COMPUTING YEAR 3/4

What I have already learnt:

-Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

-Create and debug simple programs.

-Use logical reasoning to predict the behaviour of simple programs.

-Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

-Recognise common uses of information technology beyond school.

-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.

What I will learn by the end of the units:

Coding

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 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.

Internet Safety

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.

Spreadsheets

To format cells as currency, percentage, decimal to different decimal places or fraction. • To use the formula wizard to calculate averages. • To combine tools to make spreadsheet activities such as timed times tables tests. • To use a spreadsheet to model a real-life situation. • To add a formula to a cell to automatically make a calculation in that cell.

Key Computing Concepts

Predominant Area of Computing*		
Computer Science	Information Technology	Digital Literacy

*Most units will include aspects of all strands.

Skills I may use from other subjects

Maths: Use my knowledge of measurement, graphs and tally charts.

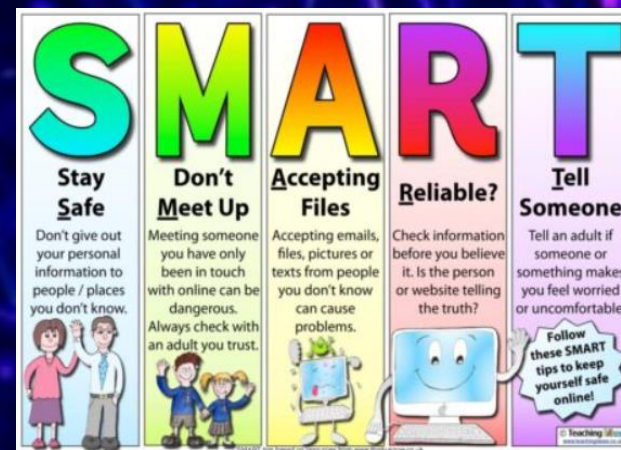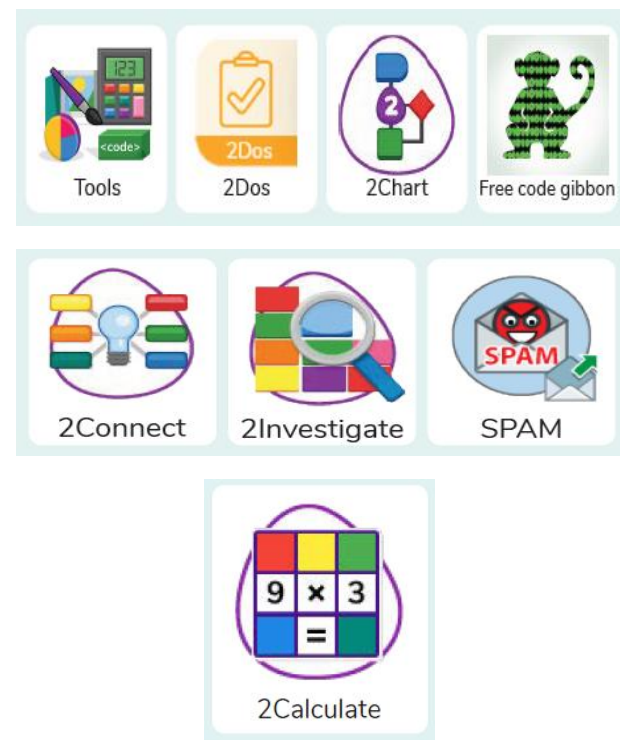Literacy: I can use my reading and comprehension skills to further my knowledge.

Science: Use my knowledge of observations and collecting data.

Recall and Remember!

Add information to your knowledge mind map regularly to help you to reflect on, and remember what you have learnt throughout the unit. At the end of the unit, work in a small group to create a fun quiz on purple mash for your friends to complete! Alternatively, have a go at the Purple Mash Quizzes for these units online!

KEY RESOURCES

Tools   2Dos   2Chart   Free code gibbon

2Connect   2Investigate   SPAM

2Calculate

SMART

S — Stay Safe — Don't give out your personal information to people / places you don't know.

M — Don't Meet Up — Meeting someone you have only been in touch with online can be dangerous. Always check with an adult you trust.

A — Accepting Files — Accepting emails, files, pictures or texts from people you don't know can cause problems.

R — Reliable? — Check information before you believe it. Is the person or website telling the truth?

T — Tell Someone — Tell an adult if someone or something makes you feel worried or uncomfortable.

Follow these SMART tips to keep yourself safe online!

purple mash

Key Skills I will learn and use

I will be able to analyse problems.
I will give opinions and respond to ideas.
I will ask questions and discuss with my peers.
I will gain an understanding of the principles and concepts of computer science.

Opportunities for teaching diversity, equality and expanding cultural capital:

A visit to a local museum of computing.
Significant people – Computing pioneers embedded in subject journey.
E-safety champions
Internet Safety Day
Computing club

What I will know by the end of the Key Stage:

I will design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

I will use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

I will use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

I will understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.

I will use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

I will 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.

I will use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Key Knowledge/Questions

What does selection mean in coding and how can you achieve this in 2Code? The code will contain commands that require a decision and the next code to run will depend upon the outcome of this decision. In 2Code we used the 'if' command for selection.

What is the difference between the different object types in 2Code Gibbon level? The different objects have different properties. This makes then suitable for different type of programs. • Buttons can only be clicked and have their colour and text changed. • Vehicles have speed and angle. • Characters have movement in 4 directions. • Turtles have rotation, pen up and down.

How can variables and if/else statements be useful when coding programs with selection?
The variable could be set either to 0 or 1 and this could be changed by user action or a timer. If/else statement outcomes could depend upon the value of the variable. command for selection.

What is meant by a digital footprint?
A digital footprint is the information that exists about a person based upon sites that they have visited, searches that they have done, information that they have shared and other online behaviours.

What is SPAM?
SPAM messages are emails or online messages sent from a computer to many other users. The users are sent the email without requesting it. The purpose of SPAM is for advertising, phishing or malware.

What is meant by plagiarism?
Plagiarism refers to using someone else's work and claiming it to be your own.

Which tools would you use to create a timed times tables test in 2Calculate?
You could use the random tool, the spin tool, the equal tool and the timer tool.

Explain what a spreadsheet model of a real-life situation is and what it can be used for? It represents the data of a situation for example budgeting for a party, working out how big a field needs to be for a certain number of animals, working out how to spend your pocket money over time.

Key Vocabulary – Coding

Action The way that objects change when programmed to do so. For example, move.

Alert This is a type of output. It shows a pop up of text on the screen.

Algorithm A precise, step-by-step set of instructions used to solve a problem or achieve an objective.

Background In 2Code the background is an image in the design that does not change.

Button A type of object that responds to being clicked on.

Code blocks A way to write code using blocks which each have an object or an action.

Command A single instruction in 2Code.

Debug/Debugging Fixing code that has errors so that the code will run the way it was designed to.

Design In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events.

Execute This is the proper word for when you run the code. We say, 'the program (or code) executes.'

Flowchart A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram. swipes, touch gestures and tilting the device. commands only run when the outer command runs.

Prompt A question or request asked in coding to obtain information from the user in order to select which code to run.

Implement When a design is turned into a program using coding.

Predict Use your understanding of a situation to say what will happen in the future or will be a consequence of something.

Key Vocabulary – Internet Safety

Plagiarism Taking someone else's work or ideas and passing them off as one's own.

Attachment A file, which could be a piece of work or a picture, that is sent with an email.

Citation Making reference to the original source of a piece of information quotation or image.

Collaborate To work jointly on an activity or project.

Cookies A small amount of data generated by a website and saved by a web browser. Its purpose is to remember information about the user.

Copyright When the rights to something belong to a specific person.

Digital footprint The information about a person that exists on the Internet as a result of their online activity.

Malware Software that is specifically designed to disrupt, damage, or gain unauthorised access to a computer system. **Phishing** Practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers.

Ransomware A type of malicious software designed to block access to a computer system until a sum of money is paid. **SMART rules** A set of rules based around the word SMART designed to help you stay safe when online. SMART represents the words Safe, Meet, Accept, Reliable, Tell.

Spam Messages sent over the Internet, typically to many users, for the purposes of advertising, phishing or spreading malware.

Virus A piece of code which can copy itself and typically has a damaging effect on the device, such as corrupting the system or destroying data.

Watermark Watermarks are used mainly on images or videos to show who the content belongs to.

Key Vocabulary – Spreadsheets

Random Number Tool This tool, when clicked, will generate a random number.

Spin Tool This tool changes a number to the right of it by one each time an arrow is pressed.

Timer When placed in the spreadsheet, clicking the timer adds 1 to the value of the cell to its right every second until it is clicked again. **Percentage** 'per' 'cent' means number of parts per hundred.

Equals tool Tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Data A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Decimal place The position of a digit to the right of a decimal point. In 2Calculate, the number of decimal places to be displayed can be chosen.

Formula Wizard Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet.

Format Cell The way that data is displayed in a cell. For example using units such as £ or $.

Line graph A line graph is used to display information which can change over time. For example, temperature at different times of the day.