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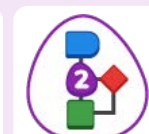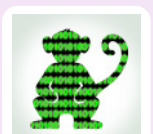- To understand how 2Code can be used to make a text-adventure game.

Key Resources

purple mash
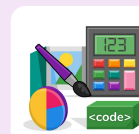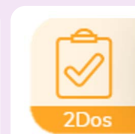
Tools | 2Dos | 2Chart | Free code gorilla

Key Vocabulary

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

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

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.'

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

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.

Command
A single instruction in a computer program.

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.

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.

2 simple
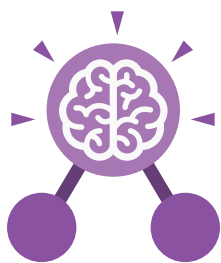
Unit: 6.1
Coding

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.

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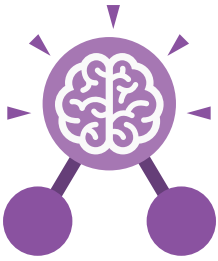
Unit: 6.1
Coding

Key Images
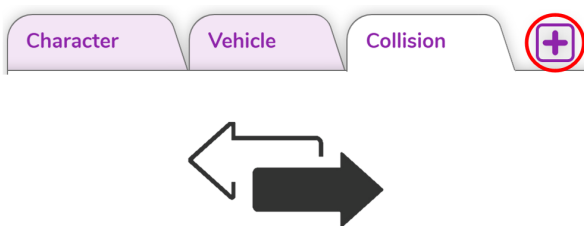

Open design mode in 2Code.

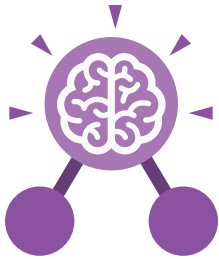Switch to code mode in 2Code.

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.

Unit: 6.1
Coding

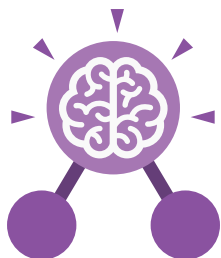## Key Questions

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 Resources

purple mash

2Investigate 2DIY 2DIY3D Free code gorilla

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.
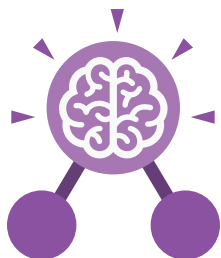
Why is it important to think about how much time use a screen for?

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.

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Key Vocabulary

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

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

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.

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

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.

Print Screen
Capturing an image of the current screen on a device. Also known as a screen shot.

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

Inappropriate
Something that is not suitable or proper in the situation.

PEGI rating
These show the age that digital content is suitable for and the type of content that it contains.
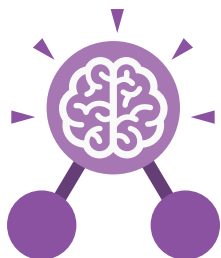
Screen time
The time spent using a device with a screen, such as a computer, television, tablet or phone.

Spoof
An imitation of something that appears to look genuine.

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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
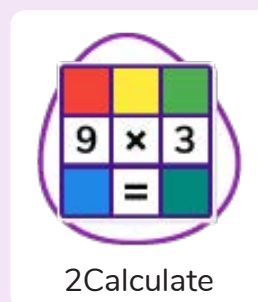
Key Vocabulary

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

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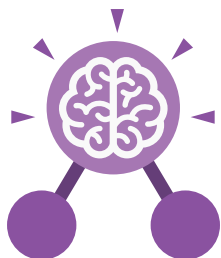
Spreadsheet
A computer program that represents data in **cells** in a grid of **rows** and **columns**. Any cell in the grid may contain either **data** or a **formula** that describes the value to be inserted based on the values in other cells.

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.

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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 ½ 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 fomula.

Formula Wizard
Helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total.
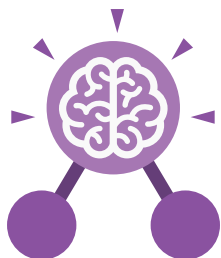
Move cell tool
Allows selected cells to be draggable.

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.

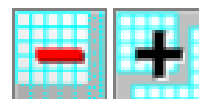2simple

Unit: 6.3
Spreadsheets

Key Images

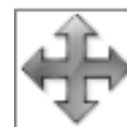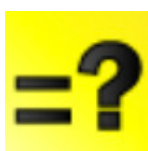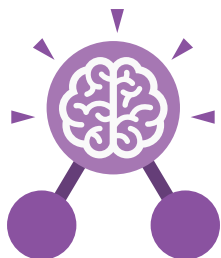|			
Open, close or share a file	Save your work	Open a previously saved file	Increase or decrease spreadsheet size
Advanced mode	Formula Wizard	Format Cell Toolbox	Charts
Totals toolbox	Image Tools	Controls Toolbox	Move
Dice	Equals	Count	
To Copy	To Cut	To Paste	

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Unit: 6.3
Spreadsheets

Key Questions

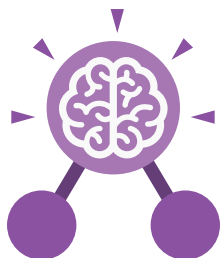### How would you add a formula so that the cell shows the total of a column of cells?

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.

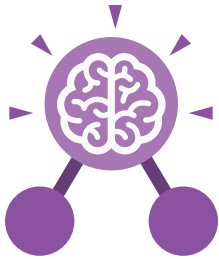## Key Questions

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

2 simple

Unit: 6.4
Blogging

Key Vocabulary

Approval
The act of acknowledging something is appropriate.

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

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

Collaborate
Work jointly on an activity or project.

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

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.

Commenting
To express an opinion or reaction in speech or writing.

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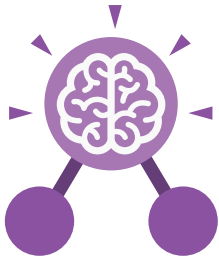
Unit: 6.5
Text Adventures

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 read and understand given code for a text adventure game.
- To debug and improve a text adventure game.

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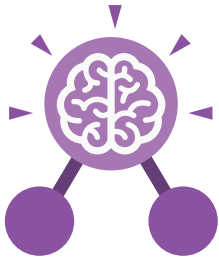
Function
In this context, a section of code that gets run when it is called from the main code. A function in a program is usually a piece of code that gets run lots of times.

Flow of Control
The order that the computer program executes the commands it contains.

Step Through
A way of executing one line of code at a time to help programmers see what happens at each stage of a program. This can be helpful when debugging.
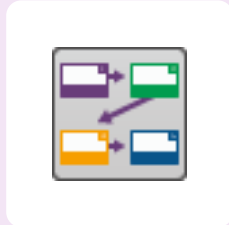
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Unit: 6.5
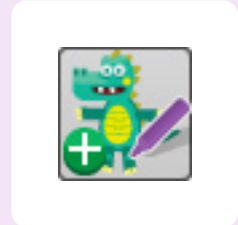## Text Adventures

Key Images

Create an adventure story in 2Create a Story
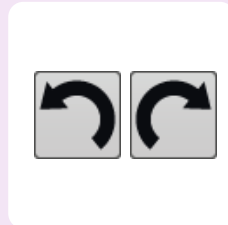
Plan out your story

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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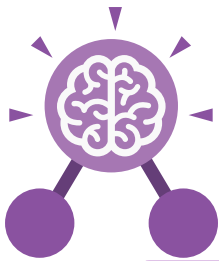
Unit: 6.6
Networks

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

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.

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.

Router
A device which forwards data packets to the appropriate parts of a computer network.
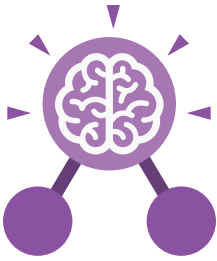
Wide area network (WAN)
A collection of local-area networks (LANs) or other networks that communicate with one another over a large physical area or even globally.

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.

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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.
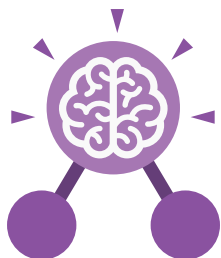
What is the difference between a LAN and a WAN?

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 survey and analyse the responses.

Key Resources

purple mash

2Quiz

2DIY

Text Toolkit

2Connect

2Investigate

2Survey

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.

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).

Participants
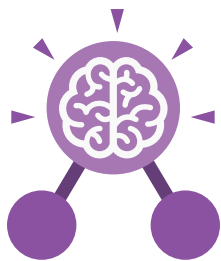The people who answer the questions in a survey.

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.
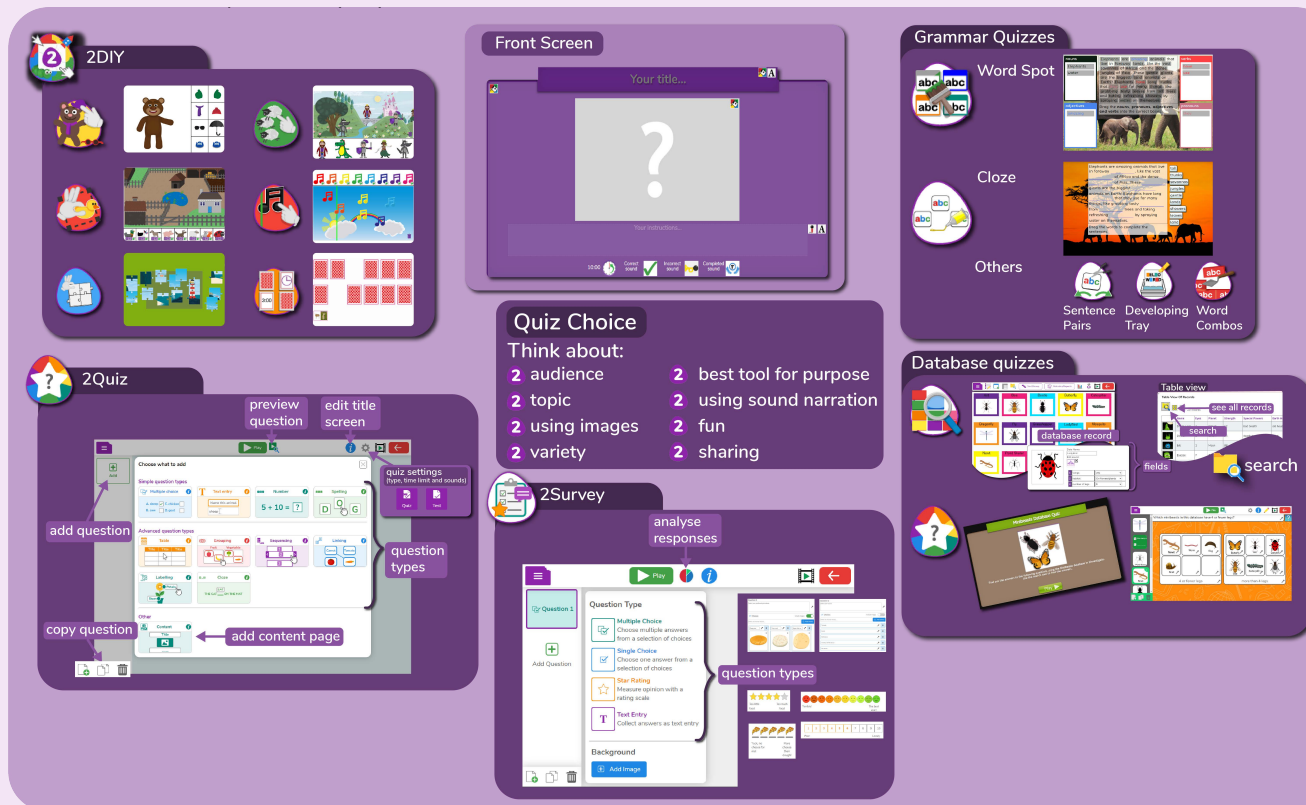
Survey
A set of questions distributed to an audience whose responses are collected and analysed.

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Unit: 6.7
Quizzing

Key Images

2DIY

2Quiz

preview question
edit title screen

add question

copy question

add content page

quiz settings
(type, time limit and sounds)

question types

Front Screen

Your title...

?

Your instructions...

Quiz Choice
Think about:
- audience
- topic
- using images
- variety
- best tool for purpose
- using sound narration
- fun
- sharing

2Survey

analyse responses

Question Type

Multiple Choice
Choose multiple answers from a selection of choices

Single Choice
Choose one answer from a selection of choices

Star Rating
Measure opinion with a rating scale

Text Entry
Collect answers as text entry

Background
Add Image

question types

Grammar Quizzes

Word Spot

Cloze

Others

Sentence Pairs

Developing Tray

Word Combos

Database quizzes

Table view

see all records

search

database record

fields

search

Key Questions

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

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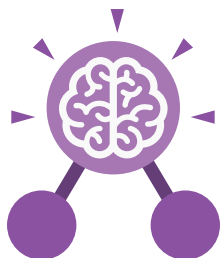The aim of the quiz; is it for fun like a game, or to make sure that the user has learnt something?

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
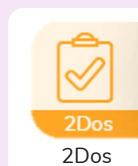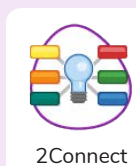
2Dos   2Connect   2Question   Free code gorilla

Key Vocabulary

Base 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.

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

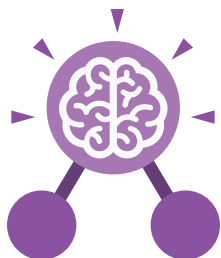**Gigabyte (GB)** - 1024 MB

Tetrabyte (TB) - 1024 GB

Bit
A single 0 or 1 is called a bit. This word comes from '**B**inary Dig**it**'.

Digit
A single integer used to show a number.

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

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

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.

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

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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.
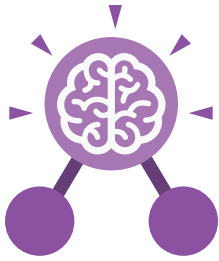
Key Images

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Unit: 6.8
Binary

Key Questions

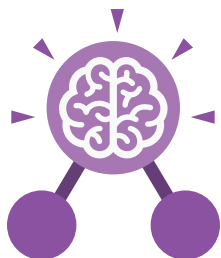### How does binary relate to the programs that you use or create?

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 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
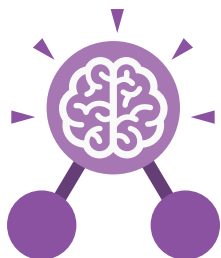

Key Questions

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.

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Unit: 6.9
Spreadsheets with Microsoft Excel

Key Vocabulary

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

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

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).

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

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

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

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

Delimiter
A character that separates each piece of data.

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

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

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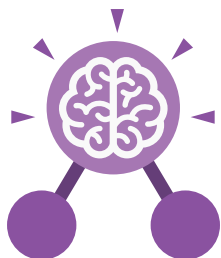A diagram that represents data there are specific layouts for graphs including bar graphs and line graphs.

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

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

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

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

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

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Unit: 6.9
Spreadsheets with Microsoft Excel

Key Images

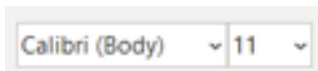|	
New	Open a new document
Open	Open an existing document
(save icon)	Save your work
Home	Home tab where many editing tools are found

Calibri (Body) 11

Font Category

× ✓ *fx* =A1+B1

Formula Bar

(undo icon)	Undo key
Insert	Insert tab where you can add in tables, illustrations and links
Insert	Insert cells
ab Wrap Text	Text Wrapping

Sheet1 ⊕

Sheets tab

2 simple
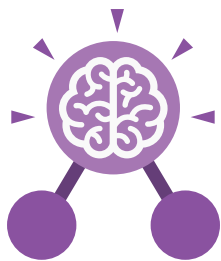
Unit: 6.9
Spreadsheets with Microsoft Excel (Tablet App)

Key Learning

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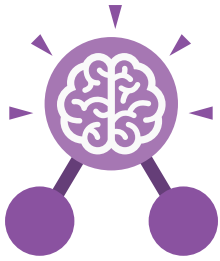A diagram that represents data there are specific layouts for graphs including bar graphs and line graphs.

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Unit: 6.9
Spreadsheets with Microsoft Excel

Key Images

Open a new document

Open an existing document

Save your work

Wrap text

Calibri (Body)   11

Font Category

fx Enter text or formula here

Formula Bar

Insert table

Insert chart\graphs

Add rows/columns

Split text to columns

Sheet1   Sheet2   Sheet3   +

Sheets tab

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Unit: 6.9
Spreadsheets with Google Sheets

Key Learning

- To know what a spreadsheet looks like.
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Key Resources

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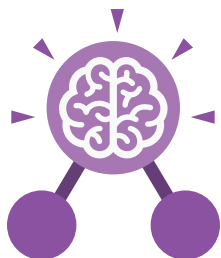A character that separates each piece of data.

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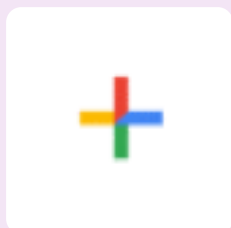Horizontal, numbered reference points for the cells in a spreadsheet.

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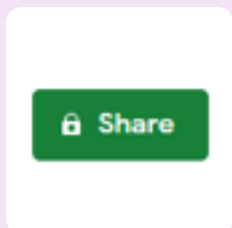This displays the cells contents on multiple lines rather than one long line, allowing all the contents to be shown.

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Unit: 6.9
Spreadsheets with Google Sheets

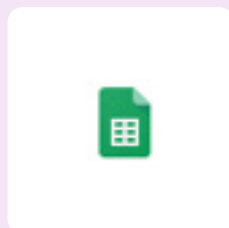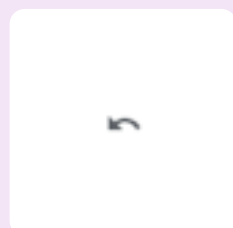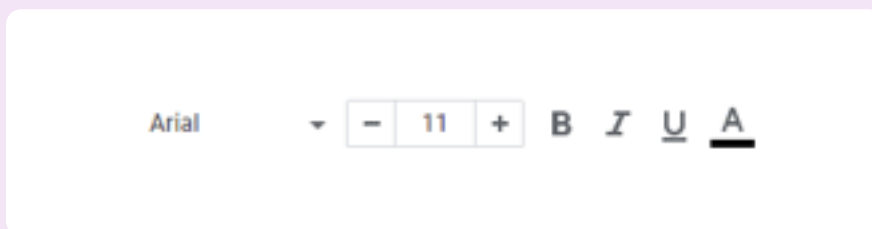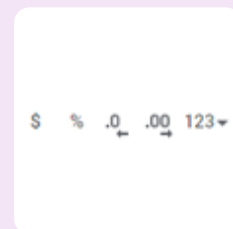**Key Images**

Open a new document

Access sharing options

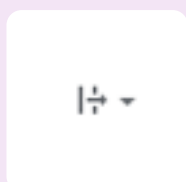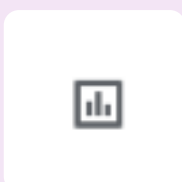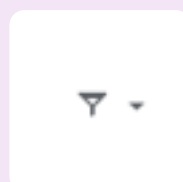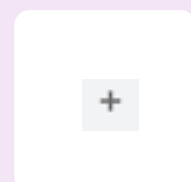Return to Sheets home

Undo key

Text formatting

Number Format

Borders

Text Wrapping

Insert chart

Create a filter

Add a new sheet

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