportunities and present evidence that challenges our children's preconceived ideas about the world – stimulating a sense of wonder and excitement, and a thirst for knowledge
- Develop a range of scientific enquiry skills and abilities - particularly those related to carrying out investigations, gathering and interpreting data, forming conclusions, and identifying evidence to support or refute scientific ideas
- Develop the ability to communicate scientific knowledge and understanding clearly in a variety of ways, using appropriate terminology and scientific vocabulary

Implementation

At Lake Haven we have chosen the White Rose Education Science scheme of work for the Primary curriculum which is carefully sequenced and interconnected; and which enables our children to develop their scientific knowledge and understanding as they move through our school. We will organise our Science Curriculum over a two year cycle, with topics of study being reviewed collaboratively by our teaching team at the end of each cycle.

As with all areas of our curriculum, it is important to remember that all of our children have significant gaps in their learning due to the experiences that have brought them to Lake Haven – indeed, all of our children have not been able to access the

full curriculum for at least a year before joining us. As explained in our Curriculum Policy, this means that many of our children are working at a level below their chronological age whilst we support them to re-engage with education and enjoy high levels of interest and success, which help them to rebuild their self-esteem and start to value their own social and academic achievements.

In our lower key stage two programme of study our children learn about human body parts (including Plants, Skeletons, Rocks and Fossils) as well as sorting, comparing and classifying creatures from across the animal kingdom. They investigate the structure and function of flowering plants; and go on to explore the interdependence of living things in various habitats, and how these relationships are reflected in food chains. The children learn to identify and name a range of materials, and carry out simple comparative tests to explore a range of basic properties. Throughout all of the topics studied, our children are encouraged to work scientifically – questioning, observing, gathering and recording evidence and starting to identify patterns and form conclusions.

In upper Key Stage Two our children begin to look more deeply at the units studied so far. They find out about Life Cycles and the circulatory system in humans, and investigate how plants reproduce and how they transport water and nutrients. Topics such as Space, Light and shadows provide lots of scope for practical investigations – building on prior learning and experiences to form predictions and carry out comparative tests. The children are also supported to start using different types of scientific enquiry to answer questions (including fair testing) and to make systematic observation and measurements to identify similarities, differences and changes.The children also discover how light and sound travel, and develop a range of new skills for separating mixtures and solutions when exploring reversible and irreversible changes.

Key Stage Three builds securely on the previous stages and enables our children to deepen their knowledge and understanding, and further develop their skills of inquiry and working scientifically. They explore more abstract concepts, such as friction, air and water resistance, and changes of state. In order for children to know more and remember more, prior learning is always considered; and opportunities for the revision of facts and scientific understanding are built into all lessons. Through revisiting and consolidating skills and understanding, our approach helps children build on existing

knowledge whilst introducing new skills and challenges; and the revision and introduction of key vocabulary is built into each lesson. Moving into KS3, we use the Beyond Science Scheme of work and also the AQA Science Curriculum Scheme of work for the Entry Level Certifiate to enable us coverage of all units to ensure we are working towards GCSE Science if the children are able. Due to the structures and content of lessons for the KS3 curriculum, where needed, will have a specialised science tutor deliver this learning to ensure the knowledge is secure should the children wish to study Science at a GCSE level and beyond.

In addition to lessons in class, our children benefit from our unique setting which enables them to get a wealth of first-hand experience of animal and plant life and seasonal changes. They also participate in National Science Week and a range of other enrichment opportunities.

Impact

Through this approach, quality first teaching and our adaptive methods, we will see the impact of this subject in different ways.

Our children will be engaged in lessons about the natural world and will want to find out more. They will be able to talk about and demonstrate the knowledge, skills and vocabulary that they have acquired; and will show increasing levels of enquiry, flexibility, independence and precision when working scientifically.

Evidence collected will show that a range of topics are being covered, and that our carefully sequenced and inter-connected approach to learning is enabling our children to develop a solid base of scientific knowledge and skills to help them explore and understand the world.

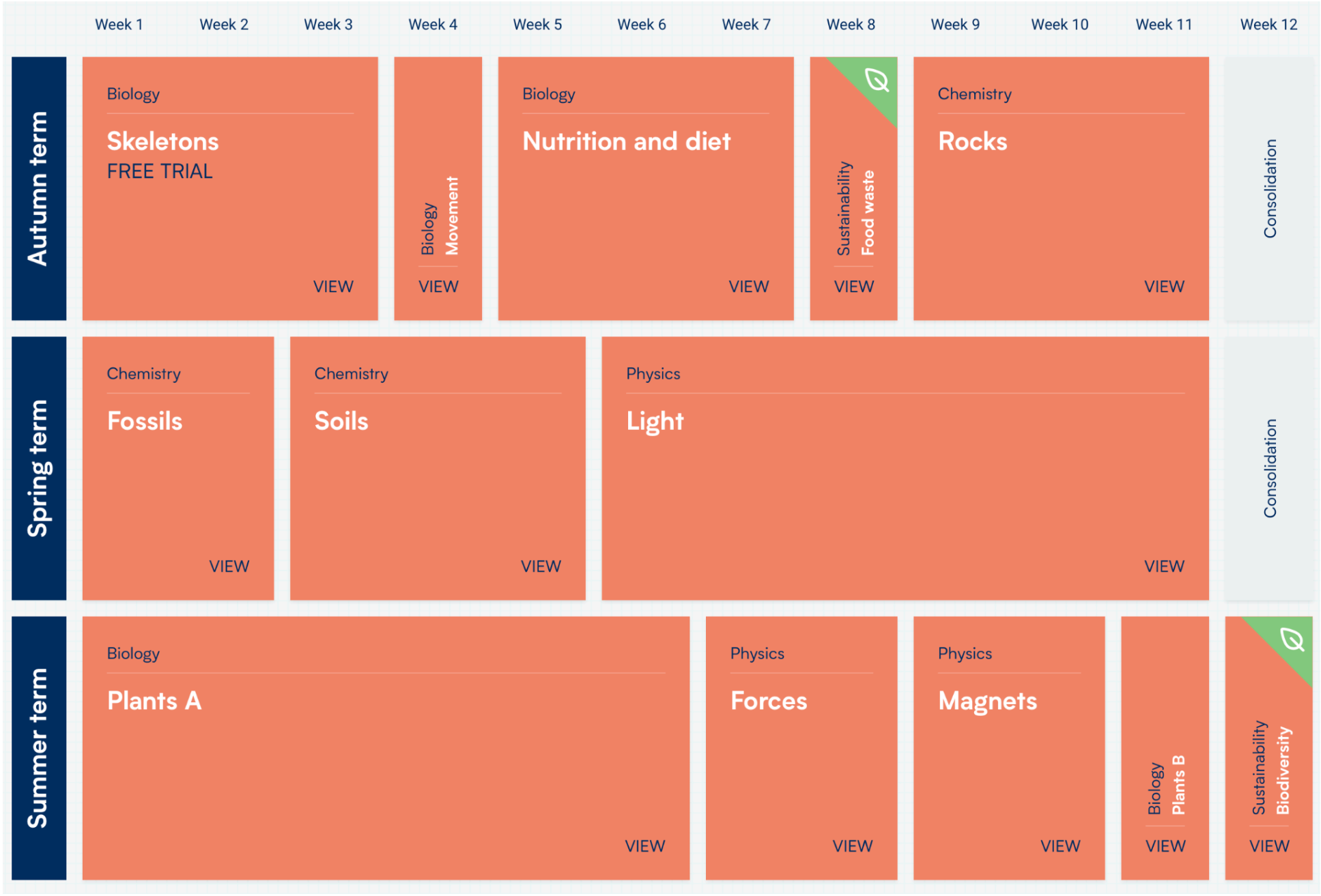
Ultimately, our children will be empowered by their growing knowledge to explore and discuss the world; and will appreciate

how they can have a positive impact upon it. Lake Haven School will be limited to the amount of GCSEs on offer. However, we would provide the opportunity for our students to study and access the GCSE Science curriculum and gain a qualification whether this starts at the Entry Level Certificate and builds up to the full qualification.

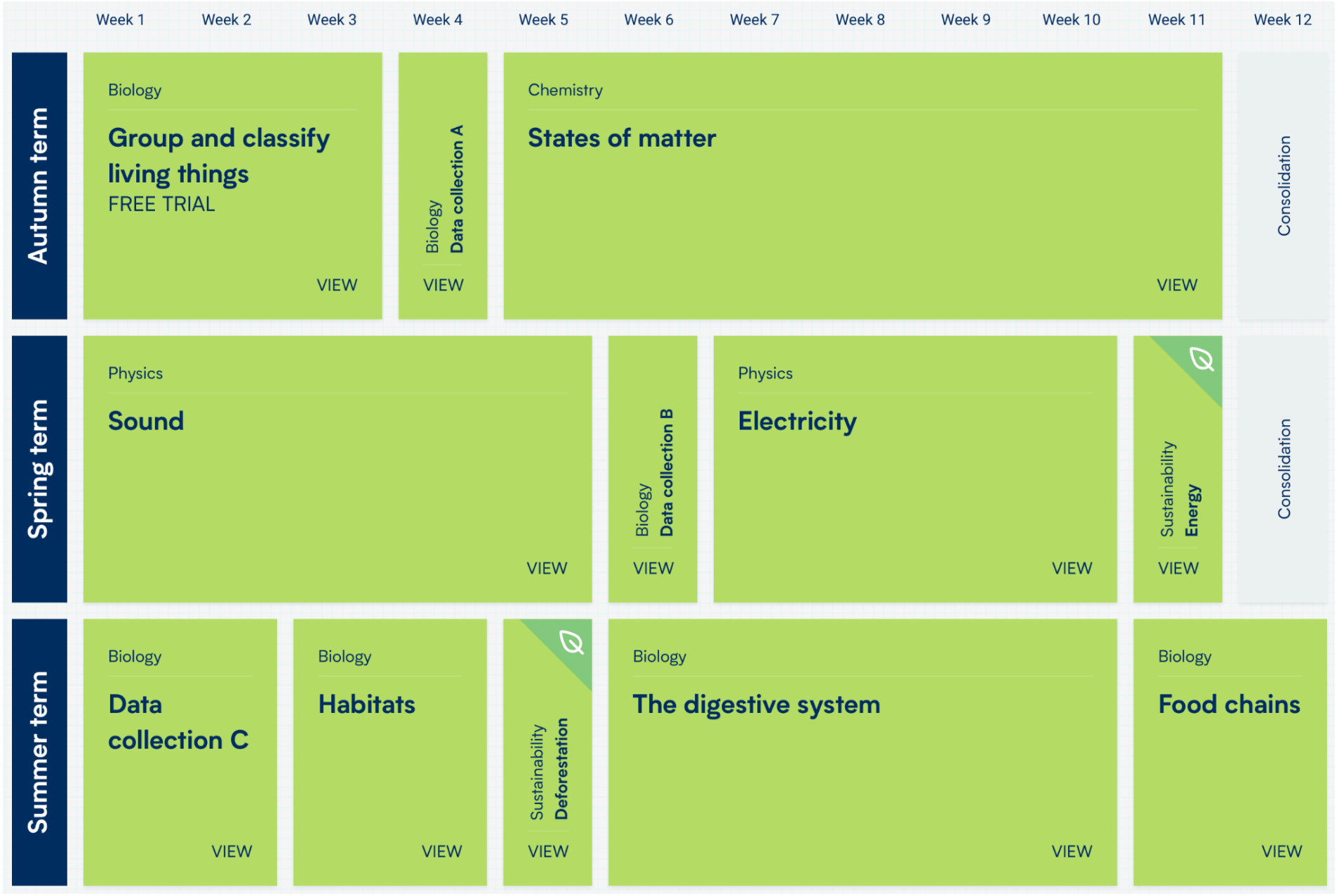
Cultural Capital

To ensure that all of our learners get an equal opportunity as their Neuro Typical mainstream counterparts, we will ensure that we enhance our learning with visits, visitors and as much hands-on experience as our learning and environment allows. We will utilise our outside space with the farm, forest, lakes and allotments to allow our learning to be as real as we possibly can. Within Science, this can help us understand our world, with pollution and looking after our planet - being sustainable, reproduction of the animals, growing of plants, life cycles, understanding our bodies and habitats of different animals. Due to the neurodivergent learners within our school, we need to make the science as explicit and as exciting as we possibly can. By providing as much opportunity to our children we will hopefully spark curious and inquisitive minds that they will seek answers to questions that our learning may develop.

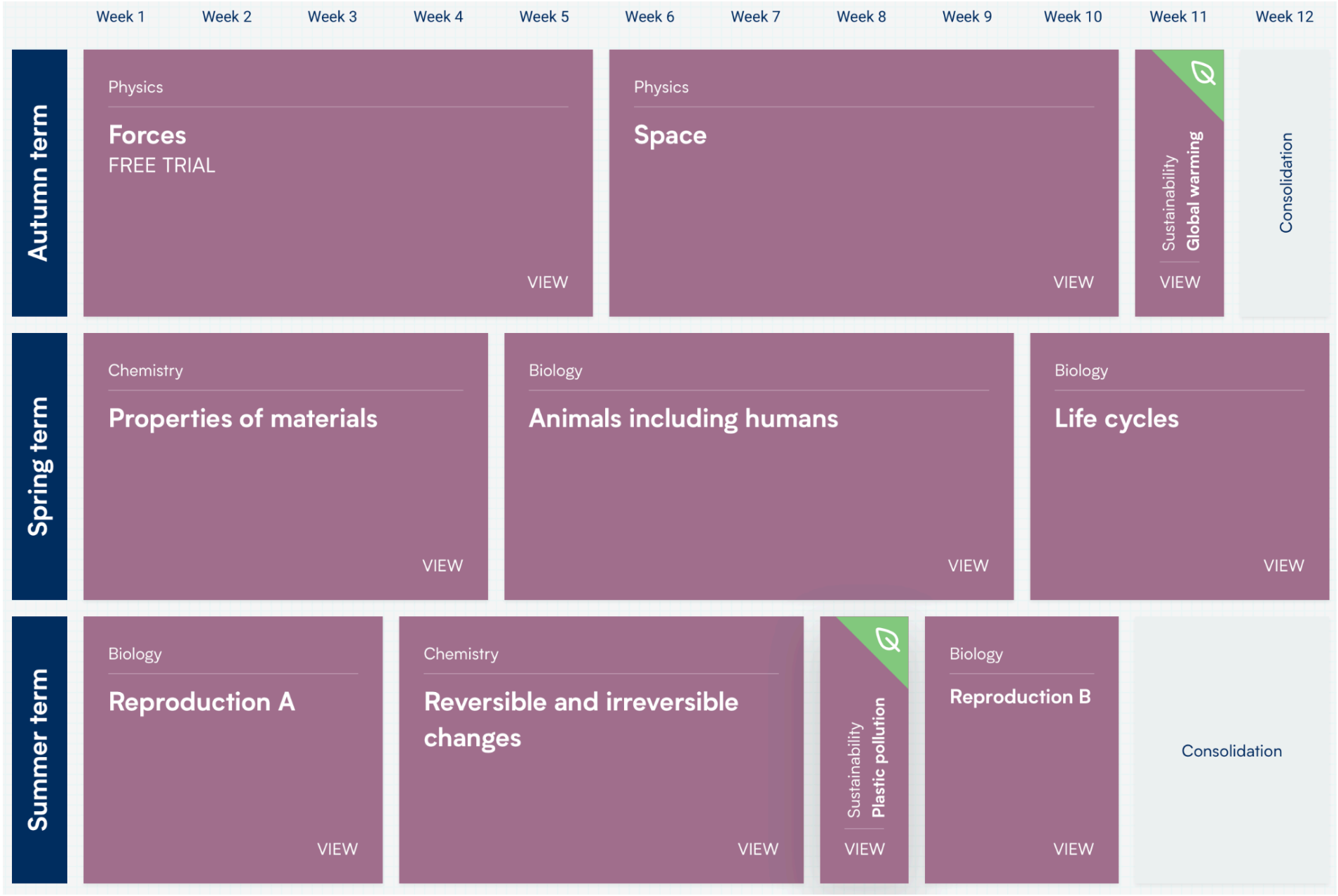
LKS2 Year A


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn term
Biology
Skeletons
FREE TRIAL
VIEW
Biology
Movement
VIEW
Biology
Nutrition and diet
VIEW
Sustainability
Food waste
VIEW
Chemistry
Rocks
VIEW
Consolidation
Spring term
Chemistry
Fossils
VIEW
Chemistry
Soils
VIEW
Physics
Light
VIEW
Consolidation
Summer term
Biology
Plants A
VIEW
Physics
Forces
VIEW
Physics
Magnets
VIEW
Biology
Plants B
VIEW
Sustainability
Biodiversity
VIEW

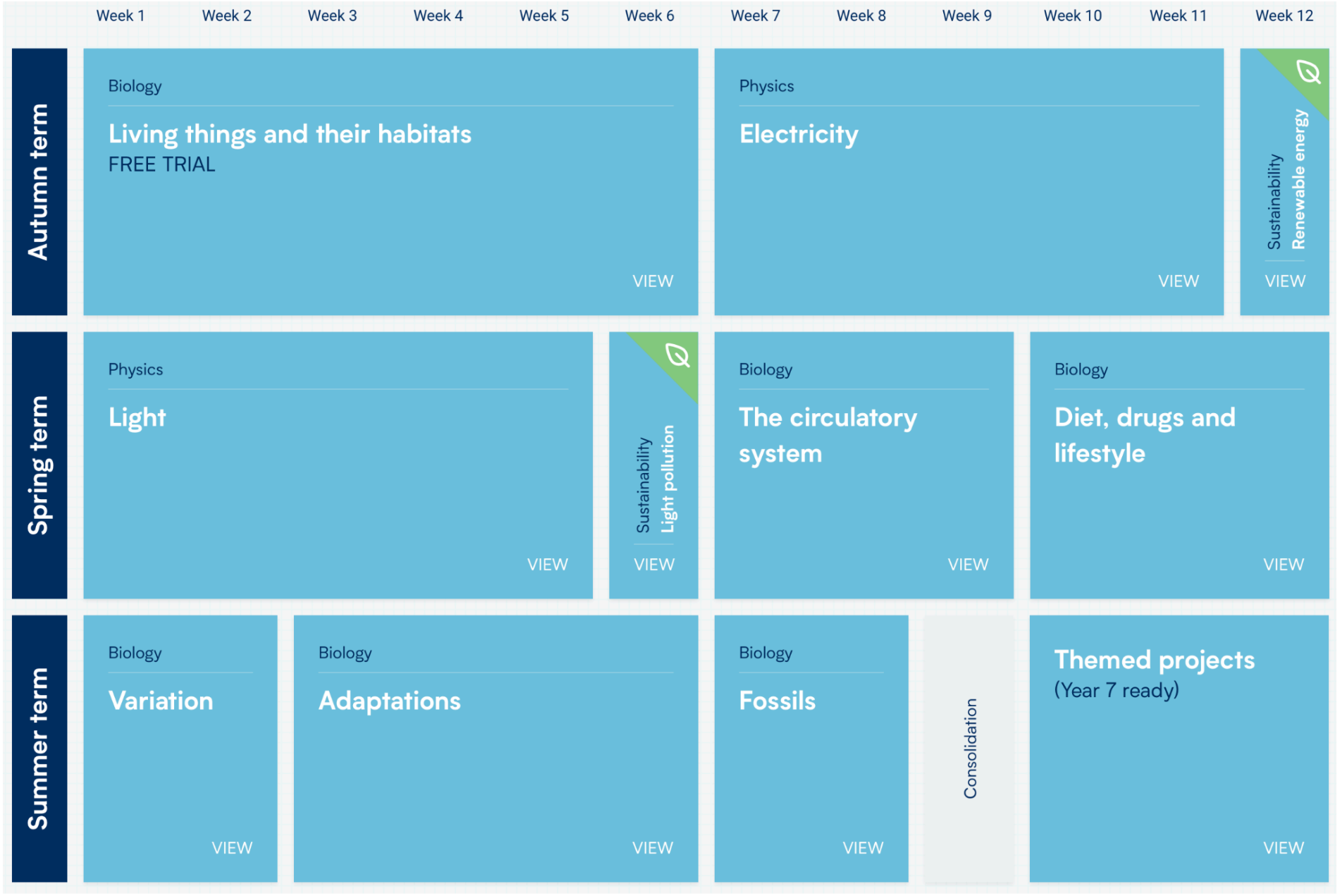
LKS2 Year B


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn term
Biology
Group and classify living things
FREE TRIAL
VIEW
Biology
Data collection A
VIEW
Chemistry
States of matter
VIEW
Consolidation
Spring term
Physics
Sound
VIEW
Biology
Data collection B
VIEW
Physics
Electricity
VIEW
Sustainability
Energy
VIEW
Consolidation
Summer term
Biology
Data collection C
VIEW
Biology
Habitats
VIEW
Sustainability
Deforestation
VIEW
Biology
The digestive system
VIEW
Biology
Food chains
VIEW

UKS2 Year A


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn term
Physics
Forces
FREE TRIAL
VIEW
Physics
Space
VIEW
Sustainability
Global warming
VIEW
Consolidation
Spring term
Chemistry
Properties of materials
VIEW
Biology
Animals including humans
VIEW
Biology
Life cycles
VIEW
Summer term
Biology
Reproduction A
VIEW
Chemistry
Reversible and irreversible changes
VIEW
Sustainability
Plastic pollution
VIEW
Biology
Reproduction B
VIEW
Consolidation

UKS2 Year B


Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Autumn term
Biology
Living things and their habitats
FREE TRIAL
VIEW
Physics
Electricity
VIEW
Sustainability
Renewable energy
VIEW
Spring term
Physics
Light
VIEW
Sustainability
Light pollution
VIEW
Biology
The circulatory system
VIEW
Biology
Diet, drugs and lifestyle
VIEW
Summer term
Biology
Variation
VIEW
Biology
Adaptations
VIEW
Biology
Fossils
VIEW
Consolidation
Themed projects
(Year 7 ready)
VIEW

KS3

KS3 Science **Curriculum Overview**

This is a suggested breakdown of the topics required for key stage three science, taught over three years.

	Year 7	Year 8	Year 9
Biology Topics	Cells and Organisation	Health and the Human Body	Inheritance and Evolution
	Reproduction	Photosynthesis and Respiration	Ecosystems and Interdependence
Chemistry Topics	States of Matter and Separating Mixtures	Chemical Reactions	Acids and Alkalis
	Atoms and the Periodic Table	Earth and Atmosphere	Materials and Recycling
Physics Topics	Energy Changes and Transfers	Electricity and Magnetism	Motion and Pressure
	Forces	Space	Waves

Working Scientifically

These skills should be embedded throughout the programme of study across all three disciplines.

Scientific Attitudes	Experimental Skills and Investigation	Analysis and Evaluation	Measurement

NB: The bespoke nature of our setting means that, in addition to the topics outlined above, our children are also engaged in lots more learning about plants, animals and the environment as part of their daily farm activities and weekly Outdoor School sessions. Our children also benefit from participating in National Science Week and other science enrichment opportunities throughout the year.

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