FAIR FIELD
JUNIOR SCHOOL

Computing Knowledge and Skills

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 3	**Computing Systems & Networks** Connecting Computers	**Creating Media** Stop-frame Animation	**Programming A** Sequencing Sounds	**Data & Information** Branching Databases	**Creating Media** Desktop Publishing	**Programming B** Events & Actions in Programs
Knowledge	• To describe what an input is • To explain that a process acts on the inputs • To explain that an output is produced by the process • To identify how changing the process can affect the output • To explain that a digital device is made up of several parts • To explain that a computer system accepts an input and processes it to produce an output • To recognise that computers can be connected to each other • To recognise that a network is made up of a number of components • To explain the role of a switch, server, and	• To explain that an animation is made up of a sequence of images • To identify that a capturing device needs to be in a fixed position • To set up the work area with an awareness of what will be captured • To recognise that smaller movements create smoother animation • To explain the need for consistency in working • To explain the impact of adding other media to an animation • To explain that a project must be exported so it can be shared	• To explain that programs start because of an input • To explain what a sequence is • To identify that a program includes sequences of commands • To identify that the sequence of a program is a process • To explain that the order of commands can affect a program's output • To identify that different sequences can achieve the same output • To identify that different sequences can achieve different outputs	• To investigate questions with yes/no answers • To identify attributes that you can ask yes/no questions about • To select an attribute to separate objects into two similarly sized groups • To choose questions that will divide objects into evenly sized subgroups • To explain that a branching database is an identification tool • To suggest real-world applications for branching databases • To recognise that a data set can be structured using yes/no questions • To explain that a well-structured branching database will enable you to identify objects using fewer questions	• To recognise how text and images can be used together to convey information • To define landscape and portrait as two different page orientations • To consider how different layouts can suit different purposes • To recognise that DTP pages can be structured with placeholders • To recognise how different font styles and effects are used for particular purposes • To consider the benefits of using a DTP application	• To explain that programs start because of an input To explain what a sequence is • To identify that a program includes sequences of commands • To identify that the sequence of a program is a process • To explain that the order of commands can affect a program's output • To identify that different sequences can achieve the same output • To identify that different sequences can achieve different outputs

	wireless access point in a network • To explain how information is passed through multiple connections • To explain how networks can be connected to other networks • To identify the benefits of computer networks • To explain how computer systems can change the way that we work					
Skills	• To identify input and output devices • To identify how devices in a network are connected with one another • To explain how a computer network can be used to share information • To identify network devices around me	• To capture an image • To move a subject between captures • To use the onion skinning tool to review subject position • To add media to enhance an animation • To review a captured sequence of frames as an animation • To remove frames to improve an animation • To review a completed project	• To build a sequence of commands • To combine commands in a program • To order commands in a program • To create a sequence of commands to produce a given outcome	• To create questions with yes/no answers • To repeatedly create subgroups of objects • To identify an object using a branching database • To retrieve information from different levels of the branching database • To relate two levels of a branching database using AND	• To show that page orientation can be changed • To organise text and image placeholders in a page layout • To add text to a placeholder • To edit text in a placeholder • To add and remove images to and from placeholders • To move, resize and rotate images • To choose fonts and apply effects to text • To review a document	• To build a sequence of commands • To combine commands in a program • To order commands in a program • To create a sequence of commands • To produce a given outcome

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	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 4	**Computing Systems & Networks** The Internet	**Creating Media** Audio Production	**Programming A** Repetition in Shapes	**Data & Information** Data Logging	**Creating Media** Photo Editing	**Programming B** Repetition in Games
Knowledge	• To describe how networks connect to other networks • To recognise that the World Wide Web is part of the internet • To explain that the global interconnection of networks is the internet • To recognise the need for security on the internet • To describe how to access the World Wide Web • To describe the types of content/media that can be added, created, and shared on the World Wide Web • To explain how the content of the World Wide Web is created, owned, and shared by people • To explain that the internet enables us to view the World Wide Web • To explain that the	• To identify that sound can be recorded • To identify that an input device is needed to record sound • To identify that output devices are needed to play audio • To recognise that recorded audio can be stored on a computer • To recognise that sound can be represented visually as a waveform • To recognise that audio can be edited • To recognise that audio can be layered so that multiple sounds can be played at the same time • To consider the results of editing choices made	• To relate what 'repeat' means • To identify everyday tasks that include repetition as part of a sequence, e.g., brushing teeth, dance moves • To list an everyday task as a set of instructions including repetition • To identify a loop within a program • To explain that we can use a loop command in a program to repeat instructions • To explain that in programming there are indefinite loops and count-controlled loops • To explain that an indefinite loop will run until the program is stopped • To explain that you can program a loop to stop after a specific number of times • To identify patterns in a sequence, e.g., 'step 3 times' means the same	• To suggest questions that can be answered using a table of data • To identify data that can be logged over time • To identify that sensors are input devices • To recognise that a sensor can be used as an input device for data collection • To explain that a data logger captures 'data points' from sensors over time	• To recognise that digital images can be manipulated • To recognise that digital images can be changed for different purposes • To consider the impact of changes made on the quality of the image	• To relate what 'repeat' means • To identify everyday tasks that include repetition as part of a sequence, e.g., brushing teeth, dance moves • To list an everyday task as a set of instructions including repetition • To explain that we can use a loop command in a program to repeat instructions • To identify a loop within a program • To explain that in programming there are indefinite loops and count-controlled loops • To explain that an indefinite loop will run until the program is stopped • To explain that you can program a loop to stop after a specific number of times

	World Wide Web comprises of websites and web pages • To describe the current limitations of World Wide Web media • To evaluate the reliability of content and the consequences of unreliable content • To explain the benefits of the World Wide Web		as 'step, step, step' • To justify when to use a loop and when not to • To explain the importance of instruction order in a loop • To recognise tools that enable more than one process to be run at the same time (concurrency) • To recognise that not all tools enable more than one process to be run at once			• To identify patterns in a sequence, e.g., 'step 3 times' means the same as 'step, step, step' • To justify when to use a loop and when not to • To explain the importance of instruction order in a loop • To recognise tools that enable more than one process to be run at the same time (concurrency) • To recognise that not all tools enable more than one process to be run at once
Skills	• To outline how information can be shared via the World Wide Web	• To record sound using a computer • To play recorded audio • To import audio into a project • To delete a section of audio • To change the volume of tracks in a project	• To identify patterns in a sequence • To use an indefinite loop to produce a given outcome • To use a count-controlled loop to produce a given outcome • To plan a program that includes appropriate loops to produce a given outcome • To create two or more sequences that run at the same time	• To use a digital device to collect data automatically • To choose an appropriate timeframe when collecting data automatically • To use a set of logged data to find information • To use a computer program to sort data by one attribute • To export information in different formats	• To use an application to change the whole of a digital image • To use an application to change part of a digital image • To select part of a digital image • To use clone, copy, and paste to change the composition of a digital image • To use cloning to retouch a digital image • To add text to a digital image • To change the composition of a digital	• To identify patterns in a sequence • To use an indefinite loop to produce a given outcome • To use a count-controlled loop to produce a given outcome • To plan a program that includes appropriate loops to produce a given outcome • To create two or more sequences that run at the same time

					image by rotating and flipping • To change the composition of a digital image by cropping • To adjust colours of a digital image • To apply filters to a digital image • To apply effects to a digital image • To choose the most appropriate tool for a particular purpose	

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	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 5	**Computing Systems & Networks** Systems & Searching	**Creating Media** Video Production	**Programming A** Selection in Physical Computing	**Data and Information** Flat-file Databases	**Creating Media** Introduction to Vector Graphics	**Programming B** Selection in Quizzes
Knowledge	• To recognise that a system is a set of interconnected parts that work together • To explain that computers can be connected together to form IT systems • To identify that data can be transferred between IT systems • To recognise inputs, processes, and outputs in large IT systems • To describe the role of a particular IT system in their lives • To relate that search engines are examples of large IT systems • To explain why search engines create indices, and that they are different for each search engine • To explain the role of web crawlers in creating an index • To explain how search results are selected • To explain that ranking orders search results to	• To explain the features of video as a visual media format • To recognise which devices can and can't record video • To identify features of a video recording device or application • To explain the limitations of editing video on a recording device • To identify that videos can be edited on a recording device or on a computer • To identify videos can be improved through reshooting or editing • To recognise the need to regularly review and reflect on a video project • To recognise that filming techniques can be used to create different effects • To explain the purpose of a storyboard • To decide what changes I will make when editing	• To explain that a condition can only be true or false • To relate that a count-controlled loop contains a condition • To compare a count-controlled loop with a condition-controlled loop • To explain that a condition-controlled loop will stop when a condition is met • To explain that when a condition is met, a loop will complete a cycle before it stops • To explain that selection can be used to branch the flow of a program • To explain that a loop can be used to repeatedly check whether a condition has been met • To explain the importance of instruction order in 'if...then...else...' statements	• To explain that a computer program can be used to organize data • To explain that tools can be used to select data to answer questions • To outline how ordering data allows us to answer some questions • To outline how operands can be used to filter data • To ask questions that need more than one attribute to answer • To outline how 'AND' and 'OR' can be used to refine data selection • To explain that computer programs can be used to compare data visually • To explain that we present information to communicate a message	• To identify that a vector drawing comprises separate objects • To recognise that each object in a drawing is in its own layer • To recognise that vector images can be scaled without impact on quality • To recognise that objects can be modified in groups • To explain how alignment and size guides can help create a more consistent drawing • To consider the impact of choices made	• To explain that a condition can only be true or false • To relate that a count-controlled loop contains a condition • To compare a count-controlled loop with a condition-controlled loop • To explain that a condition-controlled loop will stop when a condition is met • To explain that when a condition is met, a loop will complete a cycle before it stops • To explain that selection can be used to branch the flow of a program • To explain that a loop can be used to repeatedly check whether a condition has been met • To explain the importance of instruction order in 'if... then... else...' statements

	make them more useful • To explain how ranking is determined by rules and that different search engines use different rules • To explain why the order of results is important and to whom • To explain how search engines make money by selling targeted advertising space • To identify some of the limitations of search engines	• To recognise projects need to be exported to be shared				
Skills	• To describe the input and output of a search engine • To demonstrate that different search terms produce different results • To evaluate the results of search terms	• To use different camera angles • To use pan, tilt and zoom • To combine filming techniques for a given purpose • To determine what scenes will convey your idea • To choose to reshoot a scene or improve later through editing • To use split, trim and crop to edit a video	• To create a condition-controlled loop • To use a condition in an 'if...then...' statement to start an action • To use a condition in an 'if...then...else...' statement to produce given outcomes • To use selection to switch the program flow in one of two ways	• To choose different ways to view data • To choose which attribute to sort data by to answer a given question • To select an appropriate graph to visually compare data • To choose suitable ways to present information to other people • To choose which attribute and value to search by to answer a given question (operands) • To choose multiple criteria to search data to answer a given question (AND and OR)	• To add an object to a vector drawing • To select one object or multiple objects • To delete objects • To move objects between the layers of a drawing • To group and ungroup selected objects • To duplicate objects using copy and paste • To modify objects • To reposition objects • To combine options to achieve a desired effect • To create a vector drawing for a given purpose	• To create a condition-controlled loop • To use a condition in an 'if... then...' statement to start an action • To use selection to switch program flow • To choose a condition to use in a program • To use 'if... then... else...' to switch program flow in one of two ways

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	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 6	**Computing systems & networks** Communication & Collaboration	**Creating media** Web Page Creation	**Programming A** Variables in Games	**Data & information** Introduction to Spreadsheets	**Creating media** 3D Modelling	**Programming B** Sensing Movement
Knowledge	• To recognise that data is transferred across networks using agreed protocols (methods) • To explain that data is transferred in packets • To recognise that connections between computers allow access to shared stored files • To recognise computers connected to the internet allow people in different places to work together • To discuss the opportunities that technology offers for communication and collaboration • To explain which types of media can be shared through the internet • To explain that communicating and collaborating using the internet can be public or private	• To review an existing website (navigation bars, header) • To recognise that web pages are written by people • To recognise that a website is a set of hyperlinked web pages • To recognise the relationship between HTML and visual display • To recognise that web pages can contain different media types • To recognise components of a web page layout • To consider the ownership and use of images (copyright) • To recognise the need to preview pages (different screens/devices) • To recognise the need for a navigation path • To recognise the implications of linking to content owned by	• To define a 'variable' as something that is changeable • To identify examples of information that is variable, for example, a football score during a match • To explain that a variable can be used in a program, e.g., 'score' • To define a program variable as a placeholder in memory for a single value • To explain that a variable has a name and a value • To recognise that the value of a variable can be used by a program • To recognise that the value of a variable can be updated • To identify that variables can hold numbers (integers) or letters (strings) • To choose a name that identifies the role of a	• To identify questions that can be answered using spreadsheet data • To explain what an item of data is in a spreadsheet • To explain how the data type determines how a spreadsheet can process the data • To outline that there are different software tools to work with data • To explain that formulas can be used to produce calculated data • To recognise cells can be linked • To recognise that a cell's value automatically updates when the value in a linked cell is changed • To evaluate results in comparison to the question asked • To explain why data should be organized in a spreadsheet	• To explain that 3D models can be created on a computer • To recognise that a 3D environment can be viewed from different perspectives • To recognise that digital tools can be used to manipulate 3D objects • To recognise that artefacts can be broken down into a collection of 3D objects • To show how placeholders can create holes in 3D objects	• To define 'variable' as something that is changeable • To identify examples of information that is variable, e.g., a football score during a match • To explain that a variable can be used in a program, e.g., 'score' • To define a program variable as a placeholder in memory for a single value • To explain that a variable has a name and a value • To recognise that the value of a variable can be used by a program • To recognise that the value of a variable can be updated • To identify that variables can hold numbers (integers) or letters (strings) • To choose a name that identifies the role of a variable to make it

		others	variable to make it easier for humans to understand it • To define the way that a variable is changed • To recognise that a variable can be set as a constant (fixed value) • To explain the importance of setting up a variable at the start of a program (initialization) • To decide where in a program to set a variable • To explain that there is only one value for a variable at any one time • To explain that if you change the value of a variable, you cannot access the previous value (cannot undo) • To explain that if you read a variable, the value remains • To use the same variable in more than one location in a program • To explain that the name of a variable is meaningless to the computer • To explain that the name of a variable			more usable (to humans) • To define the way that a variable is changed • To recognise that a variable can be set as a constant (fixed value) • To explain the importance of setting up a variable at the start of a program (initialization) • To decide where in a program to set a variable • To explain that there is only one value for a variable at any one time • To explain that if you change the value of a variable, you cannot access the previous value (cannot undo) • To explain that if you read a variable, the value remains • To use the same variable in more than one location in a program • To explain that the name of a variable is meaningless to the computer • To explain that the name of a variable needs to be unique

			needs to be unique			
Skills	• To outline methods of communicating and collaborating using the internet • To choose methods of internet communication and collaboration for given purposes • To evaluate different methods of online communication and collaboration • To decide what you should and should not share online	• To create a new blank web page • To add text to a web page • To set the style of text on a web page • To change the appearance of text • To embed media in a web page • To preview a web page (different screen sizes) • To insert hyperlinks between pages • To insert hyperlinks to another site • To add web pages to a website	• To identify a variable in an existing program • To experiment with the value of an existing variable • To use a variable in a conditional statement to control the flow of a program • To update a variable with a user input • To use an event in a program to update a variable	• To calculate data using a formula for each operation • To use functions to create new data • To use existing cells within a formula • To choose suitable ways to present spreadsheet data	• To position 3D shapes relative to one another • To use digital tools to modify 3D objects • To combine objects to create a 3D digital artifact • To use digital tools to accurately size 3D objects • To construct a 3D model which reflects a real-world object	• To identify a variable in an existing program • To experiment with the value of an existing variable • To update a variable with a user input • To use an event in a program to update a variable • To use a variable in a conditional statement to control the flow of a program