

UKS2

COMPUTING KNOWLEDGE ORGANISER

Cycle A



KEY SKILLS IN UKS2

Year 5

- Type using fingers on both hands.
- Use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).
 - Explain what makes a strong password.
- Use folders to organise files.
- Know how to mute and unmute audio on a computer or tablet.
- Recognise that there is more than one search engine, and they may produce different results.
- Use a search engine effectively to find information and images.
 - Know how to search for an application on a computer/tablet.

Year 6

- Type efficiently using both hands.
 - Use a range of keyboard shortcuts.
- Recognise that different devices may have different operating systems.
- Organise files effectively using folders and files names.
- Use the advanced search tools when using a search engine to find specific information and images.
- Explain the basic function of an operating system.
- Recognise common file types and extensions, e.g. jpeg, png, doc, wav.

KS2 National Curriculum Objectives

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
 - select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable

COMPUTING

COMPUTER SCIENCE

In computer science, you will understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

You will analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.

INFORMATION TECHNOLOGY

Information technology is about the use of computers for functional purposes, such as collecting and presenting information, or using search technology.

DIGITAL LITERACY

Digital literacy is about the safe and responsible use of technology, including recognising its advantages for collaboration or communication.

What apps will I use?

Google Docs - Word Processing



Google Drawings - Graphics and Publications



Google Slides - Presentation



Google Sheets - Spreadsheets



Google Sites - Web-page creation



Web-Based Applications and Useful Links

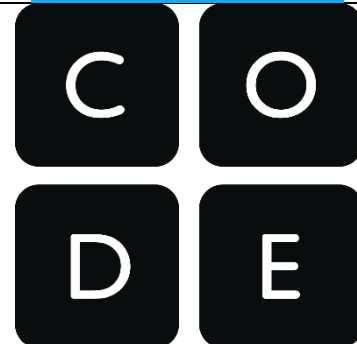
<https://classroom.google.com/>



<https://scratch.mit.edu/>



<https://code.org/>



<https://makecode.microbit.org/>



<https://www.j2e.com/jit5>



<https://www.tinkercad.com/>



Computer Science

Command - a single instruction that can be used in a program to control a computer

Condition - a statement that can be either True or False

Loops - (count-controlled, condition-controlled, or infinite) Commands that repeatedly run a defined section of code

Program - a set of ordered commands that can be run by a computer to complete a task

Repetition - part of a program where one or more commands are run multiple times in a loop

Scratch - programming application

Selection - part of a program where if a condition is met, then a set of commands is run

Sequence - sequence means arranging instructions for algorithms and programs in a particular order

Variable - a named piece of data (often a number or text) stored in a computer's memory, which can be accessed and changed by a computer program

Information Technology

Digital Literacy

3D model - the process of creating a 3D representation of any surface or object by manipulating polygons, edges, and vertices in simulated 3D space.

Application - computer software package that performs a specific function

Attribute - a word or a phrase that can be used to describe an object such as its colour, size, or price

Data - a letter, word, number etc. that has been collected for a purpose, but stored without context

Digital tools - programs, websites or online resources that can make tasks easier to complete

Flat-file database - a type of database that stores data in a single table

Input - data that is sent to a program to be processed

Operands - numbers operated upon are called operands

Output - the result of data processed by a computer

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

Placeholder - a character, word, or string of characters that temporarily takes the place of the final data

Process - a program, or part of a program, that is running on a computer

Search Engine - these are programs that search an index of the world wide web for keywords and display the results in order.

System - a combination of hardware and software that can have data input to it, which it then processes and outputs. It can be programmed to perform a variety of tasks.

Web Crawler - a web crawler, also referred to as a search engine bot or a website spider, is a digital bot that crawls across the World Wide Web to find and index pages for search engines

What should pupils already know?

Computer Science	
KS1	LKS2
Moving a robot - Writing short algorithms and programs for floor robots, and predicting program outcomes.	Sequencing sounds - Creating sequences in a block-based programming language to make music.
Robot algorithms - Creating and debugging programs, and using logical reasoning to make predictions.	Events and actions in programs - Writing algorithms and programs that use a range of events to trigger sequences of actions.
Programming animations - Designing and programming the movement of a character on screen to tell stories	Repetition in games - Using a block-based programming language to explore count-controlled and infinite loops when creating a game

Information Technology

KS1

Technology around us - Recognising technology in school and using it responsibly

Information technology around us - Identifying IT and how its responsible use improves our world in school and beyond.

Digital painting - Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.

Digital writing - Using a computer to create and format text, before comparing to writing non-digitally

Making music - Using a computer as a tool to explore rhythms and melodies, before creating a musical composition

Digital photography - Capturing and changing digital photographs for different purposes

Grouping data - Exploring object labels, then using them to sort and group objects by properties.

LKS2

Connecting computers - Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.

The internet - Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.

Photo editing - Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.

Stop-frame animation - Capturing and editing digital still images to produce a stop-frame animation that tells a story.

Branching databases - Building and using branching databases to group objects using yes/no questions.

Desktop publishing - Creating documents by modifying text, images, and page layouts for a specified purpose

Assessment Opportunities

Unit	Assessment Opportunity
Systems and networks - connecting computers	Summative Assessment - https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-sharing-information
Programming-Sequence in music	Assessment - Each lesson asks children to complete a build activity using the crumble kits. Teachers should encourage children to evaluate each build - Does it function correctly? Can you debug the build to ensure it functions properly? How could you improve the build?
Programming-Repetition	Summative Assessment Data and information - Flat-file databases (teachcomputing.org)
Creating media-photo editing	Throughout this unit, children should use the MICRO:BIT to achieve the following objectives: <ul style="list-style-type: none">• Describe what will be shown if someone has walked more than a set number of steps• Identify what will be displayed and how the user will see it<ul style="list-style-type: none">• Choose an appropriate name for a variable• Choose when and where to set a variable• Create an algorithm to describe how the program will process each input

- Combine appropriate blocks to implement their algorithm
- Run their code on the emulator to test their program
- Propose a strategy to fix the code if it is not working
- Evaluate how successful they were in meeting the task requirements

Creating media-stop-frame animation

Children can be asked to design, build and evaluate a project over a number of lessons. This can relate to their topic or be stand-alone.

Pupils working at the Expected standard will have to meet the following objectives:

- Describe what will be shown if someone has walked more than a set number of steps
- Identify what will be displayed and how the user will see it
 - Choose an appropriate name for a variable
- Choose when and where to set a variable
- Create an algorithm to describe how the program will process each input
 - Combine appropriate blocks to implement their algorithm
- Run their code on the emulator to test their program
- Propose a strategy to fix the code if it is not working

Unit Overview	Children EXS
Systems and networks- Sharing Information	
Programming- Selection - Crumble Kits	
Creating media-Flat File Databases	
Programming - Sensing	
Creating Media - 3D Modelling	