



Computing Progression Map

	Year 3	Year 4	Year 5	Year 6
Computing systems and networks	<ul style="list-style-type: none"> - I can explain that digital devices accept inputs - I can explain that digital devices produce outputs - I can follow a process - I can classify input and output devices - I can describe a simple process - I can design a digital device - I can explain how I use digital devices for different activities - I can recognise similarities between using digital devices and non-digital tools - I can suggest differences between using digital devices and non-digital tools - I can discuss why we need a network switch - I can explain how messages are passed through multiple connections - I can recognise different connections - I can demonstrate how information can be passed between devices - I can explain the role of a switch, server, and wireless access point in a network - I can recognise that a computer network is made up of a number of devices - I can identify how devices in a network are connected together - I can identify networked devices around me - I can identify the benefits of computer networks 	<ul style="list-style-type: none"> - I can demonstrate how information is shared across the internet - I can describe the internet as a network of networks - I can discuss why a network needs protecting - I can describe networked devices and how they connect - I can explain that the internet is used to provide many services - I can recognise that the World Wide Web contains websites and web pages - I can describe how to access websites on the WWW - I can describe where websites are stored when uploaded to the WWW - I can explain the types of media that can be shared on the WWW - I can explain that internet services can be used to create content online - I can explain what media can be found on websites - I can recognise that I can add content to the WWW - I can explain that there are rules to protect content - I can explain that websites and their content are created by people - I can suggest who owns the content on websites - I can explain that not everything on the World Wide Web is true - I can explain why I need to think carefully before I share or reshare content - I can explain why some information I find online may not be honest, accurate, or legal 	<ul style="list-style-type: none"> - I can describe that a computer system features inputs, processes, and outputs - I can explain that computer systems communicate with other devices - I can explain that systems are built using a number of parts - I can explain the benefits of a given computer system - I can identify tasks that are managed by computer systems - I can identify the human elements of a computer system - I can explain that data is transferred over networks in packets - I can explain that networked digital devices have unique addresses - I can recognise that data is transferred using agreed methods - I can explain that the internet allows different media to be shared - I can recognise that connected digital devices can allow us to access shared files stored online - I can send information over the internet in different ways - I can compare working online with working offline - I can make thoughtful suggestions on my group's work - I can suggest strategies to ensure successful group work - I can explain how the internet enables effective collaboration - I can identify different ways of working together online - I can recognise that working together on the internet can be public or private 	<ul style="list-style-type: none"> - I can compare results from different search engines - I can complete a web search to find specific information - I can refine my search - I can explain why we need tools to find things online - I can recognise the role of web crawlers in creating an index - I can relate a search term to the search engine's index - I can explain that a search engine follows rules to rank relevant pages - I can explain that search results are ordered - I can suggest some of the criteria that a search engine checks to decide on the order of results - I can describe some of the ways that search results can be influenced - I can explain how search engines make money - I can recognise some of the limitations of search engines - I can choose methods of communication to suit particular purposes - I can explain the different ways in which people communicate - I can identify that there are a variety of ways of communicating over the internet - I can compare different methods of communicating on the internet - I can decide when I should and should not share - I can explain that communication on the internet may not be private
Creating media	<ul style="list-style-type: none"> - I can create an effective flip book—style animation - I can draw a sequence of pictures - I can explain how an animation/flip book works - I can create an effective stop-frame 	<ul style="list-style-type: none"> - I can identify digital devices that can record sound and play it back - I can identify the inputs and outputs required to play audio or record sound - I can recognise the range of sounds that can be recorded 	<ul style="list-style-type: none"> - I can compare features in different videos - I can explain that video is a visual media format - I can identify features of videos - I can experiment with different camera angles 	<ul style="list-style-type: none"> - I can discuss the different types of media used on websites - I can explore a website - I know that websites are written in HTML - I can draw a web page layout that suits my purpose

	<p>animation</p> <ul style="list-style-type: none"> - I can explain why little changes are needed for each frame - I can predict what an animation will look like - I can break down a story into settings, characters and events - I can create a storyboard - I can describe an animation that is achievable on screen - I can evaluate the quality of my animation - I can review a sequence of frames to check my work - I can use onion skinning to help me make small changes between frames - I can evaluate another learner's animation - I can explain ways to make my animation better - I can improve my animation based on feedback - I can add other media to my animation - I can evaluate my final film - I can explain why I added other media to my animation - I can explain the difference between text and images - I can identify the advantages and disadvantages of using text and images - I can recognise that text and images can communicate messages clearly - I can change font style, size, and colours for a given purpose - I can edit text - I can explain that text can be changed to communicate more clearly - I can create a template for a particular purpose - I can define the term 'page orientation' - I can recognise placeholders and say why they are important - I can choose the best locations for my content - I can make changes to content after I've added it - I can paste text and images to create a magazine cover - I can choose a suitable layout for a given purpose - I can identify different layouts - I can match a layout to a purpose - I can compare work made on desktop publishing to work created by hand - I can identify the uses of desktop publishing in the real world - I can say why desktop publishing might be 	<ul style="list-style-type: none"> - I can discuss what other people include when recording sound for a podcast - I can suggest how to improve my recording - I can use a device to record audio and play back sound - I can discuss why it is useful to be able to save digital recordings - I can plan and write the content for a podcast - I can save a digital recording as a file - I can discuss ways in which audio recordings can be altered - I can edit sections of of an audio recording - I can open a digital recording from a file - I can choose suitable sounds to include in a podcast - I can discuss sounds that other people combine - I can use editing tools to arrange sections of audio - I can discuss the features of a digital recording I like - I can explain that digital recordings need to be exported to share them - I can suggest improvements to a digital recording - I can explain the effect that editing can have on an image - I can explore how images can be changed in real life - I can identify changes that we can make to an image - I can change the composition of an image by selecting parts of it - I can consider why someone might want to change the composition of an image - I can explain what has changed in an edited image - I can choose effects to make my image fit a scenario - I can explain why my choices fit a scenario - I can talk about changes made to images - I can choose appropriate tools to retouch an image - I can give examples of positive and negative effects that retouching can have on an image - I can identify how an image has been retouched - I can combine parts of images to create new images - I can sort images into 'fake' or 'real' and explain my choices - I can talk about fake images around me - I can compare the original image with my completed publication 	<ul style="list-style-type: none"> - I can identify and find features on a digital video recording device - I can make use of a microphone - I can capture video using a range of filming techniques - I can review how effective my video is - I can suggest filming techniques for a given purpose - I can create and save video content - I can decide which filming techniques I will use - I can outline the scenes of my video - I can explain how to improve a video by reshooting and editing - I can select the correct tools to make edits to my video - I can store, retrieve, and export my recording to a computer - I can evaluate my video and share my opinions - I can make edits to my video and improve the final outcome - I can recognise that my choices when making a video will impact on the quality of the final outcome - I can discuss how a vector drawing is different from paper-based drawings - I can identify the main drawing tools - I can recognise that vector drawings are made using shapes - I can explain that each element added to a vector drawing is an object - I can identify the shapes used to make a vector drawing - I can move, resize, and rotate objects I have duplicated - I can explain how alignment grids and resize handles can be used to improve consistency - I can modify objects to create different effects - I can use the zoom tool to help me add detail to my drawings - I can change the order of layers in a vector drawing - I can identify that each added object creates a new layer in the drawing - I can identify which objects are in the front layer or in the back layer of a drawing - I can copy part of a drawing by duplicating several objects - I can group to create a single object - I can reuse a group of objects to further develop my vector drawing - I can apply what I have learned about vector 	<ul style="list-style-type: none"> - I can recognise the common features of a web page - I can suggest media to include on my page - I can describe what is meant by the term 'fair use' - I can find copyright-free images - I can say why I should use copyright-free images - I can add content to my own web page - I can evaluate what my web page looks like on different devices and suggest/make edits - I can preview what my web page looks like - I can describe why navigation paths are useful - I can explain what a navigation path is - I can make multiple web pages and link them using hyperlinks - I can create hyperlinks to link to other people's work - I can evaluate the user experience of a website - I can explain the implication of linking to content owned by others - I can discuss the similarities and differences between 2D and 3D shapes - I can explain why we might represent 3D objects on a computer - I can select, move, and delete a digital 3D shape - I can change the colour of a 3D object - I can identify how graphical objects can be modified - I can resize a 3D object - I can position 3D objects in relation to each other - I can rotate a 3D object - I can select and duplicate multiple 3D objects - I can create digital 3D objects of an appropriate size - I can group a digital 3D shape and a placeholder to create a hole in an object - I can identify the 3D shapes needed to create a model of a real-world object - I can choose which 3D objects I need to construct my model - I can modify multiple 3D objects - I can plan my 3D model - I can decide how my model can be improved - I can evaluate my model against a given criterion - I can modify my model to improve it
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	helpful	<ul style="list-style-type: none"> - I can consider the effect of adding other elements to my work - I can evaluate the impact of my publication on others through feedback 	drawings <ul style="list-style-type: none"> - I can suggest improvements to a vector drawing - I create alternatives to vector drawings 	
Data and information	<ul style="list-style-type: none"> - I can create two groups of objects separated by one attribute - I can investigate questions with yes/no answers - I can make up a yes/no question about a collection of objects - I can arrange objects into a tree structure - I can create a group of objects within an existing group - I can select an attribute to separate objects into groups - I can group objects using my own yes/no questions - I can prove my branching database works - I can select objects to arrange in a branching database - I can compare two branching database structures - I can create yes/no questions using given attributes - I can explain that questions need to be ordered carefully to split objects into similarly sized groups - I can create questions and apply them to a tree structure - I can select a theme and choose a variety of objects - I can use my branching database to answer questions - I can compare two ways of presenting information - I can explain what a branching database tells me - I can explain what a pictogram tells me 	<ul style="list-style-type: none"> - I can choose a data set to answer a given question - I can identify data that can be gathered over time - I can suggest questions that can be answered using a given data set - I can explain that sensors are input devices - I can identify that data from sensors can be recorded - I can use data from a sensor to answer a given question - I can identify a suitable place to collect data - I can identify the intervals used to collect data - I can talk about the data that I have captured - I can import a data set - I can use a computer program to sort data - I can use a computer to view data in different ways - I can plan how to collect data using a data logger - I can propose a question that can be answered using logged data - I can use a data logger to collect data - I can draw conclusions from the data that I have collected - I can explain the benefits of using a data logger - I can interpret data that has been collected using a data logger 	<ul style="list-style-type: none"> - I can create multiple questions about the same field - I can explain how information can be recorded - I can order, sort, and group my data cards - I can choose which field to sort data by to answer a given question - I can explain what a 'field' and a 'record' is in a database - I can navigate a flat-file database to compare different views of information - I can combine grouping and sorting to answer more specific questions - I can explain how information can be grouped - I can group information to answer questions - I can choose multiple criteria to answer a given question - I can choose which field and value are required to answer a given question - I can outline how 'AND' and 'OR' can be used to refine data selection - I can explain the benefits of using a computer to create graphs - I can refine a chart by selecting a particular filter - I can select an appropriate chart to visually compare data - I can ask questions that will need more than one field to answer - I can present my findings to a group - I can refine a search in a real-world context 	<ul style="list-style-type: none"> - I can answer questions from an existing data set - I can ask simple relevant questions which can be answered using data - I can explain the relevance of data headings - I can apply an appropriate number format to a cell - I can build a data set in a spreadsheet application - I can explain what an item of data is - I can construct a formula in a spreadsheet - I can explain the relevance of a cell's data type - I can identify that changing inputs changes outputs - I can apply a formula to multiple cells by duplicating it - I can create a formula which includes a range of cells - I can recognise that data can be calculated using different operations - I can apply a formula to calculate the data I need to answer questions - I can explain why data should be organised - I can use a spreadsheet to answer questions - I can produce a graph - I can suggest when to use a table or graph - I can use a graph to show the answer to questions
Programming	<ul style="list-style-type: none"> - I can explain that objects in Scratch have attributes (linked to) - I can identify the objects in a Scratch project (sprites, backdrops) - I can recognise that commands in Scratch are represented as blocks - I can choose a word which describes an on-screen action for my plan - I can create a program following a design - I can identify that each sprite is controlled by the commands I choose - I can create a sequence of connected commands - I can explain that the objects in my project 	<ul style="list-style-type: none"> - I can create a code snippet for a given purpose - I can explain the effect of changing a value of a command - I can program a computer by typing commands - I can test my algorithm in a text-based language - I can use a template to create a design for my program - I can write an algorithm to produce a given outcome - I can identify everyday tasks that include repetition as part of a sequence, eg brushing 	<ul style="list-style-type: none"> - I can create a simple circuit and connect it to a microcontroller - I can explain what an infinite loop does - I can program a microcontroller to make an LED switch on - I can connect more than one output component to a microcontroller - I can design sequences that use count-controlled loops - I can use a count-controlled loop to control outputs - I can design a conditional loop - I can explain that a condition is either true or false - I can program a microcontroller to respond 	<ul style="list-style-type: none"> - I can explain that the way that a variable changes can be defined - I can identify examples of information that is variable - I can identify that variables can hold numbers or letters - I can explain that a variable has a name and a value - I can identify a program variable as a placeholder in memory for a single value - I can recognise that the value of a variable can be changed - I can decide where in a program to change a variable

	<p>will respond exactly to the code</p> <ul style="list-style-type: none"> - I can start a program in different ways - I can combine sound commands - I can explain what a sequence is - I can order notes into a sequence - I can build a sequence of commands - I can decide the actions for each sprite in a program - I can make design choices for my artwork - I can identify and name the objects I will need for a project - I can implement my algorithm as code - I can relate a task description to a design - I can choose which keys to use for actions and explain my choices - I can explain the relationship between an event and an action - I can identify a way to improve a program - I can choose a character for my project - I can choose a suitable size for a character in a maze - I can program movement - I can choose blocks to set up my program - I can consider the real world when making design choices - I can use a programming extension - I can build more sequences of commands to make my design work - I can choose suitable keys to turn on additional features - I can identify additional features (from a given set of blocks) - I can match a piece of code to an outcome - I can modify a program using a design - I can test a program against a given design - I can evaluate my project - I can implement my design - I can make design choices and justify them 	<p>teeth, dance moves</p> <ul style="list-style-type: none"> - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome - I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop - I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program - I can design a program that includes count-controlled loops - I can develop my program by debugging it - I can make use of my design to write a program - I can list an everyday task as a set of instructions including repetition - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code - I can choose when to use a count-controlled and an infinite loop - I can modify loops to produce a given outcome - I can recognise that some programming languages enable more than one process to be run at once - I can choose which action will be repeated for each object - I can evaluate the effectiveness of the repeated sequences used in my program - I can explain what the outcome of the repeated action should be - I can explain the effect of my changes - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites - I can develop my own design explaining what my project will do - I can evaluate the use of repetition in a project - I can select key parts of a given project to use in my own design - I can build a program that follows my design - I can evaluate the steps I followed when building my project - I can refine the algorithm in my design 	<p>to an input</p> <ul style="list-style-type: none"> - I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if...then...' statement) to direct the flow of a program - I can create a detailed drawing of my project - I can describe what my project will do - I can identify a real-world example of a condition starting an action - I can test and debug my project - I can use selection to produce an intended outcome - I can write an algorithm that describes what my model will do - I can identify conditions in a program - I can modify a condition in a program - I can recall how conditions are used in selection - I can create a program with different outcomes using selection - I can identify the condition and outcomes in an 'if... then... else...' statement - I can use selection in an infinite loop to check a condition - I can design the flow of a program which contains 'if... then... else...' - I can explain that program flow can branch according to a condition - I can show that a condition can direct program flow in one of two ways - I can identify the outcome of user input in an algorithm - I can outline a given task - I can use a design format to outline my project - I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program - I can extend my program further - I can identify the setup code I need in my program - I can identify ways the program could be improved 	<ul style="list-style-type: none"> - I can make use of an event in a program to set a variable - I can recognise that the value of a variable can be used by a program - I can choose the artwork for my project - I can create algorithms for my project - I can explain my design choices - I can choose a name that identifies the role of a variable - I can create the artwork for my project - I can test the code that I have written - I can extend my game further using more variables - I can identify ways that my game could be improved - I can share my game with others - I can apply my knowledge of programming to a new environment - I can test my program on an emulator - I can transfer my program to a controllable device - I can determine the flow of a program using selection - I can identify examples of conditions in the real world - I can use a variable in an if, then, else statement to select the flow of a program - I can experiment with different physical inputs - I can explain that if you read a variable, the value remains - I can use a condition to change a variable - I can explain the importance of the order of conditions in else, if statements - I can modify a program to achieve a different outcome - I can use an operand (e.g. <=>) in an if, then statement - I can decide what variables to include in a project - I can design the algorithm for my project - I can design the program flow for my project - I can create a program based on my design - I can test my program against my design - I can use a range of approaches to find and fix bugs
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