

# COMPUTING YEAR 5/6

## What I should have already learnt:

### 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.

## What I will learn by the end of the units:

### 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 create and debug code. • To create a simulation of a room in which devices can be controlled. • To understand how user input can be used in a program. • To understand how 2Code can be used to make a text-adventure game.

### Online Safety

To identify benefits and risks of mobile devices broadcasting the location of the user/device. • To identify secure sites by looking for privacy seals of approval. • To identify the benefits and risks of giving personal information. • To review the meaning of a digital footprint. • To have a clear idea of appropriate online behaviour. • To begin to understand how information online can persist. • 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.

### 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. • 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.

## Key Computing Concepts

### Predominant Area of Computing\*

 Computer Science	 Information Technology	 Digital Literacy
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\*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.

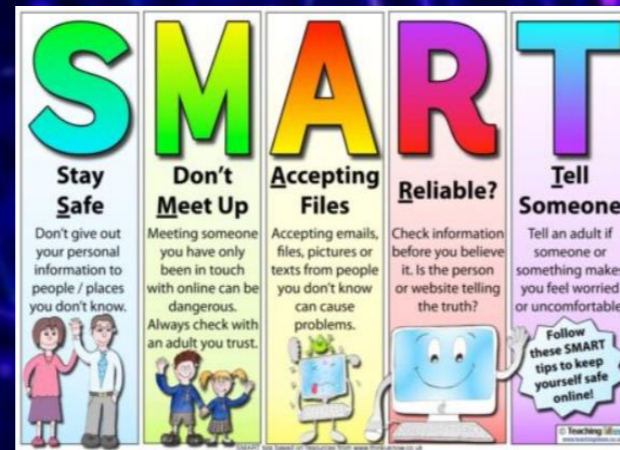
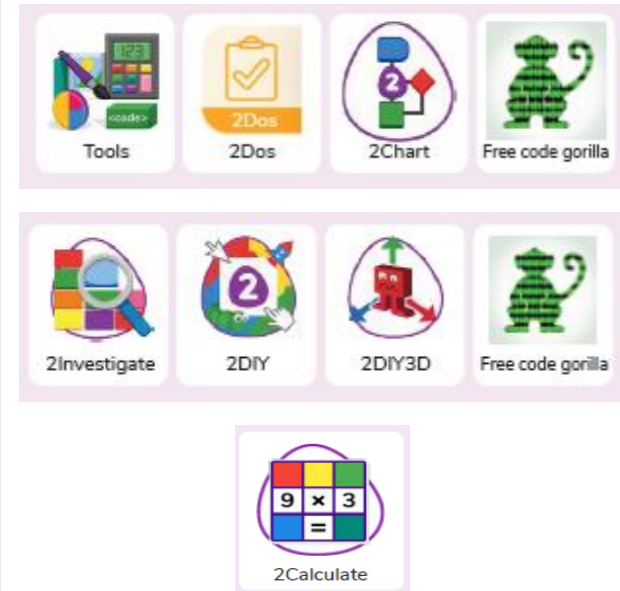
Literacy: I can use my reading and comprehension skills to further my knowledge.

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



### 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

**How can you use Tabs in 2Code Gorilla?** Tabs are used to organise you code and make it more readable. This also makes it easier to debug. Give the Tabs useful names to help with this.

**What is a function in coding? Give an example that you have used in 2Code Gorilla.** A function is a block of code that you can access when you need it, so you don't have to rewrite the same block repeatedly. You call the function each time you want it. In a turtle program you could have a button that will make the turtle draw a square each time you click it. In the text adventure, there were functions for each room that were called when the user navigated to the room.

**In 2Code Gorilla, how can a program receive user input?** When the user clicks on an object, when the user presses keys or swipes the screen with the mouse, the 'Get Input' and 'Prompt for input' commands. On a touchscreen: when the screen is touched or swiped.

**Why do I need to be aware of the dangers of being online?** Although the Internet is a brilliant resource for learning and entertainment some people use the Internet to cause you harm. Being aware of these dangers can help keep you safe and protect your privacy.

**What is meant by my digital footprint?** The term digital footprint is used to describe the traces that people leave behind when they have visited a website or used social media. Your digital footprint is unique to you.

**Why is it important to think about how much time use a screen for?** Using a screen can help you surf the Internet or enjoy computer games but you need to be careful how much time you spend using a screen. For instance, using a screen at night can damage your sleep patterns. Turn your screen off regularly and enjoy the world outside.

**How would you add a formula so that the cell shows the total of a column of cells?** Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references.

**What is a computational model and what it can be used for?** Modelling in Computing means creating or using a simulation (a model) of a real-life situation, on a computer. 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 the best price for an item or using the existing data to predict what time your shadow will be a certain length.

**If you were going to use a spreadsheet to plan your dream holiday, what data would you collect to cost the trip?** Ideas could include: Travel; comparing the cost of different methods, airports, airlines, different companies and discounts such as rail cards. Cost of accommodation of different types, trips out, food, passports, immunisations.

## Key Vocabulary - Coding

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

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

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

**Command** A single instruction in a computer program.

**Co-ordinates** Numbers which determine the position of a point, shape or object in a particular space.

**Decomposition** A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program.

**Event** An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (**when Key**) or clicking or swiping the screen (**when Clicked, when Swiped**) or when objects interact (**collision**). In 2Code, the event commands are used to create blocks of code that are run when events happen.

**Execute\Run** Clicking the Play button to make the computer respond to the code. Execute is the technical 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.

**prompt, alert or print to screen.**

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

**Properties** These determine the look and size of an object. Each object has properties such as the image, scale and position of the object.

**Repeat** This command can be used to make a block of commands run a set number of times or forever.

**Selection** Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition. In 2Code selection is accomplished using 'if' or 'if/else' statements.

**Simulation** A model that represents a real or imaginary situation. Simulations can be used to explore options and to test predictions.

**Tab** In 2Code, this is a way to organise a program into separate pages (tabs) of code.

**Timer** Use this command to run a block of commands after a timed delay or at regular intervals.

**Sequence** This is when a computer program runs commands in order.

## Key Vocabulary - Internet Safety

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

**Location sharing** A way of sharing with others your device's location, these can be switched off for added security.

**Password** A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as a website.

**PEGI rating** These show the age that digital content is suitable for and the type of content that it contains.

**Phishing** The 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.

**Print Screen** Capturing an image of the current screen on a device. Also known as a screen shot. **Screen time** The time spent using a device with a screen, such as a computer, television, tablet or phone.

**Secure websites** Secure website have particular privacy features to look out for such as a padlock or https.

**Spoof** An imitation of something that appears to look genuine.

## Key Vocabulary - Spreadsheets

**Spreadsheet** A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either **data** or a **formula** that describes the value to be inserted based on the values in other cells.

**Rows** Horizontal, numbered reference points for the cells in a spreadsheet.

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

**Columns** Vertical, lettered reference points for the cells in a spreadsheet.

**Formula** A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae.

**Dice Tool** Simulates the roll of a die to a random number between 1 and 6 when you click on it.

**Budget** The amount of money available to spend on a project.

**Move cell tool** Allows selected cells to be draggable.

**Format Cell** The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g.  $4\frac{1}{2}$  or include units such as £ or \$.

**Formula Bar** An area of the spreadsheet into which formulae can be entered using the '=' sign to open the formula.

**Profit** Money that is earned in trade or business after paying the costs of producing and selling goods and services.

**Probability** The extent to which an event is likely to occur, measured by the ratio of the favourable cases to the whole number of cases possible.

**Count (How Many) Tool** Counts how many of a variable there are in a spreadsheet.

**Expense** A cost associated with a project.

**Formula Wizard** Helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total.

**Advance mode** A mode of 2Calculate in which the cells have references and can include formulae. **Chart** A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.