Unit: 5.1
Coding

Key Learning

- To begin to simplify code.
- To create a playable game.
- To understand what a simulation is.
- To program a simulation using 2Code.
- To know what decomposition and abstraction are in computer science.
- To a take a real-life situation, decompose it and think about the level of abstraction.
- To understand how to use friction in code
- To begin to understand what a function is and how functions work in code.
- To understand what the different variables types are and how they are used differently.
- To understand how to create a string.
- To understand what concatenation is and how it works.

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.

Abstraction
A way of de-cluttering and removing unnecessary details to get a program functioning.

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

Bug
A problem in a computer program that stops it working the way it was designed.

Command
A single instruction in a computer program.

Concatenation
The action of linking things together in a series.

Control
These commands determine whether parts of the program will run, how often and sometimes, when.
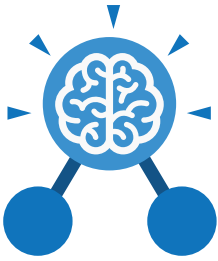
Decomposition
A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program.

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

Design Mode
Used to create the look of a 2Code computer program when it is run.

2 simple

Unit: 5.1
Coding

Key Vocabulary

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

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
A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run.

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.

Input
Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.

Output
Information that comes out of the computer e.g. sound.

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.

Physical System
A system or process which happen in the real world using robotics, sensors or motors e.g. traffic lights.

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

Sequence
This is when a computer program runs commands in order. In 2Code this can also include "repeat" or a timer.

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

Simulation
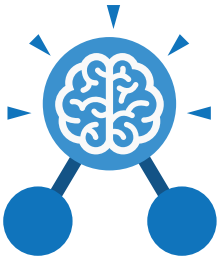A model that represents a real or imaginary situation.

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

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

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

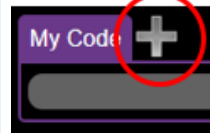2simple

Unit: 5.1
Coding
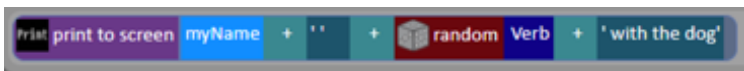
Key Images

Open design mode in 2Code.

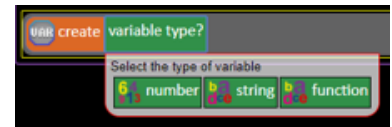Switch to code mode in 2Code.

Add a new Tab to your code
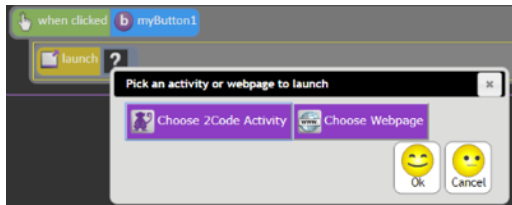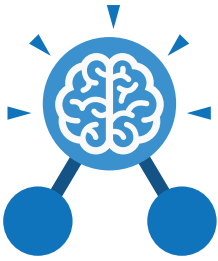

A change variable block.

Example of combining variables and strings to print to the screen

Creating a variable in 2Code

Creating a variable in 2Code

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Unit: 5.1
Coding

Key Questions

What does simulating a physical system mean?

Creating a program where the objects behave as they would in the real world. For example, a football program that uses angles, speed and friction to simulate kicking a football. When simulating a physical system, you first must break the system down into parts that can be coded (decomposition). The different parts will come together to make the full simulation.

Describe how you would use variables to make a timer countdown and a scorepad for a game.

Timer countdown:
Create a timer variable and set it to the starting number of seconds. Add a Timer command that repeats and subtracts 1 every second. Add a text object in design view to display this number.

Score:
Create a variable to store the score, each time the user gains a point, change and display the value of the variable.

Give examples of how you could use the Launch command in 2Code.

Clicking on a button or other object in the program to opens another 2Code program or a webpage.

What do the terms decomposition and abstraction mean? Use examples to explain them.

Decomposition is breaking a task into its component parts so that each part can be coded separately.
If you were coding a game of chess, you could decompose into the moves of the different pieces and the setup of the playing space.
Abstraction is removing unnecessary details to get the program functioning. In the example, the colour and size of the squares is not important to game play.

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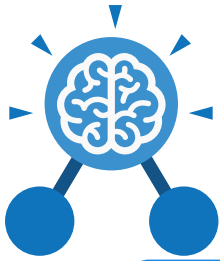
Unit: 5.2
Online Safety

Key Learning

- To gain a greater understanding of the impact that sharing digital content can have.
- To review sources of support when using technology and children's responsibility to one another in their online behaviour.
- To know how to maintain secure passwords.
- To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.
- To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.
- To learn about how to reference sources in their work.
- To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information.
- To ensure reliability through using different methods of communication.

Key Resources

purple mash

Display Boards   2Paint a Picture   2Connect   2Publish Plus

Key Questions

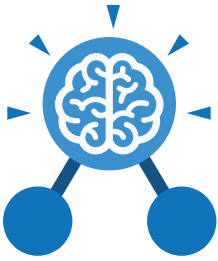### Who do I tell if I see anything online that makes me upset or scared?

When you are at school, you should tell the teacher or another adult. At home, you should tell your parent or guardian or another adult that you trust.

Why are passwords so important?

Passwords protect your information and stop other people accessing it. Passwords are like a toothbrush; they should not be shared with anyone else.

Why is it important to reference sources in my work?

If you use a book or article written by someone else, then you must reference it, so people know where you got the information from. If you don't do this then it is known as plagiarism.

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Unit: 5.2
Online Safety

Key Vocabulary

Online safety
Refers to staying safe when having a presence online.

Smart rules
A set of rules based around the word SMART designed to help you stay safe when online.

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

Reputable
Having a good reputation.

Encryption
The process of converting information or data into a code, especially to prevent unauthorized access.

Identity theft
The practice of using another person›s name and personal information in order to obtain credit, loans, etc.

Shared image
A picture that is shared online for other people to see.

Plagiarism
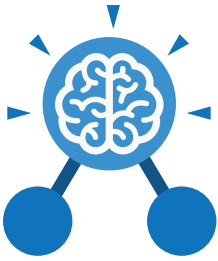The practice of taking someone else›s work or ideas and passing them off as one›s own.

Citations
A quotation from or reference to a book, paper, or author, especially in an academic work.

Reference
A mention of a source of information in a book or article including online.

Bibliography
A list of all the books and articles used in a piece of work.

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IS FOR SAFE

Never give out personal information to strangers on the internet. Personal information includes things like your home address and your birthday.

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Smart Rules
www.purplemash.com

SMART rules- S

IS FOR NEVER MEET

Never ever meet up with a stranger you have met online unless a parent or guardian has said it is ok and is present. Never, never, never, never, never.

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Smart Rules
www.purplemash.com

SMART rules- M

IS FOR ACCEPTING

Don't believe everything you read online, check your facts! Did you read it on a reliable website like the BBC? Are other websites saying the same thing? Does it tell you where they got the information from?

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Smart Rules
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SMART rules- A

IS FOR RELIABLE

Don't believe everything you read online, check your facts! Did you read it on a reliable website like the BBC? Are other websites saying the same thing? Does it tell you where they got the information from?

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SMART rules- R

IS FOR TELL

If you have an online safety problem, make sure you tell someone. Tell a parent, guardian, or teacher as soon you can.

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SMART rules- T

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Unit: 5.3
Spreadsheets

Key Learning

- To use formulae within a spreadsheet to convert measurements of length and distance.
- To use the count tool to answer hypotheses about common letters in use.
- To use a spreadsheet to model a real-life problem.
- To use formulae to calculate area and perimeter of shapes.
- To create formulae that use text variables.
- To use a spreadsheet to help plan a school cake sale.

Key Resources

purple mash

2Calculate
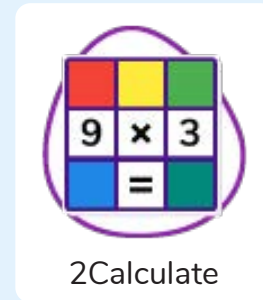
Key Questions

How would you add a formula so that the cell shows the product of two other cells?

Click on the cell where you want the product to be displayed then click the formula wizard button. Click on the cell that contains the first number. Choose the x operation then click on the second number. Click OK.

What would you use in 2Calculate to have a cell that automatically calculates the number of days since a certain date?

You could use formulae and the totalling tools. To make the spreadsheet easier to understand, you could use named variables.

Explain what a spreadsheet model of a real-life situation is and what it can be used for?

It represents the data of a situations for example: Budgeting for a party; working out how big a field needs to be for a certain number of animals; working out how to spend your pocket money over time. Using the existing data to predict what time your shadow will be a certain length etc.

2 simple
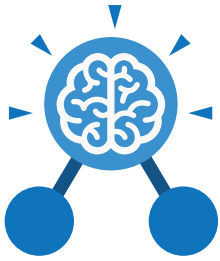
Unit: 5.3
Spreadsheets

Key Vocabulary

Average
Symbols used to represent comparing two values

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

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

Columns
Vertical reference points for the cells in a spreadsheet.

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

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

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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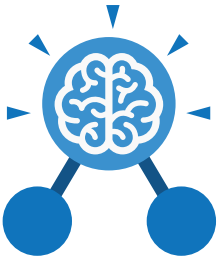
Unit: 5.3
Spreadsheets

Key Images
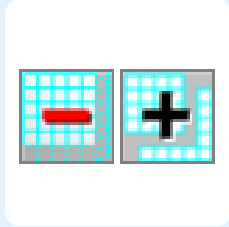
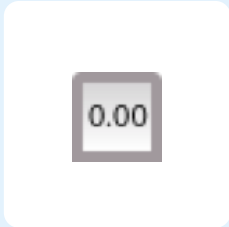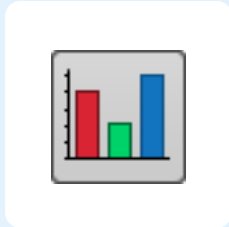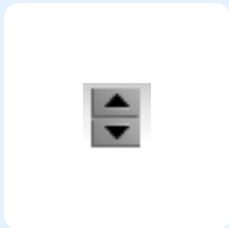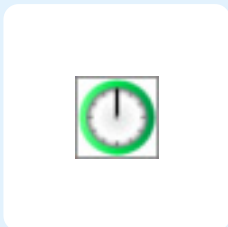|			
Open, close or share a file	Save your work	Open a previously saved file	Increase or decrease spreadsheet size
Advanced mode	Formula Wizard	Format Cell Toolbox	Charts
Totals toolbox	Image Tools	Controls Toolbox	Random Number
Spin	Equals	Timer	
To Copy	To Cut	To Paste	
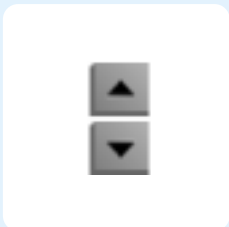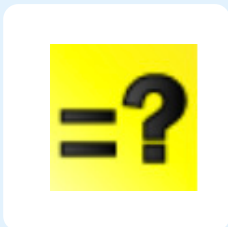
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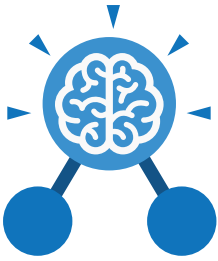
Unit: 5.4
Databases

Key Learning

- To learn how to search for information in a database.
- To contribute to a class database.
- To create a database around a chosen topic.

Key Resources

purple mash

2Investigate

Avatar builder

Key Questions

What is a database?

A collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers.

Why is the collaborative feature important?

Making a database collaborative allows lots of people to enter information into the database at the same time. This is a lot quicker than one person entering the data by themselves.

In what ways can I sort information in a database?

A database can hold lots of information so it is essential that information can be effectively investigated. In 2Investigate, data can be searched and sorted in a variety of ways. It can also be presented pictorially.

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Unit: 5.4
Databases

Key Vocabulary

Avatar
An icon or figure representing a person in a video game, Internet forum, etc.

Binary tree (branching database)
A way to sort information by dividing the information into groups based upon questions with yes or no answers.

Charts
Representing information in a pictorial form.

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

Data
Facts and statistics collected together for information.

Database
A set of data that can be held in a computer in a format that can be searched and sorted for information.

Find
Search for information in a database.

Record
A collection of data about one item entered into a database.

Sort, Group and Arrange
Different ways to sort information in a database to it is easy to read, understand and interpret.

Statistics and reports
To produce information about data in a database.

Table
Sorting information into rows and columns.

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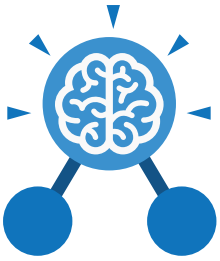
Unit: 5.4
Databases

Key Images

Open, close or share a file

Design a new database

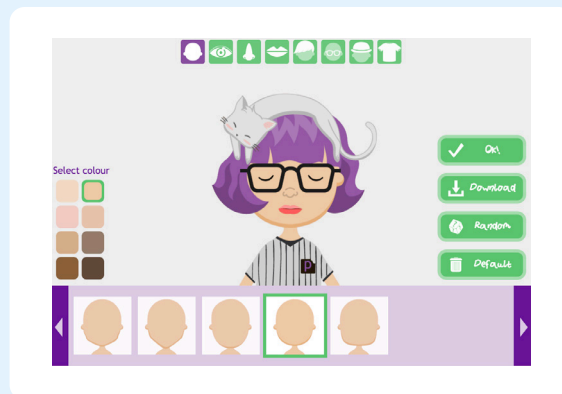Add a record to the database

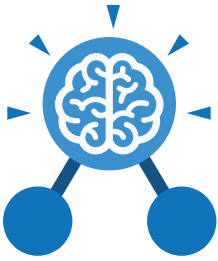Find information in the database
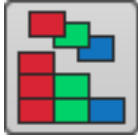
Sort, group and arrange information

Statistics and reports

Represent the information as a chart

Avatar creator

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Unit: 5.5
Game Creator

Key Learning

- To plan a game.
- To design and create the game environment.
- To design and create the game quest.
- To finish and share the game.
- To self and peer evaluate.

Key Resources

purple mash

2DIY3D

Key Vocabulary

Animation
Creating an illusion of movement.

Computer game
A game played using a computer, typically a video game.

Customise
Modify (something) to suit an individual or task.

Evaluation
The making of a judgement about the value of something.

Image
In this case, a picture displayed on the computer screen.

Instructions
Detailed information about how something should be done or operated.

Interactive
Responding to a user's input on a computer or device.

Screenshot
An image of the data displayed on the screen of a computer or mobile device.

Texture
High frequency detail or colour information on a computer-generated graphic.

Perspective
Representing three-dimensional objects on a two-dimensional surface to give the right impression of their height, width, depth, and position in relation to each other.

Playability
A measure of either the ease by which a video game may be played, or of the overall quality of its gameplay.

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Unit: 5.5
Game Creator

Key Images

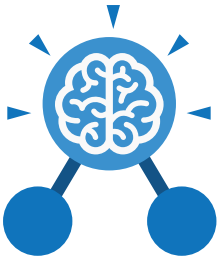|		
Open, close and share work	Change the settings of your game	Insert treasure into your game
Insert enemies into your game	Drag to set the start position of your game	Play your game
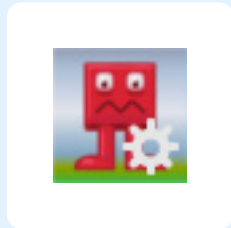
Add images to your game

Key Questions

What is the 2DIY3D tool on Purple Mash?

2DIY 3D allows users to create a playing area, such as a maze, in 2D and then turn it into a 3D computer game. The aim is to avoid the 'baddies' and collect 'treasure'.

What makes a good computer game?

A good game designer gives the player continuous challenges in a visually stimulating environment, each of which leads to another challenge, to keep the game challenging and fun.

Why is it important to continually evaluate your game?

Evaluating your game as you make it allows you to think about ways in which it can be improved. Evaluation may also involve the views of other people who play your game.

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Unit: 5.6
3D Modelling

Key Learning

- To be introduced to 2Design and Make and the skills of computer aided design.
- To explore the effect of moving points when designing.
- To design a 3D Model to fit certain criteria.
- To refine and print a model.

Key Resources

purple mash

2D&M

Key Vocabulary

CAD – Computer aided Design
A CAD computer program or app allows you to design a 3D object or environment in 2D and visualise it in 3D on the screen from many angles.

Modelling
The activity of making models.

3D
Something that has three dimensions; height, width and depth.

Viewpoint
A person's opinion or point of view.

Polygon
An object with at least three straight sides and angles, and typically five or more.

2D
Something that has only two dimensions; height and width.

Net
A pattern that you can cut and fold to make a model of a solid shape.

3D Printing
The action or process of making a physical object from a three-dimensional digital model, typically by laying down many thin layers of a material in succession.
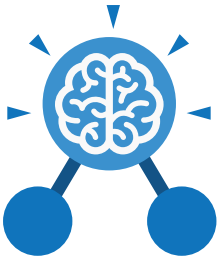
Points
An exact position or location on a 2Dsurface.

Template
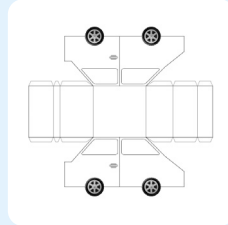Something that serves as a model for others to copy.

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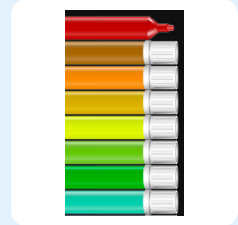
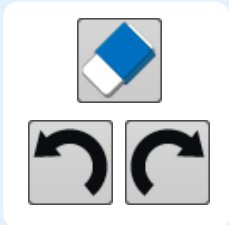# Unit: 5.6
3D Modelling
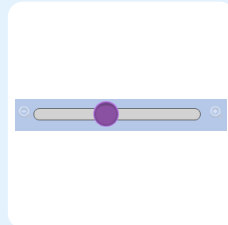
Key Images

2D Image

3D Image

Net View

Colour Palette

Clear, Undo and Redo

Fill Options

Magnify

Key Questions

What are the different view of an object available in 2Design and Make?

Net, Points and 3D.

How can the objects designed in 2Design and Make be turned into 3D objects?

You can print the net and then cut and fold this into shape or you can convert the ile into a format recognised by 3D printers.

How is CAD software used in industry? Give some examples.

It is used to design 3D objects in a 2D environment.
Some examples are; Architectural plans for buildings; designing layouts for interiors; designing objects such as packaging and designing mechanical components; designing shoes and clothing.

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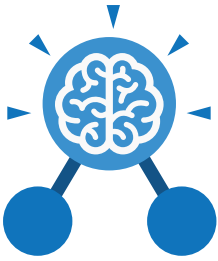
Unit: 5.7
Concept Maps

Key Learning

- To understand the need for visual representation when generating and discussing complex ideas.
- To understand the uses of a 'concept map'.
- To understand and use the correct vocabulary when creating a concept map.
- To create a concept map.
- To understand how a concept map can be used to retell stories and information.
- To create a collaborative concept map and present this to an audience.

Key Resources

purple mash

2Connect

Key Vocabulary

Audience
People giving attention to something.

Collaboratively
Something that is produced by, or involves, two or more parties working together.

Concept
An idea.

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

Connection
A relationship or link between two nodes or ideas.

Idea
An opinion or belief.

Node
A way to represent concepts or ideas.

Thought
An idea or opinion produced by thinking or occurring suddenly in the mind.
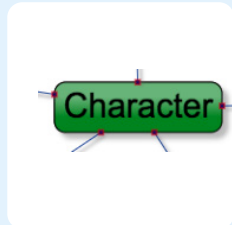
Visual
A picture, piece of film or display used to illustrate or accompany something.

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Unit: 5.7
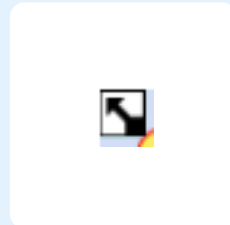## Concept Maps

Key Images
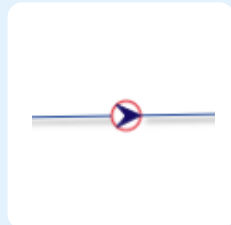
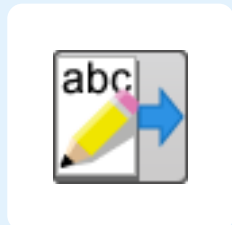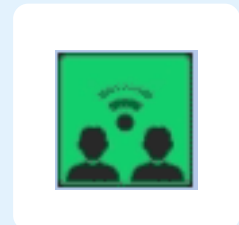|	
Node	Connection
Resize node	Edit node
Show story	Begin Presentation
Collaboration Off	Collaboration On

Key Questions
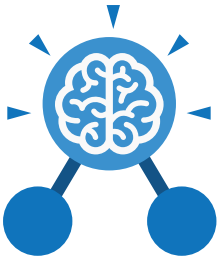
What is a concept map?

A concept map is a pictorial way of showing relationships between concepts and ideas. A concept map allows you to show information, pictures and links to support an idea or concept.

How is information arranged on a concept map?

On a concept map ideas or concepts are organised into nodes which are linked together with lines to show how the concepts and ideas link together.

How does a concept map help share ideas? safe?

A concept map in 2Connect allows many users to contribute to the map which means that ideas or concepts can be quickly amended or additional information provided.
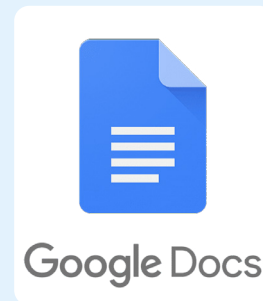
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Unit: 5.8
Word Processing with Google Docs

Key Learning

- To know what a word processing tool is for.
- To add and edit images to a word document.
- To know how to use word wrap with images and text.
- To change the look of text within a document.
- To add features to a document to enhance its look and usability.
- To use the sharing capabilities in Google Docs
- To use tables within to present information.
- To introduce children to tempates.

Key Resources

purple mash

2Connect

Google Docs

Key Questions

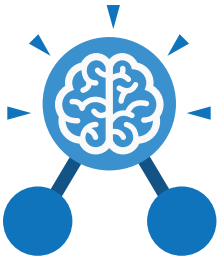**What is a word processing tool used for?**
A word processing tool is used to create, edit and print off a document. This can contain text, images, tables or charts. Documents are a type of file that portray information.

What features can you use to make a document more readable?
You can change the font format to give the document a theme and make it more readable. By changing the paragraph formatting, you can ensure the words are spaced evenly. You can add images and use text wrapping to ensure they are positioned well on the page.

How do you successfully add an image to a document?
If you have an image saved onto your computer, you click on insert – pictures – insert image from this device. You can resize and move the image and ensure it fits well on the page by changing the text wrap setting.

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Unit: 5.8
Word Processing with Google Docs

Key Vocabulary

Copyright
When an image, logo or idea has a legal right to not be copied or used without the owner's permission.

Cursor
The flashing vertical line that shows your place in a document.

Document
A type of file which shows written information and/or images and sometimes charts and tables.

Font
A set of type which shows words and numbers in a particular style and size.

In-built styles
A bank of ready-made styles which you can use to make sure your style (font, headers, spacing, size etc) is consistent throughout the document.

Merge cells
A tool you can use when making a table to join cells which are next to each other in columns or rows.

Paragraph formatting
When you change the format of the text in a paragraph, including how the text is aligned and spaced.

Readability
How easy and pleasant it is to read and understand a document.

Template
A ready-made outline of a document you might want to adapt, such as a letter or certificate.

Text formatting
When you change the format of text on a page, including the font and the size and whether it is bold, underlined or in italics.
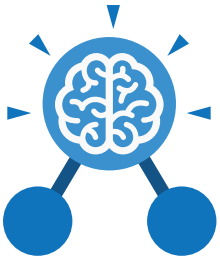
Text wrapping
A feature which helps you place and position an image neatly on a page or within a paragraph of text.

Textbox
A way to include text in a position that you want out of the usual flow of the document.

Word Processing tool
A programme which allows you to write, edit and print different documents.

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Unit: 5.8
Word processing with Google Docs

Key Images

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

Text formatting

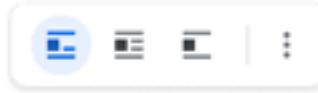**Text Alignment**

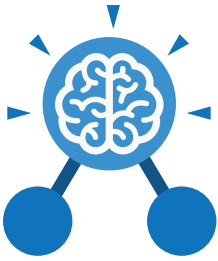|			
Insert image	Crop image	Text wrapping	Clear formatting

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Unit: 5.8
Word Processing with Microsoft Word

Key Learning

- To know what a word processing tool is for.
- To add and edit images to a word document.
- To know how to use word wrap with images and text.
- To change the look of text within a document.
- To add features to a document to enhance its look and usability.
- To use tables within MS Word to present information.
- To introduce children to templates.
- To consider page layout including heading and columns.

Key Resources

purple mash

2Connect

Microsoft Word

Key Questions

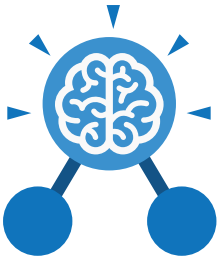### What is a word processing tool used for?
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Unit: 5.8
Word Processing with Microsoft Word

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Text formatting
When you change the format of text on a page, including the font and the size and whether it is bold, underlined or in italics.

Text wrapping
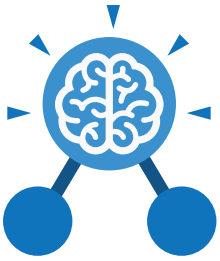A feature which helps you place and position an image neatly on a page or within a paragraph of text.

Word Art
A way to treat text as a graphic so that you can add special effects to text.

Word Processing tool
A programme which allows you to write, edit and print different documents.

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Unit: 5.8
Word Processing with Microsoft Word

Key Images

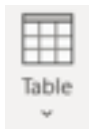Open a new document

Open an existing document
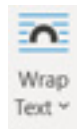

Save your work

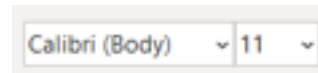

Undo key

Insert a table

Text wrapping

Font Category

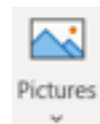

Design tab where you can change the style of the document

Insert tab where you can add an object such as a picture or table

Home tab where many editing tools are found

Insert a picture

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