YEAR : COMPUTING SCHEME OF WORK - KNOWLEDGE ORGANISER

Unit: 5.1 – Coding

Key Learning

To represent a program design and algorithm.

To create a program that simulates a physical system using decomposition.

To explore string and text variable types so that the most appropriate can be used in programs.

To use the Launch command in 2Code Gorilla

To program a playable game with timers and scorepad.

Key Resources

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.

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

Code Design – Design what a program will look like and what it will do.

Command - A single instruction in a computer program.

Control - These commands determine whether parts of the program will run, how often and sometimes, when.

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.

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

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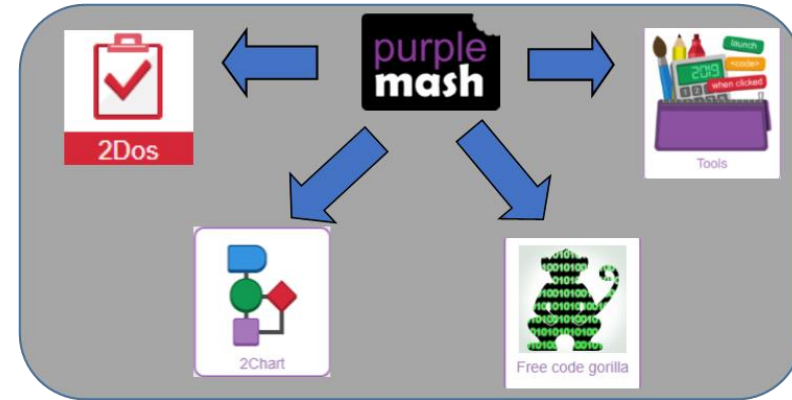
If/Else - A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.

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.

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.

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.

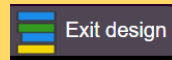# YEAR : COMPUTING SCHEME OF WORK - KNOWLEDGE ORGANISER
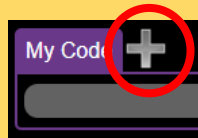
Unit: 5.1 – Coding
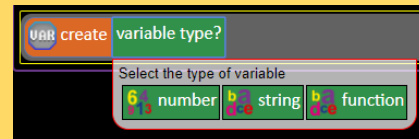
Key Images

Open design mode in 2Code
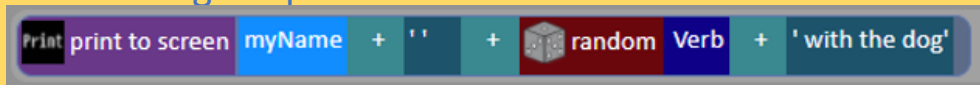
Switch to code mode in 2Code
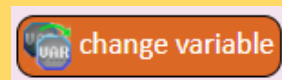
Add a new Tab to your code
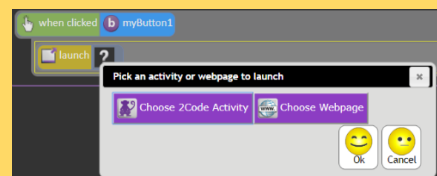
Creating a variable in 2Code

Gorilla

Example of combining variables and strings to print to the screen

A change variable block

The Launch command block

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.

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.

Key Resources

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.

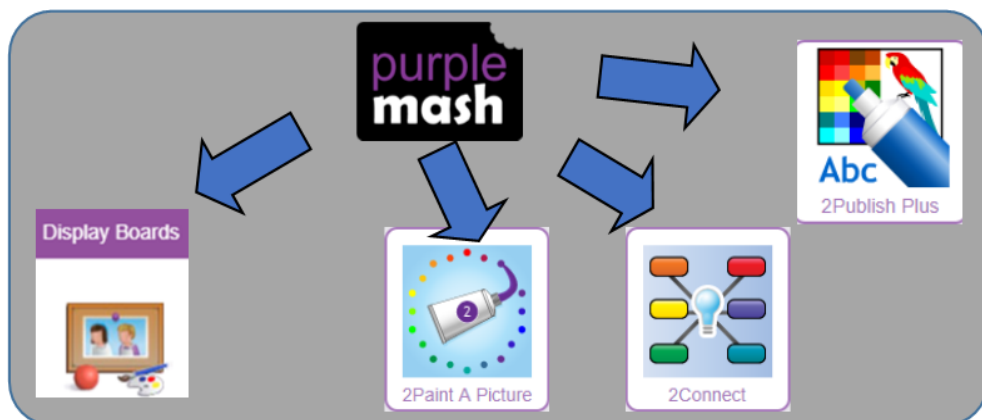**Shared image** – A picture that is shared online for other people to see.

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.

Unit: 5.2 – Online Safety

SMART rules - S

IS FOR SAFE
Never give out personal information to strangers on the internet. Personal information includes things like your home address and your birthday.
purple mash
Smart Rules
www.purplemash.com

SMART rules - M

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.
purple mash
Smart Rules
www.purplemash.com

SMART rules - A

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?
purple mash
Smart Rules
www.purplemash.com

SMART rules - R

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?
purple mash
Smart Rules
www.purplemash.com

SMART rules - T

IS FOR TELL
If you have an online safety problem, make sure you tell someone. Tell a parent, guardian, or teacher as soon as you can.
purple mash
Smart Rules
www.purplemash.com

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.

Unit: 5.3 – Spreadsheets

Key Learning

Using the formula wizard to add a formula to a cell to automatically make a calculation in that cell.
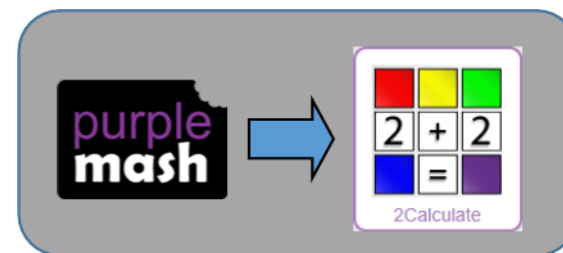
To copy and paste within 2Calculate.

Using 2Calculate tools to test a hypothesis.

To add a formula to a cell to automatically make a calculation in that cell.

Using a spreadsheet to model a real-life situation and answer questions.

Key Resources

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.
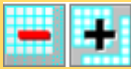
## Key Images

Open the main menu

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   Count

Equals   Timer

To copy   Ctrl + C   To cut   Ctrl + X   To paste   Ctrl + V

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.
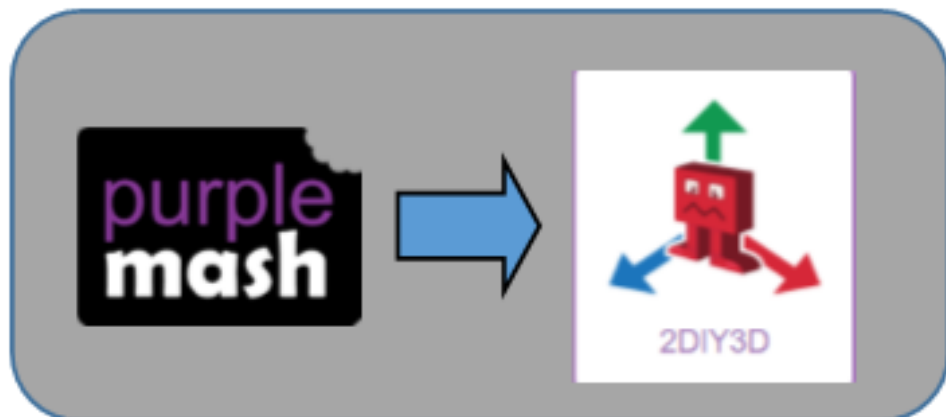
Unit: 5.5 – Game creator

Key Learning

To set the scene.

To create the game environment.

To create the game quest.

To finish and share the game.

To evaluate their and peers' games.

Key Resources

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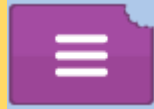
Playability – A measure of either the ease by which a video game may be played, or of the overall quality of its gameplay.

Unit: 5.5 – Game creator

Key Images

Open, save or share your file

Change the settings of your game

Add images to your game

Insert treasure into you game

Insert enemies into your game

Drag to set the start position of your game

Play 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.

Unit: 5.7 – Concept Maps

Key Learning

To understand the need for visual representation when generating and discussing complex ideas.

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 present information.

To create a collaborative concept map and present this to an audience.

Key Resources

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.

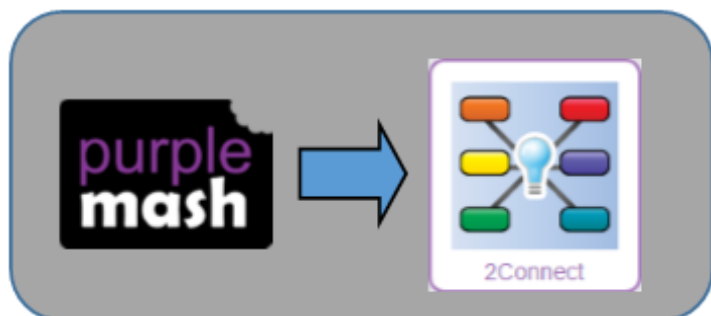**Connection** - A relationship or link between two nodes or ideas.

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.

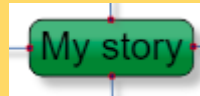**Visual** - A picture, piece of film or display used to illustrate or accompany something.

Key Images

Node	My story
Connection	
Resize node	ma
Edit node	
Show story	ABC
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?

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.