



BLACKMINSTER MIDDLE SCHOOL

Community – Aspiration – Respect – Excellence

Long-term Overview for Computing

If you miss a lesson, please access Oak National Academy to help you complete lessons in this subject.

Lessons have been designed to ensure you are secure in the foundations of Computing.

Key Substantive Knowledge: What will students learn?

	Unit 1	Unit 2	Unit 3	Unit 4
Year 6 Computing	<u>Communication and the internet</u> In this unit pupils explore how data is transferred over the internet. They will examine addressing and the makeup and structure of data packets. They will investigate how the internet facilitates online communication and collaboration and how to communicate responsibly on the internet. Communication and the internet KS2 Y6 Computing Lesson Resources Oak National Academy	<u>Web page creation</u> In this unit pupils will discover how to create websites for a chosen purpose. They will identify what makes a good webpage and use this information to design and evaluate their own website. Pupils will consider copyright and fair use of media, the aesthetics of the site, and clear navigation. Web page creation KS2 Y6 Computing Lesson Resources Oak National Academy	<u>Using variables in programming to develop a game</u> This unit explores the concept of variables in programming through the development of games. Pupils will investigate what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. Using variables in programming to develop a game KS2 Y6 Computing Lesson Resources Oak National Academy	<u>Introduction to spreadsheets</u> This unit introduces pupils to how spreadsheets can be used to organise data and create their own data sets. They will discover the importance of formatting data to support calculations, while also examining how formulas can be used to produce calculated data and how graphs can present this data. Introduction to spreadsheets KS2 Y6 Computing Lesson Resources Oak National Academy
Year 7 computing	<u>Clear messaging in digital media</u> In this unit pupils will use a range of skills across several pieces of software. They will work between applications to create a poster and slides on a given theme. The unit is designed so that pupils can apply skills that they may have previously learnt as well as those learnt in the unit. Clear messaging in digital media KS3 Y7 Computing Lesson Resources Oak National Academy	<u>Computer networks and data transmission</u> In this unit pupils will explore the impact networks have on our daily lives. They will define what a network is and explore the benefits of networking, before covering how data is transmitted across networks using protocols. They will investigate different types of network and hardware required. Computer networks and data transmission KS3 Y7 Computing Lesson Resources Oak National Academy	<u>Using media to gain support for a cause</u> During this unit, pupils develop their understanding of information technology and digital literacy skills. They will use the skills learnt across the unit to create a blog post about a real-world cause that they would like to gain support for. Using media to gain support for a cause KS3 Y7 Computing Lesson Resources Oak National Academy	<u>Using fundamental programming constructs in a block-based language</u> In this unit pupils will build their confidence and knowledge of the key programming constructs (sequence, iteration, selection and variables). Learners will use Scratch to explore the key programming constructs firstly through editing pre-existing code and then by developing their own programs. Using fundamental programming constructs in a block-based language KS3 Y7 Computing Lesson Resources Oak National Academy
Year 8 computing	<u>Developing vector graphics</u> In this unit pupils will design graphics using vector graphic editing software. They will apply their skills by creating an illustration, a logo, and icons. Pupils will recognise that objects can be grouped and combined to create new elements and that vector drawings are made up of paths.	<u>Computer systems and data science</u> In this unit pupils will explore the layers of computer systems from programs to the physical components that store and execute these programs. They will discover the fundamental binary building blocks that make up computer systems and how systems are evolving for developments such as AI.	<u>Developing for the Web</u> In this unit, pupils will explore the technologies that make up the internet and WWW. Starting with an exploration of the building blocks of the WWW, HTML, and CSS. They will construct a fully functioning website and discover how websites are catalogued for effective retrieval by search engines.	<u>Data representation: text and numbers</u> In this unit pupils will be introduced to binary digits and how they can be used to represent text and numbers. Pupils will perform conversions between binary and decimal numbers and how binary can be used to represent characters. They will explore how cryptography can be used to protect data.

	Developing vector graphics KS3 Y8 Computing Lesson Resources Oak National Academy	Computer systems and data science KS3 Y8 Computing Lesson Resources Oak National Academy	Developing for the Web KS3 Y8 Computing Lesson Resources Oak National Academy	Data representation: text and numbers KS3 Y8 Computing Lesson Resources Oak National Academy
National Curriculum	This curriculum enables pupils to become confident and efficient users of technology. The curriculum establishes the important knowledge in computing to provide a foundation for the technical nature of the subject. We aim for pupils to understand how the technology they use every day has an impact on the world around them, giving pupils the knowledge to express themselves and develop their ideas in real-world contexts. A careful and purposeful sequencing of our curriculum content underpins the design of our curriculum, ensuring that pupils are able to build on and make links with existing knowledge. The computing curriculum follows a spiral model where knowledge is revisited and expanded upon regularly. This approach ensures that as their technical understanding of computing develops, pupils can tackle more complex ideas with confidence, drawing upon previous learning. Attention is paid to vertical coherence via threads, which map the developments of concepts over time, for example, the ‘Artificial intelligence’ thread sees the concept of AI first appear in key stage 1 where pupils explore how it is used alongside more traditional forms of processing. Pupils will learn about how to create digital artefacts first-hand and then compare this to computer-generated artefacts. As pupils develop their computing knowledge, they then explore the use of AI from a technical perspective to provide insight into the benefits and limitations of automated generation.			