Computing Curriculum
Key Stage 2 Progression of Skills

PERRAN-AR-WORTHAL CP SCHOOL
Every Moment Matters

National Curriculum Pupils should be taught to:	What does this look like in each year group?			
	Year 3	Year 4	Year 5	Year 6
1. design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	• explain that objects in Scratch have attributes (linked to) • identify the objects in a Scratch project (sprites, backdrops) • create a program following a design • make design choices for my artwork • identify and name the objects I will need for a project	• modify a snippet of code to create a given outcome • predict the outcome of a snippet of code • recognise that some programming languages enable more than one process to be run at once • explain the effect of my changes • reuse existing code snippets on new sprites • develop own design explaining what my project will do • build a program that follows my design • evaluate the steps I followed when building my project	• create a program with different outcomes using selection • explain that program flow can branch according to a condition • show that a condition can direct program flow in one of two ways • use a design format to outline my project • share my program with others • extend my program further • identify what setup code my project needs	• apply my knowledge of programming to a new environment • test my program on an emulator • transfer my program to a controllable device • identify examples of conditions in the real world • use a variable in an if… then… else… statement to select the flow of a program • explain the importance of the order of conditions in else if statements • modify a program to achieve a different outcome • use an operand (e.g. <>=) in an if… then… statement • use a range of approaches to find and fix bugs • choose the artwork for my project • explain my design choices • create the artwork for my project • test the code that I have written • identify ways that my game could be improved • share my game with others
2. use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• explain that digital devices accept inputs • explain that digital devices produce outputs • follow a process • classify input and output devices • create a sequence of connected commands • choose a word which describes an onscreen action for my design • identify that each sprite is controlled by the commands I choose • combine sound commands • start a program in different ways	• list an everyday task as a set of instructions including repetition • choose when to use a countcontrolled and an infinite loop • modify loops to produce a given outcome • choose which action will be repeated for each object • explain what the outcome of the repeated action should be • evaluate the effectiveness of the repeated sequences used in my program • identify which parts of a loop can be changed • evaluate the use of repetition in a project	• describe that a computer system features inputs, processes, and outputs • identify conditions in a program • modify a condition in a program • recall how conditions are used in selection • identify the condition and outcomes in an if..then… else statement • use selection in an infinite loop to check a condition • design the flow of a program which contains 'if… then… else…' • identify the outcome of user input in an algorithm	• experiment with different physical inputs • determine the flow of a program using selection • explain that if you read a variable, the value remains • use a condition to change a variable • decide what variables to include in a project • explain that the way that a variable changes can be defined • identify examples of information that is variable • identify that variables can hold numbers or letters • explain that a variable has a name and a value • identify a program variable as a placeholder in memory for a single value • recognise that the value of a variable can be changed • decide where in a program to change a variable • make use of an event in a program to set a variable • recognise that the value of a variable can be used by a program • choose a name that identifies the role of a variable • extend my game further using more variables
3. use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	• implement my algorithm as code • relate a task description to a design • recognise that commands in Scratch are represented as blocks • explain that the objects in my project will respond exactly to the code	• refine the algorithm in my design • select key parts of a given project to use in my own design	• implement my algorithm to create the first section of my program • test my program • identify ways the program could be improved	• design the algorithm for my project • create algorithms for my project • design the program flow for my project • create a program based on my design • test my program against my design
4. 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	• discuss why we need a network switch • explain how messages are passed through multiple connections • recognise different connections • demonstrate how information can be passed between devices • explain the role of a switch, server, and wireless access point in a network • recognise that a computer network is made up of a number of devices • identify how devices in a network are connected with one another • identify networked devices around me • identify the benefits of computer networks	• demonstrate how information is shared across the internet • describe the internet as a network of networks • discuss why a network needs protecting • describe the different networked devices and how they connect • explain how the internet allows us to view the World Wide Web • recognise that the World Wide Web is the part of the internet that contains websites and web pages • describe how to access websites on the www • describe where websites are stored when uploaded to the www • explain the types of media that can be shared on the world wide web • explain that new content can be created online • recognise that anyone add content to the www • explain that there are rules to protect content • explain that websites and their content are created by people • suggest who owns the content on websites	• recognise that working together on the internet can be public or private • explain that computer systems communicate with other devices • explain that systems are built using a number of parts • explain the benefits of a given computer system • identify tasks that are managed by computer systems • identify the human elements of a computer system • explain that data is transferred over networks in packets • explain that networked digital devices have unique addresses • recognise that data is transferred using agreed methods • explain how the internet enables effective collaboration • recognise that connected digital devices can allow us to access shared files stored online • send information over the internet in different ways • identify different ways of working together online	• explain why we need tools to find things online • choose methods of communication to suit particular purposes • explain the different ways in which people communicate • identify that there are a variety of ways of communicating over the internet • compare different methods of communicating on the internet • decide when I should and should not share • explain that communication on the internet may not be private
5. use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• identify the advantages and disadvantages of using text and images • choose the best locations for my content	• consider why someone might want to change the composition of an image • give examples of positive and negative effects that retouching can have on an image • talk about fake images around me • sort images into 'fake' or 'real' and explain my choices • explain why some information I find online may not be honest, accurate, or legal.	• explain that the internet allows different media to be shared	• compare results from different search engines • complete a web search to find specific information • refine my search • recognise the role of web crawlers in creating an index • relate a search term to the search engine's index • explain that a search engine follows rules to rank relevant pages • explain that search results are ordered • suggest some of the criteria that a search engine checks to decide on the order of results • describe some of the ways that search results can be influenced • explain how search engines make money • recognise some of the limitations of search engines

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6. 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	• explain how I use digital devices for different activities • recognise similarities between using digital devices and nondigital tools • suggest differences between using digital devices and nondigital tools • select the right program for my design • explain the difference between text and images • make changes to content after I've added it • choose a suitable layout for a given purpose • identify different layouts • match a layout to a purpose • compare work made on desktop publishing to work created by hand • identify the uses of desktop publishing in the real world • say why desktop publishing might be helpful • recognise that text and images can communicate messages clearly • change font style, size, and colours for a given purpose • edit text • explain that text can be changed to communicate more clearly • create a template for a particular purpose • define the term 'page orientation' • recognise placeholders and say why they are important	• explain the effect that editing can have on an image • explore how images can be changed in real life • identify changes that we can make to an image • change the composition of an image by selecting parts of it • choose effects to make my image fit a scenario • explain why my choices fit a scenario • talk about changes made to images • choose appropriate tools to retouch an image • identify how an image has been retouched • compare the original image with my completed publication • explain what has changed in an edited image • combine parts of images to create new images • consider the effect of adding other elements to my work • evaluate the impact of my publication on others through feedback • create media which can be found on websites	• explain that a video can include both visual and audio media • explain the benefits of adding audio to a video • plan a video project using a storyboard • choose the most suitable digital device for recording my project • identify and name digital devices that can record video and sound • locate and identify the working features of a digital device that can record video • demonstrate suitable methods of using a digital device to capture my video • demonstrate the safe use and handling of devices • select a suitable device and software to capture my video • explain why lighting and angle are important in creating an effective video • list some of the features of an effective video • record a video that demonstrates some of the features of an effective video • explain how to improve a video by reshooting and editing • select the correct tools to make edits to my video • store, retrieve, and export my recording to a computer • evaluate my video and share my opinions • make edits to my video and improve the final outcome • recognise that my choices when making a video will impact on the quality of the final outcome • discuss how a vector drawing is different from paper-based drawings • identify the main drawing tools • recognise that vector drawings are made using shapes • explain that each element added to a vector drawing is an object • identify the shapes used to make a vector drawing • move, resize, and rotate objects I have duplicated • explain how alignment grids and resize handles can be used to improve consistency • modify objects to create different effects • use the zoom tool to help me add detail to my drawings • change the order of layers in a vector drawing • identify that each added object creates a new layer in the drawing • identify which objects are in the front layer or in the back layer of a drawing • copy part of a drawing by duplicating several objects • group to create a single object • reuse a group of objects to further develop my vector drawing • apply what I have learned about vector drawings • suggest improvements to a vector drawing	• discuss the similarities and differences between 2D and 3D shapes • explain why we might represent 3D objects on a computer • select, move, and delete a digital 3D shape • change the colour of a 3D object • identify how graphical objects can be modified • resize a 3D object • position 3D objects in relation to each other • rotate a 3D object • select and duplicate multiple 3D objects • create digital 3D objects of an appropriate size • group a digital 3D shape and a placeholder to create a hole in an object • identify the 3D shapes needed to create a model of a real-world object • choose which 3D objects I need to construct my model • modify multiple 3D objects • plan my 3D model • decide how my model can be improved • evaluate my model against a given criterion • modify my model to improve it
7. use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• talk about what makes a secure password and why they are important. • protect my personal information when I do different things online. • use the safety features of websites as well as reporting concerns to an adult. • recognise websites and games appropriate for my age. • make good choices about how long I spend online. • ask an adult before downloading files and games from the internet.	• choose a secure password when I am using a website. talk about the ways protect myself and my friends from harm online. • use the safety features of websites as well as reporting concerns to an adult. • understand that anything I post online can be seen by others. • choose websites and games that are appropriate for my age. • help my friends make good choices about the time they spend online. • talk about why I need to ask a trusted adult before downloading files and games from the internet. • understand the importance of commenting positively and respectfully online. • explain that not everything on the World Wide Web is true. • explain why I need to think carefully before I share or reshare content	• protect my password and other personal information. • explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. • understand that anything I post online can be seen, used and may affect others. • talk about the dangers of spending too long online or playing a game. • explain the importance of communicating kindly and respectfully. • discuss the importance of choosing an age appropriate website or game • explain why I need to protect my computer or device from harm. • understand which resources on the internet download and use	• protect my password and other personal information. • explain the consequences of sharing too much information about myself online. • support my friends to protect themselves and make good choices online, including reporting concerns to an adult. explain the consequences of spending too much time online or on a game. • explain the consequences to myself and others of not communicating kindly and respectfully. • protect my computer or device from harm on the internet.