CODING
TECHNOLOGY

S M A R T

Algorithms **Decomposition** **Logic** **Debugging**
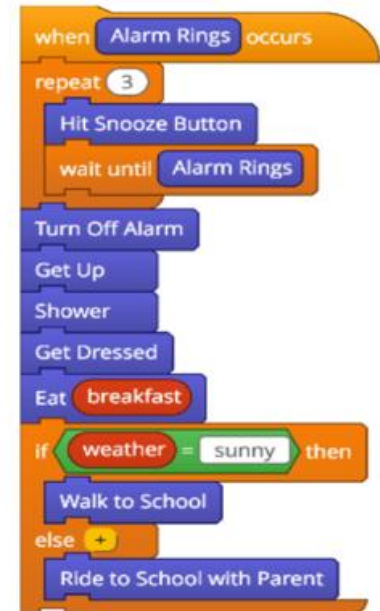
Wyborne Primary Curriculum

Footscray Road New Eltham SE9 2EH

Computing

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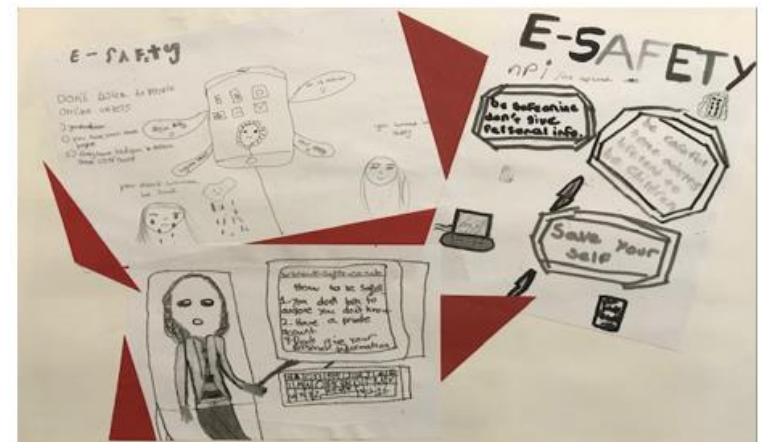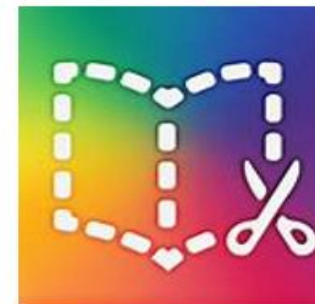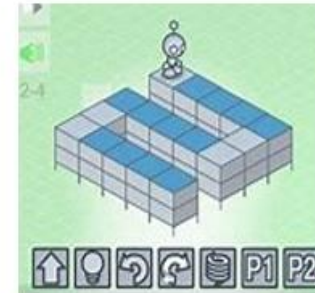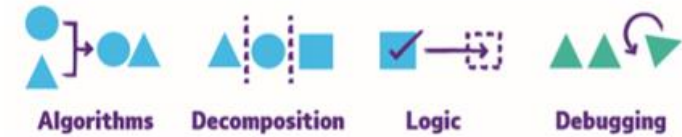
when **Alarm Rings** occurs
repeat 3
Hit Snooze Button
wait until **Alarm Rings**
Turn Off Alarm
Get Up
Shower
Get Dressed
Eat breakfast
if weather = sunny then
Walk to School
else +
Ride to School with Parent

E-SAFETY
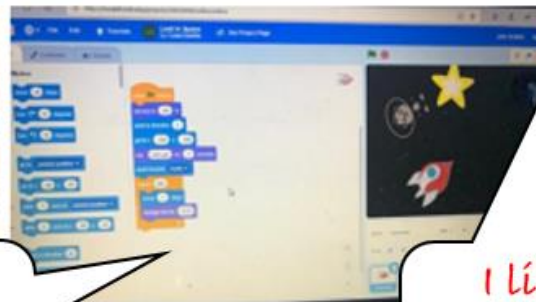
What are we trying to achieve for our learners through the computing curriculum?

The vision for our pupils at Wyborne is that during their learning journey they will be provided with the opportunities to gain life-skills that will enable them to embrace and utilise new technology in a socially responsible and safe way. We want children to become independent users of computing technologies, gaining confidence and enjoyment from their activities.

At Wyborne, the use of technology will support learning across the entire curriculum and ensure that our curriculum is accessible to every child. Not only do we want them to be digitally literate and competent users of technology but through our computer science lessons we want them to develop creativity, resilience, problem-solving and critical thinking skills. We want our pupils to have a breadth of experience to develop their understanding of themselves as individuals within their community but also as members of a wider global community and as responsible digital citizens.

How will we implement our computing curriculum?

At Wyborne, although we have a timetabled computing session each week, we believe the majority of computing should be embedded across the curriculum, which should allow for some flexibility. We teach the three computing strands Computer Science, Digital Literacy and Information Technology. However, the timetabled computing session usually focuses on Computer Science, which normally requires a more explicit approach. A Computer Science session can also concentrate on tinkering. A tinkering session looks at introducing a new app or tool and giving children opportunity to experiment and familiarise themselves with the different elements before it can be applied in a more focused approach across the curriculum.

The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, therefore ensuring that learning is built upon. For example, children in Key Stage 1 learn what algorithms are, which leads them to the design stage of programming in Key Stage 2, where they design, write and debug programs, explaining the thinking behind their algorithms.

National Curriculum Overview

Area	Key Stage 1 Aims	Key Stage 2 Aims
Computer Science (CS)	1. Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions 2. Create and debug simple programs 3. Use logical reasoning to predict the behaviour of simple programs	4. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 5. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output 6. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 7. Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web 8. Appreciate how [search] results are selected and ranked
Information Technology (IT)	1. Use technology purposefully to create, organise, store, manipulate and retrieve digital content	2. Use search technologies effectively 3. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Digital Literacy (DL)	1. Recognise common uses of information technology beyond school 2. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	3. Understand the opportunities [networks] offer for communication and collaboration 4. Be discerning in evaluating digital content 5. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

EYFS Computing Overview: Key Skills & Knowledge – Computing planning in context of long-term knowledge & coherence

EYFS Computing Focus:	Subject Rationale: How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)	Key vocabulary/ questions:	Early Learning Goals
Digital Literacy (DL) **Resources on:** Purple Mash, Barefoot Computing, Twinkl **Other suggested sites:** https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://nationalonlinesafety.com/lesson-plans https://www.net-aware.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school **Apps:** Tech Safe	Given the technological nature of the world in which we live, a high-quality early years technology provision is essential if our children are to grow up to become 'digitally literate' citizens, equipped to take an active and successful part in society. The cornerstones of children's digital literacy are laid during the EYFS. During this unit in EYFS, children will learn about everyday technologies and use IT to enhance and support their learningIn this unit. They will begin to understand not to talk to strangers and that they must only use a computer/device with an adult's permission. Children will be shown age appropriate videos and have discussions around the topic of stranger danger, online communication and permission.	stranger permission *What is a stranger?* *Do we know everyone we can chat to online?*	Technology: Children recognise that a range of technology is used in places such as homes and schools. Knows that information can be retrieved from computers. They select and use technology for particular purposes. Completes a simple program on a computer. Interacts with age-appropriate computer software. Shows an interest in technological toys with knobs or pulleys, or real objects.
Information Technology (IT) **Resources on:** Purple Mash, Barefoot Computing **Other suggested sites/programs:** 2Simple (see desktop) **Apps:** Green Screen app	Children will be given opportunities to use IT to develop skills across the areas of learning. By the end of EYFS most children should be able to: • log on to a computer independently • perform simple functions using a mouse and keyboard • use appropriate internet-based games and activities to support their learning • use a touch screen to input and select information In Reception, children will have opportunities to use apps and paint programs such as 2Paint a Picture (Purple Mash) and explore the other painting tools such as simple, slice, spinner, wet paint and swirly. Using a computer program or app, children will be given scenes from a story to illustrate. Teachers can find or create their own storybook to play back and listen to with the children and/or make a class story together where the children can use the record tool to record their own voice. Teachers and children can use the camera and video feature to record each other acting in role. Music apps and programs such as Purple Mash's 2Beat will be used to explore making different sounds with different instruments. Ipads (for recording) and old computing equipment (pretend office) can be used in role plays, for example, at the vets. Ch can think about the technology the vet might have to use to look after the animals in the vets, use some junk material to make and include these in the role play area. Apply this to other jobs.	mouse screen keyboard computer tablet	Exploring and using media and materials: Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Being Imaginative: Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music,

| Computer Science (CS)
Resources on: Purple Mash,
Other suggested sites: J2Code
Apps: Daisy Dino, Beebot, Scratch Jr, Green Screen app

*Children to use beebots | By the end of EYFS most children will be able to complete a simple computer program. Children will use resources such as Beebots to start becoming familiar with programming and positional language.

Chilren will have developed their sequencing skills, which can be any activity that explores pattern making, spotting errors in sequences and predicting what comes next. They will be given opportunities to sort objects, for example sorting stones or creatures that are also coloured and 2D shapes.

Children in EYFS will have activities like draw my monster or build-a-robot, where one child instructs another on how to build their robot based on a design they have drawn. They can use verbal, written or drawn instructions. Sequences should be related to daily routines, such as getting ready for school | What can you create? Can you make a pattern using only one colour but find different shades of the colour to create the pattern with?
What will your character sound like? | dance, role play and stories.

Being Imaginiaitve: Captures experiences and responses with a range of media, such as music, dance and paint and other materials or words.

Shapes, space&measures: many areas can be linked with computing using websites and programs like Purple Mash (2Simple)

Expressive arts and design: Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. |

Year 1 Computing Overview: Key Skills & Knowledge – Computing planning in context of long-term knowledge & coherence

| Year 1

Computing Focus:	Subject Rationale: How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)	Key vocabulary/ questions:	Target Tracker Assessment Statements:
Digital Literacy (DL)
Resources on: Purple Mash, Barefoot Computing, Twinkl
Other suggested sites:
https://www.internetmatters.org/schools-esafety/primary/teaching-resources/
https://nationalonlinesafety.com/lesson-plans
https://www.net-aware.org.uk/
http://www.childnet.com/
http://www.theparentzone.co.uk/school
Apps: Tech Safe | In this unit children will *begin* to learn to use technology safely and respectfully, keeping personal information private; identifying where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Children will learn about the potential dangers in the online world and what basic steps we all need to take in order to have positive digital experiences. They will learn to do the following:
• Safely search for images online (e.g KidzSearch)
• Understand what personal information is
• Name, date and save work
• With support, compose an email
Curriculum Links:
Circle times, PSHE | stranger
email
search
personal information
Who is an adult you trust?
Who could you speak to if you need help on the computer?
Who would you send emails to? | To recognise how I use technology in my home and at school.

To know to tell an adult if I see anything worrying online. |

Information Technology (IT) **Resources on:** Purple Mash, Barefoot Computing, Twinkl **Other suggested sites/programs:** Word, J2Code **Apps:** Book Creator, Green Screen app, Pyonkee	Children will **begin** to learn to use technology purposefully to create, organise, store, manipulate and retrieve digital content. In this unit they will learn **basic typing and word processing** skills, how to type with two hands, use the shift, space and enter keys properly, and edit work by using the backspace, delete and arrow keys. Children will then go on to learn how to use undo and redo and to select and format text. They will begin to learn basic computer skills that they will need in order to be able to use a desktop or laptop computer. Children will learn how to use a computer mouse or a trackpad and how to switch on and shut down a computer. They will apply their mouse or trackpad skills by launching applications, manipulating windows and opening and saving files and folders. Year 1 focuses are: **Word Processing** • Using a keyboard to input text • Editing text • Formatting the font of text **Designing** • Creating a simple poster containing colours, images and text (**Book Creator**)	text input font images Microsoft Word word processing *How can you format text in different ways?* *Can you show me how to type a symbol using the shift key?* *Can you draw a shape and resize it (using paint software*	To recognise common uses of information technology in the home and school environment. To use technology purposefully to create digital content. To use a program to create a simple document.
	Curriculum Links/Ideas: Whole school projects, History-Great Fire of London poster/leaflet, Science-Seasons comparison page		
Computer Science (CS) **Resources on:** Purple Mash, Twinkl, **Other suggested sites:** **Apps:** Daisy Dino, Beebot, Scratch Jr, Pyonkee *Children to use beebots	In this unit, children will to **begin** to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. **Scratch Jr** encourages basic understanding of algorithms and how to create precise instructions for visual working programs. It begins to develop a sense of creating, debugging and logical reasoning, which are required for further programming at KS2. Children will learn to do the following: • Instruct a sprite to move and change size • Create a program that plays a sound. • Create simple, precise and ordered instructions using pictures Through unplugged tasks and the use of Bee-Bots, the ch will be introduced to algorithms as a set of step-by-step instructions given to a device, will learn how to debug simple algorithms and how to use logical reasoning to predict how a program will behave.	sprite algorithm ordered instructions sound program Scratch Jnr *Can you show me how to add a new character and change the background (Scratch Jnr)?* *Can you get your srpite to follow a sequence of instructions?*	Use technology purposefully to create digital content comparing the benefits of different programs.
	Curriculum Links: Maths-Direction		

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Year 2 Computing Overview: Key Skills & Knowledge – Computing planning in context of long-term knowledge & coherence

Year 2 Computing Focus:	Subject Rationale: **How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)**	Key vocabulary/ questions:	Target Tracker Assessment Statements:
Digital Literacy (DL) **Resources on:** Purple Mash, Barefoot Computing, Twinkl Other suggested sites: https://nationalonlinesafety.com/lesson-plans https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://www.net-aware.org.uk/news/fortnite-all-you-need-	In this unit, children will be **developing** how to use technology safely and respectfully, keeping personal information private; identifying where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children will learn about how what they do online leaves a trail called a digital footprint. Children will be introduced to the term *'cyberbullying'* and look at how they should communicate online and deal with instances of people being unkind via digital means. They will learn to do the following: • Understand digital footprint • Use keywords to safely search for information • Recognise if a website is appropriate for children • Distinguish between kind and unkind behaviour online • Using links to access information.	digital footprint, search engine, links, online behaviour *What do you do if you experience unkind online behaviour?* *Should you report someone's negative behaviour if it's not*	To use technology safely and keep personal information private.

		directed at you? What is a digital footprint?	
know/ http://anti-bullyingalliance.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school **Apps:** Tech Safe	**Curriculum Links:** Circle times, PSHE		
Information Technology (IT) **Resources on:** Purple Mash, Twinkl **Other suggested sites/programs:** PowerPoint, Paint, 2Simple (see desktop), J2Code **Apps:** Book Creator, Green Screen app	In this unit children will be *developing* how to to use technology purposefully to create, organise, store, manipulate and retrieve digital content. Lessons will focus on important computer skills needed for safe and effective computer use and introduce some further skills concerning the use of folders, searching for files and printing. Children will be introduced to presentations and will be able to teach the skills needed to create a simple presentation. They will compare different programs like **Powerpoint** and **Book Creator**. Children will reproduce the painting styles of great artists using computer programs. Check that whatever you are using will allow the children to meet the objectives. At the end of the unit your class will have the opportunity to use a mixture of the styles and skills learnt within this topic to produce their own computer-painted masterpiece! In Year 2, children will learn the following: **Presentation Skills** • Using folders to store information • Creating a simple presentation with text and images in a logical order **Designing** • Using tools in paint to create different styles of art **Curriculum Links:** Art-painter focus, whole school projects, castles	folder presentation Microsoft PowerPoint text images paint drawing tool fill tool shape too *Can you retrieve a file from a saved location? Can you control the mouse to produce different effects?*	To recognise common uses of information technology beyond school. To use technology purposefully to create, organise, store, manipulate and retrieve digital content. To use technology purposefully to create digital content comparing the benefits of different programs.
Computer Science (CS) **Resources on:** Purple Mash, Twinkl **Other suggested sites:** https://turtleacademy.com/ Scratch **Apps:** Beebot, Scratch Jr, Lightbot, *Children to use beebots, create their own floor map and use the wooden maze (see subject lead)	Children will be developing their knowledge of algorithms; how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions. Children need to start using the language of **Logo**; they begin by giving and following instructions to move forward and make quarter turns, followed by walking simple straight-lined shapes. The language then needs to be extended so they can use the main Logo commands. Children will create, text and debug algorithms for shapes and routes around school in preparation for using the commands in the Logo programs. They will then learn how further develop algorithms using the "repeat" command. These skills are then developed by teaching children to create algorithms in Scratch using a selection of blocks. In Year 2, children will learn how to: • Use left and right turn algorithms • Give and follow algorithms to make half and quarter turns • Use a repeat function • Change the backdrop on **Scratch** • Begin to debug simple programs involving the skills above **Curriculum Links:** Maths-direction, time, prepositions, routines, problem solving	algorithm sprite turn command repeat function backdrop debug Turtlelogo Scratch *What does debug mean? How can you save time when using the same instruction more than once?*	To use logical reasoning to predict the behaviour of simple programs. To create simple programs To create and debug simple programs. To debug simple programs by using logical reasoning to predict the actions instructed by the code. To understand that programs execute by following precise and unambiguous instructions.

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Year 3 Computing Overview: Key Skills & Knowledge – Computing planning in context of long-term knowledge & coherence

Year 3 **Computing Focus:**	**Subject Rationale:** **How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)**	**Key vocabulary/ questions:**	**Target Tracker Assessment Statements:**

Digital Literacy (DL)	In Year 3, children will look at how to write and send emails, as well as how to decide if an email is safe to open. They will build on their existing knowledge of cyberbullying and how to deal with unkind behaviour online. The use and importance of *privacy settings* is introduced and children will discuss the types of information we should not share online. They will build on the idea of a digital footprint by thinking about how the adverts they see online are targeted at them.	cyberbullying advertisements password safe email	Use technology safely and respectfully, keeping personal information private.
Resources on: Purple Mash, Barefoot Computing, Twinkl Other suggested sites: https://nationalonlinesafety.com/lesson-plans https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://www.net-aware.org.uk/news/fortnite-all-you-need-know/ http://anti-bullyingalliance.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school Apps: Tech Safe	In Year 3, children will: • Begin to understand cyberbullying is • Recognise advertisements online • Create passwords • Know how people communicate online • Independently compose an email and decide if an email is safe to open	*What is cyberbullying? Why is a strong password important? What's a targeted advert? What are the positive and negative aspects of online communities?*	Use technology safely and recognise acceptable and unacceptable behaviour.
	Curriculum Links: PSHE		
Information Technology (IT)	Year 3 children will learn to use various features for formatting text. The children will be introduced to screenshots and the Snipping Tool, and secure use of passwords. Children will develop their use of presentation software. Lessons will teach children new skills, following on from previous skills learnt; setting the theme, slide transitions, animating objects onto the slide, creating hyperlinks in the action settings and adding audio and video.	screenshot shift caps lock text box keyboard shortcut grouping template hyperlink transition animation theme	Recognise common uses of information technology beyond school. Make efficient use of familiar forms of input and output devices.
Resources on: Purple Mash, Barefoot Computing, Twinkl Other suggested sites/programs: PowerPoint, Word Apps: Book Creator, Green Screen app	**Word Processing** • Taking and inserting screenshots • Changing between upper case and lower case • Aligning text to aid presentation (including use of bullet points andnumbering) • Insert and format text boxes • Begin to use keyboard shortcuts (ctrl + C, ctrl + V, caps lock) • Drawing using shapes and lines • Grouping objects **Presentation Skills** • Create slide templates • Create hyperlinks (including buttons) between slides • Format transitions, animation and themes	*Why are shortcuts helpful? Can you show me how to group and order objects (PowerPoint)?*	Use technology purposefully to create digital content comparing the benefits of different programs.
	Curriculum Links: Whole school projects, fact files/Powerpoints on a history topic (Stone Age, Ancient Egypt, Romans)		
Computer Science (CS)	*Following on* from the Year 2 unit, children will use the basic commands in **Logo** to move and draw using the turtle on screen, and then further develop algorithms using the "repeat" command. These skills will then be developed by teaching children to create algorithms in **Scratch** (website) using a selection of blocks. • Use turning algorithms to make more complex shapes and patterns • Begin to debug simple programs involving the skills above In Year 3, children will also learn how word order affects the results returned. They will learn how to **bookmark or favourite** a page and name different types of online communication.	algorithm repeat function debug Scratch Turtlelogo sprite sequence code	Design, write and debug programs that control or simulate virtual events. Use logical reasoning to explain how some simple algorithms work.
Resources on: Purple Mash, Twinkl Other suggested sites: Scratch (see desktop or website), https://turtleacademy.com/ Apps: Lightbot, Alex the Robot		*What is pen up and pen down on Logo? Can you use thr repeat command block (Scratch&Logo)*	
	Curriculum Links: Maths-time, angles, problem solving		

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Year 4	**Subject Rationale:** How does this work support children's wider long term Computing journey. What does it build upon	Key	Target Tracker

Computing Focus:	and what does it prepare them for in the future (proximal role of the content)	vocabulary/ questions:	Assessment Statements:
Digital Literacy (DL) **Resources on:** Purple Mash, Barefoot Computing, Twinkl Other suggested sites: https://nationalonlinesafety.com/lesson-plans https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://www.net-aware.org.uk/news/fortnite-all-you-need-know/ http://anti-bullyingalliance.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school **Apps:** Tech Safe	In Year 4, children will learn how to be a good digital citizen. At the end of this topic they should be able to: • define cyberbullying • know how to respond to a hurtful message or comment online • access a trusted search engine • understand that different search terms give different results • know what plagiarism is • identify which information to keep private online and tell someone else at least one way to stay safe online Ch will knowhow to use search engines accurately and understand that plagiarism is copying the work of others. Children will learn about preventing and dealing with cyberbullying. They will understand how to create safe online profiles and how this relates to personal information. **Curriculum Links:** PSHE	cyberbullying accuracy plagiarism personal information *What is plagiarism?* *Can you explain what digital citizenship is?* *Do you know how to responfd to a hurtful message online?*	Use technology responsibly and understand that communication online may be seen by others. Understand where to go for help and support when he/she has concerns about content or contact on the internet or other online technologies.
Information Technology (IT) **Resources on:** Purple Mash, Barefoot Computing, Twinkl **Other suggested sites/programs:** PowerPoint, Word **Apps:** Book Creator, Green Screen app	Following the units in year 1, 2 and 3 aimed at teaching basic word processing and text formatting skills, Year 4 children will move onto unit 4 they'll learn about formatting images and organising content into and effective layout. Children will be taught the basic principles and techniques of simple animation. Beginning with the history of animation, children will research some of the early animation techniques used before the use of computers. They will compare a range of free animation software and try to incorporate the different techniques into their own animation. **Word Processing** • Formatting images. • Using spellcheck consistently • Inserting and formatting tables • Creating and using hyperlinks **Animation** • Create a simple digital 2D animation **Video Editing** • Record and edit videos using iMovie, using features such as transitions and filters.will learn webpage design, how to create a webpage with appropriate layout, using features from previous units of Information Technology **Designing** • Create and manipulate 3D shapes to create 3D drawings and increasingly complex models **Audio Recording** • Record and manipulate sound files • Record a podcast and radio advertisement **Curriculum Links:** Whole school projects	Format spellcheck table hyperlinks 2D animation stop motion animation iMovie record video editing filter transition video file *Can you use some of the main keyboard shortcuts?* *How do you add or delete rows and columns in a table?*	With support select and use a variety of software on a range of digital devices. With support select, use and combine a variety of software on a range of digital devices to accomplish given goals. Use other input devices such as cameras or sensors.
Computer Science (CS) **Resources on:** Purple Mash, Twinkl **Other suggested sites/programs:** Scratch **Apps:** Lightbot, Alex the Robot, Greeb Screen app	This unit follows up the earlier units on programming Scratch on a computer/tablet or Scratch Jnr/Pyonkee with iPads. In this unit the children write quizzes by combining questions. While specific skills in Scratch are taught, the unit aims to teach children the wider programming skills of solving problems, testing, debugging, improving and evaluating. By the end of Year 4, most ch should be able to Use repetition and selection. • Work with variables and adjust these depending on the effect they wish to create. • Understand and use the duplicate function. • Demonstrate that they understand how to combine a range of different effects to create their own quiz. • Begin to use variables • Decompose and edit a program • Using algorithms to draw, including the use of different colours, fill effects and arcs • Begin to debug simple programs involving the skills above This Programming Turtle Logo unit will teach children how to create an algorithm to program a procedure. Lessons are designed to be used with online programs such as Turtle Logo/Logo Interpreter or MSWLogo. Children are reminded of the basic commands and how to repeat alongside a variable. The children are then shown how to program their own procedures, use colour and set the position of the turtle using coordinates. In the concluding lesson they use the arc command to create patterns using different	algorithm repeat function debug variable arc Scratch Turtlelogo sprite sequence code	Decompose programs into smaller parts. Use logical reasoning to detect and correct errors in algorithms and programs. Select, use and combine a variety of software, systems and content that accomplish given goals.

shapes and randomly selected colours, which they are encouraged to share with the rest of the class.

Curriculum Links: Maths-problem solving		

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Year 5 **Computing Focus:**	**Subject Rationale:** How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)	**Key vocabulary/ questions:**	**Target Tracker Assessment Statements:**
Digital Literacy (DL) **Resources on:** Purple Mash, Barefoot Computing, Twinkl Other suggested sites: https://nationalonlinesafety.com/lesson-plans https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://www.net-aware.org.uk/news/fortnite-all-you-need-know/ http://anti-bullyingalliance.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school **Apps:** Tech Safe	In Year 5, children will learn about email safety with a focus on preventing and dealing with spam. They will consider the importance of strong passwords and **revise** how to create them. Children will **build on** their knowledge of plagiarism and fair use of people's work by learning how to write citations and references for websites they may use. They will scrutinise photographs that they see online and learn how easy it is to manipulate pictures and present them as reality. All children should be able to: • Identify a spam email and explain what to do with spam email • Understand why they should cite a source • Explain the rules for creating a strong password and create one • Identify unsafe online behaviour • Know that not everything they see online is true **Curriculum Links:** PSHE	spam email citation password editing photographs social media *Why might sharing personal information be dangerous? How is being a good digitial citizen linked to being a good citizen in real life?*	Understand the need to only select age appropriate content.

		Key vocabulary	Target Tracker Assessment Statements
Information Technology (IT) **Resources on:** Purple Mash, Barefoot Computing, Twinkl **Other suggested sites/programs:** PowerPoint, Movie Maker **Apps:** Book Creator, Green Screen app, Sketch Up	In Year 5, children will learn about spreadsheets, inlcuding entering data, using the sum formula and ordering and manipulating data using MIN, MAX and AVERAGE functions. They will learn to design a spreadsheet for a specific purpose. They will also learn: • Video Editing • How to record a video on one device and import to another • Editing video footage using Windows Movie Maker (WMM), using features such as transitions, captions, information cards. Insert audio to a video using WMM • Children will also learn how to extend their drawing skills usiing softare such as Sketchup. They will draw 2D shapes or lines., draw simple 3D models, manipulate 2D shapes into 3D shapes and import 3D models from the 3D warehouse.	webpage domain hyperlink publishing CAD (computer-aided design) 3D modelling inference point mp3 (audio file) microphone podcast	Independently select and use appropriate software for a task. Independently select, use and combine a variety of software to design and create content for a given audience.
	Curriculum Links: Whole school projects,		
Computer Science (CS) **Resources on:** Purple Mash, Twinkl **Other suggested sites:** Scratch **Apps:** Alex the Robot	This Year 5 unit **builds on** the previous unit using Scratch in Year 4 (Questions and Quizzes) to form and edit algorithms for simple games. Ch children develop their skills in writing their own algorithms as well as editing and debugging existing codes. Ch will be able to move and edit blocks as part of an algorithm and add additional effects and features such as sound or point scoring to enhance the appeal of a game. Year 5 children will be able to: • Structure and time events • Controlling when objects are visible • Sequencing events • Adding interactive features to a program • Use 'when,' 'if' and 'do' functions • Evaluate a game to increase or reduce challenge	algorithm repeat function debug variable Scratch sprite score sequence code *Can you add extra effects in your game, like point scoring to enhance its appeal?*	Design, input and test an increasingly complex set of instructions to a program or device. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Design, write and test simple programs that follow a sequence of instructions or allow a set of instructions to be repeated. Design write and test simple programs with opportunities for selection, where a particular result will happen based on actions or situations controlled by the user. Use logical reasoning to explain how increasingly complex algorithms work to ensure a program's efficiency.
	Curriculum Links: Maths-problem solving		

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Year 6 **Computing Focus:**	**Subject Rationale:** How does this work support children's wider long term Computing journey. What does it build upon and what does it prepare them for in the future (proximal role of the content)	**Key vocabulary/ questions:**	**Target Tracker Assessment Statements:**

Digital Literacy (DL) **Resources on:** Purple Mash, Barefoot Computing, Twinkl Other suggested sites: https://nationalonlinesafety.com/lesson-plans https://www.internetmatters.org/schools-esafety/primary/teaching-resources/ https://www.net-aware.org.uk/news/fortnite-all-you-need-know/ http://anti-bullyingalliance.org.uk/ http://www.childnet.com/ http://www.theparentzone.co.uk/school **Apps:** Tech Safe	In Year 6, children will be able to distinguish between bullying and cyberbullying. They will be introduced to the idea of the internet, as a type of media, and how it can shape our ideas about boys and girls through stereotypes. Children will be given ways to deal with online content that they find worrying or even believe to be dangerous. They will be able to: • Understand when a website is safe and secure • Know the benefits and risks associated with online relationships • Understand online media and its role in shaping ideas about gender	cyberbullying https privacy policy media social media *How do you know if a webiste is secure?* *What are good strategies to deal with cyberbullying?*	Use technology respectfully and responsibly. Identify a range of ways to report concerns about content and contact in and out of school.
	Curriculum Links: PSHE		
Information Technology (IT) **Resources on:** Purple Mash, Barefoot Computing, Twinkl **Other suggested sites/programs:** PowerPoint, Excel, Movie Maker **Apps:** Book Creator, Green Screen	In Year 6, children will cover the following: **Spreadsheets** • Entering data • Using the sum formula • Order and manipulate data using MIN, MAX and AVERAGE functions • Design a spreadsheet for a specific purpose **Video Editing** • Record a video on a device and import to another • Edit video footage using a program like Windows Movie Maker • (WMM), using features such as transitions, captions, information cards • Insert audio to a video using WMM This unit fits in well with film making where the children can use software to plan and write their own film script, film it on a device and import it into a video editing program like Movie Maker.	spreadsheet Microsoft Excel data formula sum function min function max function average function import export mp3 (audio file) mp4 (video file) media *How can you order the data?* *What are the advantages of spreadsheets over comparartive manual methods?*	Independently select, use and combine a variety of software to design and create content for a given audience, including collecting, analysing, evaluating and presenting data and information. Design and create a range of programs, systems and content for a given audience. Independently select, use and combine a variety of software to collect, analyse, evaluate and present data and information.
	Curriculum Links: Whole school projects, maths problem solving,		
Computer Science (CS) **Resources on:** Purple Mash, Twinkl **Other suggested sites:** Scratch **Apps:** Alex the Robot	Year 6 children will be able to animate stories selecting appropriate characters to match a scene, animate characters with movement and speech in a story scene, use broadcast and receive blocks correctly in code and use show and hide blocks correctly in code. The children will know how to: • Structure and time events • Control when objects are visible • Sequence events • Add interactive features to a program • Use 'when,' 'if' and 'do' functions • Evaluate a game to increase or reduce challenge • Independently debug programs involving the skills above Children will be intorudced to programming sites like Kodu, where they will use simple visiual programming language to edit and create games.	Iteration broadcast receive algorithm repeat function debug variable Scratch sprite sequence code *How do you control when objects need to be visible?* *How can you enchance an*	Include use of sequences, selection and repetition with the hardware used to explore real world systems. Solves problems by decomposing them into smaller parts. Create programs which use variables. Use variables, sequence, selection, and repetition in programs. Use logical reasoning to explain how increasingly complex algorithms work and to detect and correct errors in algorithms and programs
	Curriculum Links: Maths-problem solving		

		animated scene?	efficiently.

*Apply knowledge and skills associated with the three strands with increasing independence across the wider curriculum

Glossary

This is a glossary of terms in the computer science context – the words may sometimes (but not always) have different meanings in other contexts.

Abstraction Reducing complexity by focusing on the essential features of an algorithm or data representation and omitting unnecessary detail.

Algorithm An algorithm is a sequence of instructions and/or set of rules.

Animation Animation is a way of creating a continuous motion and shape change of your graphic or sprite.

Artificial Intelligence Artificial Intelligence (**AI**) is the behaviour of a computer independently of a human. Computer games have artificial intelligence built into them in order to make the game much more interesting.

Application A self-contained program that performs a specific function for end users.

Augmented Reality A technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.

Binary Code A computer language to express the digital information they process. It is called binary because it consists of two symbols – 0s and 1s.

Blogging A personal website/webpage which an individual records opinions, links to other sites, etc. on a regular basis.

Boolean logic / digital logic A system of reasoning with truth values, true and false, using logical operations such as and, or, and not. Named after British mathematician George Boole.

Browser A piece of software that enables a user to locate, retrieve and display information on the world wide web.

Central Processing Unit (CPU) This is the part of the computer that turns your commands in actions

Code These are the instructions used to write a computer program. Different pieces of code can be arranged in different ways to give the computer a set of instructions.

Complexity The way that a solution to a problem scales as the size of the input increases, considering both the number of computational steps and the memory space required.

Computation Performing a calculation by executing the instructions of a program on a computational device.

Computational device / digital device A computer or other programmable device that performs computation.

Computational thinking The ability to analyse ways to solve problems using appropriate algorithms and data representations, taking account of the complexity of possible solutions.

Computer Program A computer program is a sequence of instructions written to perform certain tasks by the computer. It's a way of talking to the computer to ask it to do things for you.

Computer science The scientific study of computation, applied to both hardware and software, covering both theoretical and practical concerns.

Computational thinking It is a way of thinking that uses concepts and theories from computer science to solve problems.

Conditional Language Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** the *following Condition* is *True* **Then** do *the following instructions* **Else** do *these different instructions.*

Conditional Statements Can also be described as a *Conditional Expression,* they are features of coding that perform different computations or actions depending on a specified condition being either *True* or *False.* For example using the ***if then else*** construct, **If** the *following Condition* is *True* **Then** do *the following instructions* **Else** do *these different instructions.*

Control In ICT Terms, this means the commands placed in a sequence to perform a desired task.

CPU This is the part of the computer that turns your commands in actions

Data Information which can be stored, retrieved and manipulated in digital form using digital devices.

Data representation The various ways data can be represented as words, numbers and pictures in the memory of a computational device.

Debug This is the process of finding errors or problems with your code and trying to fix it. Sometimes code will be in the wrong order or there could be bits of code missing, the process of fixing the code is called debugging.

Decipher Convert (a text written in code, or a coded signal) into normal language

Decomposition Also known as *factoring*, refers to the process by which a complex problem or system is broken down into parts that are easier to conceive, understand, program, and maintain.

Digital artifacts / digital content Images, videos, text or data, or a combination of these, which are made on a digital device.

Directional language Forwards, backwards, left and right.

Digital literacy The ability to access and manipulate digital content and understand the implications of its creation and distribution.

eBook An electronic version of a printed book which can be read on a computer or a specifically designed handheld device.

Elements: Elements are like tags but they contain the information about the web page. A element will sit inside a tag.

eMail: This is a digital letter Messages distributed by electronic means from one computer user to one or more recipients via a network.

E-safety Understanding and applying rules to mitigate against the risks to personal safety and privacy of personal information in using digital devices of all kinds.

Flipcam A HD camcorder

Flowchart A diagram of the sequence of movements or actions

Function A small section of computational code that performs a specific operation. In particular, a function takes inputs, or arguments, and returns outputs, or results.

Garageband Software application that allows users to create music or podcasts

Green screen (in film and video) A subject is filmed in front of a green background which allows a separately filmed background/image to be added to the final video in the editing phase.

Hardware Physical items of computing kit such as desktop hard drives, printers and scanners

HTML Web pages are files that are viewed using an internet browser. The pages are written in a language called HTML. HTML is made up of elements, or tags, that are used as instructions to tell the browser what should appear on a web page and how it should be structured. HTML stands for HyperText Markup Language.

Infographic Visual representation of information, that can be very complex, displayed in a way that can be interpreted quickly and easily.

Input: Inputs are devices or code that send instructions to the computer and allows us to interact with technology. These are the means of communicating with computers e.g. keyboard and mouse.

Internet An electronic system that connects billions of people using computers, phones, or other devices, and allows them to communicate with one another

Jingles A short slogan, verse, or tune designed to be easily remembered used in advertising.

Logic A systematic approach to reasoning. The rules that underlie an algorithm used for an application. Can also refer to digital components in computer hardware.

Looping A loop is a sequence of instructions that will be continually repeated until a **Conditional Statement** is reached or becomes true. Using loops is a way of asking a question until something (*conditional statement*) becomes true.

Memory This is the name for the electronic holding place for instructions and data that a computer's microprocessor can reach quickly.

Message Something you want to tell or ask another person

Mind map A mind map is a diagram used to visually outline information. A mind map is often created around a single word or text, placed in the centre, to which associated ideas, words and concepts are added.

Mnemonic A system such as a pattern of letters, ideas, or associations which assists in remembering something.

Musical Loops A repeating section of sound material

Network A number of computational devices connected together, allowing sharing of resources and cooperation between devices in the solution of a problem. Also the hardware used to establish connections between devices on a network.

Operating system The program that enables the computer to start and access different sorts of software on the computer, examples include Microsoft Windows and iOS for Mac.

Output These are the means by which the computer relays information e.g. printer or monitor

Peripherals These are the external accessories to computers such as printers.

Player Interaction Player interaction is the main point of all the computer games. If the player cannot interact with the game or control something within a game they simply won't play the game.

Podcast Podcasts are shows, similar to radio or TV shows that are produced and posted to the Internet for download and listening or viewing.

Procedure A small section of computational code that performs a specific operation. Unlike a function, a procedure does not return a result but may be to change the data stored in objects in computer memory.

Program/code (verb) To create or modify a program.

Program/code (noun) A sequence of instructions to perform a task.

Programming language A formal language for representing statements, or commands, and data values used in a program. A programming language has a precise syntax that defines the valid ways for combining the symbols used to denote variables and data values. Examples used on schools include Scratch, Python and SmallBASIC.

Python Is an object-oriented coding language, meaning everything in the program is treated as an object.

QR Code A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Search technologies Algorithms used by applications known as search engines to trawl the internet for digital content matching search terms given by a user. Results are normally presented in the form of links to relevant content.

Selection It means 'to choose something'.

Sequence A set of actions or events that must be carried out in the same order every time.

Simple Program A sequence of instructions to perform a task.

Simulation The technique of representing the real world by a computer program

SketchUp is 3D modeling software

Software The programs that enable computers to undertake specific functions.

Stop motion is an animation technique that physically manipulates an object so that it appears to move on its own. The object is moved in small increments between individually photographed frames, creating the illusion of movement.

Storyboard A sequence of drawings, representing the shots planned for a film.

Structure HTML files need to have a structure or order to them in order for them to be understood by the internet browser to display the web page. If the structure is wrong then the web page won't display correctly.

Sprite A sprite is a 2D image that is integrated into a computer game in a layered effect.

Tags Tags are what the HTML language uses as instructions to tell in the internet browser what should appear on the web page. Tags look like this <head> </head>. They will always have an opening tag and closing tag.

Variables Variables are used to store information within computer code, each Variable will have a unique name and it will hold a known or unknown quantity or value. For example the number of points scored by each player would be stored in a variable.

Visual programming Any programming language that lets users create programs by manipulating program elements graphically rather than by specifying them textually.

Wiki A website developed collaboratively by a community of users, allowing any user to add and edit content.