



St Monica's Catholic Primary School

Philosophy

Every child is a unique gift from God, with his or her own unique gifts.

Our Catholic school, inspired by the teaching of Jesus Christ, will always endeavour to meet the needs of every child within our school.

At St. Monica's, we strive to ensure that all children and staff are offered the opportunity to develop to their full potential in individual, educational, moral, intellectual and spiritual needs.

Our Mission Statement is "Let Trust, Respect and Love live here."

What we teach and what your children learn in Computing

Please see below a summary of our plans (organised in Knowledge Organisers and Scheme of Work Summaries by Year Group) for teaching and learning in Computing at our school.

If you want further information on the curriculum, including how it is differentiated for children within classes who are at different stages of learning including your child, please contact your child's teacher or email the school on stmonicas@stmonicas.co.uk

Our Intent, Implementation and Impact statement for Computing

Intent:

At St. Monica's Catholic Primary School, we aim to prepare our learners for their future by giving them the opportunities to gain knowledge and develop skills that will equip them for an ever-changing digital world. Our Computing curriculum focuses on progression skills in computer science, information technology, digital literacy and online safety to ensure that children become competent in using technology in an informed and safe way. These skills are revisited repeatedly to ensure that the learning is embedded and that the skills are developed.

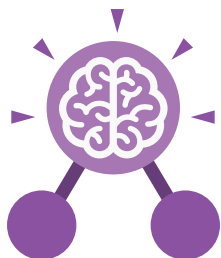
Implementation:

Computing is taught in specific Computing lessons. Teachers use the 'Purple Mash' scheme, published by 2Simple. The scheme has been closely referenced against the 2014 National Curriculum attainment targets in order to ensure progression and coverage. Lessons in the scheme have been planned in our school curriculum so they can meet the needs of all of our pupils with a particular focus on key vocabulary for our children who speak more than one language. Our plans are differentiated beyond the core knowledge listed to provide for the learning needs of all learners and to ensure all learners, including SEND, Pupil Premium and high attainers, are challenged, including through cross curricular links. Having specific lessons means that the children are able to develop depth in their knowledge and skills over the duration of each of their Computing topics.

We have over 60 laptops in school which are timetabled for use by EYFS, KS1 and KS2. Meaningful links will be made between the Computing curriculum and the wider curriculum. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught. We also use the 2Do feature on Purple Mash to set home learning. During and at the end of topic, teachers use differentiated statements from our curriculum documents to assess children. This is based on children's work in lessons and their saved work in their own Purple Mash files, including their work on 2Do tasks. These also provide formative assessment for future learning in addition to the informal assessment which has taken place throughout the topics to close gaps, including with regard to previous learning.

Impact:

The implementation of this curriculum ensures that, when children leave St. Monica's Catholic Primary School, they are competent and safe users of IT with an understanding of how technology works. They will have developed skills to express themselves and be equipped to apply their skills in computing to different challenges going forward, including in transition to secondary school.



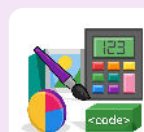
Unit: 6.1

Coding

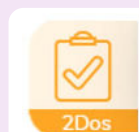
Key Learning

- 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.

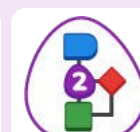
Key Resources



Tools



2Dos



2Chart



Free code gorilla

Key Vocabulary

Action

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

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.

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.

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.

Execute\Run

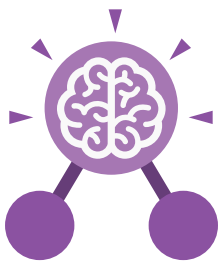
Clicking the Play button to make the computer respond to the code. Execute is the technical word for when you run the code. We say, 'the program (or code) executes.'

Debug/Debugging

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

Flowchart

A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram.



Unit: 6.1

Coding

Key Vocabulary

Function

A block or sequence of code that you can access when you need it, so you don't have to rewrite the code repeatedly. Instead, you simply **call** the function each time you want it.

Object

Items in a program that can be given instructions to move or change in some way (action). In 2Code Gorilla, the **object types** are button number, input, text, shape turtle, character, object, vehicle, animal.

Procedure

An independent code module that fulfils a task and is referenced within a larger body of code. In 2Code a procedure might be coded as a function.

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.

Tab

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

Input

Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device. In 2Code the commands **prompt for input** and **get input** are used to prompt the user to enter typed input and then use this input.

Properties

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

Sequence

This is when a computer program runs commands in order.

Simulation

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

Timer

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

Launch Command

This command will open another Purple Mash file or an external website that you specify when it is called.

Output

Information that comes out of the computer e.g. **sound**, **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

Repeat

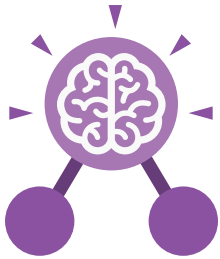
This command can be used to make a block of commands run a set number of times or forever.

Repeat Until

In 2Code this command will repeat a block of commands until a condition is met.

Variable

A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.



Unit: 6.1

Coding

Key Images



Design

Open design mode in 2Code.

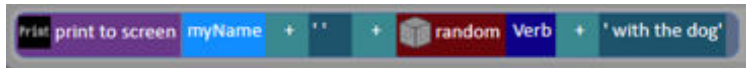


Exit Design

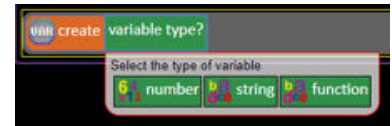
Switch to code mode in 2Code.



A change variable block.



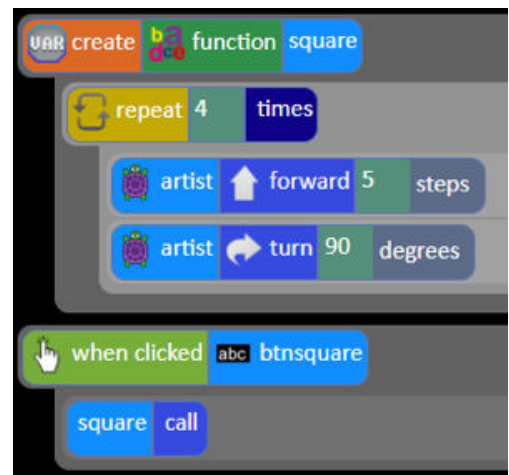
Example of combining variables and strings to print to the screen



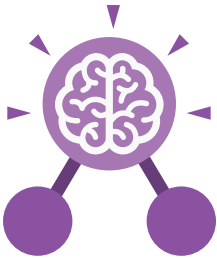
Creating a variable in 2Code



Add a new Tab to your code or move code blocks between tabs



A function called 'square' that is called by clicking on a button called btnSquare.



Unit: 6.1

Coding

Key Questions

How can you use Tabs in 2Code Gorilla?

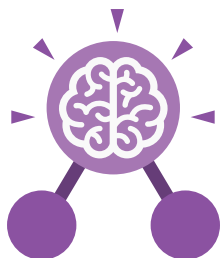
Tabs are used to organise your code and make it more readable. This also makes it easier to debug. Give the Tabs useful names to help with this.

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.



Unit: 6.2

Online Safety

Key Learning

- 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.

Key Questions

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.

Key Resources

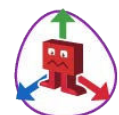
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2Investigate



2DIY



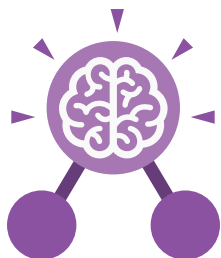
2DIY3D



Free code gorilla

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.



Unit: 6.2

Online Safety

Key Vocabulary

Data analysis

The process of interpreting and understanding data that has been collected and organised.

Digital footprint

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

Inappropriate

Something that is not suitable or proper in the situation.

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

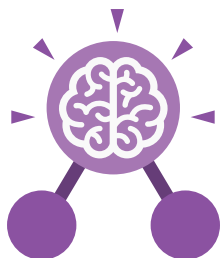
The time spent using a device with a screen, such as a computer, television, tablet or phone.

Spoof

An imitation of something that appears to look genuine.

Secure websites

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



Unit: 6.3

Spreadsheets

Key Learning

- 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 Resources



Key Vocabulary

Rows

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

Columns

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

Spreadsheet

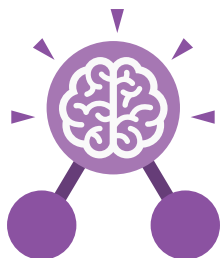
A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either **data** or a **formula** that describes the value to be inserted based on the values in other cells.

Data

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

Formula

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



Unit: 6.3

Spreadsheets

Key Vocabulary

Advance mode

A mode of 2Calculate in which the cells have references and can include formulae.

Budget

The amount of money available to spend on a project.

Chart

A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

Count (How Many) Tool

Counts how many of a variable there are in a spreadsheet.

Dice Tool

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

Expense

A cost associated with a project.

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.

Formula Wizard

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

Move cell tool

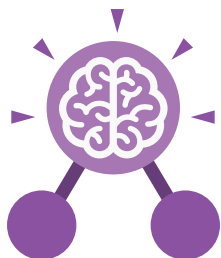
Allows selected cells to be draggable.

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.

Profit

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



Unit: 6.3

Spreadsheets

Key Images



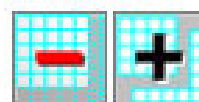
Open, close or share
a file



Save your work



Open a previously
saved file



Increase or decrease
spreadsheet size



Advanced mode



Formula Wizard



Format Cell Toolbox



Charts



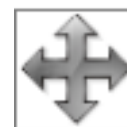
Totals toolbox



Image Tools



Controls Toolbox



Move



Dice



Equals



Count



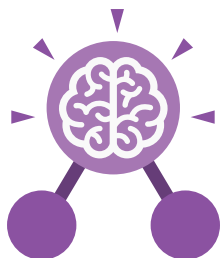
To Copy



To Cut



To Paste



Unit: 6.3

Spreadsheets

Key Questions

How would you add a formula so that the cell shows the total of a column of cells?

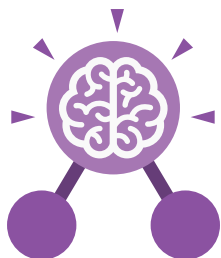
Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references.

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.



Unit: 6.4

Blogging

Key Learning

- To identify the purpose of writing a blog.
- To identify the features of a successful blog.
- To plan the theme and content for a blog.
- 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 how and why blog posts are approved by the teacher.
- To understand the importance of commenting on blogs.

Key Resources

**purple
mash**



2Blog



2Connect

Key Questions

What is a blog?

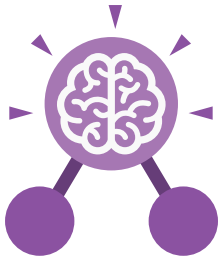
A blog is a website or webpage that is regularly updated by the author. A blog also allows the reader to post comments or opinion based on what is written.

What can a blog be about?

A blog can be written about any subject. You could write a blog about school such as information about the subject you are studying. Alternatively, you could write a blog about your favourite team or movie.

How are the audience involved in a blog?

A key feature of blogs is that the audience can leave a comment or opinion about what they have read on the blog.



Unit: 6.4

Blogging

Key Vocabulary

Approval

The act of acknowledging something is appropriate.

Archive

In this case, where older blog or vlog posts are stored.

Blog

A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.

Blog post

A piece of writing or other item of content published on a blog.

Collaborate

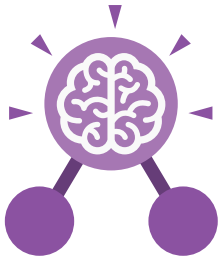
Work jointly on an activity or project.

Commenting

To express an opinion or reaction in speech or writing.

Vlog

A personal website or social media account where a person regularly posts short videos.



Unit: 6.5

Text Adventures

Key Learning

- To find out what a text adventure is.
- To use 2Connect to plan a story adventure.
- To make a story-based 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.

Key Resources

**purple
mash**



2Create a Story



2Connect

Key Vocabulary

Text-based Adventure

A computer game that uses text instead of graphics.

Debug\ Debugging

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

Sprite

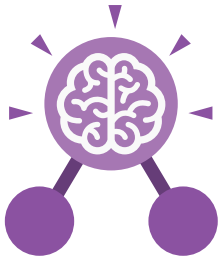
A computer graphic which may be programmed to move on-screen.

Selection

When selection is used, a program will choose a different outcome depending on a condition.

Function

In this context, a section of code that gets run when it is called from the main code. A function in a program is usually a piece of code that gets run lots of times.



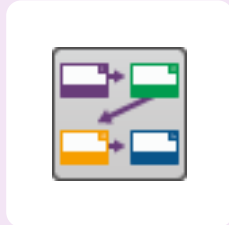
Unit: 6.5

Text Adventures

Key Images



Create an adventure story in 2Create a Story



Plan out your story



Add a button to the story



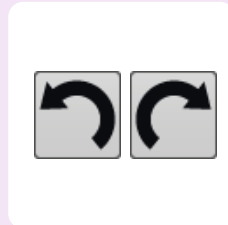
Add a sprite to the story



Add sound to the story



Choose a background



Undo or redo the last action



Play your text based adventure

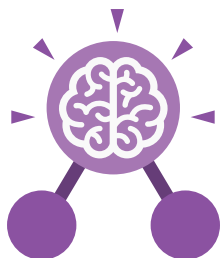
Key Questions

What is a text based adventure?

A text based adventure is a type of game that uses text rather than graphics to tell the story. The player normally selects the next move from a series of text based options.

Why is it important to plan a text based adventure?

Text based adventures can often be complicated and give the player lots of options about what to do next. Planning the game ensures the player doesn't make a decision that has no outcome.



Unit: 6.6 Networks

Key Learning

- To learn about what the Internet consists of.
- To find out what a LAN and a WAN are.
- To find out how the Internet is accessed in school.
- To research and find out about the age of the Internet.
- To think about what the future might hold.

Key Resources

**purple
mash**



Tim Berners- Lee
Profile



Communication
Questionnaire

Key Vocabulary

Hub\Switch

The connection point for networks where data packets from many locations converge and are then sent out to different devices.

Internet

A global computer network providing a variety of information and communication facilities consisting of interconnected networks using standardized communication protocols.

Local area network (LAN)

A computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1 km.

Network

Several interconnected computers, machines, or operations.

Router

A device which forwards data packets to the appropriate parts of a computer network.

Wide area network (WAN)

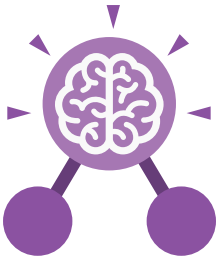
A collection of local-area networks (LANs) or other networks that communicate with one another over a large physical area or even globally.

World Wide Web

An information system on the Internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.

Wi-Fi

A facility allowing computers, smartphones, or other devices to connect to the Internet or communicate with one another wirelessly within a particular area.



Unit: 6.6

Networks

Key Questions

What is the difference between the Internet and the World Wide Web?

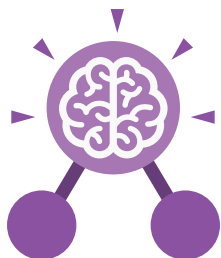
The Internet is a global network of networks while the Web, also referred formally as the World Wide Web (www) is collection of information which is accessed via the Internet.

What is the difference between a LAN and a WAN?

Both are networks that connect computers together. A LAN (Local Area Network) is normally for computers connected less than 1KM distance, whilst a WAN (Wide Area Network) extends over a large geographical area.

Who is Tim Berners-Lee?

Tim Berners-Lee is the inventor of the World Wide Web. The WWW is the system that delivers webpages over the internet.



Unit: 6.7

Quizzing

Key Learning

- To create a picture-based quiz for young children.
- To learn how to use the question types within 2Quiz.
- To explore the grammar quizzes.
- To make a quiz that requires the player to search a database.
- To make a quiz to test your teachers or parents.

Key Resources

**purple
mash**



2Quiz



2DIY



Text Toolkit



2Connect



2Investigate

Key Vocabulary

Audience

People who watch a performance or use a resource.

Audio

Sound (especially when recorded).

Case-Sensitive

Differentiating between capital and lower-case letters.

Clone

To make a complete copy of something.

Cloze

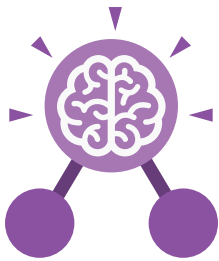
A test in which words are removed from a text and replaced with spaces. The learner has to fill each space with the correct word(s).

Preview

To see what something (or part of something) looks like before committing to it being the final version.

Quiz

An activity in which participants answer questions and receive a score dependent upon correct answers.



Unit: 6.7

Quizzing

Key Images



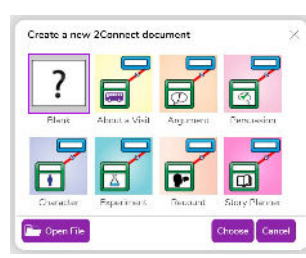
Create a quiz using 2Do It Yourself



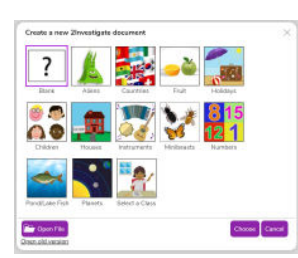
Create a quiz using Text Toolkit



Choose a question type in 2Quiz



Create a concept map from scratch (blank) or an existing template.



Create a blank database

Key Questions

What factors do you need to consider when creating a quiz?

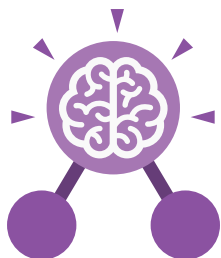
The intended audience; age and reading ability and interests.
The aim of the quiz; is it for fun like a game, or to make sure that the user has learnt something?

Name three question types in 2Quiz.

- Sequencing
- Grouping and Sorting
- Text based
- Multiple-choice
- Labelling

Apart from the questions, what else does a quiz need to contain?

A title screen and instructions for the user.
Feedback for the user (some quizzes). Time limits (some quizzes).
Images for interest as well as part of the questions



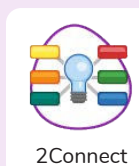
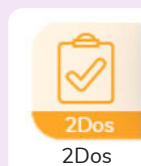
Unit: 6.8

Binary

Key Learning

- 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.

Key Resources



Key Vocabulary

Base 2

A number system in which there are two separate integers that can be used to make all numbers. This is also called the **binary** system.

Bit

A single 0 or 1 is called a bit. This word comes from 'Binary Digit'.

Base 10

A number system in which there are ten separate integers that can be used to make all numbers. This is also called the **decimal** and the **denary** system.

Words used to describe numbers of bits and the computer memory space used:

Nibble - 4 bits

Byte - 8 bits.

Kilobyte (KB) - 1024 bytes

Megabyte (MB) - 1024 KB

Gigabyte (GB) - 1024 MB

Tetrabyte (TB) - 1024 GB

Digit

A single integer used to show a number.

Integer

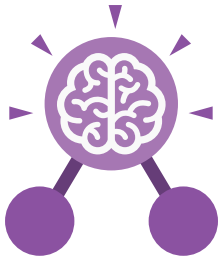
Any whole number. This includes negative and positive numbers but not fractions or decimals.

Transistor

A transistor is a tiny switch that is activated by the electronic signals it receives.

Switch

An act of changing to or adopting one thing in place of another.



Unit: 6.8

Binary

Key Vocabulary

Machine code

The code that signals to a computer which transistors should be on or off. Machine code is written in binary.

Megabyte (MB)

1024 KB.

Nibble

4 bits.

Switch

A component that can be one of two states at any time: on or off.

Terabyte (TB)

1024 GB

Transistor

A tiny switch that is activated by the electronic signals it receives.

Variable

A variable is used in programming to keep track of things that can change while a program is running. A variable must have a name. The value of the variable is the information to store.

Key Images

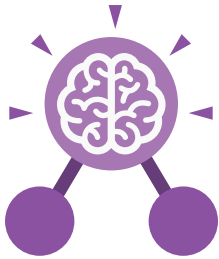
1
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Unit: 6.8

Binary

Key Questions

How does binary relate to the programs that you use or create?

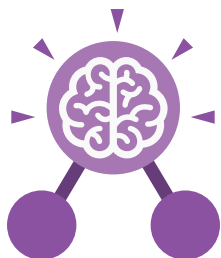
In a computer, everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make the requested sound. Or graphics card to make images appear on the screen.

How does binary relate to computer memory?

A single 0 or 1 is called a bit. The word comes from Binary Digit. The bigger the program, the more bits are used so more memory space is taken up. For example, 1 byte is 8 bits, 1 megabyte (Mb) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits!

How would you write the numbers 0 to 10 in binary?

0, 1, 10, 11,
100, 101, 110, 111, 1000,
1001, 1010.



Unit: 6.9

Spreadsheets with Microsoft Excel

Key Learning

- To know what a spreadsheet looks like.
- To navigate and enter data into cells.
- To introduce some basic data formulae in Excel for percentages, averages and max and min numbers.
- To demonstrate how the use of Excel can save time and effort when performing calculations.
- To use a spreadsheet to model a real-life situation.
- To demonstrate how Excel can make complex data clear by manipulating the way it is presented.
- To create a variety of graphs in Excel.
- To apply spreadsheet skills to solving problems.

Key Resources



Key Questions

What is a spreadsheet used for?

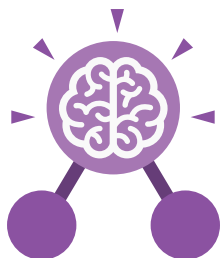
Spreadsheets are used to display, organise and interpret information. They are easy to manipulate and carry out useful calculations quickly.

How do you carry out a multiplication calculation?

Within the formula bar for the cell, you will need to write = then the cells you want to multiply using the operator *. For example, =A1*B1 will show the answer of A1 multiplied by B1. You can change the contents of A1 or B1 and this will change your answer.

How does using the SUM function save time?

Using the SUM function allows you to add together the total of many cells without having to write them all out. For example, it is easier to write =SUM(A1:A6) rather than = A1+ A2+ A3+ A4+ A5+ A6.



Unit: 6.9

Spreadsheets with Microsoft Excel

Key Vocabulary

Auto fit

A function of a spreadsheet that alters column widths to fit data.

Chart

A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

Conditional formatting

When a cell or cells are formatted in a specific way depending upon the values in the cell or cells.

Formula(e)

A group of letters, numbers, or other symbols which represent a mathematical rule. It allows a spreadsheet to carry out calculations.

Horizontal axis

The x-axis of a graph is called the horizontal axis.

Spreadsheet

A software tool used for organising information and performing calculations on the data. A spreadsheet workbook file is organised into sheets.

Cell

An individual section of a spreadsheet grid. It contains data or calculations.

Column

Vertical, lettered 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.

Formula Bar

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

Range

A collection of selected cells: all the numbers you want to appear in a calculation. For example, A1:A12 includes all the cells from A1 to A12.

Vertical axis

The y-axis of a graph is called the vertical axis.

Cell Reference

Each cell has a cell reference that shows its position. The cell reference is displayed in the box on the top left (not on tablet version).

Computational Model

Creating or using a simulation (a model) of a real-life situation, on a computer.

Delimiter

A character that separates each piece of data.

Graph

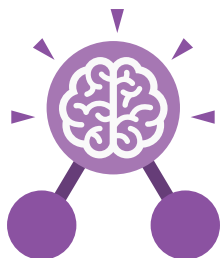
A diagram that represents data there are specific layouts for graphs including bar graphs and line graphs.

Row

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

Text Wrapping

This displays the cells contents on multiple lines rather than one long line, allowing all the contents to be shown.



Unit: 6.9

Spreadsheets with Microsoft Excel

Key Images



Open a new document



Open an existing document



Save your work



Home tab where many editing tools are found



Font Category



Formula Bar



Undo key



Insert tab where you can add in tables, illustrations and links



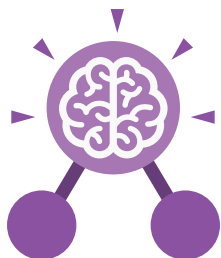
Insert cells



Text Wrapping



Formula Bar



Unit: 6.9

Spreadsheets with Google Sheets

Key Learning

- To know what a spreadsheet looks like.
- To navigate and enter data into cells.
- To introduce some basic data formulae for percentages, averages and max and min numbers.
- To demonstrate how the use of spreadsheets can save time and effort when performing calculations.
- To use a spreadsheet to model a situation.
- To demonstrate how a spreadsheet can make complex data clear by manipulating the way it is presented.
- To create a variety of graphs in sheets.
- To apply spreadsheet skills to solving problems.

Key Resources



Google Sheets

Key Questions

What is a spreadsheet used for?

Spreadsheets are used to display, organise and interpret information.

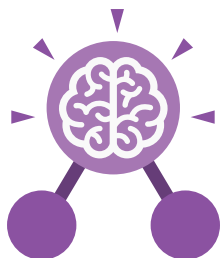
They are easy to manipulate and carry out useful calculations quickly.

How do you carry out a multiplication calculation?

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How does using the SUM function save time?

Using the SUM function allows you to add together the total of many cells without having to write them all out. For example, it is easier to write =SUM(A1:A6) rather than = A1+ A2+ A3+ A4+ A5+ A6.



Unit: 6.9

Spreadsheets with Google Sheets

Key Vocabulary

Auto fit

A function of a spreadsheet that alters column widths to fit data.

Chart

A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

Conditional formatting

When a cell or cells are formatted in a specific way depending upon the values in the cell or cells.

Formula(e)

A group of letters, numbers, or other symbols which represent a mathematical rule. It allows a spreadsheet to carry out calculations.

Horizontal axis

The x-axis of a graph is called the horizontal axis.

Spreadsheet

A software tool used for organising information and performing calculations on the data. A spreadsheet workbook file is organised into sheets.

Cell

An individual section of a spreadsheet grid. It contains data or calculations.

Column

Vertical, lettered 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.

Formula Bar

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

Range

A collection of selected cells: all the numbers you want to appear in a calculation. For example, A1:A12 includes all the cells from A1 to A12.

Vertical axis

The y-axis of a graph is called the vertical axis.

Cell Reference

Each cell has a cell reference that shows its position. The cell reference is displayed in the box on the top left (not on tablet version).

Computational Model

Creating or using a simulation (a model) of a real-life situation, on a computer.

Delimiter

A character that separates each piece of data.

Graph

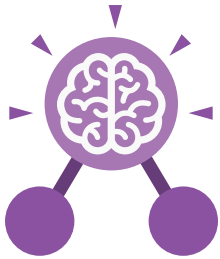
A diagram that represents data there are specific layouts for graphs including bar graphs and line graphs.

Row

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

Text Wrapping

This displays the cells contents on multiple lines rather than one long line, allowing all the contents to be shown.



Unit: 6.9

Spreadsheets with Google Sheets

Key Images



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Access sharing options



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Number Format



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Text Wrapping



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Add a new sheet

Year 6 Unit Overview

Unit 6.1 – Coding

Lesson	Title	Aims (Objectives)	Success Criteria
1 & 2	Designing and Making a more Complex Program	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can plan a program which includes a timer and a score. Children can follow their plans to create a program. Children can debug when things do not run as expected.
3	Using Functions	<ul style="list-style-type: none"> To use functions and understand why they are useful. To understand how functions are created and called. 	<ul style="list-style-type: none"> Children can create a program that makes use of functions. Children can create a program that uses multiple functions with the code arranged in tabs. Children can explain how their code executes when their program is run.
4	Flowcharts and Control Simulations	<ul style="list-style-type: none"> To use flowcharts to test and debug a program. To create a simulation of a room in which devices can be controlled. 	<ul style="list-style-type: none"> Children can follow flowcharts to create and debug code. Children can create flowcharts for procedures. Children can be creative with the way they code to generate novel visual effects.
5	User Input	<ul style="list-style-type: none"> To understand the different options of generating user input in 2Code. To understand how user input can be used in a program. 	<ul style="list-style-type: none"> Children can code programs that take text input from the user and use this in the program. Children can attribute variables to user input. Children are aware of the need to code for all possibilities when using user input.
6	Using Text-based Adventures	<ul style="list-style-type: none"> To understand how 2Code can be used to make a text-based adventure game. 	<ul style="list-style-type: none"> Children can follow through the code of how a text adventure can be programmed in 2Code. Children can design their own text-based adventure game based on one they have played. Children can adapt an existing text adventure so it reflects their own ideas.

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Unit 6.2 – Online Safety

Lesson	Title	Aims (Objectives)	Success Criteria
1	Message in a Game	<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. 	<ul style="list-style-type: none"> Children have used the example game and further research to refresh their memories about risks online including sharing location, secure websites, spoof websites, phishing, and other email scams. Children have used the example game and further research to refresh their memories about the steps they can take to protect themselves including protecting their digital footprint, where to go for help, smart rules and security software.
2	Online Behaviour	<ul style="list-style-type: none"> 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 begin to understand how information online can persist and give away details of those who share or modify it. 	<ul style="list-style-type: none"> Children understand how what they share impacts upon themselves and upon others in the long-term. Children know about the consequences of promoting inappropriate content online and how to put a stop to such behaviour when they experience it or witness it as a bystander. Extension: Children' actions demonstrate that they also feel a responsibility to others when communicating and sharing content online.
3	Screen Time	<ul style="list-style-type: none"> To understand the importance of balancing game and screen time with other parts of their lives, e.g., explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effect this has on their health. To identify the positive and negative influences of technology on health and the environment. 	<ul style="list-style-type: none"> Children can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. Children can give reasons for limiting screen time. Children can talk about the positives and negative aspects of technology and balance these opposing views. Extension: Children have an internalised in-depth understanding of the risks and benefits of an online presence.

Unit 6.3 – Spreadsheets

Lesson	Title	Aims (Objectives)	Success Criteria
1	Exploring Probability	<ul style="list-style-type: none"> To use a spreadsheet to investigate the probability of the results of throwing many dice. 	<ul style="list-style-type: none"> Children can create a spreadsheet to answer a mathematical question relating to probability. Children can take copy and paste shortcuts. Children can problem solve using the count tool.
2	Creating a Computational Model	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can create a machine to help work out the price of different items in a sale. Children can use the formula wizard to create formulae. Children can use a spreadsheet to solve a problem.
3	Use a Spreadsheet to Plan Pocket Money Spending	<ul style="list-style-type: none"> To use a spreadsheet to plan how to spend pocket money and the effect of saving money. 	<ul style="list-style-type: none"> Children can use a spreadsheet to model a real-life situation and come up with solutions. Children can make practical use of a spreadsheet to help plan actions.
4 & 5	Planning a School Event	<ul style="list-style-type: none"> To use a spreadsheet to plan a school charity day to maximise the money donated to charity. 	<ul style="list-style-type: none"> Children can use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.

Unit 6.4 – Blogging

Lesson	Title	Aims (Objectives)	Success Criteria
1	What is a Blog?	<ul style="list-style-type: none"> To identify the purpose of writing a blog. To identify the features of successful blog writing. 	<ul style="list-style-type: none"> Children understand how a blog can be used as an informative text. Children understand the key features of a blog.
2	Planning a Blog	<ul style="list-style-type: none"> To plan the theme and content for a blog. 	<ul style="list-style-type: none"> Children can work collaboratively to plan a blog.
3	Writing a Blog	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can create a blog or blog post with a specific purpose. Children understand that the way in which information is presented has an impact upon the audience.

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4	Sharing Posts and Commenting	<ul style="list-style-type: none"> To understand the importance of commenting on blogs. To peer-assess blogs against the agreed success criteria. To understand how and why blog posts and comments are approved by the teacher. 	<ul style="list-style-type: none"> Children can post comments and blog posts to an existing class blog. Children understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying. Children can assess the effectiveness and impact of a blog. Children understand that content included in their blog carefully considers the end user.
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Unit 6.5 – Text Adventures

Lesson	Title	Aims (Objectives)	Success Criteria
1	What Is a Text Adventure? Planning a Story Adventure	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can describe what a text adventure is. Children can map out a story-based text adventure. Children can use 2Connect to record their ideas. Extension: Children can turn a simple story with 2 or 3 levels of decision making into a logical design
2	Making a Story-based Adventure Game	<ul style="list-style-type: none"> To use 2Connect plans for a story adventure to make the adventure using 2Create a Story. 	<ul style="list-style-type: none"> Children can use the full functionality of 2Create a Story Adventure mode to create, test and debug using their plan. Children can split their adventure-game design into appropriate sections to facilitate creating it.
3	Introducing Map-Based Text Adventures	<ul style="list-style-type: none"> To introduce an alternative model for a text adventure which has a less sequential narrative. 	<ul style="list-style-type: none"> Children can map out an existing text adventure. Children can contrast a map-based game with a sequential story-based game. Extension: Children can make a comprehensive design map with a sequence of rooms including rooms in which the player needs to make a choice and collect items in a certain order to complete the game.
4	Coding a Map-Based Text Adventure	<ul style="list-style-type: none"> To use written plans to code a map-based adventure in 2Code. 	<ul style="list-style-type: none"> Children can create their own text-based adventure based upon a map. Children can use coding concepts of functions, two-way selection (if/else statements) and repetition in

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			conjunction with one another to code their game. <ul style="list-style-type: none"> Children make logical attempts to debug their code when it does not work correctly.
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Unit 6.6 – Networks

Lesson	Title	Aims (Objectives)	Success Criteria
1	The World Wide Web and the Internet	<ul style="list-style-type: none"> To discover what the children know about the Internet. 	<ul style="list-style-type: none"> Children know the difference between the World Wide Web and the internet. Extension: Children can provide examples of the difference between the World Wide Web and the Internet.
2	Our School Network and Accessing the Internet	<ul style="list-style-type: none"> To find out what a LAN and WAN are. To find out how we access the internet in school. 	<ul style="list-style-type: none"> Children know about their school network. Extension: Children can explain the differences between more than two network types such as: LAN, WAN, WLAN and SAN.
3	Research	<ul style="list-style-type: none"> To research and find out about the age of the internet. To think about what the future might hold. 	<ul style="list-style-type: none"> Children have researched and found out about Tim Berners-Lee. Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.

Unit 6.7 – Quizzing

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introducing 2DIY	<ul style="list-style-type: none"> To create a picture-based quiz for young children. 	<ul style="list-style-type: none"> Children have used the 2DIY activities to create a picture-based quiz. Children have considered the audience's ability level and interests when setting the quiz. Children have shared their quiz and responded to feedback.
2 & 3	Using 2Quiz	<ul style="list-style-type: none"> To learn how to use the question types within 2Quiz. 	<ul style="list-style-type: none"> Children understand the different question types within 2Quiz. Children have ideas about what sort of questions are best suited to the different question types. Children have used 2Quiz to make and share a science quiz (or another subject).

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			<ul style="list-style-type: none"> Children have considered the audience's ability level and interests when setting the quiz. Children have shared their quiz with peers. Children have given and responded to feedback.
4	Exploring Grammar Quizzes	<ul style="list-style-type: none"> To explore the grammar quizzes. 	<ul style="list-style-type: none"> Children have tried out the different types of grammar games. Children have chosen an appropriate tool to make their own grammar game(s).
5	A Database Quiz	<ul style="list-style-type: none"> To make a quiz that requires the player to search a database. 	<ul style="list-style-type: none"> Children have used a 2Investigate quiz to answer quiz questions. Children have designed their own quiz based on one of the 2Investigate example databases.
6	Are you Smarter than a 10- (or 11-) Year-Old?	<ul style="list-style-type: none"> To make a quiz to test your teachers or parents. 	<ul style="list-style-type: none"> Children have used their knowledge of quiz types to create a quiz show quiz based on a curriculum area.

Unit 6.8– Understanding Binary

Lesson	Title	Aims (Objectives)	Success Criteria
	Examine how whole numbers are used as the basis for representing all types of data in digital systems through:		Children understand binary as a number system and its purpose and application in computing.
1	What is Binary?	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can explain how all data in a computer is saved in the computer memory in a binary format. Children can explain that binary uses only the integers 0 and 1. Children can relate 0 to an 'off' switch and 1 to an 'on' switch.
2	Counting in Binary	<ul style="list-style-type: none"> To examine how whole numbers are used as the basis for representing all types of data in digital systems. 	<ul style="list-style-type: none"> Children can count up from 0 in binary using visual aids if needed. Children can relate bits to computer storage.

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		<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. 	
3	Converting from Decimal to Binary	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can convert numbers to binary using the division by two method. Children can check their own answers using the converter tool.
4	Game States	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Children can make use of a variable set to 0 or 1 to control game states.

Unit 6.9– Spreadsheets (with Microsoft Excel)

Lesson	Title	Aims (Objectives)	Success Criteria
1	What is a Spreadsheet?	<ul style="list-style-type: none"> To know what a spreadsheet looks like. To navigate and enter data into cells. 	<ul style="list-style-type: none"> Children know some uses of a spreadsheet tool. Children can navigate around a spreadsheet using cell references. Children can enter data into cells. Children understand new vocabulary relating to spreadsheets: cells, columns, rows, cell names, sheets, workbook.
2	Basic Calculations	<ul style="list-style-type: none"> To introduce some basic data formulae in Excel. To demonstrate how the use of Excel can save time and effort when performing calculations. 	<ul style="list-style-type: none"> Children can use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae. Children can use the series fill function. Children recognise how using formulae allows the data to change and the calculations to update automatically.
3	Modelling	<ul style="list-style-type: none"> To use a spreadsheet to model a situation. 	<ul style="list-style-type: none"> Children can use a spreadsheet to model a situation. Children can use a spreadsheet to solve a problem. Children can use the SUM function
4	Organising Data	<ul style="list-style-type: none"> To demonstrate how Excel can make complex data clear by manipulating the way it is presented. 	<ul style="list-style-type: none"> Children can use a variety of methods including flash fill, convert text to tables and splitting cells for organising and presenting their data in a spreadsheet. Children know what is meant by a delimiter. Children understand how to sort data.
5	Advanced Formulae and Big Data	<ul style="list-style-type: none"> To use formulae for percentages, averages, max and min in spreadsheets. 	<ul style="list-style-type: none"> Children know how to incorporate formulae for percentages, averages, max and min into their spreadsheets. Children gain familiarity with range notation. Children know some shortcuts that help to make data meaningful. Children begin to develop a critical eye when it comes to the conclusions that can be made from data.
6	Charts and Graphics	<ul style="list-style-type: none"> To create a variety of graphs in Excel. 	<ul style="list-style-type: none"> Children know that there are ways to represent their data graphically and that spreadsheets can make the process of representing data easier.

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			<ul style="list-style-type: none"> Children gain an understanding of how a graphical representation can make data easier to interpret. Children make a variety of charts using Sheets. Children illustrate their data using sparklines and data bars.
7	Using a Spreadsheet to Plan a Cake Sale	<ul style="list-style-type: none"> To use a spreadsheet to model a real-life situation. 	<ul style="list-style-type: none"> Children can understand how a spreadsheet can be used to plan an event. Children understand the advantages of using formulae when data is subject to change. Children have modelled a real-life situation using a spreadsheet.
8	Using a Spreadsheet to Solve Problems	<ul style="list-style-type: none"> To apply spreadsheet skills to solving problems. 	<ul style="list-style-type: none"> To apply all new spreadsheet skills to solving problems and presenting data. To explore printing spreadsheets.

Unit 6.9– Spreadsheets (with Google sheets)

Lesson	Title	Aims (Objectives)	Success Criteria
1	What is a Spreadsheet?	<ul style="list-style-type: none"> To know what a spreadsheet looks like. To navigate and enter data into cells. 	<ul style="list-style-type: none"> Children know some uses of a spreadsheet tool. Children can navigate around a spreadsheet using cell references. Children can enter data into cells. Children understand new vocabulary relating to spreadsheets: cells, columns, rows, cell names, sheets, workbook.
2	Basic Calculations	<ul style="list-style-type: none"> To introduce some basic data formulae in Sheets. To demonstrate how the use of Sheets can save time and effort when performing calculations. 	<ul style="list-style-type: none"> Children can use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae. Children can use the series fill function. Children recognise how using formulae allows the data to change and the calculations to update automatically.
3	Modelling	<ul style="list-style-type: none"> To use a spreadsheet to model a situation. 	<ul style="list-style-type: none"> Children can use a spreadsheet to model a situation. Children can use a spreadsheet to solve a problem. Children can use the SUM function
4	Organising Data	<ul style="list-style-type: none"> To demonstrate how spreadsheets can make complex data clearer by manipulating the way it is presented. 	<ul style="list-style-type: none"> Children can use a variety of methods including flash fill, convert text to tables and splitting cells for organising and presenting their data in a spreadsheet.

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			<ul style="list-style-type: none"> Children know what is meant by a delimiter. Children understand how to sort data.
5	Advanced Formulae and Big Data	<ul style="list-style-type: none"> To use formulae for percentages, averages, max and min into spreadsheets. 	<ul style="list-style-type: none"> Children know how to incorporate formulae for percentages, averages, max and min into their spreadsheets. Children gain familiarity with range notation. Children know some shortcuts that help to make data meaningful. Children begin to develop a critical eye when it comes to the conclusions that can be made from data.
6	Charts and Graphics	<ul style="list-style-type: none"> To create a variety of charts and graphs to understand data. 	<ul style="list-style-type: none"> Children know that there are ways to represent their data graphically and that spreadsheets can make the process of representing data easier. Children gain an understanding of how a graphical representation can make data easier to interpret. Children make a variety of charts using Sheets. Children illustrate their data using sparklines and data bars.
7	Using a Spreadsheet to Plan a Cake Sale	<ul style="list-style-type: none"> To use a spreadsheet to model a real-life situation. 	<ul style="list-style-type: none"> Children can understand how a spreadsheet can be used to plan an event. Children understand the advantages of using formulae when data is subject to change. Children have modelled a real-life situation using a spreadsheet.
8	Using a Spreadsheet to Solve Problems	<ul style="list-style-type: none"> To apply spreadsheet skills to solving problems. 	<ul style="list-style-type: none"> To apply all new spreadsheet skills to solving problems and presenting data. To explore printing spreadsheets.