



Computing Knowledge Organisers

Spring Term



Key Stage 1

Key Learning

- To compare the effects of adhering strictly to instructions to completing tasks without complete instructions.
- To follow and create simple instructions on the computer.
- To consider how the order of instructions affects the result.

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Key Vocabulary

Algorithm

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

Code

Instructions that a programmer enters into a computer that cause the computer to perform a certain way.

Computer

An electronic device for storing and processing data.

Debugging

To find and remove errors from computer hardware or software.

Instructions

Detailed information about how something should be done or operated.

Program

An algorithm that has been coded into something that can be run by a machine, e.g., a computer or a robot.

Real life contexts/ Other opportunities to apply my skills

Key Questions

What is an instruction?
Why do we need to debug a code?

Key Learning

- To understand the functionality of the direction keys.
- To understand how to create and debug a set of instructions (algorithm).
- To use the additional direction keys as part of an algorithm.
- To understand how to change and extend the algorithm list.
- To create a longer algorithm for an activity.
- To set challenges for peers.
- To access peer challenges set by the teacher as 2Dos.

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Key Vocabulary

Algorithm

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

Direction

The path that something travels. For example, a robot moving forwards, backwards or diagonal.

Route

A path an object or thing takes to get somewhere.

Command

An action such as left command.

Left and Right

A position which relates to something. For example, make the fish move left of the screen.

Unit

A unit such as make the turtle move 2 units (squares).

Challenge

A task to be completed.

Instruction

Detailed information about how something should be done or operated.

Undo

If we make a mistake, we can press the undo button.

Real life contexts/ Other opportunities to apply my skills

Teach computing – Programming A moving a robot
Bee bots

Key Questions

What is a 2Go?
How do I undo a mistake?

Key Learning

- To learn about data handling tools that can give more information than pictograms.
- To use yes/no questions to separate information.
- To construct a binary tree to identify items.
- To use 2Question (a binary tree database) to answer questions.
- To use a database to answer more complex search questions.
- To use the Search tool to find information.

Real life contexts/ Other opportunities to apply my skills

Teach Computing – pictograms

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Key Questions

How does a Pictogram show information?
How is information organised in a binary tree?
How can a database help organise information?

Key Vocabulary

Pictogram

A diagram that uses pictures to represent data.

Collate

Collect and combine (texts, information, or data).

Avatar

An icon or figure representing a person in a video game, Internet forum or other online format.

Question

A sentence written or spoken to find information.

Binary Tree

A simple way of sorting information into two categories.

Data

Facts and statistics collected together that can provide information.

Database

A computerised system that makes it easy to search, select and store information.

Key Learning

- To understand the terminology associated with searching.
- To gain a better understanding of searching on the Internet.
- To create a leaflet to help someone search for information on the Internet.

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Key Vocabulary

Internet

A global computer network providing a variety of information and communication facilities, consisting of interconnected networks and computers.

Search

Look for information in a database or the World Wide Web using a search engine.

Search Engine

A program that searches for and identifies items on the World Wide Web.

Real life contexts/ Other opportunities to apply my skills

Key Questions

How can I search the Internet?
How can I do it safely?



Lower Key Stage 2

Key Learning

- To understand what a flowchart is and how flowcharts are used in computer programming.
- To understand that there are different types of timers and select the right type for purpose.
- To understand how to use the repeat command.
- To understand the importance of nesting.
- To design and create an interactive scene.

Real life contexts/ Other opportunities to apply my skills

Use of Purple Mash coding alongside Scratch to ensure pupils have the opportunity to practice their skills in a variety of programs.

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Key Questions

What does repeat mean in computer programming?

Using the repeat command will make a block of commands run for a set number of timers or forever. These saves rewriting the code many times.

What is the difference between 'timer after' and 'timer every'?

A 'timer after' means after a certain amount of seconds, the action will occur. 'Timer every' means that the action will re-occur every certain amount of seconds on a loop.

Key Vocabulary

Action

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

Alert

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

Algorithm

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

Background

In 2Code the background is an image in the design that does not change.

Bug

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

Button

A type of object that responds to being clicked on.

Click Event

An event that is triggered when the user clicks on an object.

Code

Writing the code for a computer program.

Collision Detection Event

The event of two objects colliding.

Command

A single instruction in a computer program.

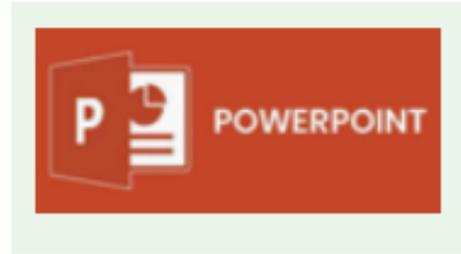
Debug/Debugging

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

Key Learning

- To understand the uses of PowerPoint.
- To create a page in a presentation.
- To add media to a presentation.
- To add animations to a presentation.
- To add timings to a presentation.
- To use the skills learnt to design and create an engaging presentation.

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Key Vocabulary

Animation
The process of adding movement to still objects.

Border Properties
The style of the border around text or an object including the colour, thickness and dashes.

Font formatting
Changing the appearance of text on the screen.

Layer
Describes which objects appear in the front (foreground) of a slide and which appear behind other objects.

Media
Information in the form of words, sounds, numbers, images, or graphics in electronic, print or broadcast form.

Presentation
A visual way of displaying information to an audience that is clear and engaging. It can contain text, images, animation and videos.

Slide
A single page within a presentation.

Slideshow
A collection of pages arranged in sequence that contains text and images to present to an audience.

Text box
An object that can be inserted into a piece of work in a program that allows the user to input text.

Transition
How a slide moves from one to the next.

WordArt
A way of changing the appearance of text often using decorative shapes.

Real life contexts/ Other opportunities to apply my skills

Use of Google Slides to show children the different ways of presenting information.
Use of collaborative work.

Key Questions

What is a presentation program used for?
How do you add a transition to a presentation?
What features can you use to make a presentation more engaging?

Key Learning

- To understand the purpose of the Slides tool.
- To add slides to presentations.
- To add media to presentations.
- To format text appropriately.
- To add shapes and lines to enhance a presentation.
- To use the skills learnt to design and create an engaging presentation.

Real life contexts/ Other opportunities to apply my skills

Use of PowerPoint to show children the different ways of presenting information.

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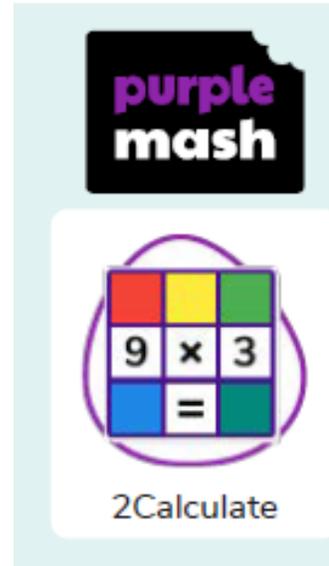
Key Learning

- To format cells as currency, percentage, decimal to different decimal places or fraction.
- To use the formula wizard to calculate averages.
- To combine tools to make spreadsheet activities such as timed times tables tests.
- To use a spreadsheet to model a real-life situation.
- To add a formula to a cell to automatically make a calculation in that cell.

Real life contexts/ Other opportunities to apply my skills

Children will be given the opportunity to explore Microsoft Excel and Google Spreadsheets.

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Key Questions

How would you add a formula so that the cell shows a percentage score for a test?

What tools would you use to create a time times table test?

Give an example of the data the could be best represented with a graph. Explain what a spreadsheet model of a real-life situation is.

Key Vocabulary

Row

Vertical reference points for the cells in a spreadsheet.

Column

Horizontal reference points for the cells in a spreadsheet.

Average

A number expressing the typical value in a set of data. Also known as the mean. It is calculated by dividing the sum of the values in the set by their number.

Data

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

Format Cell

The way that data is displayed in a cell. For example using units such as £ or \$.

Percentage

'per' 'cent' means number of parts per hundred.

Timer

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

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.

Budget

The amount of money available to spend on a project.

Decimal place

The position of a digit to the right of a decimal point. In 2Calculate, the number of decimal places to be displayed can be chosen.

Formula Wizard

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.

Place value

This is the value of each digit within a number. For example 354, the 3 = 3 hundreds, the 5 = 5 tens and the 4 = 4 ones.

Formula

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

Chart

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

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.

Line graph

A line graph is used to display information which can change over time. For example, temperature at different times of the day.

Random Number Tool

This tool, when clicked, will generate a random number.

Spin Tool

This tool changes a number to the right of it by one each time an arrow is pressed.

Key Learning

- To explore how font size and style can affect the impact of a text.
- To use a simulated scenario to produce a news report.
- To use a simulated scenario to write for a community campaign.

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Key Vocabulary

Campaign

An organised course of action to achieve a goal.

Format

The way in which something is arranged or set out.

Font

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

Genre

The style or category type of a piece of art, music or writing.

Opinion

A view or judgment someone forms about something, not always based on fact.

Reporter

A person who reports news or conducts interviews for the press or broadcasting media.

Viewpoint

The way someone sees or thinks about something.

Real life contexts/ Other opportunities to apply my skills

The children will be given a range of real life newspaper reports to explore.

Key Questions

Why should I change the font when I am writing?



Upper Key Stage 2

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.

Real life contexts/ Other opportunities to apply my skills

Excel spreadsheets
Creating graphs in Excel/Purple Mash to display data in Science experiments

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Key Questions

How would you add a formula so that the cell shows the product of two other cells? What would you use to have a cell that automatically calculates the number of...? Explain what a spreadsheet model of a real-life situation is and what it can be used for?

Key Vocabulary

Rows

Boxes running horizontally in a spreadsheet.

Data

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

Advance mode

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

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.

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.

Format

The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. $4\frac{1}{2}$ or include units such as £ or \$.

'How Many?' Tool

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

Variable

Used in computing to keep track of things that can change while a program is running.

Columns

Boxes running vertically in a spreadsheet.

Formula

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

Formula Bar

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

Totalling tool

Adds up the value of every cell above it, next to it or diagonal to it according to which total tool is selected.

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.

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Key Vocabulary

Evaluation

To critically examine a program. It involves collecting and analysing information about a program's activities, characteristics, and outcomes.

Feedback

In this case, share information with the creator about how the game could be improved.

Image

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

Instructions

Detailed information about how something should be done or operated.

Promotion

The publicising of a product, in this case a game, so as to increase sales or public awareness.

Quest

To find or do something.

Scene

The place where an incident in real life or fiction occurs or occurred.

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.

Theme

In this case, the subject of the game.

Real life contexts/ Other opportunities to apply my skills

Key Questions

What makes a good computer game?
Why is it important to continually evaluate your game?

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 commentina on bloas.

Real life contexts/ Other opportunities to apply my skills

Exploring current blogs and relevant bloggers.

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Key Questions

What is a blog?
What can a blog be about?
How are the audience involved in a blog?

Key Vocabulary

Approval
The act of acknowledging something is appropriate.

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

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

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

Collaborate
Work jointly on an activity or project.

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

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

Key Learning

- To find out what a text adventure is.
- To use 2Connect to plan a story adventure.
- To make a story-based adventure using 2Create a Story.
- To introduce an alternative model for a text adventure which has a less sequential narrative.
- To use written plans to code a map-based adventure in 2Code.

Real life contexts/ Other opportunities to apply my skills

Possible links to English – creating own stories

Look at physical ‘Choose your own adventure’ books.

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Key Questions

What is a text based adventure?
Why is it important to plan a text based adventure?

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.