



# The Computing Curriculum Year 2

Year 2 – Autumn 1		Unit 1 – Computing Systems and Networks – Information Technology	
National Curriculum			
<ul style="list-style-type: none"><li>• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</li><li>• Recognise common uses of information technology beyond school</li><li>• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</li></ul>			
Unit Overview			
In this unit, learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly.			
Previous Knowledge acquired – Year 1			
<ul style="list-style-type: none"><li>• Know technology as something that helps us</li><li>• Know examples of technology in the classroom</li><li>• Know how these technology examples help us</li><li>• Know the names of the main parts of a computer</li><li>• Know how to switch on and log into a computer</li><li>• Know how to use a mouse to click and drag</li><li>• Know how to use a mouse to open a program</li><li>• Know how to click and drag to make objects on a screen</li><li>• Know how to use a mouse to create a picture</li><li>• Know what a keyboard is for</li><li>• Know how to type my name on a computer</li><li>• Know how to save my work to a file</li><li>• Know how to open my work from a file</li><li>• Know how to use the arrow keys to move the cursor</li><li>• Know how to delete letters</li><li>• Know rules to keep us safe and healthy when we are using technology in and beyond the home and give examples of some of these rules</li><li>• Know how we benefit from these rules</li></ul>			
Progression of knowledge throughout the Computing curriculum - Technology			
Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>• Know that digital devices accept inputs.</li><li>• Know that digital devices produce outputs.</li><li>• Know how to follow a process.</li><li>• Know how to classify input and output devices.</li></ul>	<ul style="list-style-type: none"><li>• Know the internet is a network of networks</li><li>• Know how information is shared across the internet</li><li>• Know why a network needs protecting</li><li>• Know the different networked devices and how they connect</li></ul>	<ul style="list-style-type: none"><li>• Know that systems are built using a number of parts</li><li>• Know that a computer system features inputs, processes, and outputs</li><li>• Know that computer systems communicate with other devices</li></ul>	<ul style="list-style-type: none"><li>• Know how to complete a web search to find specific information</li><li>• Know how to refine my search</li><li>• Know how to compare results from different search engines</li><li>• Know why we need tools to find things online</li></ul>

<ul style="list-style-type: none"> <li>• Know how to model a simple process.</li> <li>• Know how to design a digital device.</li> <li>• Know how I use digital devices for different activities.</li> <li>• Know how to recognise similarities between using digital devices and non-digital tools.</li> <li>• Know the differences between using digital devices and non-digital tools.</li> <li>• Know how to recognise different connections.</li> <li>• Know how messages are passed through multiple connections.</li> <li>• Know why we need a network switch.</li> <li>• Know that a computer network is made up of a number of devices.</li> <li>• Know and can demonstrate how information can be passed between devices.</li> <li>• Know and can explain the role of a switch, server, and wireless access point in a network.</li> <li>• Know and can identify how devices in a network are connected with one another.</li> <li>• Know and can identify networked devices around me.</li> <li>• Know and can identify the benefits of computer networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Know how the internet allows us to view the World Wide Web</li> <li>• Know that the World Wide Web is the part of the internet that contains websites and web pages</li> <li>• Know the types of media that can be shared on the World Wide Web (WWW)</li> <li>• Know where websites are stored when uploaded to the WWW</li> <li>• Know how to access websites on the WWW</li> <li>• Know how to create media which can be found on websites</li> <li>• Know that I can add content to the WWW</li> <li>• Know that new content can be created online</li> <li>• Know that websites and their content are created by people</li> <li>• Know who owns the content on websites</li> <li>• Know that there are rules to protect content</li> <li>• Know that not everything on the World Wide Web is true.</li> <li>• Know why some information I find online may not be honest, accurate, or legal.</li> <li>• Know why I need to think carefully before I share or reshare content</li> </ul>	<ul style="list-style-type: none"> <li>• Know tasks that are managed by computer systems</li> <li>• Know the human elements of a computer system</li> <li>• Know the benefits of a given computer system</li> <li>• Know that data is transferred using agreed methods</li> <li>• Know that networked digital devices have unique addresses</li> <li>• Know that data is transferred over networks in packets</li> <li>• Know that connected digital devices can allow us to access shared files stored online</li> <li>• Know how to send information over the internet in different ways</li> <li>• Know that the internet allows different media to be shared</li> <li>• Know and suggest strategies to ensure successful group work</li> <li>• Compare working online with working offline</li> <li>• Know different ways of working together online</li> <li>• Know that working together on the internet can be public or private</li> <li>• Know how the internet enables effective collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Know the role of web crawlers in creating an index</li> <li>• Know how to relate a search term to the search engine's index</li> <li>• Know that search results are ordered</li> <li>• Know that a search engine follows rules to rank relevant pages</li> <li>• Know some of the criteria that a search engine checks to decide on the order of results</li> <li>• Know some of the ways that search results can be influenced</li> <li>• Know some of the limitations of search engines</li> <li>• Know how search engines make money</li> <li>• Know the different ways in which people communicate</li> <li>• Know that there are a variety of ways of communicating over the internet</li> <li>• Know to choose methods of communication to suit particular purposes</li> <li>• Know how to compare different methods of communicating on the internet</li> <li>• Know when I should and should not share</li> <li>• Know that communication on the internet may not be private</li> </ul>
Key knowledge acquired throughout this unit			

- Know examples of computers
- Know and describe some uses of computers
- Know that a computer is a part of information technology
- Know and explain the purpose of information technology in the home
- Know how to open a file
- Know how to move and resize images
- Know how to find examples of information technology
- Know and talk about uses of information technology
- Compare types of information technology
- Know how information technology is used in a shop
- Know that information technology can be connected
- Know and explain how information technology helps people
- Know different uses of information technology
- Know how to use information technology responsibly
- Know how those rules/guides can help me
- Identify the choices that I make when using information technology
- Know and explain simple guidance for using information technology in different environments and settings

#### Subject knowledge and teacher guidance

Lesson 1: You should have a clear understanding of devices which can be described as information technology (IT). For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.

Lesson 2: You should have a clear understanding of devices which can be described as IT. For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.

Lesson 3: You will need to understand where technology can be found in shops and how it can be used. You should also know which devices can work together, for example:

- Barcode, barcode scanner, till
- Bank card, chip and PIN card reader, till
- Traffic light, crossing button, crossing signal

Lesson 4: You can find some useful information and a short video about barcodes at [www.waspbarcode.com/buzz/barcode](http://www.waspbarcode.com/buzz/barcode)

Lesson 5: You should know your school's rules regarding the safe use of technology and be familiar with Education for a Connected World.

Lesson 6: You will need to be familiar with the Digital 5 a Day: [www.childrenscommissioner.gov.uk/our-work/digital/5-a-day](http://www.childrenscommissioner.gov.uk/our-work/digital/5-a-day)

#### Information technology is anything that...

is a computer  
or  
has a computer inside  
or  
works with computers



#### Barcodes

Most items in a shop will have a code on, for example, books, beans, bottles...

A barcode contains a code that can be read very quickly by a computer.



#### Subject specific vocabulary and definitions (Tier 3 vocabulary)

Information technology	A computer or has a computer inside or works with a computer
Technology	Anything made by people that helps us do a job
File	A folder on a computer where you keep your work
Resize	Make bigger or smaller
Compare	Say what is the same and what is different
Connected	Joined together

#### Medium Term Planning

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
To recognise the uses and features of information technology	To identify information technology in the home	To identify information technology beyond school	To explain how information technology benefits us	To show how to use information technology safely	To recognise that choices are made when using information technology

Year 2 – Autumn 2		Unit 2 – Digital Photography	
National Curriculum			
<ul style="list-style-type: none"><li>• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</li><li>• Recognise common uses of information technology beyond school</li><li>• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</li></ul>			
Unit Overview			
<p>Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real.</p> <p>It is recommended that you use digital cameras to take photographs in these lessons, so that learners can experience a range of devices. However, tablets or other devices with cameras will also work. This unit uses screenshots from the website <a href="https://pixlr.com/x/">https://pixlr.com/x/</a>, but you could also use the Pixlr app if you’re using tablets.</p>			
Previous Knowledge acquired – Year 1			
<ul style="list-style-type: none"><li>• Know how to make marks on a screen and explain which tools were used</li><li>• Know how to draw lines on a screen and explain which tools were used.</li><li>• Know how to use paint tools to draw a picture.</li><li>• Know how to make marks with the square and line tools</li><li>• Know how to use shape and line tools effectively to recreate the work of an artist</li><li>• Choose appropriate shapes</li><li>• Know how to make appropriate colour choices</li><li>• Know how to create a picture in the style of an artist</li><li>• Know how to choose appropriate paint tools and colours to create the work of an artist</li><li>• Know which tools were helpful and why</li><li>• Know how to make dots of colour on the page</li><li>• Know how to change the colour and brush size</li><li>• Know how to use dots of colour to create a picture in the style of an artist on my own.</li></ul>			
Progression of knowledge throughout the Computing curriculum – Digital Literacy			
Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>• Know how to draw a sequence of pictures</li><li>• Know how to create flip book—style animation.</li><li>• Know how an animation and flip book works.</li><li>• Know what an animation will look like.</li><li>• Know why little changes are needed for each frame.</li><li>• Know how to create and effective stop frame animation.</li></ul>	<ul style="list-style-type: none"><li>• Know digital devices that can record sound and play it back</li><li>• Know the inputs and outputs required to play audio or record sound</li><li>• Know the range of sounds that can be recorded</li><li>• Know how to use a device to record audio and play back sound</li><li>• Know how to improve my recording</li><li>• Know what other people include when</li></ul>	<ul style="list-style-type: none"><li>• Know that video is a visual media format</li><li>• Know features of videos</li><li>• Know how to compare features in different videos</li><li>• Know and find features on a digital video recording device</li><li>• Know how to experiment with different camera angles</li><li>• Know how to make use of a microphone</li><li>• Know and suggest filming techniques for a</li></ul>	<ul style="list-style-type: none"><li>• Know how to explore a website</li><li>• Know the different types of media used on websites</li><li>• Know that websites are written in HTML</li><li>• Know the common features of a web page</li><li>• Know which media to include on my page</li><li>• Know how to draw a web page layout</li></ul>

<ul style="list-style-type: none"> <li>• Know how to break down a story into settings, characters and events.</li> <li>• Know how to describe an animation that is achievable on screen.</li> <li>• Know how to create a storyboard.</li> <li>• Know how to use onion skinning to help me make small changes between frames.</li> <li>• Know how to review a sequence of frames to check my work.</li> <li>• Know how evaluate the quality of my animation.</li> </ul>	<p>recording sound for a podcast</p> <ul style="list-style-type: none"> <li>• Know how to plan and write the content for a podcast</li> <li>• Know why it is useful to be able to save digital recordings</li> <li>• Know how to save a digital recording as a file</li> <li>• Know how to open a digital recording from a file</li> <li>• Know ways in which audio recordings can be altered</li> <li>• Know how to edit sections of an audio recording</li> <li>• Know sounds that other people combine</li> <li>• Know suitable sounds to include in a podcast</li> <li>• Know how to use editing tools to arrange sections of audio</li> <li>• Know that digital recordings need to be exported to share them</li> <li>• Know the features of a digital recording I like</li> <li>• Know and suggest improvements to a digital recording</li> </ul>	<p>given purpose</p> <ul style="list-style-type: none"> <li>• Know how to capture video using a range of filming techniques</li> <li>• Know how to review how effective my video is</li> <li>• Know how to outline the scenes of my video</li> <li>• Know how to decide which filming techniques I will use</li> <li>• Know how to create and save video content</li> <li>• Know how to store, retrieve, and export my recording to a computer</li> <li>• Know how to improve a video by reshooting and editing</li> <li>• Know how to select the correct tools to make edits to my video</li> <li>• Know how to make edits to my video and improve the final outcome</li> <li>• Know that my choices when making a video will impact the quality of the final outcome</li> <li>• Know how to evaluate my video and share my opinions</li> </ul>	<p>that suits my purpose</p> <ul style="list-style-type: none"> <li>• Know why I should use copyright-free images</li> <li>• Know how to find copyright-free images</li> <li>• Know what is meant by the term 'fair use'</li> <li>• Know how to add content to my own web page</li> <li>• Know how to preview what my web page looks like</li> <li>• Know to evaluate what my web page looks like on different devices and suggest/make edits.</li> <li>• Know what a navigation path is</li> <li>• Know why navigation paths are useful</li> <li>• Know how to make multiple web pages and link them using hyperlinks</li> <li>• Know the implication of linking to content owned by others</li> <li>• Know how to create hyperlinks to link to other people's work</li> <li>• Know to evaluate the user experience of a website</li> </ul>
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#### Key knowledge acquired throughout this unit

- Know what devices can be used to take photographs
- Know how to take a photograph
- Know and explain what I did to capture a digital photo
- Know the process of taking a good photograph
- Know how to take photos in both landscape and portrait format
- Know and explain why a photo looks better in portrait or landscape format
- Know what is wrong with a photograph
- Know how to take a good photograph
- Know that I can improve a photograph by retaking it
- Know the effect that light has on a photo
- Know to experiment with different light sources
- Know and explain why a picture may be unclear
- Know that images can be changed

- Know how to use a tool to achieve a desired effect
- Know how to apply a range of photography skills to capture a photo
- Know which photos have been changed
- Know which photos are real and which have been changed

### Subject knowledge and teacher guidance

You should be familiar with the basic principles of photography, including composition, framing, lighting, and how to reduce blur.

Lesson 5 uses an online photo editing tool, Pixlr, and knowledge of using photo editing software to apply filters to images is required to use this effectively; you should also be familiar with saving and downloading images.

#### When is it OK to take someone's photo?

Taking photos can be lots of fun, but not everyone wants to be in them.

Before taking anyone's photo, you should ask them if it's OK. If they say that it is OK, you can take it.

If they say they don't want to, find someone else to take a photo of!



#### How do you take a good photograph?

1. Hold the device firmly with both hands.
2. Point the camera lens at the subject.
3. Look into the viewing window or screen.
4. Move the device until you see everything clearly.
5. Press the capture button.



#### Portrait or landscape?



Upright = portrait



Sideways = landscape

#### Taking a good photograph



**Positioning:** Is it obvious what the main subject of the photograph is?



**Framing:** Have you included everything you wanted to?



**Subject:** Are you close enough that you can see the detail?

#### Three ways to add more light

##### Add more daylight

Take the photo where there is more sunlight.



##### Use the camera flash

Select the built-in flash tool or use an external flash to add light.



##### Use another light source

Provide extra light by shining artificial light on the object.



### Subject specific vocabulary and definitions (Tier 3 vocabulary)

Device	A piece of computer hardware
Photograph	A picture made using a camera
Landscape	Holding the camera lengthways
Portrait	Holding the camera upright



Capture	Something that has been photographed				
Edited	Changed				
Medium Term Planning					
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
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

Year 2 – Spring 1	Unit 3 – Pictograms
<b>National Curriculum</b>	
<ul style="list-style-type: none"> <li>• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</li> <li>• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</li> </ul>	
<b>Cross Curricular Links</b>	
<b>Maths</b>	
<u>Building on Year 1 number and place value:</u>	
<ul style="list-style-type: none"> <li>• Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: ‘equal to’, ‘more than’, ‘less than’ (‘fewer’), ‘most’, ‘least’</li> </ul>	
<u>Year 2</u>	
<ul style="list-style-type: none"> <li>• interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>• ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>• ask and answer questions about totalling and comparing categorical data</li> </ul>	
Notes and guidance: Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10).	
<b>Unit Overview</b>	
<p>Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term ‘attribute’ and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.</p> <p>During this unit of work learners will use <a href="#">j2e pictogram</a> tool which can be accessed online using a desktop, laptop or tablet computer. Your school may have access to an equivalent alternative which could be used instead.</p>	
<b>Previous Knowledge acquired – Year 1</b>	
<ul style="list-style-type: none"> <li>• Know how to describe objects using labels</li> <li>• Know how to match objects to groups</li> <li>• Know how to identify the label for a group of objects</li> <li>• Know how to count objects</li> <li>• Know how to group objects</li> <li>• Know how to count a group of objects</li> <li>• Know how to describe an object</li> <li>• Know how to describe a property of an object</li> <li>• Know how to find objects with similar properties</li> <li>• Know how to group similar objects</li> <li>• Know how to group objects in more than one way</li> <li>• Know how to count how many objects share a property</li> <li>• Know how to choose how to group objects</li> <li>• Know how to describe groups of objects</li> </ul>	

- Know how to record how many objects are in a group
- Know how to decide how to group objects to answer a question
- Know how to compare groups of objects
- Know how to record and share what I have found

#### Progression of knowledge throughout the Computing curriculum – Data Handling

Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Know how to investigate questions with yes/no answers.</li> <li>• Know how to make up a yes/no question about a collection of objects.</li> <li>• Know how to create two groups of objects separated by one attribute.</li> <li>• Know select an attribute to separate objects into groups.</li> <li>• Know how to create a group of objects within an existing group.</li> <li>• Know how to arrange objects into a tree structure.</li> <li>• Know how to select objects to arrange in a branching database.</li> <li>• Know how to group objects using my own yes/no questions.</li> <li>• Know how my branching database works.</li> <li>• Know how to create yes/no questions using given attributes.</li> <li>• Know how to explain that questions need to be ordered carefully to split objects into similarly sized groups.</li> <li>• Know how to compare two branching database structures.</li> <li>• Know how to select a theme and choose a variety of objects.</li> <li>• Know how to create questions and apply them to a tree structure.</li> <li>• Know how to use my branching database to answer questions.</li> <li>• Know how to explain what a pictogram tells me.</li> <li>• Know how to explain what a branching</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to choose a data set to answer a given question</li> <li>• Know how to suggest questions that can be answered using a given data set</li> <li>• Know that data gathered over time can be used to answer questions</li> <li>• Know data that can be gathered over time</li> <li>• Know that sensors are input devices</li> <li>• Know how to use data from a sensor to answer a given question</li> <li>• Know that data from sensors can be recorded</li> <li>• Know a suitable place to collect data</li> <li>• Know the intervals used to collect data</li> <li>• Know about the data that I have captured</li> <li>• Know how to import a data set</li> <li>• Know how to use a computer to view data in different ways</li> <li>• Know how to use a computer program to sort data</li> <li>• Know to propose a question that can be answered using logged data</li> <li>• Know how to collect data using a data logger</li> <li>• Know how to interpret data that has been collected using a data logger</li> <li>• Know how to draw conclusions from the data that I have collected</li> <li>• Know the benefits of using a data logger</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to create multiple questions about the same field</li> <li>• Know how information can be recorded</li> <li>• Know how to order, sort, and group my data cards</li> <li>• Know how to navigate a flat-file database to compare different views of information</li> <li>• Know what a 'field' and a 'record' is in a database</li> <li>• Know which field to sort data by to answer a given question</li> <li>• Know how information can be grouped</li> <li>• Know how to group information to answer questions</li> <li>• Know how to combine grouping and sorting to answer more specific questions</li> <li>• Know which field and value are required to answer a given question</li> <li>• Know how 'AND' and 'OR' can be used to refine data selection</li> <li>• Know to choose multiple criteria to answer a given question</li> <li>• Know to an appropriate chart to visually compare data</li> <li>• Know to refine a chart by selecting a particular filter</li> <li>• Know the benefits of using a computer to create graphs</li> <li>• Know to ask questions that will need more than one field to answer</li> <li>• Know how to refine a search in a real-world context</li> </ul>	<ul style="list-style-type: none"> <li>• Know and explain the relevance of data headings</li> <li>• Know how to answer questions from an existing data set</li> <li>• Know to ask simple relevant questions which can be answered using data</li> <li>• Know what an item of data is</li> <li>• Know how to apply an appropriate number format to a cell</li> <li>• Know how to build a data set in a spreadsheet application</li> <li>• Know and explain the relevance of a cell's data type</li> <li>• Know how to construct a formula in a spreadsheet</li> <li>• Know that changing inputs changes outputs</li> <li>• Know that data can be calculated using different operations</li> <li>• Know how to create a formula which includes a range of cells</li> <li>• Know how to apply a formula to multiple cells by duplicating it</li> <li>• Know how to use a spreadsheet to answer questions</li> <li>• Know and explain why data should be organised</li> <li>• Know and apply a formula to calculate the data I need to answer questions</li> <li>• Know how to produce a graph</li> <li>• Know how to use a graph to show the</li> </ul>

database tells me. • Know how to compare two ways of presenting information.			answer to questions • Know when to use a table or graph
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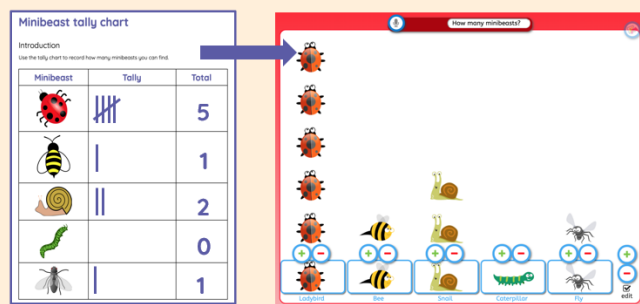
### Key knowledge acquired throughout this unit

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

### Subject knowledge and teacher guidance

This unit builds on prior learning from the Year 1 unit 'Grouping data'. Teachers should understand how tally charts and pictograms are created, and the benefits of organising data in those formats. These different formats allow data to be presented in different ways and will suit different purposes.. Teachers will need to understand how people, animals and objects can be described using different attributes.

#### My own pictogram



#### Block diagrams



#### Creating block diagrams



Subject specific vocabulary and definitions (Tier 3 vocabulary)					
Data	Information that can be stored and used by a computer				
Tally	A record of numbers				
Pictogram	A simple drawing that shows amounts				
Attribute	A way to describe objects				
Medium Term Planning					
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
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

Year 2 – Spring 2		Unit 4 – Making Music	
National Curriculum			
<ul style="list-style-type: none"><li>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</li></ul>			
Unit Overview			
In this unit, learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.			
Previous Knowledge acquired – Year 1			
<ul style="list-style-type: none"><li>Know how to open a word processor</li><li>Know keys on a keyboard</li><li>Know how to enter text into a computer</li><li>Know how to use letter, number, and space keys</li><li>Know how to use backspace to remove text</li><li>Know how to type capital letters</li><li>Know where the toolbar is and use bold, italic, and underline</li><li>Know how to select a word by double-clicking</li><li>Know how to select all of the text by clicking and dragging</li><li>Know how to change the font</li><li>Know and say what tool I used to change the text</li><li>Know if my changes have improved my writing</li><li>Know how to use ‘undo’ to remove changes</li><li>Know how to write a message on a computer and on paper</li><li>Compare using a computer with using a pencil and paper</li><li>Know which method I like best</li></ul>			
Progression of knowledge throughout the Computing curriculum – Digital Literacy			
Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"><li>Know the difference between text and images.</li><li>Know that text and images can communicate messages clearly.</li><li>Know I can identify the advantages and disadvantages of using text and images.</li><li>Know how to change font style, size, and colours for a given purpose.</li><li>Know how to edit text.</li><li>Know how to explain that text can be changed to communicate more clearly.</li><li>Know and can explain what ‘page</li></ul>	<ul style="list-style-type: none"><li>Know the changes that we can make to an image</li><li>Know how images can be changed in real life</li><li>Know the effect that editing can have on an image</li><li>Know what has changed in an edited image</li><li>Know how to change the composition of an image by selecting parts of it</li><li>Know why someone might want to change the composition of an image</li></ul>	<ul style="list-style-type: none"><li>Know that vector drawings are made using shapes</li><li>Know how to experiment with the shape and line tools</li><li>Know how vector drawings are different from paper-based drawings</li><li>Know the shapes used to make a vector drawing</li><li>Know that each element added to a vector drawing is an object</li><li>Know how to move, resize, and rotate objects I have duplicated</li></ul>	<ul style="list-style-type: none"><li>Know the similarities and differences between 2D and 3D shapes</li><li>Know why we might represent 3D objects on a computer</li><li>Know how to select, move, and delete a digital 3D shape</li><li>Know how graphical objects can be modified</li><li>Know how to resize a 3D object</li><li>Know how to change the colour of a 3D object</li></ul>

<ul style="list-style-type: none"> <li>orientation' means.</li> <li>Know how to recognise placeholders and say why they are important.</li> <li>Know how to create a template for a particular purpose.</li> <li>Know how to add content to a desktop publishing publication.</li> <li>Know how to choose the best locations for my content.</li> <li>Know how to paste text and images to create a magazine cover.</li> <li>Know how to make changes to content after I've added it.</li> <li>Know how different layouts can suit different purposes</li> <li>Know how to identify different layouts.</li> <li>Know how to match a layout to a purpose.</li> <li>Know how to choose a suitable layout for a given purpose.</li> <li>Know the benefits of desktop publishing</li> <li>Know how to identify the uses of desktop publishing in the real world.</li> <li>Know how to say why desktop publishing might be helpful.</li> <li>Know how to compare work made on desktop publishing to work created by hand.</li> </ul>	<ul style="list-style-type: none"> <li>Know and talk about changes made to images</li> <li>Know how to use effects to make my image fit a scenario</li> <li>Know why my choices fit a scenario</li> <li>Know how an image has been retouched</li> <li>Know examples of positive and negative effects that retouching can have on an image</li> <li>Know appropriate tools to retouch an image</li> <li>Know how to sort images into 'fake' or 'real' and explain my choices</li> <li>Know how to combine parts of images to create new images</li> <li>Know the effect of adding other elements to my work</li> <li>Know to compare the original image with my completed publication</li> <li>Know to evaluate the impact of my publication on others through feedback</li> </ul>	<ul style="list-style-type: none"> <li>Know how to use the zoom tool to help me add detail to my drawings</li> <li>Know how alignment grids and resize handles can be used to improve consistency</li> <li>Know how to modify objects to create a new image</li> <li>Know that each added object creates a new layer in the drawing</li> <li>Know how to change the order of layers in a vector drawing</li> <li>Know how to use layering to create an image</li> <li>Know how to copy part of a drawing by duplicating several objects</li> <li>Know how to recognise when I need to group and ungroup objects</li> <li>Know how to reuse a group of objects to further develop my vector drawing</li> <li>Know how to create a vector drawing for a specific purpose</li> <li>Know to reflect on the skills I have used and why I have used them</li> <li>Know how to compare vector drawings to freehand paint drawings</li> </ul>	<ul style="list-style-type: none"> <li>Know how to rotate a 3D object</li> <li>Know how to position 3D objects in relation to each other</li> <li>Know how to select and duplicate multiple 3D objects</li> <li>Know how to identify the 3D shapes needed to create a model of a real-world object</li> <li>Know how to create digital 3D objects of an appropriate size</li> <li>Know how to group a digital 3D shape and a placeholder to create a hole in an object</li> <li>Know to plan my 3D model</li> <li>Know which 3D objects I need to construct my model</li> <li>Know how to modify multiple 3D objects</li> <li>Know how my model can be improved</li> <li>Know to modify my model to improve it</li> <li>Know to evaluate my model against a given criterion</li> </ul>
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#### Key knowledge acquired throughout this unit

- Know and identify simple differences in pieces of music
- Know to listen with concentration to a range of music (links to the Music curriculum)
- Know how music makes me feel, e.g. happy or sad
- Know how to create a rhythm pattern
- Know how to play an instrument following a rhythm pattern
- Know how to explain that music is created and played by humans
- Know how to connect images with sounds
- Know how to use a computer to experiment with pitch and duration
- Know to relate an idea to a piece of music
- Know that music is a sequence of notes

- Know how to use a computer to create a musical pattern using three notes
- Know how to describe an animal using sounds
- Know to explain my choices
- Know how to save my work
- Know to refine my musical pattern on a computer
- Know how to reopen my work
- Know to explain how I made my work better
- Know to listen to music and describe how it makes me feel

### Subject knowledge and teacher guidance

- You should be familiar with *The Planets* by Gustav Holst:
  - BBC Ten Pieces (includes video recordings of the suite and music/digital art lesson plan ideas): [www.bbc.co.uk/programmes/articles/14ZjT5yjnKQRdKVsqRLzk1x/mars-from-the-planets-by-gustav-holst](http://www.bbc.co.uk/programmes/articles/14ZjT5yjnKQRdKVsqRLzk1x/mars-from-the-planets-by-gustav-holst)
  - Gustav Holst's 'The Planets': a guide – Classic FM: [www.classicfm.com/composers/holst/pictures/holsts-planets-guide](http://www.classicfm.com/composers/holst/pictures/holsts-planets-guide)
  - Learning to Listen: Gustav Holst's 'The Planets' – YourClassical: [www.yourclassical.org/story/2014/02/10/gustav-holst-the-planets-on-learning-to-listen](http://www.yourclassical.org/story/2014/02/10/gustav-holst-the-planets-on-learning-to-listen)
- You should also be familiar with musical terminology:
  - BBC: [www.bbc.co.uk/bitesize/subjects/zwxhfg8](http://www.bbc.co.uk/bitesize/subjects/zwxhfg8)
  - BBC Bitesize video (pulse and rhythm): [www.bbc.co.uk/bitesize/clips/zmqn34j](http://www.bbc.co.uk/bitesize/clips/zmqn34j)
- You should be familiar with Chrome Music Lab ([musiclab.chromeexperiments.com/About](http://musiclab.chromeexperiments.com/About)), including:
  - The Song Maker tool ([musiclab.chromeexperiments.com/Song-Maker](http://musiclab.chromeexperiments.com/Song-Maker))
  - Saving and opening work in Chrome Music Lab

#### The Planets

- Gustav Holst wrote music to make us think and feel different things
- He named his pieces of music after the planets

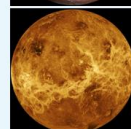


#### The Planets

*Mars, the Bringer of War* was written about Mars, who is the Roman god of War.

*Venus, the Bringer of Peace* was written about Venus, who is the Roman goddess of love and beauty.

- Which piece is which?
- What clues help you?

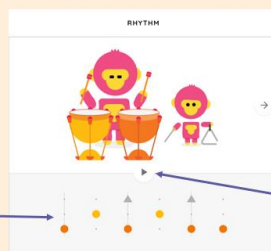


#### Pulse and rhythm

**Pulse** is a steady beat, like a ticking clock or your heartbeat.

**Rhythm** is a pattern of long and short sounds.

#### Explore pulse and rhythm



Explore other instruments

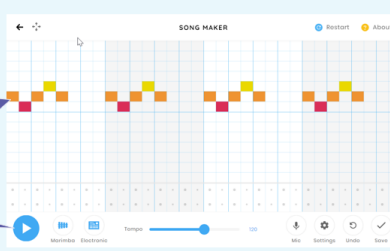
Play

Each line has three instruments

#### Musical patterns

Click on a blank rectangle on the grid to add a **note**. Click on it again to remove it.

Click to play the music.



#### Create a rhythm for your animal

Create a rhythm pattern here.

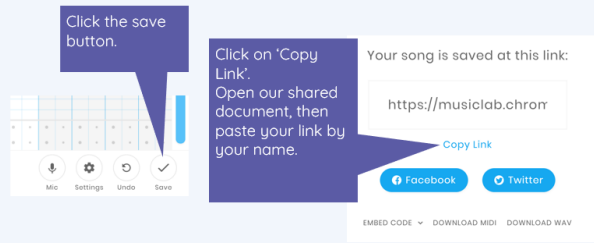
Choose a rhythm instrument.

Drag the blue circle by 'Tempo' to change how fast the notes play.





### Chrome Music Lab: Save your work



### Subject specific vocabulary and definitions (Tier 3 vocabulary)

Pulse	Steady beat/ Musical heartbeat
Rhythm	Pattern of long and short sounds
Tempo	How fast or slow a piece of music is.

### Medium Term Planning

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
To say how music can make us feel	To identify that there are patterns in music	To describe how music can be used in different ways	To show how music is made from a series of notes	To create music for a purpose	To review and refine our computer work

Year 2 – Summer 1		Unit 5 – Robot algorithms	
National Curriculum			
<ul style="list-style-type: none"><li>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</li><li>Create and debug simple programs</li><li>Use logical reasoning to predict the behaviour of simple programs</li></ul>			
Unit Overview			
<p>This unit develops pupils’ understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Pupils will use given commands in different orders to investigate how the order affects the outcome. Pupils will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.</p> <p>There are two Year 2 programming units:</p> <ul style="list-style-type: none"><li>Programming A – Robot algorithms</li><li>Programming B – Programming quizzes</li></ul> <p>This is unit A, which should be delivered before unit B.</p>			
Previous Knowledge acquired – Year 1			
<ul style="list-style-type: none"><li>I can predict the outcome of a command on a device</li><li>Know how to match a command to an outcome</li><li>Know how to run a command on a device</li><li>Know how to follow an instruction</li><li>Know how to recall words that can be acted out</li><li>Know how to give directions</li><li>Know how to compare forwards and backwards movements</li><li>Know to start a sequence from the same place</li><li>I can predict the outcome of a sequence involving forwards and backwards commands</li><li>Know to compare left and right turns</li><li>Know how to experiment with turn and move commands to move a robot</li><li>I can predict the outcome of a sequence involving up to four commands</li><li>Know how to what my program should do</li><li>Know how to choose the order of commands in a sequence</li><li>Know how to debug my program</li><li>Know to identify several possible solutions</li><li>Know how to plan two programs</li><li>Know how to use two different programs to get to the same place</li></ul>			
Progression of knowledge throughout the Computing curriculum – Programming A			
Year 3	Year 4	Year 5	Year 6

<ul style="list-style-type: none"> <li>• Know all the objects in a Scratch project (sprites, backdrops)</li> <li>• Know that objects in Scratch have attributes (linked to)</li> <li>• Know that commands in Scratch are represented as blocks</li> <li>• Know that each sprite is controlled by the commands I choose</li> <li>• Know a word which describes an on-screen action for my design</li> <li>• Know how to create a program following a design</li> <li>• Know how to start a program in different ways</li> <li>• Know how to create a sequence of connected commands</li> <li>• Know how to explain that the objects in my project will respond exactly to the code</li> <li>• Know how to explain what a sequence is</li> <li>• Know how to combine sound commands</li> <li>• Know how to order notes into a sequence</li> <li>• Know how to build a sequence of commands</li> <li>• Know how to decide the actions for each sprite in a program</li> <li>• Know how to make design choices for my artwork</li> <li>• Know the names of the objects I will need for a project</li> <li>• Know how to relate a task description to a design</li> <li>• Know how to implement my algorithm as code</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to program a computer by typing commands</li> <li>• Know the effect of changing a value of a command</li> <li>• Know how to create a code snippet for a given purpose</li> <li>• Know how to use a template to draw what I want my program to do</li> <li>• Know how to write an algorithm to produce a given outcome</li> <li>• Know how to test my algorithm in a text-based language</li> <li>• Know examples of repetition in everyday tasks</li> <li>• Know how to identify patterns in a sequence</li> <li>• Know how to use a count-controlled loop to produce a given outcome</li> <li>• Know the effect of changing the number of times a task is repeated</li> <li>• Know to predict the outcome of a program containing a count-controlled loop</li> <li>• Know how to choose which values to change in a loop</li> <li>• Know where there are 'chunks' of actions in the real world</li> <li>• Know how to use a procedure in a program</li> <li>• Know that a computer can repeatedly call a procedure</li> <li>• Know how to design a program that includes count-controlled loops</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to build a simple circuit to connect a microcontroller to a computer</li> <li>• Know how to program a microcontroller to light an LED</li> <li>• Know and explain why I used an infinite loop</li> <li>• Know how to connect more than one output device to a microcontroller</li> <li>• Know how to design sequences for given output devices</li> <li>• Know which output devices I control with a count-controlled loop</li> <li>• Know that a condition is something that can be either true or false (eg whether a value is more than 10, or whether a button has been pressed)</li> <li>• Know to experiment with a 'do until' loop</li> <li>• Know how to program a microcontroller to respond to an input</li> <li>• Know that a condition being met can start an action</li> <li>• Know how to identify a condition and an action in my project</li> <li>• Know how to use selection (an 'if... then...' statement) to direct the flow of a program</li> <li>• Know how to identify a condition to start an action (real world)</li> <li>• Know and describe what my project will do (the task)</li> <li>• Know how to create a detailed drawing of my project</li> <li>• Know how to write an algorithm to control lights and a motor</li> <li>• Know to use selection to produce an intended outcome</li> <li>• Know how to test and debug my project</li> </ul>	<ul style="list-style-type: none"> <li>• Know examples of information that is variable</li> <li>• Know that the way that a variable changes can be defined</li> <li>• Know that variables can hold numbers or letters</li> <li>• Know to identify a program variable as a placeholder in memory for a single value</li> <li>• Know that a variable has a name and a value</li> <li>• Know that the value of a variable can be changed</li> <li>• Know where in a program to change a variable</li> <li>• Know to make use of an event in a program to set a variable</li> <li>• Know that the value of a variable can be used by a program</li> <li>• Know how to choose the artwork for my project</li> <li>• Know to explain my design choices</li> <li>• Know how to create algorithms for my project</li> <li>• Know how to create the artwork for my project</li> <li>• Know to choose a name that identifies the role of a variable</li> <li>• Know how to test the code that I have written</li> <li>• Know ways that my game could be improved</li> <li>• Know how to extend my game further using more variables</li> <li>• Know how to share my game with others</li> </ul>
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	<ul style="list-style-type: none"> <li>• Know how to make use of my design to write a program</li> <li>• Know how to develop my program by debugging it</li> </ul>		
<b>Key knowledge acquired throughout this unit</b>			
<ul style="list-style-type: none"> <li>• Know how to follow instructions given by someone else</li> <li>• Know how to choose a series of words that can be enacted as a sequence</li> <li>• Know to give clear and unambiguous instructions</li> <li>• Know how to create different algorithms for a range of sequences (using the same commands)</li> <li>• Know how to use an algorithm to program a sequence on a floor robot</li> <li>• Know to show the difference in outcomes between two sequences that consist of the same commands</li> <li>• Know to follow a sequence</li> <li>• Know to predict the outcome of a sequence</li> <li>• Know to compare my prediction to the program outcome</li> <li>• Know to explain the choices I made for my mat design</li> <li>• Know to identify different routes around my mat</li> <li>• Know how to test my mat to make sure that it is usable</li> <li>• Know to explain what my algorithm should achieve</li> <li>• Know how to create an algorithm to meet my goal</li> <li>• Know how to use my algorithm to create a program</li> <li>• Know how to plan algorithms for different parts of a task</li> <li>• Know to test and debug each part of the program</li> <li>• Know to put together the different parts of my program</li> </ul>			
<b>Subject knowledge and teacher guidance</b>			
<p>This unit focuses on developing pupils' understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading 'code' to predict what a program will do. Pupils will engage in aspects of program design, including outlining the project task and creating algorithms.</p> <p>When programming, there are four levels that can help describe a project, known as 'levels of abstraction'. Research suggests that this structure can support pupils in understanding how to create a program and how it works:</p> <ul style="list-style-type: none"> <li>• Task — what is needed</li> <li>• Design — what it should do</li> <li>• Code — how it is done</li> <li>• Running the code — what it does</li> </ul> <p>Spending time at the task and design levels before engaging in writing code aids pupils in assessing the achievability of their programs and reduces the cognitive load for pupils during programming.</p>			

Pupils will move between the different levels throughout the unit, and this is highlighted within each lesson plan.

### Robots follow instructions

Robots have a computer inside.  
Robots do what we want because they follow instructions. They don't make any choices themselves.

How do you give a robot instructions?



### Programming and artwork

Computer programs can be more than just code.

The games console has lots of artwork on the screen.



The painting program has small pictures that are buttons to click.



### Subject specific vocabulary and definitions (Tier 3 vocabulary)

Algorithm	A precise set of ordered steps (that can be followed by a human or a computer to achieve a task.)
Command	A single instruction (that can be used in a program to control a computer.)
Program	A set of ordered commands (that can be run by a computer to complete a task.)
Route	A way from one place to another.
Debug	Finding and correcting errors (in a program)

### Medium Term Planning

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
To describe a series of instructions as a sequence	To explain what happens when we change the order of instructions	To use logical reasoning to predict the outcome of a program (series of commands)	To explain that programming projects can have code and artwork	To design an algorithm	To create and debug a program that I have written

Year 2 – Summer 2		Unit 6 – An Introduction to quizzes	
National Curriculum			
<ul style="list-style-type: none"><li>Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</li><li>Create and debug simple programs</li><li>Use logical reasoning to predict the behaviour of simple programs</li><li>Use technology purposefully to create, organise, store, manipulate, and retrieve digital content</li></ul>			
Unit Overview			
<p>This unit initially recaps on learning from the Year 1 ScratchJr unit ‘Programming B – Programming animations’. Learners begin to understand that sequences of commands have an outcome and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects.</p> <p>There are two Year 2 programming units:</p> <ul style="list-style-type: none"><li>Programming A – Robot algorithms</li><li>Programming B – Programming quizzes</li></ul> <p>This is unit B, which should be delivered after unit A.</p>			
Previous Knowledge acquired – Year 1			
<ul style="list-style-type: none"><li>I can find the commands to move a sprite</li><li>I can use commands to move a sprite</li><li>I can compare different programming tools</li><li>I can use more than one block by joining them together</li><li>I can use a <b>Start</b> block in a program</li><li>I can run my program</li><li>I can find blocks that have numbers</li><li>I can change the value</li><li>I can say what happens when I change a value</li><li>I can show that a project can include more than one sprite</li><li>I can delete a sprite</li><li>I can add blocks to each of my sprites</li><li>I can choose appropriate artwork for my project</li><li>I can decide how each sprite will move</li><li>I can create an algorithm for each sprite</li><li>I can use sprites that match my design</li><li>I can add programming blocks based on my algorithm</li><li>I can test the programs I have created</li></ul>			
Progression of knowledge throughout the Computing curriculum – Programming B			
Year 3	Year 4	Year 5	Year 6

<ul style="list-style-type: none"> <li>• Know the relationship between an event and an action</li> <li>• Know which keys to use for actions and explain my choices</li> <li>• Know a way to improve a program</li> <li>• Know a suitable size for a character in a maze</li> <li>• Know how to program movement</li> <li>• Know how to use a programming extension</li> <li>• Know to consider the real world when making design choices</li> <li>• Know which blocks to use to set up my program</li> <li>• Know additional features (from a given set of blocks)</li> <li>• Know suitable keys to turn on additional features</li> <li>• Know how to build more sequences of commands to make my design work</li> <li>• Know how to test a program against a given design</li> <li>• Know how to match a piece of code to an outcome</li> <li>• Know how to modify a program using a design</li> <li>• Know to make design choices and justify them</li> <li>• Know how to implement my design</li> <li>• Know to evaluate my project</li> </ul>	<ul style="list-style-type: none"> <li>• Know an everyday task as a set of instructions including repetition</li> <li>• Know to predict the outcome of a snippet of code</li> <li>• Know how to modify a snippet of code to create a given outcome</li> <li>• Know how to modify loops to produce a given outcome</li> <li>• Know when to use a count-controlled and an infinite loop</li> <li>• Know that some programming languages enable more than one process to be run at once</li> <li>• Know which action will be repeated for each object</li> <li>• Know what the outcome of the repeated action should be</li> <li>• Know to evaluate the effectiveness of the repeated sequences used in my program</li> <li>• Know which parts of a loop can be changed</li> <li>• Know the effect of my changes</li> <li>• Know to re-use existing code snippets on new sprites</li> <li>• Know to evaluate the use of repetition in a project</li> </ul>	<ul style="list-style-type: none"> <li>• Know how conditions are used in selection</li> <li>• Know how to identify conditions in a program</li> <li>• Know how to modify a condition in a program</li> <li>• Know how to use selection in an infinite loop to check a condition</li> <li>• Know to identify the condition and outcomes in an 'if... then... else...' statement</li> <li>• Know how to create a program with different outcomes using selection</li> <li>• Know that program flow can branch according to a condition</li> <li>• Know how to design the flow of a program which contains 'if... then... else...'</li> <li>• Know that a condition can direct program flow in one of two ways</li> <li>• Know how to outline a given task</li> <li>• Know how to use a design format to outline my project</li> <li>• Know how to identify the outcome of user input in an algorithm</li> <li>• Know how to implement my algorithm to create the first section of my program</li> <li>• Know how to test my program</li> <li>• Know how to share my program with others</li> <li>• Know to identify ways the program could be improved</li> <li>• Know how to identify the setup code I need in my program</li> <li>• Know how to extend my program further</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to apply my knowledge of programming to a new environment</li> <li>• Know how to test my program on an emulator</li> <li>• Know how to transfer my program to a controllable device</li> <li>• Know how to identify examples of conditions in the real world</li> <li>• Know to use a variable in an if, then, else statement to select the flow of a program</li> <li>• Know how to determine the flow of a program using selection</li> <li>• Know to use a condition to change a variable</li> <li>• Know how to experiment with different physical inputs</li> <li>• Know that if you read a variable, the value remains</li> <li>• Know the importance of the order of conditions in else, if statements</li> <li>• Know how to use an operand (e.g. &lt;=&gt;) in an if, then statement</li> <li>• Know how to modify a program to achieve a different outcome</li> <li>• Know what variables to include in a project</li> <li>• Know how to design the algorithm for my project</li> <li>• Know how to design the program flow for my project</li> <li>• Know how to create a program based on my design</li> <li>• Know how to test my program against my design</li> <li>• Know to use a range of approaches to find and fix bugs</li> </ul>
Key knowledge acquired throughout this unit			

- Know where the start of a sequence is
- Know that a program needs to be started
- Know how to run my program
- Know to predict the outcome of a sequence of commands
- Know how to match two sequences with the same outcome
- Know how to change the outcome of a sequence of commands
- Know how to work out the actions of a sprite in an algorithm
- Know which blocks to use to meet the design
- Know how to build the sequences of blocks I need
- Know how to choose backgrounds for the design
- Know how to choose characters for the design
- Know how to create a program based on the new design
- Know how to choose the images for my own design
- Know how to create an algorithm
- Know how to build sequences of blocks to match my design
- Know how to compare my project to my design
- Know how to improve my project by adding features
- Know how to debug

#### **Subject knowledge and teacher guidance**

This unit focuses on developing learners' understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading 'code' to predict what a program will do. Learners will engage in aspects of program design, including outlining the project task and creating algorithms.

When programming, there are four levels that can help describe a project, known as Levels of abstraction. Research suggests that this structure can support learners in understanding how to create a program and how it works:

Task – what is needed

Design – what it should do

Code – how it is done

Running the code – what it does

Spending time at the 'task' and 'design' levels before engaging in code-writing aids learners in assessing the achievability of their programs, and reduces a learner's cognitive load during programming.

Learners will move between the different levels throughout the unit, and this is highlighted within each lesson plan.



## ScratchJr hunt

Where would you add a new sprite?



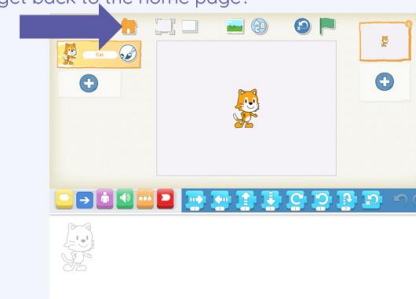
## ScratchJr hunt

Where would you change the background?



## ScratchJr hunt

How do you get back to the home page?



Question	Background	Sprite	1. Start on tap	2. Yes or No	3. Stop or change to background?
Who lives here?			Tap cat	Say "No"	Stop
			Tap fish	Say "Yes"	Change to empty room background
Who lives here?			Tap cat	Say "Yes"	Change to jungle background
			Tap fish	Say "No"	Stop

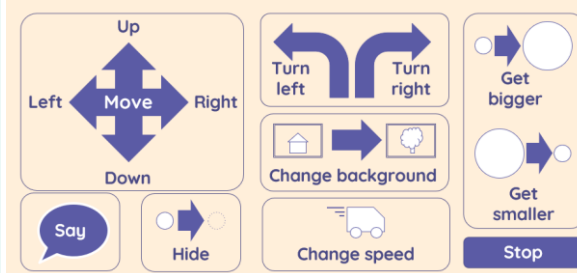
This is a design used to create a quiz question in ScratchJr.

## Programming multiple sprites

If you are using multiple sprites, you need to make sure you are programming the right one.



## What actions will your sprites do?



## Subject specific vocabulary and definitions (Tier 3 vocabulary)

Block	Small pieces of programme that can be stuck together to form a sequence
Project	A task
Debug	Finding and correcting errors (in a program)
Commands	A single instruction (that can be used in a program to control a computer.)
Backdrop	Scenery at the back of the project
Algorithm	A precise set of ordered steps (that can be followed by a human or a computer to achieve a task.)

## Medium Term Planning

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
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