



# Computing: Substantive and Disciplinary Knowledge



## KS1

	EYFS	Year 1	Year 2
Substantive: Computer Science	<p>I can explore programmable toys such as Botley, Beebot or Cod-eapillar.</p> <p>I can use some words like forwards and backwards to describe how I want to make a programmable toy move.</p> <p>I can give a simple set of instructions e.g. how to brush your teeth.</p>	<p>I can predict the outcome of a command on a device.</p> <p>I can match a command to an outcome.</p> <p>I can recall words that can be acted out.</p> <p>I can compare forwards and backwards movements.</p> <p>I can start a sequence from the same place.</p> <p>I can predict the outcome of a sequence involving forwards and backwards commands.</p> <p>I can compare left and right turns.</p> <p>I can experiment with turn and move commands to move a robot.</p> <p>I can predict the outcome of a sequence involving up to four commands.</p> <p>I can explain what my program should do.</p> <p>I can choose the order of commands in a sequence.</p> <p>I can debug my program.</p> <p>I can compare different programming tools.</p> <p>To show that a series of commands can be joined together.</p> <p>To identify the effect of changing a value.</p> <p>To explain that each sprite has its own instructions.</p> <p>To design the parts of a project.</p> <p>To use my algorithm to create a program.</p>	<p>I can show the difference in outcomes between two sequences that consist of the same commands.</p> <p>I can follow a sequence.</p> <p>I can predict the outcome of a sequence.</p> <p>I can compare my prediction to the program outcome.</p> <p>I can explain the choices I made for my mat design.</p> <p>I can identify different routes around my mat.</p> <p>I can test my mat to make sure that it is usable.</p> <p>I can explain what my algorithm should achieve.</p> <p>I can create an algorithm to meet my goal.</p> <p>I can use my algorithm to create a program.</p>

## Substantive: Information Technology

I can name some sources of IT from home and school.  
 I know that typing using a keyboard is another way of writing information.  
 I know that digital devices can be used to create pictures.  
 I know that things can be similar or different in lots of ways and can talk about some of these similarities and differences.

Identify IT in the home and beyond school.  
 Explain how IT benefits us.  
 Recognise how IT can change the way we work.  
 Understand that some digital software can create art.  
 Explain reasoning behind text choices e.g. colour, size and font.  
 I can explain what the keys that I have learnt about already do.  
 I can say what tool I used to change the text.  
 I can compare using a computer with using a pencil and paper.  
 I can describe objects using labels.  
 I can describe an object.  
 I can describe a property of an object.  
 I can find objects with similar properties.  
 I can choose how to group objects.  
 I can describe groups of objects.  
 I can record how many objects are in a group.  
 I can decide how to group objects to answer a question I can compare groups of objects.

I can identify examples of computers.  
 I can describe some uses of computers.  
 I can identify that a computer is a part of information technology (IT).  
 I can explain the purpose of IT in the home.  
 I can talk about uses of IT.  
 I can compare types of IT.  
 I can list different uses of IT.  
 I can recognise how to use IT responsibly.  
 I can say how those rules/guides can help me.  
 I can identify the choices that I make when using IT.  
 I can explain simple guidance for using IT in different environments and settings.  
 I can enjoy a variety of activities Digital Photography.  
 I can sort devices into old and new.  
 I can talk about how to take a photograph.  
 I can explain the process of taking a good photograph.  
 I can identify what is wrong with a photograph.  
 I can discuss how to take a good photograph.  
 I can improve a photograph by retaking it.  
 I can explore the effect that light has on a photo.  
 I can experiment with different light sources.  
 I can recognise that images can be changed.  
 I can use a tool to achieve a desired effect.  
 I can explain my choices Making Music.  
 I can connect images with sounds.  
 I can relate an idea to a piece of music.  
 I can identify that music is a sequence of notes.  
 I can use a computer to create a musical pattern using three notes.  
 I can refine my musical pattern on a computer.

Substantive: Digital Literacy	I know what to do if I see something that worries me when I am using a digital device.	I can identify rules that help keep us safe and healthy in and beyond the home when using technology. I can give some simple examples. I know that the work I create belongs to me. I can name my work so that others know it belongs to me.	I can recognise that images can be changed.
Disciplinary: Code	I can push a button to make a programmable toy move. I can find a power button on a programmable toy and that I need to switch it on to make it work.	I can run a command on a device. I can follow an instruction. I can give directions. I can find the commands to move a sprite. I can use commands to move a sprite.	I can follow instructions given by someone else. I can choose a series of words that can be enacted as a sequence. I can give clear and unambiguous instructions. I can create different algorithms for a range of sequences (using the same commands). I can use an algorithm to program a sequence on a floor robot. I can plan algorithms for different parts of a task. I can test and debug each part of the program. I can put together the different parts of my program.
Disciplinary: Connect	I can find and start a favourite app on a digital device. I can search for things I like with support on a child-safe search engine.	Use a mouse in different ways. Use a keyboard to type and edit text. Use a computer to paint a picture. Selecting and opening a programme or application. Saving and closing a programme or application.	I can find examples of information technology. To recognise that images can be changed.

<p><b>Disciplinary: Communicate</b></p>	<p>I can select letters on a keyboard to write simple words and sentences. I am learning where the spacebar and enter button are and what they can do. I can use a mousepad to move a click a cursor, or my finger on a touchscreen to move and select.</p>	<p>I can open a word processor. I can recognise keys on a keyboard. I can enter text into a computer. I can use letter, number, and space keys. I can use backspace to remove text. I can type capital letters. I can identify the toolbar and use bold, italic, and underline. I can select a word by double-clicking. I can select all of the text by clicking and dragging. I can change the font. I can use 'undo' to remove change. I can write a message on a computer and on paper.</p>	<p>I can open a file. I can move and resize images. I can demonstrate how IT is used in a shop. I can recognise that IT can be connected. I can explain how IT helps people. I can capture digital photos and talk about my experience. I can take photos in both landscape and portrait format. I can focus on an object. I can use a computer to experiment with pitch and duration.</p>
---	---	--	--

Disciplinary: Collect

I can sort a group of objects using two given criteria e.g. feathers and fur or curved and straight edges.

I can match objects to groups.  
I can count objects.  
I can group objects.  
I can count a group of objects.  
I can group similar objects.  
I can group objects in more than one way.  
I can count how many objects share a property.

I can record data in a tally chart.  
I can represent a tally count as a total.  
I can compare totals in a tally chart.  
I can enter data onto a computer.  
I can use a computer to view data in a different format.  
I can use pictograms to answer simple questions about objects.  
I can organise data in a tally chart.  
I can use a tally chart to create a pictogram.  
I can explain what the pictogram shows.  
I can tally objects using a common attribute.  
I can create a pictogram to arrange objects by an attribute.  
I can answer 'more than'/'less than' and 'most/least' questions about an attribute.  
I can choose a suitable attribute to compare people.  
I can collect the data I need.  
I can create a pictogram and draw conclusions from it.  
I can use a computer program to present information in different ways.  
I can share what I have found out using a computer.  
I can give simple examples of why information should not be shared.