

Computing

VISION:	AIM:	RIGHTS RESPECTING SCHOOLS (RRS)	Behaviour charter
At Tillingbourne we want children to: <ol style="list-style-type: none"> 1. Love Learning 2. Find their strengths and talents 3. Achieve more than they thought possible 	Children are successful at Tillingbourne School because they are: <ul style="list-style-type: none"> • Aspirational • Responsible • Resilient • Curious • Confident • Caring 	FOCUS RIGHTS <ol style="list-style-type: none"> 1. The right to learn 2. The right to be heard 3. The right to be me 	All children must be: <p>Ready</p> <p>Respectful</p> <p>Safe</p>

	EYFS and KS1	Year 3	Year 4	Year 5	Year 6
Computer Science (Networks)					
Concepts	Technology around us: <ul style="list-style-type: none"> - To identify technology and computers - To recognise that a computer is an example of technology - To recognise that technology can help us - To talk about how information technology can help us 	Connecting computers: <ul style="list-style-type: none"> - 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 recognise that a digital device is made up of several parts - To recognise that computers can be connected to each other - To explain how computer systems can change the way that we work - To recognise that a network is made up of a number of components - To identify the benefits of computer networks 	The Internet: <ul style="list-style-type: none"> - To describe how networks connect to other networks - To outline how information can be shared via the World Wide Web - 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 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 	Sharing information: <ul style="list-style-type: none"> - To recognise that a system is a set of interconnected parts which 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 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 	Communication: <ul style="list-style-type: none"> - To recognise that data is transferred across networks using agreed protocols (methods) - To recognise that connections between computers allow access to shared stored files - To explain that data is transferred in packets - To recognise that 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 collaboration using the internet can be public or private

Skills	Technology around us: <ul style="list-style-type: none"> - Use and mouse and a keyboard - Identify technology beyond school - Show how to use information technology safely 	Connecting computers: <ul style="list-style-type: none"> - To identify input and output devices - To explain that a computer system accepts an input and processes it to produce an output - To explain how a computer network can be used to share information - To explain the role of a switch, server and wireless access point in a network - To identify network devices around me - To explain how networks can be connected to other networks 		Sharing information: <ul style="list-style-type: none"> - 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 	Communication: <ul style="list-style-type: none"> - 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
---------------	---	--	--	--	--

Computer Science (programming)

Concepts	<ul style="list-style-type: none"> - To match a command to an outcome - To recognise how to run a command (press a button) - To describe a series of commands as a sequence 	Sequencing sounds & events and actions: <ul style="list-style-type: none"> - 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 	Repetition: <ul style="list-style-type: none"> - To relate what 'repeat' means - To identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - To explain that we can use a loop command in a program to repeat instructions - To identify patterns in a sequence - 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 - To identify patterns in a sequence, eg '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 	Selection: <ul style="list-style-type: none"> - 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 	Variables: <ul style="list-style-type: none"> - 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 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 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 value at the start of a program - To explain that there is only one value for a variable at any one time - To explain that if you changed 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 explain that the name of a variable is meaningless to the computer - To explain that the name of variable needs to be unique
-----------------	--	---	---	--	---

Skills	<ul style="list-style-type: none"> - Understand that a program is a set of commands - To run a program on a device - To trace a sequence and make a prediction - To choose a series of commands that can be run as a program 	Sequencing sounds & events and actions: <ul style="list-style-type: none"> - 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 	Repetition: <ul style="list-style-type: none"> - To list an everyday task as a set of instructions including repetition - 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 recognise tools that enable more than one process to be run at the same time (concurrency) - To create two or more sequences that run at the same time 	Selection: <ul style="list-style-type: none"> - To choose a condition to use in a program - 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 use 'if... then... else...' to switch program flow in one of two ways 	Variables: <ul style="list-style-type: none"> - To identify a variable in an existing program - To experiment with the value of an existing variable - To choose a name that identifies the role of a variable to make it easier for humans to understand it - To decide where in a program to set up a variable - To update a variable with 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 the program - To use the same variable in more than one location in a program
---------------	--	---	--	--	--

Information technology (Data and information)

<p>Concepts</p>	<ul style="list-style-type: none"> - Use a tally chart to collect data - Explain that we can present information using a computer 	<p>Branching databases:</p> <ul style="list-style-type: none"> - 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 explain that a branching database is an identification tool - 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 relate two levels of a branching database using AND - To suggest real-world applications for branching databases 	<p>Data Logging:</p> <ul style="list-style-type: none"> - 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 	<p>Databases:</p> <ul style="list-style-type: none"> - To explain that a computer program can be used to organise 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 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 <p>Websites:</p> <ul style="list-style-type: none"> - To recognise the relationship between HTML and visual display - To recognise that web pages can contain different media types - To recognise that web pages are written by people - To recognise that a website is a set of hyperlinked web pages - To recognise components of a web page layout - To consider the ownership and use of images (copyright) - To recognise the need for a navigation path - To recognise the need to preview pages (different screens / devices) - To recognise the implications of linking to content owned by others 	<p>Spreadsheets:</p> <ul style="list-style-type: none"> - Identify questions that can be answered by spreadsheet data - Explain what an item of data is in a spreadsheet - 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 explain why data should be organised in a spreadsheet - 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
------------------------	---	--	--	--	---

<p>Skills</p>	<ul style="list-style-type: none"> - Use a computer to view data in different formats 	<p>Branching databases:</p> <ul style="list-style-type: none"> - To create questions with yes/no answers - To choose questions that will divide objects into evenly sized subgroups - To repeatedly create subgroups of objects - To identify an object using a branching database - To retrieve information from different levels of the branching database 	<p>Data Logging:</p> <ul style="list-style-type: none"> - 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 	<p>Databases:</p> <ul style="list-style-type: none"> - To choose different ways to view data - To choose which attribute and value to search by to answer a given question (operands) - To ask questions that need more than one attribute to answer - To choose which attribute to sort data by to answer a given question - To choose multiple criteria to search data to answer a given question (AND and OR) - To select an appropriate graph to visually compare data - To choose suitable ways to present information to other people <p>Websites:</p> <ul style="list-style-type: none"> - To review an existing website (navigation bars, header) - 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 embed media in a web page - To change the appearance of text - To add web pages to a website - To preview a web page (different screen sizes) - To insert hyperlinks between pages - To insert hyperlinks to another site 	<p>Spreadsheets:</p> <ul style="list-style-type: none"> - To calculate data using 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
----------------------	--	--	--	---	--

Information technology (Creating media)

<p>Concepts</p>	<ul style="list-style-type: none"> - Recognise that some digital device can capture images - To recognise that computers can be used to create art - To recognise that text on a computer can be changed and altered 	<p>Desktop publisher:</p> <ul style="list-style-type: none"> - 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 	<p>Audio production:</p> <ul style="list-style-type: none"> - 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 	<p>Vector graphics:</p> <ul style="list-style-type: none"> - 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 	<p>Video production:</p> <ul style="list-style-type: none"> - To explain the features of video as a visual media format - To recognise which devices can and can't record video - To explain the limitations of editing video on a recording device
------------------------	---	--	--	---	---

		<ul style="list-style-type: none"> - 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 <p>DTP = Desktop publishing</p> <p>Stop-frame animation</p> <ul style="list-style-type: none"> - 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 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. 	<ul style="list-style-type: none"> - To recognise that audio can be edited - To recognise that sound can be represented visually as a waveform - 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 <p>Photo editing:</p> <ul style="list-style-type: none"> - To recognise that digital images can be manipulated - To recognise that digital images can be changed for different purposes - To choose the most appropriate tool for a particular purpose - To consider the impact of changes made on the quality of the image 	<ul style="list-style-type: none"> - To explain how alignment and size guides can help create a more consistent drawing - To consider the impact of choices made 	<ul style="list-style-type: none"> - To identify that videos can be edited on a recording device or on a computer - To explain the purpose of a storyboard - To recognise that filming techniques can be used to create different effects - To recognise the need to regularly review and reflect on a video project - To identify videos can be improved through and reshooting or editing - To identify that videos can be edited on a recording device or on a computer - To recognise projects need to be exported to be shared
Skills	<ul style="list-style-type: none"> - Capture digital images - To combine a range of tools to create a piece of artwork - To use letter, number and space keys to enter text onto a computer 	<p>Desktop publisher:</p> <ul style="list-style-type: none"> - To show that page orientation can be changed - To add text to a placeholder - To organise text and image placeholders in a page layout - To add and remove images to and from placeholders - To edit text in a placeholder - To choose fonts and apply effects to text - To review a document - To add and remove images to and from placeholders - To move resize and rotate images <p>Stop-frame animation</p> <ul style="list-style-type: none"> - To set up the work area with an awareness of what will be captured - To plan an animation using a storyboard - To capture an animation - To use the onion skinning tool to review subject position - To move a subject between captures - To review a captured sequence of frames as an animation - To remove frames to improve an animation - To add media to enhance an animation - To review a completed project 	<p>Audio production:</p> <ul style="list-style-type: none"> - 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 <p>Photo editing:</p> <ul style="list-style-type: none"> - To use an application to change the whole of a digital image - To use an application to change part of a digital image - To use an application to add to the composition of a digital image - To change the composition of a digital 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 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 	<p>Vector graphics:</p> <ul style="list-style-type: none"> - 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 duplicate objects using copy and paste - To modify objects - To reposition objects - To group and ungroup selected objects - To combine options to achieve a desired effect - To create a vector drawing for a given purpose 	<p>Video production:</p> <ul style="list-style-type: none"> - To use different camera angles - To use pan, tilt and zoom - To identify features of a video recording device or application - 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 decide what changes I will make when editing - To use split, trim and crop to edit a video

Online safety

	<p>Copyright and ownership</p> <p>Managing online information</p> <p>Privacy and security – passwords</p> <p>Self-image and identity</p> <p>Online reputation</p> <p>Health, wellbeing and lifestyle</p>	<p>Managing information online</p> <p>Copyright and ownership</p> <p>Online bullying</p> <p>Online reputation</p> <p>Online relationship</p>	<p>Managing online information</p> <p>Health and wellbeing</p> <p>Privacy and security</p> <p>Copyright and ownership</p> <p>Managing information online</p> <p>Online bullying</p>	<p>Managing information online</p> <p>Self-image and identity</p> <p>Online bullying</p> <p>Managing online information</p> <p>Online reputation</p> <p>Health and wellbeing – age restrictions and content</p>
--	--	--	---	---