

Computing Curriculum Progression Map

Early Years Foundation Stage

The early learning goals that previously linked to computing (EYFS UW Technology) have been removed from the Early Years Foundation Stage Framework 2020. There is no mention of the teaching of technology in the educational programmes or Development Matters document either. We understand how important it is that children develop their technology skills and will continue to use a range of technology to support and enhance learning in other areas of the curriculum. For example, the children will continue to use the Bee-Bots when learning about direction and will use iPads to listen to and watch animated stories, watch videos linked to our topics and play games to develop phonic and number skills. Children will also use iPads and laptops to begin simple word processing skills.

In the EYFS, children:

- Have daily access to a range of technology resources such as torches with switches, remote controlled cars, BeeBots, talking tins and voice-recording toys, as well as class iPads and interactive whiteboards.
- Use a range of technology resources to support learning in other areas of the curriculum.
- Are taught how to use the resources for different purposes e.g. iPads to watch videos, play games, take photographs and listen to stories.

Computing Curriculum Progression Map

Autumn 1						
	Year 1 <u>Computing Systems and Networks – Technology Around Us</u>	Year 2 <u>Computing Systems and Networks – Information Technology Around Us</u>	Year 3 <u>Computing Systems and Networks – Connecting Computers</u>	Year 4 <u>Computing Systems and Networks – The Internet</u>	Year 5 <u>Computing Systems and Networks – Systems and Searching</u>	Year 6 <u>Computing Systems and Networks – Communication and Collaboration</u>
Pillar	Digital Literacy	Digital Literacy	Digital Literacy	Digital Literacy	Digital Literacy	Digital Literacy
Declarative Knowledge <i>Know that...</i>	Technology is something that has been made by people to help us. Not all technology is electronic. The main parts of a computer are the screen, mouse or trackpad, keyboard and base unit. We need to follow rules to keep us safe and healthy when we are using technology.	A computer is a part of information technology The features of information technology How rules for using information technology can help us That choices are made when using information technology	How information pass through different connections A network is made up of a number of components An output in produced by a process A process acts on the inputs	How networks connect to other networks The internet enables us to view the World Wide Web The global interconnection of networks is the internet WWW. means the World Wide Web	Search engines create indices, and that they are different for each search engine ranking is determined by rules, and that different search engines use different rules search engines are examples of large IT systems	All data transferred over the internet is broken down into packets 192.168.1.15 is an example of an IP address When two people collaborate online They both need to be working on the internet when packets reach their destination They are reassembled in the correct order

Computing Curriculum Progression Map

Autumn 1

	Year 1 <u>Computing Systems and Networks – Technology Around Us</u>	Year 2 <u>Computing Systems and Networks – Information Technology Around Us</u>	Year 3 <u>Computing Systems and Networks – Connecting Computers</u>	Year 4 <u>Computing Systems and Networks – The Internet</u>	Year 5 <u>Computing Systems and Networks – Systems and Searching</u>	Year 6 <u>Computing Systems and Networks – Communication and Collaboration</u>
Procedural Knowledge <i>Know how...</i>	- How examples of technology help us. - How to switch on and login to a computer. - How to use a mouse to click and drag: making objects on a screen, creating a picture, opening a program. - How to save work to a file and open it. - How to type own name and delete letters. - How to use the arrow keys to move the cursor. - How we benefit from rules about using technology.	-To recognise the uses and features of information technology -To identify the uses of information technology in the school -To identify information technology beyond school -To explain how information technology helps us -To explain how to use information technology safely -To recognise that choices are made when using information technology	- To explain how digital devices function - To identify input and output devices - To recognise how digital devices can change the way we work - To explain how a computer network can be used to share information - To explore how digital devices can be connected - To recognise the physical components of a network	-To describe how networks physically connect to other networks -To recognise how networked devices make up the internet -To outline how websites can be shared via the World Wide Web (WWW) -To describe how content can be added and accessed on the World Wide Web (WWW) -To recognise how the content of the WWW is created by people -To evaluate the consequences of unreliable content	- To explain what makes a video effective - To identify digital devices that can record video - To capture video using a range of techniques -To create a storyboard -To identify that video can be improved through reshooting and editing -To consider the impact of the choices made when making and sharing a video	-To review an existing website and consider its structure -To plan the features of a web page -To consider the ownership and use of images (copyright) -To recognise the need to preview pages -To outline the need for a navigation path -To recognise the implications of linking to content owned by other people

Computing Curriculum Progression Map

Autumn 1

	Year 1 <u>Computing Systems and Networks – Technology Around Us</u>	Year 2 <u>Computing Systems and Networks – Information Technology Around Us</u>	Year 3 <u>Computing Systems and Networks – Connecting Computers</u>	Year 4 <u>Computing Systems and Networks – The Internet</u>	Year 5 <u>Computing Systems and Networks – Systems and Searching</u>	Year 6 <u>Computing Systems and Networks – Communication and Collaboration</u>
Key Vocabulary	technology, computer, mouse, trackpad, keyboard, screen, double-click, typing	Information technology (IT), computer, barcode, scanner/scan	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.	communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many.

Computing Curriculum Progression Map

Autumn 2						
	Year 1 Creating Media <u>Digital Painting</u>	Year 2 Creating Media <u>Digital Photography</u>	Year 3 Creating Media <u>Stop-Frame Animation</u>	Year 4 Creating Media <u>Audio Production</u>	Year 5 Creating Media <u>Video Production</u>	Year 6 Creating Media <u>Webpage Creation</u>
Pillar	Information Technology	Information Technology	Information Technology	Information Technology	Information Technology	Information Technology
Declarative Knowledge <i>Know that...</i>	computers can be used to create art a tool can be adjusted to suit their need undo button to can correct a mistake a shape and line tools can be use when precision is needed	Some digital devices can capture images using a camera photographs can be saved and viewed later photographs can be change after they have been taken some images are not accurate	A capturing device needs to be in a fixed position An animation is made up of a sequence of images Small movements create smoother animation A projects need to be exported to be shared	an input device is needed to record sound sound can be recorded output devices are needed to play audio that audio can be edited	videos can be improved through and reshooting or editing videos can be edited on a recording device or on a computer filming techniques can be used to create different effects A projects need to be exported to be shared	web pages are written by people a website is a set of hyperlinked web pages there are implications of linking to content owned by others web pages can contain different media types

Computing Curriculum Progression Map

Autumn 2

	Year 1 Creating Media <u>Digital Painting</u>	Year 2 Creating Media <u>Digital Photography</u>	Year 3 Creating Media <u>Stop-Frame Animation</u>	Year 4 Creating Media <u>Audio Production</u>	Year 5 Creating Media <u>Video Production</u>	Year 6 Creating Media <u>Webpage Creation</u>
Procedural Knowledge <i>Know how...</i>	-To describe what different freehand tools do -To use the shape tool and the line tools -To make careful choices when painting a digital picture -To explain why I chose the tools I used -To use a computer on my own to paint a picture -To compare painting a picture on a computer and on paper	-To use a digital device to take a photograph -To make choices when taking a photograph -To describe what makes a good photograph -To decide how photographs can be improved -To use tools to change an image -To recognise that photos can be changed.	-To explain that animation is a sequence of drawings or photographs -To relate animated movement with a sequence of images -To plan an animation -To identify the need to work consistently and carefully -To review and improve an animation -To evaluate the impact of adding other media to an animation	-To identify that sound can be recorded -To explain that audio recordings can be edited -To recognise the different parts of creating a podcast project -To apply audio editing skills independently -To combine audio to enhance my podcast project -To evaluate the effective use of audio	-To explain what makes a video effective -To identify digital devices that can record video -To capture video using a range of techniques -To create a storyboard -To identify that video can be improved through reshooting and editing -To consider the impact of the choices made when making and sharing a video	-To review an existing website and consider its structure -To plan the features of a web page -To consider the ownership and use of images (copyright) -To recognise the need to preview pages -To outline the need for a navigation path -To recognise the implications of linking to content owned by other people

Computing Curriculum Progression Map

Autumn 2

	Year 1 Creating Media <u>Digital Painting</u>	Year 2 Creating Media <u>Digital Photography</u>	Year 3 Creating Media <u>Stop-Frame Animation</u>	Year 4 Creating Media <u>Audio Production</u>	Year 5 Creating Media <u>Video Production</u>	Year 6 Creating Media <u>Webpage Creation</u>
Key Vocabulary	paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers	device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting,	animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.	audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.	video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.	website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.

Computing Curriculum Progression Map

Spring 1						
	Year 1 Moving a Robot	Year 2 Robot Algorithms	Year 3 Sequencing Sounds	Year 4 Repetition in Shapes	Year 5 Selection in Physical Computing	Year 6 Variables in Games
Pillar	Programming A	Programming A	Programming A	Programming A	Programming A	Programming A
Declarative Knowledge <i>Know that...</i>	a program is a set of commands that a computer can run a series of instructions can be issued before they are enacted	a series of instructions is a sequence a series of instructions can be issued before they are enacted you can predict the outcome of a program	programs start because of an input a program includes sequences of commands the sequence of a program is a process that different sequences can achieve the same output	we can use a loop command in a program to repeat instructions in programming there are indefinite loops and count-controlled loops you can program a loop to stop after a specific number of times that not all tools enable more than one process to be run at once	a condition-controlled loop will stop when a condition is met selection can be used to branch the flow of a program a count-controlled loop contains a condition a condition can only be true or false	A variable can be used in a program, eg 'score' A variable has a name and a value A value of a variable can be updated If you change the value of a variable, you cannot access the previous value (cannot undo)

Computing Curriculum Progression Map

Spring 1

	Year 1 Moving a Robot	Year 2 Robot Algorithms	Year 3 Sequencing Sounds	Year 4 Repetition in Shapes	Year 5 Selection in Physical Computing	Year 6 Variables in Games
Procedural Knowledge <i>Know how...</i>	- To explain what a given command will do - To act out a given word - To act out a given word - To combine 'forwards' and 'backwards' commands to make a sequence - To combine four direction commands to make sequences - To plan a simple program - To find more than one solution to a problem	- To use logical reasoning to predict the outcome of a program - To explain that programming projects can have code and artwork - To design an algorithm - To create and debug a program that I have written	- To explore a new programming environment - To identify that commands have an outcome - To explain that a program has a start - To recognise that a sequence of commands can have an order - To change the appearance of my project - To create a project from a task description	- To identify that accuracy in programming is important - To create a program in a text-based language - To explain what 'repeat' means - To modify a count-controlled loop to produce a given outcome - To decompose a task into small steps - To create a program that uses count-controlled loops to produce a given outcome	- To control a simple circuit connected to a computer - To write a program that includes count-controlled loops - To explain that a loop can stop when a condition is met - To explain that a loop can be used to repeatedly check whether a condition has been met - To design a physical project that includes selection - To create a program that controls a physical computing project	- To define a 'variable' as something that is changeable - To explain why a variable is used in a program - To choose how to improve a game by using variables - To design a project that builds on a given example - To use my design to create a project - To evaluate my project
Key Vocabulary	Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.	instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.	microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer	variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare

Computing Curriculum Progression Map

Spring 2						
	Year 1 Digital Writing	Year 2 Digital Music	Year 3 Desktop Publishing	Year 4 Photo Editing	Year 5 Introduction to Vector Graphics	Year 6 3D Modelling
Pillar	Creating Media	Creating Media	Creating Media	Creating Media	Creating Media	Creating Media
Declarative Knowledge <i>Know that...</i>	a keyboard is used to enter text into a computer the Shift key changes the output of a key the appearance of text can be changed	the same pattern can be represented in different ways computers can be used to play sounds of different instruments	DTP pages can be structured with placeholders different layouts can suit different purposes text and images can be used together to convey information different font styles and effects are used for particular purposes	Some digital devices can capture images using a camera photographs can be saved and viewed later photographs can be change after they have been taken some images are not accurate	each object in a drawing is in its own layer a vector drawing comprises separate objects objects can be modified in groups alignment and size guides can help create a more consistent drawing	3D models can be created on a computer That artefacts can be broken down into a collection of 3D objects That digital tools can be used to manipulate 3D objects That a 3D environment can be viewed from different perspectives

Computing Curriculum Progression Map

Spring 2

	Year 1 Digital Writing	Year 2 Digital Music	Year 3 Desktop Publishing	Year 4 Photo Editing	Year 5 Introduction to Vector Graphics	Year 6 3D Modelling
Procedural Knowledge <i>Know how...</i>	-To use a computer to write -To add and remove text on a computer -To identify that the look of text can be changed on a computer -To make careful choices when changing text -To explain why I used the tools that I chose -To compare typing on a computer to writing on paper	-To say how music can make us feel -To identify that there are patterns in music -To experiment with sound using a computer -To use a computer to create a musical pattern -To create music for a purpose -To review and refine our computer work	-To recognise how text and images convey information -To recognise that text and layout can be edited -To choose appropriate page settings -To add content to a desktop publishing publication -To consider how different layouts can suit different purposes -To consider the benefits of desktop publishing	-To explain that the composition of digital images can be changed -To explain that colours can be changed in digital images -To explain how cloning can be used in photo editing -To explain that images can be combined -To combine images for a purpose -To evaluate how changes can improve an image	-To identify that drawing tools can be used to produce different outcomes -To create a vector drawing by combining shapes -To use tools to achieve a desired effect -To recognise that vector drawings consist of layers -To group objects to make them easier to work with -To apply what I have learned about vector drawings	-To recognise that you can work in three dimensions on a computer -To identify that digital 3D objects can be modified -To recognise that objects can be combined in a 3D model -To create a 3D model for a given purpose -To plan my own 3D model - To create my own digital 3D model
Key Vocabulary	word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing.	music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit.	text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.	image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.	vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection	TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify.

Computing Curriculum Progression Map

Summer 1						
	Year 1 Programming Animations	Year 2 Programming Quizzes	Year 3 Events and Actions in Programs	Year 4 Repetition in Games	Year 5 Selection in Quizzes	Year 6 Sensing Movement
Pillar	Programming B	Programming B	Programming B	Programming B	Programming B	Programming B
Declarative Knowledge <i>Know that...</i>	commands can be used on a given device a program is a set of commands a computer can run a series of instructions can be issued before they are enacted	a series of instructions can be issued before they are enacted.	programs start because of an input a program includes sequences of commands the order of commands can affect a program's output different sequences can achieve different outputs	we can use a loop command in a program to repeat instructions in programming there are indefinite loops and count-controlled loops that not all tools enable more than one process to be run at once you can program a loop to stop after a specific number of times	a condition can only be true or false a count-controlled loop contains a condition a condition-controlled loop will stop when a condition is met a loop can be used to repeatedly check whether a condition has been met	A program variable as a placeholder in memory for a single value That the value of a variable can be used by a program that a variable can be set as a constant (fixed value) that the name of a variable is meaningless to the computer

Computing Curriculum Progression Map

Summer 1

	Year 1 Programming Animations	Year 2 Programming Quizzes	Year 3 Events and Actions in Programs	Year 4 Repetition in Games	Year 5 Selection in Quizzes	Year 6 Sensing Movement
Procedural Knowledge <i>Know how...</i>	-To choose a command for a given purpose -To show that a series of commands can be joined together -To identify the effect of changing a value -To explain that each sprite has its own instructions -To design the parts of a project -To use my algorithm to create a program	-To explain that a sequence of commands has a start -To explain that a sequence of commands has an outcome -To create a program using a given design -To change a given design -To create a program using my own design -To decide how my project can be improved	-To explain how a sprite moves in an existing project -To create a program to move a sprite in four directions -To adapt a program to a new context -To develop my program by adding features -To identify and fix bugs in a program -To design and create a maze-based challenge	-To develop the use of count-controlled loops in a different programming environment -To explain that in programming there are infinite loops and count controlled loops -To develop a design that includes two or more loops which run at the same time -To modify an infinite loop in a given program -To design a project that includes repetition -To create a project that includes repetition	-To explain how selection is used in computer programs -To relate that a conditional statement connects a condition to an outcome -To explain how selection directs the flow of a program -To design a program which uses selection -To create a program which uses selection -To evaluate my program	-To create a program to run on a controllable device -To explain that selection can control the flow of a program -To update a variable with a user input -To use a conditional statement to compare a variable to a value -To design a project that uses inputs and outputs on a controllable device -To develop a program to use inputs and outputs on a controllable device

Computing Curriculum Progression Map

Summer 1

	Year 1 Programming Animations	Year 2 Programming Quizzes	Year 3 Events and Actions in Programs	Year 4 Repetition in Games	Year 5 Selection in Quizzes	Year 6 Sensing Movement
Key Vocabulary	ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.	motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.	Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.

Computing Curriculum Progression Map

Summer 2

	Year 1 Grouping Data	Year 2 Pictograms	Year 3 Branching Databases	Year 4 Data Logging	Year 5 Flat File Databases	Year 6 Introduction to Spreadsheets
Pillar	Data and Information	Data and Information	Data and Information	Data and Information	Data and Information	Data and Information
Declarative Knowledge <i>Know that...</i>	objects can be counted information can be presented information can be presented in different ways	a series of instructions can be issued before they are enacted a series of instructions as a 'sequence'	a branching database is an identification tool a data set can be structured using yes/no question a well-structured branching database will enable you to identify objects using fewer questions	Data can be logged over time A sensor can be used as an input device for data collection Data logger captures "Data Points" from sensors over time	'AND' and 'OR' can be used to refine data selection operands can be used to filter data tools can be used to select data to answer questions a computer program can be used to organise data	The data type determines how a spreadsheet can process the data Cells can be linked That formulas can be used to produce calculated data There are different software tools to work with data

Computing Curriculum Progression Map

Summer 2

	Year 1 Grouping Data	Year 2 Pictograms	Year 3 Branching Databases	Year 4 Data Logging	Year 5 Flat File Databases	Year 6 Introduction to Spreadsheets
Procedural Knowledge <i>Know how...</i>	-To label objects -To identify that objects can be counted -To describe objects in different ways -To count objects with the same properties -To compare groups of objects -To answer questions about groups of objects	-To recognise that we can count and compare objects using tally charts -To recognise that objects can be represented as pictures -To create a pictogram -To select objects by attribute and make comparisons -To recognise that people can be described by attributes -To explain that we can present information using a computer	-To create questions with yes/no answers -To identify the attributes needed to collect data about an object -To create a branching database -To explain why it is helpful for a database to be well structured -To plan the structure of a branching database -To independently create an identification tool	-To explain that data gathered over time can be used to answer questions -To use a digital device to collect data -To explain that a data logger collects 'data points' from sensors over time -To recognise how a computer can help us analyse data -To identify the data needed to answer questions -To use data from sensors to answer questions	-To use a form to record information -To compare paper and computer-based databases -To outline how you can answer questions by grouping and then sorting data -To explain that tools can be used to select specific data -To explain that computer programs can be used to compare data visually -To use a real-world database to answer questions	-To create a data set in a spreadsheet -To build a data set in a spreadsheet -To explain that formulas can be used to produce calculated data -To apply formulas to data -To create a spreadsheet to plan an event -To choose suitable ways to present data

Computing Curriculum Progression Map

Summer 2

	Year 1 Grouping Data	Year 2 Pictograms	Year 3 Branching Databases	Year 4 Data Logging	Year 5 Flat File Databases	Year 6 Introduction to Spreadsheets
Key Vocabulary	object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same	more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing	attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.	database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.	data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.