

Computing progression of skills

| | EYFS | Year 1 and 2 | Year 3 and 4 | Year 5 and 6 |
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| Computer science | <p>ELG Fine motor skills</p> <ul style="list-style-type: none"> To use a range of small tools, including scissors, paint brushes and cutlery <p>ELG Expressive arts and design</p> <ul style="list-style-type: none"> To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and functions. | <p>Great Grange! (Aut 2 A)</p> <p><u>Maze explorers</u></p> <ul style="list-style-type: none"> To understand the functionality of the basic direction keys in Challenges 1 and 2. To be able to use the direction keys to complete the challenges successfully. To understand the functionality of the basic direction keys in Challenges 3 and 4. To understand how to create and debug a set of instructions (algorithm). To use the additional direction keys as part of their algorithm. To understand how to change and extend the algorithm list. To create a longer algorithm for an activity. <p>Great Grange! (Aut 2 A)</p> <p><u>Lego builders</u></p> <ul style="list-style-type: none"> To emphasise the importance of following instructions. To follow and create simple instructions on the computer. To consider how the order of instructions affects the result. <p>Great Grange! (Aut 2 A)</p> <p><u>Grouping and sorting</u></p> <ul style="list-style-type: none"> To sort items using a range of criteria. | <p>From field to fork (Aut 2 A)</p> <p><u>Logo</u></p> <ul style="list-style-type: none"> To learn the structure of the language of 2Logo. To input simple instructions in 2Logo To use 2Logo to create letter shapes. To use the Repeat command in 2Logo to create shapes. To use and build procedures in 2Logo. <p>From field to fork (Aut 2 A)</p> <p><u>Hardware investigators</u></p> <ul style="list-style-type: none"> To understand the different parts that make up a desktop computer. To recall the different parts that make up a computer. <p>Poles apart (Aut 2 B)</p> <p><u>Coding</u></p> <ul style="list-style-type: none"> To create a simple computer program. To begin to understand selection in computer programming. To understand how an IF statement works To understand how to use coordinates in computer programming. To understand the Repeat until command. To begin to understand selection in computer programming. | <p>Off with her head! (Spr 2 A)</p> <p><u>Game creator</u></p> <ul style="list-style-type: none"> To introduce the 2DIY 3D tool. To begin planning a game. To design the game environment. To design the game quest to make it a playable game. To finish and share the game. To self- and peer evaluate. <p>Children of the revolution (Aut 1 B)</p> <p><u>Networks</u></p> <ul style="list-style-type: none"> To discover what the children know about the Internet. To find out what a LAN and WAN are. To find out how we access the internet in school. To research and find out about the age of the internet. To think about what the future might hold. <p>Who let the Gods out? (Aut 2 B)</p> <p><u>Coding</u></p> <ul style="list-style-type: none"> To review existing coding knowledge To being to be able to simplify code. To create a playable game. To understand what a simulation is. To program a simulation using 2Code. |

- To sort items on the computer using the 'Grouping' activities in Purple Mash.

Take a break (Aut 2 B)

Coding

- To understand what instructions are.
- To predict what will happen when instructions are followed.
- To understand that computer programs work by following instructions called code.
- To use code to make a computer program.
- To understand what objects and actions are.
- To understand what an event is and use an event to control an object.
- To understand what an event is.
- To begin to understand how code executes when a program is run.
- To understand what backgrounds and objects are.
- To plan and make a computer program.

Here and there (Sum 1 B)

Coding

- To understand what an algorithm is.
- To create a computer program using an algorithm.
- To create a program using a given design.
- To understand the collision detection event.

- To understand how an IF/ELSE statement works.
- To understand what a variable is in programming.
- To use a number variable.
- To create a playable game.

All wrapped up! (Spr 1 B)

Coding

- To review coding vocabulary and knowledge.
- To create a simple computer program.
- To begin to understand selection in computer programming.
- To understand how an if statement works.
- To understand how to use co-ordinates in computer programming.
- To understand the repeat until command.
- To begin to understand selection in computer programming.
- To understand how an if/else statement works.
- To understand what a variable is in programming.
- To use a number variable.
- To create a playable game.

- To know what decomposition and abstraction are in computer science.
- To take a real-life situation, decompose it and think about the level of abstraction.
- To use decomposition to make a plan of a real-life situation.
- To understand how to use friction in code.
- To begin to understand what a function is and how functions work in code.
- To understand what the different variable types are and how they are used differently.
- To understand how to create a string.

Who let the Gods out? (Spr 1 B)

Coding

- To design a playable game with a timer and a score.
- To plan and use selection and variables.
- To understand how the launch command works.
- To use functions and understand why they are useful.
- To understand how functions are created and called.
- To use flowcharts to test and debug a program.
- To create a simulation of a room in which devices can be controlled.
- To understand the different options of generating user input in 2Code.
- To understand how user input can be used in a program.

- To understand that algorithms follow a sequence.
- To design an algorithm that follows a timed sequence.
- To understand that different objects have different properties.
- To understand what different events do in code.
- To create a program using a given design.
- To understand the function of buttons in a program.
- To know what debugging means.
- To understand the need to test and debug a program repeatedly.
- To debug simple programs.

- To understand how 2Code can be used to make a text-based adventure game.

Pollution solution (Spr 2 B)

Text adventures

- To find out what a text-based adventure game is and to explore an example made in 2Create a Story.
- To use 2Connect to plan a 'Choose your own Adventure' type story.
- To use 2Connect plans for a story adventure to make the adventure using 2Create a Story.
- To introduce an alternative model for a text adventure which has a less sequential narrative.
- To use written plans to code a map-based adventure in 2Code.

Data mining (Sum 2 B)

Understanding binary

- To examine how whole numbers are used as the basis for representing all types of data in digital systems.
- To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems).
- To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.
- To examine how whole numbers are used as the basis for

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| | | | | <p>representing all types of data in digital systems.</p> <ul style="list-style-type: none"> • To recognise that the numbers 0, 1, 2 and 3 could be represented by the patterns of two binary digits of 00, 01, 10 and 11 • To represent whole numbers in binary, for example counting in binary from zero to 15, or writing a friend's age in binary. • To examine how whole numbers are used as the basis for representing all types of data in digital systems. • To represent whole numbers in binary, for example counting in binary from zero to 15, or writing a friend's age in binary. • To explore how division by two can be used as a technique to determine the binary representation of any whole number by collecting remainder terms. • To examine how whole numbers are used as the basis for representing all types of data in digital systems. • To represent the state of an object in a game as active or inactive using the respective binary values of 1 or 0. |
| <p>Information technology</p> | | <p>Toy story (Spr 1 A) <u>Spreadsheets</u></p> <ul style="list-style-type: none"> • To understand what a spreadsheet looks like. • To be able to navigate around a spread sheet and enter data. • To learn new vocabulary related to spreadsheets. | <p>Unwelcome visitors (Spr 1 A) <u>Branching databases</u></p> <ul style="list-style-type: none"> • To sort objects using yes/no questions • To complete a branching database using 2Question. • To create a branching database of the children's choice. | <p>Frozen (Aut 1 A) <u>Blogging</u></p> <ul style="list-style-type: none"> • To identify the purpose of writing a blog. • To identify the features of successful blog writing. • To plan the theme and content for a blog. |

- To add clipart images to a spreadsheet.
- To use the 'move cell' and 'lock' tools.
- To use the 'speak' and 'count' tools in 2Calculate to count items.

Toy story (Spr 1 A)

Spreadsheets

- To use copying, cutting and pasting shortcuts in 2Calculate.
- To use 2Calculate totalling tools.
- To use 2Calculate to solve a simple puzzle
- To explore the capabilities of a spreadsheet in adding up coins to match the prices of objects
- To add and edit data in a table layout.
- To use the data to manually create a block graph.

Up, up and away (Sum 1 A)

Creating pictures

- To explore 2Paint A Picture.
- To look at the work of Impressionist artists and recreate them using the Impressionism template.
- To look at the work of pointillist artists such as Seurat.
- To recreate pointillist art using the Pointillism template.
- To look at the work of Piet Mondrian and recreate it using the Lines template.

Unwelcome visitors (Spr 1 A)

Graphing

- To enter data into a graph and answer questions.
- To solve an investigation and present the results in graphic form.

Under the canopy (Spr 2 A)

Simulations

- To find out what a simulation is and understand the purpose of simulations.
- To explore a simulation, making choices and discussing their effects.
- To work through and evaluate a more complex simulation.

Under the canopy (Spr 2 A)

Animation

- To decide what makes a good, animated film or cartoon and discuss favourite animations.
- To learn how animations are created by hand.
- To find out how 2Animate animations can be created in a similar way using technology.
- To learn about onion skinning in animation.
- To add backgrounds and sounds to animations.
- To explore stop motion animation

Extreme Earth (Sum 1 A)

Spreadsheets

- To add and edit data in a table layout.

- To understand how to write a blog and a blog post.
- To consider the effect upon the audience of changing the visual properties of the blog.
- To understand how to contribute to an existing blog.
- To understand the importance of commenting on blogs.
- To understand how and why blog posts and comments are approved by the teacher.

Raid, invade and stayed (Aut 2 A)

Spreadsheets

- To use formulae within a spreadsheet to convert measurements of length and distance.
- To use the count tool to answer hypotheses about common letters in use.
- To use a spreadsheet to model a real-life problem.
- To use formulae to calculate area and perimeter of shapes.
- To create formulae that use text variables.
- To use a spreadsheet to help plan a school cake sale.

In the heat (Spr 1 A)

Spreadsheets

- To use a spreadsheet to investigate the probability of the results of throwing many dice.
- To use a spreadsheet to calculate the discount and final prices in a sale. Create a formula to help work out the prices of items in the sale.

- To look at the work of William Morris and recreate it using the Patterns template.
- To look at some surrealist art and create your own using the eCollage function in 2Paint A Picture

All around us (Sum 2 A)

Making music

- To be introduced to making music digitally using 2Sequence.
- To explore, edit and combine sounds using 2Sequence.
- To add sounds to a tune to improve it.
- To think about how music can be used to express feelings and create tunes which depict feelings.
- To upload a sound from a bank of sounds into the Sounds section.
- To record their own sound and upload it into the Sounds section.
- To create their own tune using the sounds which they have added to the Sounds section.

Beside the seaside (Sum 2 A)

Animated story books

- To understand the differences between traditional books and ebooks.
- To explore the tools of 2Create a Story's My Simple Story level.
- To save the page they have created.
- To add animation to a picture.
- To play the pages created so far.

- To find out how spreadsheet programs can automatically create graphs from data.
- To introduce the more than, less than and equals tools.
- To introduce the spin tool and show how it can be used to count through times tables.
- To introduce the advanced mode of 2Calculate.
- To learn about describing cells using their addresses.

Extreme Earth (Sum 1 A)

Effective searching

- To locate information on the search results page.
- To use search effectively to find out information.
- To assess whether an information source is true and reliable.

Invaders and settlers (Sum 2 A)

Spreadsheets

- To explore how the numbers entered into cells can be set to either currency or decimal.
- To explore the use of the display of decimal places.
- To find out how to add formulae to a cell.
- To explore how tools can be combined to use 2Calculate to make number games.
- To explore the use of the timer, random number and spin button tools.
- To use the line graphing tool in 2Calculate with appropriate data.

- To use a spreadsheet to plan how to spend pocket money and the effect of saving money.
- To use a spreadsheet to plan a school charity day to maximise the money donated to charity.

- To save the additional changes and overwrite the file.
- To add a sound effect to a picture.
- To add a voice recording and music to the picture.
- To add a background to the story.
- To demonstrate a good understanding of all the tools they have used in 2Create a Story and use these successfully to create their own story.
- To use the copy and paste feature to create additional pages.

Around the world (Spr 1 B)

Questioning

- To show that the information provided on pictograms is of limited use beyond answering simple questions
- To use yes/no questions to separate information
- To construct a binary tree to separate different items.
- Use 2Question (a binary tree) to answer questions
- To use a database to answer more complex search questions.
- To use the Search tool to find information.

Back to school (Spr 2 B)

Pictograms

- To understand that data can be represented in picture format.
- To contribute to a class pictogram.
- To use a pictogram to record the results of an experiment.

- To interpret a line graph to estimate values between data readings.
- To use the currency formatting tool in 2Calculate.
- To use 2Calculate to create a model of a real-life situation.
- To use the functions of allocating value to images in 2Calculate to make a resource to teach place value.

Location, location, location (Sum 2 B)

Touch typing

- To introduce typing terminology.
- To understand the correct way to sit at the keyboard.
- To learn how to use the home, top and bottom row keys.
- To practice and improve typing for home, bottom and top rows.
- To practice the keys typed with the left and right hands.

Summer term B

Making music

- To identify and discuss the main elements of music: Pulse, Rhythm, Tempo, Pitch, Texture
- To understand and experiment with rhythm and tempo.
- To create a melodic phrase.
- To compose a piece of electronic music.

Summer term B

Writing for different audiences

- To explore how font size and style can affect the impact of a text.

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| | | <p>Inside the castle walls (Sum 2 B) <u>Presenting ideas</u></p> <ul style="list-style-type: none"> • To explore how a story can be presented in different ways. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. • To make a presentation to the class. | <ul style="list-style-type: none"> • To use a simulated scenario to produce a news report. • To use a simulated scenario to write for a community campaign. <p>Summer term B <u>Presenting</u></p> <ul style="list-style-type: none"> • To create a page in a presentation. • To add media to a presentation. • To add shapes and lines to a presentation. • To add animations into a presentation. • To use the skills learnt in previous weeks to design and present an effective presentation. | |
| <p>Digital literacy</p> | | <p>Me, myself and I (Aut 1 A) <u>Online safety and exploring Purple Mash</u></p> <ul style="list-style-type: none"> • To log in safely and understand why that is important. • To be able to create a picture and avatar and add their own name to it. • To start to understand the idea of ‘ownership’ of creative work. • To save and retrieve work to the My Work area and understand that this is private space. • To learn how to see messages left by the teacher on their work. • To become more familiar with the icons used in the resources in the Topics section. • To start to add pictures and text to work. • To explore the Tools area of Purple Mash and to learn about the common icons used in Purple Mash for Save, Print, Open, New. | <p>Ug! (Aut 1 A) <u>Online safety</u></p> <ul style="list-style-type: none"> • To know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away. • To understand how the internet can be used to help us to communicate effectively. • To understand how a blog can be used to help us communicate with a wider audience. • To consider if what can be read on websites is always true. • To look at and create spoof websites. • To think about what spoof websites might exist and how to check that the information is accurate. • To learn about the meaning of age restriction symbols on digital media and devices. | <p>Frozen (Aut 1 A) <u>Online safety</u></p> <ul style="list-style-type: none"> • To identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. • To identify secure sites by looking for privacy seals of approval, e.g., https, padlock icon. • To identify the benefits and risks of giving personal information and device access to different software. • To review the meaning of a digital footprint and understand how and why people use their information and online presence to create a virtual image of themselves as a user. • To have a clear idea of appropriate online behaviour and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour. |

- To understand the importance of logging out when they have finished.

Me, myself and I (Aut 1 A)

Technology outside school

- To find and understand examples of where technology is used in the local community
- To record examples of technology outside school.

Never eat shredded wheat (Aut 1 B)

Online safety

- To know how to refine searches using the Search tool.
- To use digital technology to share work on Purple Mash to communicate and connect with others locally.
- To have some knowledge and understanding about sharing more globally on the Internet.
- To introduce Email as a communication tool using 2Respond simulations.
- To open and send simple online communications in the form of email.
- To understand that information put online leaves a digital footprint or trail.
- To begin to think critically about the information they leave online.
- To identify the steps that can be taken to keep personal data and hardware secure

- To discuss why PEGI restrictions exist.
- To know where to turn for help if they see inappropriate content or have inappropriate contact from others.
- To understand how children can protect themselves from online identity theft.
- To understand that information put online leaves a digital footprint or trail and that this can aid identity theft.
- To identify the risks and benefits of installing software including apps.
- To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism.
- To identify appropriate behaviour when participating or contributing to collaborative online projects for learning.
- To identify the positive and negative influences of technology on health and the environment.
- To understand the importance of balancing game and screen time with other parts of their lives.

A child of the times (Aut 1 B)

Email and email safety

- To think about the different methods of communication.
- To open and respond to an email.
- To write an email to someone from an address book.
- To learn how to use email safety.
- To add an attachment to an email.

- To begin to understand how information online can persist and give away details of those who share or modify it.
- To understand the importance of balancing game and screen time with other parts of their lives,
- To identify the positive and negative influences of technology on health and the environment.

Going green (Sum 1 A)

Databases

- To learn how to search for information in a database.
- To contribute to a class database.
- To create a database around a chosen topic.

Blitzed Britain (Sum 2 A)

Concept maps

- To understand the need for visual representation when generating and discussing complex ideas.
- To understand the uses of a 'concept map'.
- To understand and use the correct vocabulary when creating a concept map.
- To create a concept map.
- To understand how a concept map can be used to retell stories and information.
- To create a collaborative concept map and present this to an audience.

Children of the revolution (Aut 1 B)

Online safety

Never eat shredded wheat (Aut 1 B)

Effective searching

- To understand the terminology associated with the Internet and searching.
- To gain a better understanding of searching the Internet.
- To create a leaflet to help someone search for information on the Internet.

- To explore a simulated email scenario.

- To gain a greater understanding of the impact that sharing digital content can have.
- To review sources of support when using technology.
- To review children's responsibility to one another in their online behaviour.
- To know how to maintain secure passwords.
- To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.
- To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.
- To learn about how to reference sources in their work.
- To search the internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information.
- To ensure reliability through using different methods of communication.

Unheard histories (Sum 1 B)

3D modelling

- To be introduced to the 2Design and Make tool.
- To explore the effect of moving points when designing.
- To design a 3D model to fit certain criteria.
- To refine and print a model.