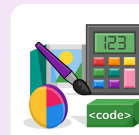# Unit: 6.1
Coding
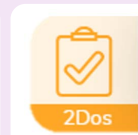
Key Learning

- 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

purple mash

Tools

2Dos

2Chart

Free code gorilla

Key Vocabulary

Action
Types of commands, which are run on an object. They could be used to move an object or change a property.

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
The part of the program design that shows behind everything else. It sets the scene for the story or game.

Button
An object that can trigger an event in response to being clicked.

Called
A line of code that triggers a function to be executed.

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.
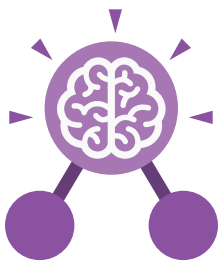
Debug/Debugging
Looking for any problems in the code, fixing and testing them.

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.

Developer
A person who writes, debugs and executes code to create a program.

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Unit: 6.1
Coding

Key Vocabulary

Event
Something that causes a block of code to be run.

Flowchart
A diagram which represents an algorithm.

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.

Get Input
This puts the text that a user types into the computer's temporary memory to be used to control the program flow.

If/Else
A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.

Launch Command
A command that launches another program within the existing program.

Number Variable
A variable that is numerical.

Nested
When you write a command inside something else e.g. a block of commands could be nested inside a timer.

Object
An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects.

Predict
Say what you think will happen when a piece of code is run.

Procedure
A set of coded instructions that perform a certain task.

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

Properties
All objects have properties that can be changed in design or by writing code e.g. image, colour and scale properties.

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

Run
To cause the instruction in a program to be carried out.

Scene
A visual aspect of a program.

Selection
This is a conditional/decision command. When selection is used, a program will choose a different outcome depending on a condition.

Simulation
A model that represents a real or imaginary situation.

String
A sequence of characters, which could form words, phrases or even whole sentences.

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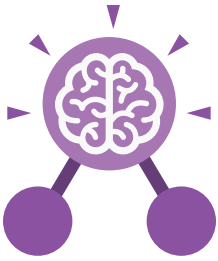In 2Code, this is a way to organise a program into separate pages (tabs) of code.

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

User Input
When a program requires an input from a user such as a click or text from a keyboard.

Variable
A named area in computer memory. A variable has a name and a value. The program can change this variable value.

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Unit: 6.1
Coding

Key Images

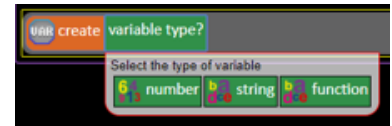Open design mode in 2Code.

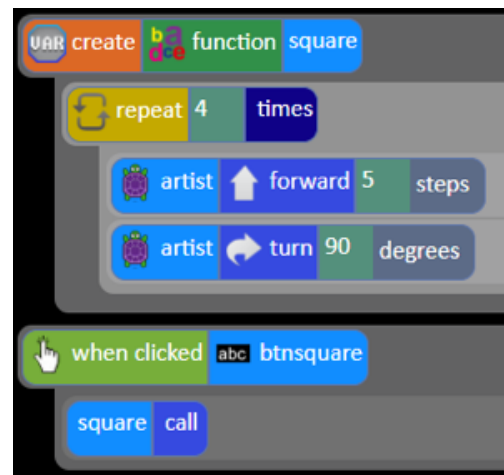Switch to code mode in 2Code.

A change variable block.

Example of combining variables and strings to print to the screen
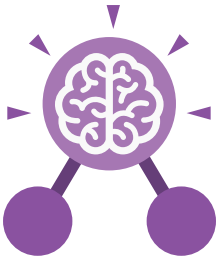

Creating a variable in 2Code

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.

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Unit: 6.1
Coding

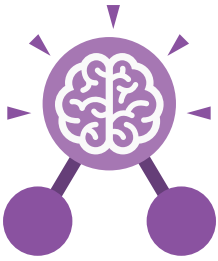## Key Questions

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.

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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

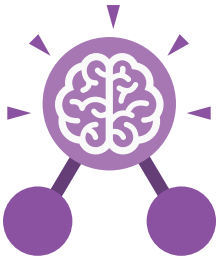**Why do I need to be aware of the dangers of being online?**

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.

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.

Key Resources

purple mash

| 2Investigate | 2DIY | 2DIY3D | Free code gorilla |

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Unit: 6.2
Online Safety

Key Vocabulary

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

PEGI rating
A rating that shows what age a game is suitable for.

Screen time
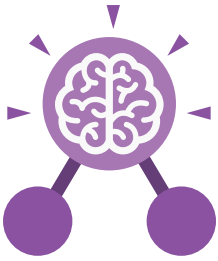Time spent using a device such as a computer, television, or games console.

Password
A string of characters that allow access to a computer system or service.

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.

Spoof website
A website that uses dishonest design to trick users into thinking that it represents the truth.

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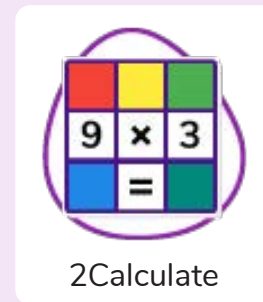Tel: +44(0)208 203 1781 | Email: support@2simple.com | Twitter: @2simplesoftware

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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

purple mash

2Calculate

Key Vocabulary

Average Function
A feature that allows a user to find the average values of selected cells.

Columns
Vertical reference points for the cells in a spreadsheet.

Count (how many) tool
Counts the number of whatever value object is in the cell to its immediate left and puts the answer in the cell to its immediate right.

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

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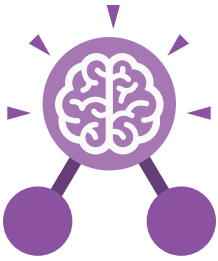An individual section of a spreadsheet grid. It contains data or calculations.

Dice
When clicked, this will simulate a dice roll by switching to one of the faces of a die.

Copy and Paste
A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.

Charts
Use this button to create a variety of graph types for the data in the spreadsheet.

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Unit: 6.3
Spreadsheets

Key Vocabulary

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.

Formula
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.

Formula Wizard
The wizard guides you in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells.

Move cell tool
This tool makes a cell's contents moveable by drag-and-drop methods.

Random tool
Click to give a random value between 0 and 9 to the cell.

Rows
Vertical reference points for the cells in a spreadsheet.

Spin Tool
Adds or subtracts 1 from the value of the cell to its right.

Spreadsheet
A computer program that represents information 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.

Timer
When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again.

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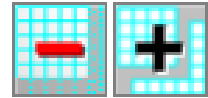
Unit: 6.3
Spreadsheets

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
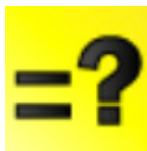
Charts

Totals toolbox

Image Tools

Controls Toolbox

Move

Dice

Equals

Count

To Copy

To Cut

To Paste

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Unit: 6.3
Spreadsheets

Key Questions

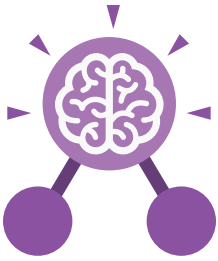### How would you add a formula so that the cell shows the total of a column of cells?

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.

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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.
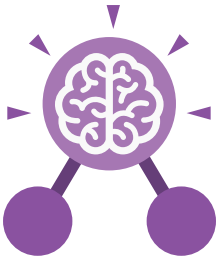
Key Questions

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.

Key Resources

purple mash

2Blog

2Connect

2simple

Unit: 6.4
Blogging

Key Vocabulary

Audience
In this case the readership of the blog.

Blog page
A webpage onto which blog posts are hosted.

Collaborative
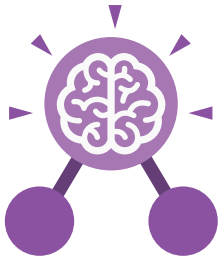Produced by or involving two or more parties working together.

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.

Icon
A symbol or graphic representation on a screen.

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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.

Concept map
A tool for organising and representing knowledge. They form a web of ideas which are all interconnected.
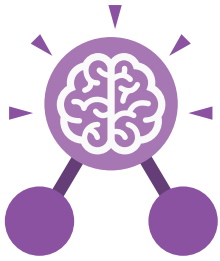
Debug
Identify and remove errors from (computer hardware or software).

Sprite
A computer graphic which may be moved on-screen.

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.
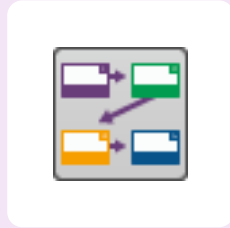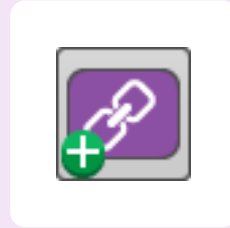
2 simple

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

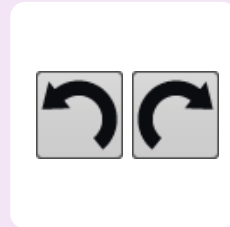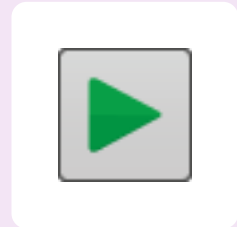Add a sprite to the story

Add sound to the story

Choose a background

Undo or redo the last action
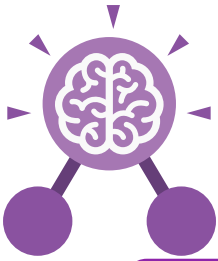
Play your text based adventure

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.

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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

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

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.

Network
Several interconnected computers, machines, or operations.

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.

Wide area network (WAN)
A computer network in which the computers connected may be far apart, generally having a radius of more than 1 km.
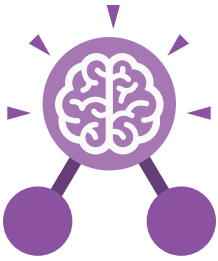
Router
A device which forwards data packets to the appropriate parts of a computer network.

Network cables
Used to connect and transfer data and information between computers and routers.

Wireless
The ability to transmit data from one device to another without using wires.

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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.

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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
The people giving attention to something.

Collaboration
The action of working with someone to produce something.

Concept map
A tool for organising and representing knowledge. They form a web of ideas which are all interconnected.

Database
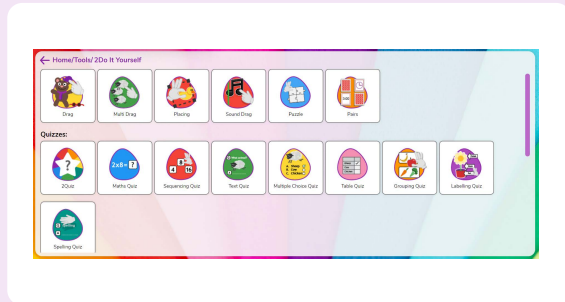A structured set of data held in a computer, especially one that is accessible in various ways.

Quiz
A test of knowledge, especially as a competition between individuals or teams as a form of entertainment.
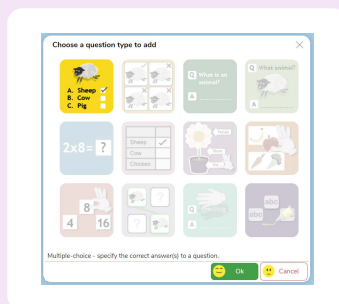
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Unit: 6.7
Quizzing
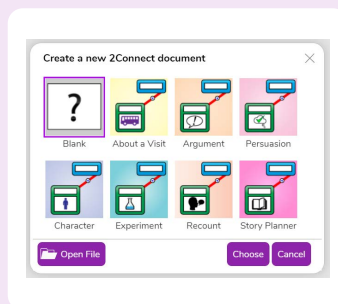
Key Images

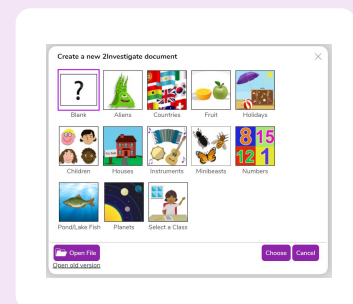Create a quiz using 2Do It Yourself

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

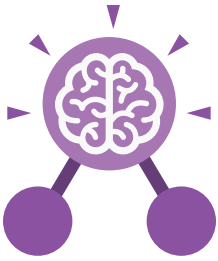**What factors do you need to consider when creating a quiz?**

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
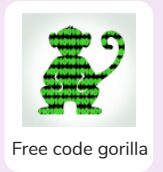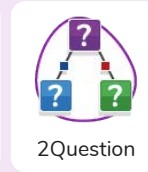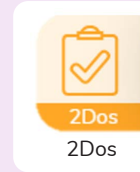
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Unit: 6.8
Binary

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

purple mash

| 2Dos | 2Connect | 2Question | Free code gorilla |

Key Vocabulary

Base 10
The number system commonly used in day-to-day life. Using the digits 0,1,2,3,4,5,6,7,8,9 to make. Also known as decimal or denary.

Base 2
A number system based only on the numerals 0 and 1. Also known as binary. The digits 1 and 0 used in binary reflect the on and off states of transistors.

Binary
See Base-2.

Bit
A single 0 or 1 in the binary system.

Byte
8 bits.

Decimal
See Base-10.

Denary
See Base-10.

Digit
A single integer used to show a number.

Gigabyte (GB)
1024 MB.

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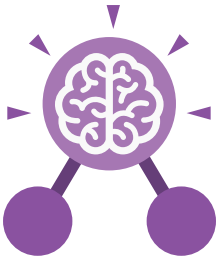Any whole number. This includes negative and positive numbers but not fractions or decimals.

Kilobyte (KB)
1024 bytes.

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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.
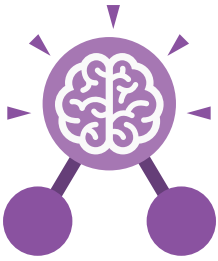
Key Images

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Unit: 6.8
Binary

Key Questions

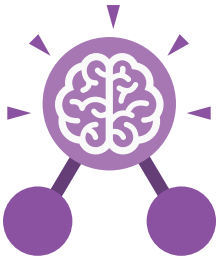### How does binary relate to the programs that you use or create?

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.

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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?

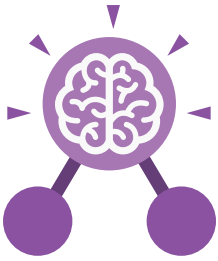Spreadsheets are used to display, organise and interpret information. They are easy to manipulate and carry out useful calculations quickly.

How do you carry out a multiplication calculation?

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.

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Unit: 6.9
Spreadsheets with Google Sheets

Key Vocabulary

Alignment
How the contents of a cell is lined up and arranged.

Calculate
A spreadsheet's ability to complete calculations in a cell by using the = sign.

Cell
Each box on a spreadsheet is a cell. It can contain a variety of data such as letters, numbers, symbols and calculations.

Cell reference
The letter and number combination which shows a cells location on the page.

Chart
A tool which is used to display information in a form of a graph.

Column
The letter labelled columns going vertically down the sheet.

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

Function
Ready-made mathematical formulae which help you quickly carry out calculations.

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.

Row
The numbered rows going horizontally across the sheet.

Spreadsheet
The main part of the page of a software tool used to organise information.

Style
How the contents of a cell is presented.

Sum
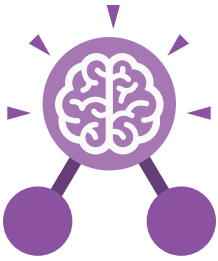A function which adds together the totals in a range of cells.

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

Value
What the data in a cell represents. This could be certain text e.g. blue/green, a date, or a number.

Workbook
A file can contain more than one 'sheet'. The complete file is called a spreadsheet workbook.

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Unit: 6.9
Spreadsheets with Google Sheets

Key Images

Open a new document	Access sharing options
Return to Sheets home	Undo key

Text formatting

Number Format

Borders	Text Wrapping	Insert chart	Create a filter	Add a new sheet

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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

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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.

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Unit: 6.9
Spreadsheets with Microsoft Excel

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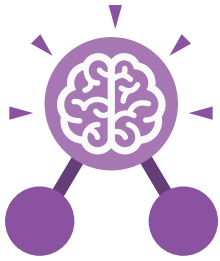A function which adds together the totals in a range of cells.

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Workbook
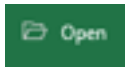A file can contain more than one 'sheet'. The complete file is called a spreadsheet workbook.

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Unit: 6.9
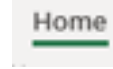# Spreadsheets with Microsoft Excel

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

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