Town Farm Endpoint Document

What we want our pupils to know, understand and remember at the end of each year

Curriculum Subject: **COMPUTING**

The Town Farm Computing curriculum is built on the three pillars of progression:

Computer Science
Information Technology
Digital Literacy

DECLARATIVE KNOWLEDGE 'Knowing that'	**PROCEDURAL KNOWLEDGE** 'Knowing how'	**KEY VOCABULARY**
EYFS		
Know that: • Online means using the internet on a computer, tablet, or phone to watch, play, or learn. • Staying safe online is important. To know how to stay safe online – not to give information online and to report anything that worries them to a grown up. • IT equipment can be used to find out information.	**Know how:** • To use tablets to take photos of their own work. • To use the IWB deliberately and purposefully. • To use their fingers to manipulate small objects with increasing dexterity.	• Online • Safe • Screen, monitor, keyboard, mouse, interactive whiteboard, switch, laptop. • Tablet, touch • Click, point, type, cursor • Battery, power

• Computers / tablets can be used to present ideas. • Technology can be turned on / off. • Some things need batteries to supply power. • Batteries need to be charged.		
YEAR 1		
What are the SMART rules for keeping safe online?		
ONLINE SAFETY **Know that:** Safe Search filters must be used when using a search engine The SMART rules for Internet safety help to keep them safe Personal information should be kept safe from strangers	**Know how:** To make links between the online and offline world To turn the computer on and log in To use a keyboard To use a mouse, including the left click	• Username / Password • Online / Offline • Internet • E-safety / Online safety • Search / Engine • Edit • Icon • Keyboard/ Mouse / Display / Screen • Log on / in / off • Software • SMART • Print, save
How can I programme the Beebot to move?		
PROGRAMMING TOYS **Know that:** An algorithm is a list of rules to follow in order to complete a task or solve and problem and know	**Know how:** To program a Bee-Bot using the arrow buttons	• Debug • Algorithm • Arrow • Forwards, backwards, turn

why it is important to be precise when writing an algorithm	To check their work for mistakes (debug); To start their programming sequence again if they need to To plan and check an algorithm	• Programme, programmable • Instructions
How do I use a computer?		
COMPUTER SKILLS **Know that:** There are different examples of technology in the classroom; to name the main parts of a PC device and begin to understand what each part is used for. Some of the main keys on a keyboard are needed to complete a task The buttons on a window change its shape and position.	**Know how:** To switch on a PC device, sometimes with adult support and use a keyboard to log on to a PC device To use some of the main keys on a keyboard to complete a task To use the click and double-click function on a mouse or trackpad to open and close applications from the Desktop or Start menu	• PC (personal computer) • Desktop • Mouse • Keyboard • Keys • Logon / log in • Right click / left click • Device • Technology • Shift / return / undo • Window • Buttons • Resize
How do I write on the computer?		
WORD PROCESSING SKILLS **Know that:** The keys on a keyboard execute different functions The mouse can be used to execute different functions	**Know how:** To type with two hands To use undo and redo	• Shift, space, enter, undo, redo, backspace, delete, arrow • Text • Bold, underline, italic • Folder, save • Edit • Up, down, left, right

The appearance of a text can be altered using keys and the mouse Work produced on word processing programmes can be saved and retrieved	To make text bold, italic or underline To save their work in a folder To edit text using backspace, delete and the arrow keys To use a mouse and its functions to perform basic tasks e.g. Select single words	
How do I paint on the computer?		
DIGITAL PAINTING **Know that:** Digital paintings can be created using a computer software programme Certain tools are helpful to alter a mistake on a digital painting (and can access these independently) Text can be added to a digital painting	**Know how:** To use brush tools effectively to create a digital painting, selecting their own colours To use shapes to create a digital painting and fill those shapes with colour To add text to a digital painting	• Paint, paintbrush, • Shapes, fill, colour • Text • Digital • Painting • Software / hardware
Can I draw, paint and write words on the computer?		
USING AND APPLYING **Know that:** Different computer software programmes can be used to create digital artefacts	**Know how:** To use the keyboard and mouse to log on, open applications and interact with tools To type letters and symbols	• Click, double-click, drag, object • Save, open • File, folder

Word documents are used for creating text documents Paint software is used to create digital paintings Work produced on computer programmes can be saved and retrieved	To format text in different ways To click, double-click and drag objects To save and open files	

DECLARATIVE KNOWLEDGE 'Knowing that'	PROCEDURAL KNOWLEDGE 'Knowing how'	KEY VOCABULARY
YEAR 2		
How can I stay safe online?		
ONLINE SAFETY **Know that:** A 'digital footprint' is a trail of places that they have visited on the internet and the activities and games they have taken part in A digital footprint does not automatically disappear An adult must be asked for advice if they are unsure about anything they see online Unkind online behaviour is not acceptable and know what to do if they think someone is being unkind to them	**Know how:** To use a website to search for information To identify possible dangers online To choose appropriate websites for their age To safely search for information online	• Digital footprint • Website • Filtering • Bullying
How can I copy an artist's style with painting software?		
COMPUTER ART **Know that:** Different programme tools produce different techniques and effects Formatting a tool can adjust the colour and size	**Know how:** To switch between program tools to produce different techniques	• Draw, brush • Technique • Formatting • Tool

Different art styles can be created	To alter the formatting of a tool to adjust the colour or size To manipulate shapes and objects to recreate an art style.	
How can I create and debug a programme?		
PROGRAMMING **Know that:** Programming software is used to tell the computer what to do Programs execute by following precise and unambiguous instructions Simple algorithms (made by using blocks) affect the sprite and its movements Blocks can be snapped together to create scripts The different areas of the Scratch interface have individual functions	**Know how:** To use the mouse and right / left / double-clicks to perform functions To debug programmes To move blocks into the Scripts Area To snap blocks together to combine commands To create simple algorithms using several different blocks. To use the repeat and green flag blocks to control algorithms.	• Block, script • Algorithm • Debug • Turn, move • Function • Flag block • Sprite
How can I make a presentation on the computer?		
PRESENTATION SKILLS **Know that:** PowerPoint is a presentation tool	**Know how:** To insert slides, add and type in a text box	• PowerPoint • Slides • Text, text box • Folder, file

Slides can be inserted into the presentation Text can be inserted onto a slide Work produced on computer programmes can be saved and retrieved	To create folders, print files, add images, format text and text boxes To open PowerPoint and create a new presentation To use the mouse and right / left / double-clicks to perform functions	• Image • Format
What technology is around us?		
TECHNOLOGY AROUND US **Know that:** Different types of technology are used in different settings (e.g. home, school, office) and to identify these Technology is used in their lives and explain the benefits of doing so Technology has changed over time and that technology will continue to evolve Several people have been significant in shaping the world of information technology (Ada Lovelace, Alan Turing, Bill Gates, Sir Tim Berners-Lee)	**Know how:** To identify risks of being online know how to keep safe	• AI (Artificial Intelligence) • AR (Augmented Reality) • VR (Virtual Reality) • Digital Device • WWW (World Wide Web) • Computer-generated • Content • Micro-controller • Smartphone, smartwatch, laptop • Network • Wireless • Internet
Can I use and apply what I have learned this year?		
USING AND APPLYING **Know that:**	**Know how:** To control the mouse to produce different effects (dots/lines)	• Block, script • Algorithm • Debug • Turn, move

Different software programmes can be used for creating computer art, PowerPoint presentations and Scratch programming The mouse and keyboard execute different functions in each programme	To add new slides to a presentation with a main idea on each slide; insert and reorder slides To make a character move in Scratch	• Function • Flag block • PowerPoint • Slides • Text, text box • Folder, file • Image • Format

DECLARATIVE KNOWLEDGE 'Knowing that'	PROCEDURAL KNOWLEDGE 'Knowing how'	KEY VOCABULARY
YEAR 3		
How can I stay safe online?		
ONLINE SAFETY **Know that:** Advertising is used to promote products, services or ideas at a cost It is important to create a strong password and why Privacy settings allow them to control who sees their information and how this data is used. Online communities exist and know their pros and cons	**Know how:** To recognise and define cyberbullying and know how to report it To identify adverts online To use privacy settings To create a strong password To send and receive an email	• Cyberbullying • Online, offline • Advert, advertising • Persuasion • Password • Generate • Privacy, settings • Email • Online community
How can I change?		
WORD PROCESSING **Know that:** The font can be formatted to alter its appearance Images can be inserted into a text Keyboard shortcuts can be used to execute a function quickly	**Know how:** To change case, align text, select single words, cut, copy and paste text and format the font. Know how to insert images and copy a screenshot into another application	• Font, case, align, text, format • Cut, copy, paste, edit • Insert • Application • Control • Shortcut

	To use formatting tools to change the look of a document. To use <CTRL> keyboard shortcuts	
PROGRAMMING TURTLE LOGO AND SCRATCH **Know that:** Algorithms can be created to move a character and make it perform a specific function A computer bug is an error that stops a programme working correctly. Debugging is checking for errors and fixing them	**Know how:** To create and debug algorithms to draw patterns using regular polygons using the repeat command/ block To identify errors in a programme and be able to debug the error To move blocks into the Scripts Area Snap blocks together to combine commands	• Block, script • Algorithm • Debug • Turn, move • Function • Flag block • Sprite
DRAWING AND DESKTOP PUBLISHING **Know that:** Microsoft Publisher is a desktop publishing application which is more suited to design than text composition Microsoft Publisher can be used to create a variety of different documents Objects can be inserted and manipulated for effect	**Know how:** To use Microsoft Publisher to create a document To draw objects, insert textboxes and images To order and group objects To move, resize and arrange text boxes and images effectively	• Microsoft Publisher • Application • Document • Insert • Text box • Object • Image • Resize • Reaarange
ONLINE SURFERS AND SEARCHERS **Know that:**	**Know how:**	• Internet Protocol Address • Internet Service Provider (ISP) • search engine • web browser

The Internet is a global network of computers which provides a variety of information and communication facilities Packets of data move along routes The different connections that can be used Reliable links are shown as a secured padlock in the URL address bar	To use a search engine to find information and implement strategies to improve results when searching online, including using keywords To use a search engine to copy and paste images across to a blank document.	• web page • website • World Wide Web • Uniform Resource Locator (URL) • Domain • Router
PRESENTATION SKILLS **Know that:** PowerPoint can be used to present information The look of a presentation can be altered by making changes to the slide show	**Know how:** To create a hyperlink to another slide To use slide transitions To insert audio and video files and to record audio onto a slide To copy and organise slides as required	• Animation • Format • Hyperlink • Multimedia • Slide • Slideshow • Theme • Transition

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YEAR 4		
ONLINE SAFETY **Know that:** Search results are ranked on a SERP (Search Engine Results Page) to present the most relevant, useful results quickly Other people's work should be used respectfully and that copying their work is called 'plagiarism' It could be dangerous to share private information	**Know how:** To use other people's work respectfully To identify comments or messages that may be hurtful to others and edit their own messages and comments to make sure they are kind	• Citation • Digital citizen • Keywords • Online • Personal information • Plagiarism • Privacy settings • Search engine results page (SERP) • Social media
ANIMATION **Know that:** Traditional methods of animation were hand-drawn, frame-by-frame Onion-skinning is used in 2D animation to see several frames at once – traditionally on thin paper over a light source. Stop-motion is an animated filmmaking technique in which objects are manipulated physically between individually photographed frames	**Know how:** To use a time slider to find a specific point in a film clip to insert or edit an object To use onion-skinning techniques to make slight changes to an image To edit and refine images in a stop motion animation short film clip	• Onion-skinning • Animation, animators • Frame, frame rate • Still image • Stop motion • Structured timing
WORD PROCESSING **Know that:** Page layout can be changed (portrait / landscape)	**Know how:**	• Select, edit, manipulate • Insert, image, format • Spellcheck • Tool

A table can be added to a text document Text can be manipulated for effect Images can be inserted into a document	To select, edit and manipulate text in different ways; insert an image into a document and format it; use formatting tools to improve the layout; use the spellcheck tool To insert a table and add or delete rows or columns To change the orientation of the page Use some of the main keyboard shortcuts To type using two hands, with increasing speed and accuracy	• Orientation, landscape, portrait
TURTLE LOGO **Know that:** Algorithms create procedures Programming software can draw shapes and create different images by moving a sprite Coordinates tell a sprite their position	**Know how:** To create an algorithm to program a procedure To use programming language (Logo) and software (Turtle) to draw shapes and create different images by moving a turtle on the screen Use the pen up / pen down commands To move the turtle to a set coordinate using setpos, setxy, setx, sety	• Algorithm • Arc • Command • Coordinate • Debug • Procedure • Random • repeat
SCRATCH **Know that:** Conditional statements use if / if then / when variables when writing code Repeat loops, sensing blocks and operator blocks can be used for a desired outcome	**Know how:** To use conditional statements to use variable blocks when writing code	• algorithm • block • code • debugging • repetition • sequence • variable • Control blocks

Logical thinking explains how algorithms work Detecting and correcting errors in algorithms and programmes makes them work correctly	To select appropriate blocks for a desired outcome, including using repeat loops, sensing blocks and operator blocks To use logical thinking to explain how algorithms work and are able to detect and correct errors in algorithms and programs	• Interface • Duplication • Operator blocks • Sprite • Backdrop
USING AND APPLYING **Know that:** Turtle Logo and Scratch are programmes which support programming Characters / Sprites can be modified	**Know how:** To create a new character or sprite for a game To choose a sprite and modify it to create a new character	• Sprite, character • Edit • Animate

DECLARATIVE KNOWLEDGE 'Knowing that'	PROCEDURAL KNOWLEDGE 'Knowing how'	KEY VOCABULARY
YEAR 5		
ONLINE SAFETY **Know that:** Some emails can be spam and that this can be dangerous Not everything they see online is true Unsafe behaviour online can present itself in different ways	**Know how:** To identify a dangerous spam email To create multiple strong passwords for use across different platforms How to identify unsafe online behaviour To stay safe online	• Technology • Respectful, responsible behaviour • Cite, citing • Editing
CONTROLLING DEVICES: FLOWOL **Know that:** Flow charts are diagrams which depict a process using rectangles, ovals, diamonds and connecting arrows Conventional symbols execute a specific function	**Know how:** To follow written instructions to draw a simple flowchart. To insert and modify symbols and add inputs into a flowchart To use decisions and sub-routines To program inputs and outputs	• Flowchart • Sequence, selection, repetition • Variables • Input, output • Symbol • Deconstruct, debug • Decision, sub-routine
RADIO STATION **Know that:** Sounds can be recorded and replayed	**Know how:** To record and play their own sounds in recording software	• Audio • Backing track • Edit • Gain • Input, output • Jingle

Recordings can be edited to improve their output quality Recordings can be used to produced podcasts	To listen to and improve on their own recordings by re-recording To plan and record appropriate audio content for a podcast To evaluate what features makes good quality audio content	• Mute • Podcast • Record • Voicover • Waveform • Speed, pitch, tempo
SCRATCH **Know that:** Conditional statements in the code tell the computer when an action should occur, including if...then and if... then...else blocks Enhancements can be constructed which enhance the programming output Problems in the code can be solved through decomposition	**Know how:** To design backdrops and sprites To program consequences for actions completed To add appropriate effects to enhance the game Understand simple algorithms by predicting what may happen within their code Operators blocks work and can use these within their code decomposition works and can decompose a problem within their code	• Algorithm • Debug • Deconstruct • Operator blocks • Conditional statement • Code • Costume • Backdrop • Variable • Consequence • Repetition • Decomposition, decompose
3D Modelling (Now a Y6 unit)		
USING AND APPLYING – designing a bedroom **Know that:** Various programmes can be selected and/ or combined to accomplish their goals	**Know how:** To select, use and combine a variety of software to design and create a range of programs, systems and content that accomplish given goals, including	• Research, plan, design, create, promote, evaluate, present

Programmes and software applications can be evaluated to determining their success in achieving the outcome	collecting, analysing, evaluating and presenting data and information	

DECLARATIVE KNOWLEDGE 'Knowing that'	PROCEDURAL KNOWLEDGE 'Knowing how'	KEY VOCABULARY
YEAR 6		
ONLINE SAFETY **Know that:** The address bar of a website shows if it is secure Some people might have online friendships and the pros and cons of this Stereotype means that some people hold a strong idea about what someone is like based on their characteristics, which may be untrue Gender roles are sometimes stereotyped The media plays a powerful role in shaping ideas about gender stereotypes	**Know how:** To check the website address bar for a locked padlock to show it is secure To identify secure websites by identifying privacy seals of approval.	• Address • Website • Secure / unsecure • Stereotype • Gender • Privacy / seals • Media
SPREADSHEETS **Know that:** Spreadsheets are a software programme which can store, handle and interpret data Spreadsheets are organised into rows and columns Spreadsheets work by programming algorithms to manipulate data within cells / pages	**Know how:** To enter text and numbers into a spreadsheet To identify and refer to cells by row and column To enter formulae with the SUM function To enter formulae into cells	• Spreadsheet • Cell • Column • Row • Data • Formula • SUM • Pages

	To use further functions including AVERAGE, MIN and MAX	
KODU **Know that:** Kodu is a visual programming tool where tiles are connected to create code to build 3D worlds In Kodu, they can create 3D terrains and populate these with characters and props	**Know how:** To open Kodu and navigate the programming environment using keyboard or mouse To add objects to a world and program them using When and Do instructions To plan and design the features of an original virtual environment To program a character to move around a track To analyse and deconstruct code to work out its purpose.	• Kodu • 3D • Terrain • Prop • Environment • Track • Deconstruct
USING AND APPLYING **Know that:** They can design a new game, using appropriate software to present information and advertise a product launch. Research is important in finding out what people like / dislike Evaluations help them to understand how successful a project has been	**Know how:** To create a game using programming software such as Scratch, Turtle Logo and Kodu To carry out research and ask questions regarding computer games To carry out an evaluation to assess their product's success	• Advertise • Assess • Evaluation • Research
SCRATCH: Animated Stories **Know that:**	**Know how:**	• Block • Record

Coding is used to write algorithms Debugging is used to solve problems in existing codes	To select appropriate sprites to fit within a scene and use costume changes for motion effect To use the broadcast message and receive block to structure and control the timing of event To insert the show and hide block into an algorithm and locate the correct place to make a sprite appear visible To order a series of backdrops to create a story narrative and narrate events with required timings To record a sound to enhance an animated story and insert blocks to play the recorded sounds	• Narrative • Broadcast message • Visible / Hidden • Sequence, selection, repetition • Decompose • Audio / Sound
FILM MAKING **Know that:** Digital videos can be recorded on various devices Video files can be imported into editing software and be manipulated to create films	**Know how:** To use a digital video camera (or similar device) to record To import video files into video editing software To frame an appropriate filming shot when interviewing To arrange video files to produce a complete film.	• Video • Film making • Edit • Cut • Scene • Props • Frames