Andover CE Primary – Computing Progression of ***Knowledge*** and ***Skills***

EYFS Early Learning Goals	**KS1** National Curriculum	**KS2** National Curriculum
	Pupils should be taught to: • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • create and debug simple programs. • use logical reasoning to predict the behaviour of simple programs. • use technology purposefully to create, organise, store, manipulate and retrieve digital content. • recognise common uses of information technology beyond school. • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Pupils should be taught to: • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Online Safety	Describe what personal information is. Understand the importance of asking for help from an adult when on the internet. Identify some ways technology is used at home and in school.	Identify what personal information is. Identify what to do if they see disturbing content online at home or at school. Identify ways to keep themselves safe while using digital technology. Understand that information on the internet can be seen by others. Describe some of the risks that occur on the internet. Show an awareness of how IT is used for communication beyond school.	Explain what personal information is and develop awareness of why it is special and should not be shared. Explain what to do if they have concerns about content or contact online. Keep safe and show respect to others while using digital technology. Identify ways they can use the internet to communicate with family and friends. Show an awareness of how IT is used for a range of purposes beyond school.	Identify who they can trust and share their personal information with online. Use digital technology safely and show respect for others when working online. Identify how to report concerns and inappropriate behaviour in school. Recognise unacceptable behaviour when using digital technology. Decide whether a web page is relevant for a given purpose or question. Explain and understand online protocols, in order to stay safe on the web. Identify cyberbullying and its consequences. Identify the risks on online gaming and know how to protect themselves.	Demonstrate that they can act responsibly when using computers. Identify and explain the differences between acceptable and unacceptable behaviours when using digital technology. Know who to talk to about concerns and inappropriate behaviour at home or in school. Decide whether digital content is relevant for a given purpose or question. Begin to use a range of online communication tools, such as forums, email and polls in order to formulate, develop and exchange ideas. Describe the meaning of copyright and the importance of acknowledging sources.	Demonstrate that they can act responsibly when using the internet. Discuss the consequences of particular behaviours when using digital technology. Know how to report concerns and inappropriate behaviour in a range of contexts. Decide whether digital content is reliable and unbiased. Work collaboratively with peers on a class website or blog. Explain what is meant by copyright.	Show that they can think through the consequences of their actions when using digital technology. Identify principles underpinning acceptable use of digital technologies. Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts. Articulate an opinion about the effectiveness of digital content. Use online tools to plan and carry out a collaborative project successfully.

Computing Systems and Networks		**Technology around us** Identify technology. Identify a computer and its main parts. Create rules for using technology responsibly. Use a mouse in different ways. Use a keyboard to type. Use the keyboard to edit text.	**Information technology around us** Recognise the uses and features of information technology. Identify information technology in the home. Identify information technology beyond school. Explain how information technology benefits us. Show how to use information technology safely. Recognise that choices are made when using information technology.	**Connecting computers** Explain how digital devices function. Identify input and output devices. Recognise how digital devices can change the way we work. Explain how a computer network can be used to share information. Explore how digital devices can be connected. Recognise the physical components of a network.	**The internet** Describe how networks physically connect to other networks. Recognise how networked devices make up the internet. Outline how websites can be shared via the World Wide Web. Describe how content can be added and accessed on the World Wide Web. Recognise how the content of the WWW is created by people. Evaluate the consequences of unreliable content.	**Sharing information** Explain that computers can be connected together to form systems. Recognise the role of computer systems in our lives. Recognise how information is transferred over the internet. Explain how sharing information online lets people in different places work together. Contribute to a shared project online. Evaluate different ways of working together online.	**Communication** Identify how to use a search engine. Describe how search engines select results. Describe how search engines select results. Explain how search results are ranked. Recognise why the order of results is important, and to whom. Recognise how we communicate using technology. Evaluate different methods of online communication.
Creating Media		**Digital painting** Describe what different freehand tools do. Make careful choices when painting a digital picture. Explain why I chose the tools I used. Compare painting a picture on a computer and on paper. Use the shape tool and the line tools. Use a computer on my own to paint a picture. **Digital writing** Identify that the look of text can be changed on a computer. Make careful choices when changing text. Explain why I used the tools that I chose. Compare writing on a computer with writing on paper. Use a computer to write. Add and remove text on a computer.	**Digital photography** Know what devices can be used to take photographs. Describe what makes a good photograph. Decide how photographs can be improved. Recognise that images can be changed. Use a digital device to take a photograph. Use tools to change an image. **Making music** Say how music can make us feel. Identify that there are patterns in music. Describe how music can be used in different ways. Show how music is made from a series of notes. Create music for a purpose. Review and refine our computer work.	**Stop-frame animation** Explain that animation is a sequence of drawings or photographs. Relate animated movement with a sequence of images. Identify the need to work consistently and carefully. Plan an animation. Review and improve an animation. Evaluate the impact of adding other media to an animation. **Desktop publishing** Recognise how text and images convey information. Recognise that text and layout can be edited. Consider how different layouts can suit different purposes. Consider the benefits of desktop publishing. Choose appropriate page settings. Add content to a desktop publishing publication.	**Audio editing** Identify that sound can be digitally recorded. Explain that a digital recording is stored as a file. Explain that audio can be changed through editing. Show that different types of audio can be combined and played together. Use a digital device to record sound. Evaluate editing choices made. **Photo editing** Explain that digital images can be changed. Describe how images can be changed for different uses. Recognise that not all images are real. Change the composition of an image. Make good choices when selecting different tools. Evaluate how changes can improve an image.	**Video editing** Recognise video as moving pictures, which can include audio. Identify digital devices that can record video. Recognise the features of an effective video. Identify that video can be improved through reshooting and editing. Consider the impact of the choices made when making and sharing a video. Capture video using a digital device. **Vector drawing** Identify that drawing tools can be used to produce different outcomes. Recognise that vector drawings consist of layers. Create a vector drawing by combining shapes. Use tools to achieve a desired effect. Group objects to make them easier to work with. Evaluate my vector drawing.	**Web page creation** Review an existing website and consider its structure. Consider the ownership and use of images (copyright). Recognise the need to preview pages. Outline the need for a navigation path. Recognise the implications of linking to content owned by other people. Plan the features of a web page. **3D modelling** Identify that physical objects can be broken down into a collection of 3D shapes. Compare working digitally with 2D and 3D graphics. Use a computer to create and manipulate three-dimensional (3D) digital objects. Construct a digital 3D model of a physical object. Design a digital model by combining 3D objects. Develop and improve a digital 3D model.

Data and Information		**Grouping data** Identify that objects can be counted. Compare groups of objects. Answer questions about groups of objects. Describe objects in different ways. Label objects. Count objects with the same properties.	**Pictograms** Recognise that we can count and compare objects using tally charts. Recognise that objects can be represented as pictures. Recognise that people can be described by attributes. Explain that we can present information using a computer. Create a pictogram. Select objects by attribute and make comparisons.	**Branching databases** Identify the object attributes needed to collect relevant data. Identify objects using a branching database. Explain why it is helpful for a database to be well structured. Compare the information shown in a pictogram with a branching database. Create questions with yes/no answers. Create a branching database.	**Data logging** Explain that data gathered over time can be used to answer questions. Explain that a data logger collects 'data points' from sensors over time. Identify the data needed to answer questions. Use a digital device to collect data automatically. Use data collected over a long duration to find information. Use collected data to answer questions.	**Flat-file databases** Compare paper and computer-based databases. Outline how grouping and then sorting data allows us to answer questions. Explain that tools can be used to select specific data. Explain that computer programs can be used to compare data visually. Use a form to record information. Apply my knowledge of a database to ask and answer real-world questions.	**Spreadsheets** Identify questions which can be answered using data. Explain that objects can be described using data. Explain that formula can be used to produce calculated data. Apply formulas to data, including duplicating. Create a spreadsheet to plan an event. Choose suitable ways to present data.
Programming		**Moving a robot** Explain what a given command will do. Act out a given word. Combine forwards and backwards commands to make a sequence. Combine four direction commands to make sequences. Plan a simple program. Find more than one solution to a problem. **Introduction to animation** Identify the effect of changing a value. Explain that each sprite has its own instructions. Choose a command for a given purpose. Show that a series of commands can be joined together. Design the parts of a project. Use my algorithm to create a program.	**Robot algorithms** Describe a series of instructions as a sequence. Explain what happens when we change the order of instructions. Explain that programming projects can have code and artwork. Use logical reasoning to predict the outcome of a program (series of commands). Design an algorithm. Create and debug a program that I have written. **Introduction to quizzes** Explain that a sequence of commands has a start. Explain that a sequence of commands has an outcome. Create a program using a given design. Change a given design. Create a program using my own design. Decide how my project can be improved.	**Sequence in music** Explore a new programming environment. Identify that each sprite is controlled by the commands I choose. Explain that a program has a start. Recognise that a sequence of commands can have an order. Change the appearance of my project. Create a project from a task description. **Events and actions** Explain how a sprite moves in an existing project. Create a program to move a sprite in four directions. Adapt a program to a new context. Develop my program by adding features. Identify and fix bugs in a program. Design and create a maze-based challenge.	**Repetition in shapes** Identify that accuracy in programming is important. Explain what 'repeat' means. Create a program in a text-based language. Modify a count-controlled loop to produce a given outcome. Decompose a program into parts. Create a program that uses count-controlled loops to produce a given outcome. **Repetition in games** Explain that in programming there are infinite loops and count controlled loops. Develop the use of count-controlled loops in a different programming environment. Develop a design which includes two or more loops which run at the same time. Modify an infinite loop in a given program. Design a project that includes repetition. Create a project that includes repetition.	**Selection in physical computing** Explain that a loop can stop when a condition is met, e.g. number of times. Conclude that a loop can be used to repeatedly check whether a condition has been met. Control a simple circuit connected to a computer. Write a program that includes count-controlled loops. Design a physical project that includes selection. Create a controllable system that includes selection. **Selection in games** Explain how selection is used in computer programs. Relate that a conditional statement connects a condition to an outcome. Explain how selection directs the flow of a program. Design a program which uses selection. Create a program which uses selection. Evaluate my program.	**Variables in games** Define a 'variable' as something that is changeable. Explain why a variable is used in a program. Choose how to improve a game by using variables. Design a project that builds on a given example. Use my design to create a project. Evaluate my project. **Sensing** Explain that selection can control the flow of a program. Create a program to run on a controllable device. Update a variable with a user input. Use a conditional statement to compare a variable to a value. Design a project that uses inputs and outputs on a controllable device. Develop a program to use inputs and outputs on a controllable device.

Note for EYFS: Although there is no Early Learning Goal for computing children in EYFS begin their computing journey by developing their skills and knowledge in computational thinking, creativity, simple algorithms and collaboration within their continuous provision. Children also have access to technology in the classroom and technology is regularly used as part of the children's role play.