

## Medium Term Plan

### Year 1 Computing Overview

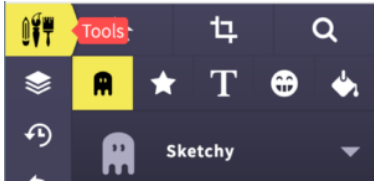
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Strands	Computer Network & Systems	Programming	Skills Showcase	Programming	Creating Media	Data Handling
Topic	Improving Mouse Skills	Algorithms Unplugged	Rocket to the Moon	Bee Bots	Digital Imagery	Introduction to Data

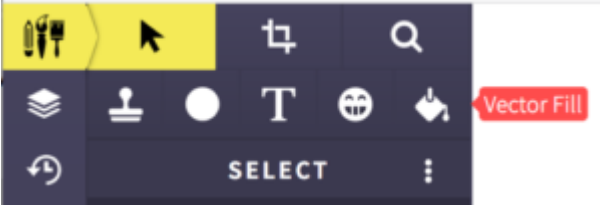
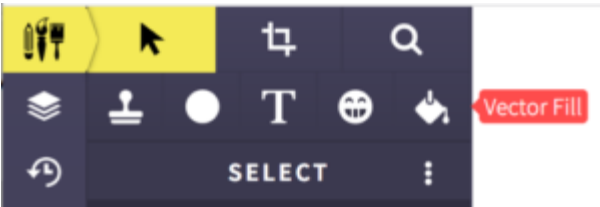
#### Key stage 1 Pupils should be taught to:

- ✓ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- ✓ Create and debug simple programs
- ✓ Use logical reasoning to predict the behaviour of simple programs
- ✓ Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- ✓ Recognise common uses of information technology beyond school
- ✓ 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.

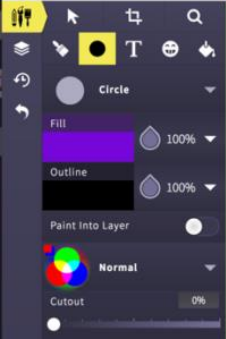
Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
<p>Mouse Skills – <b>Computer Network</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Use technology 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</li> </ul>	<ul style="list-style-type: none"> <li>▪ To know that “log in” means to begin and end a connection with a computer</li> <li>▪ To know that a computer and a mouse can be use to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.</li> <li>▪ To know that passwords are important for security.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To log into a computer and access a website</li> <li>▪ To develop mouse skills</li> <li>▪ I can use mouse skills to draw and manipulate shapes</li> <li>▪ To use a range of tools to create desired effects</li> <li>▪ To understand how to layer shapes to create an image</li> </ul>	<p>Web Browser</p> <p>Sketch Pad</p>	<p><u>RSE</u></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• the rules and principles for keeping safe online, how to recognise risks, harmful content and contact, and how to report them</li> <li>• about the concept of privacy and the implications of it for both children and adults</li> </ul> <p><u>Art</u></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Learn about the work of a range of artists, craft makers and designers, describing the differences and</li> </ul>	<ul style="list-style-type: none"> <li>• Log in</li> <li>• Login</li> <li>• Log off</li> <li>• Computer</li> <li>• Mouse</li> <li>• Mouse pointer</li> <li>• Click</li> <li>• Keyboard</li> <li>• Screen</li> <li>• Password</li> <li>• Account</li> <li>• Software</li> <li>• Sketchpad</li> <li>• Clipart</li> <li>• Tools</li> <li>• Brushes</li> <li>• Eraser</li> <li>• Predict</li> <li>• Explore</li> <li>• Explain</li> </ul>

				similarities between different practices and disciplines	
Lesson		Success Criteria	Lesson Outline		Differentiation & Key Questions
Lesson 1		<p>I can recognise what we mean by a computer</p> <p>I understand why we need to log in to a computer</p> <p>I can log in and log out of an account on my computer</p>	<p><b>Logging in</b></p> <p>Ask the children what items they can think of that are password protected (phones, computers, tablets, etc). Ask why we might need password protection on our computers (to keep things safe or to stop someone else from accessing our information). Explain that we also use accounts to help organise what information people have access to and to make it easy to save work to a secure space.</p> <p>In pairs, ask the children to discuss why they should always ask a trusted adult before sharing information about themselves online? Take feedback from the class and steer the conversation to the importance of not sharing information with people that we do not know, and this includes passwords, images and information such as our address.</p> <p>Explain that at school we all have accounts that we can log into so that we can keep our work separate from everyone else's. If you are using a 'class' account, for example, 'Year 1F', explain that they will have personal accounts when they are older.</p>		<p><b>Pupils needed extra support:</b> Encourage the children to stick to brushes before moving on to shapes. Let the children get comfortable with using the mouse to 'left' click. Let them navigate the mouse pointer to the icons they are looking for. The children might need help recognising letters: the keyboard only shows capital letters, and they may only recognise lowercase. Support pupils with fine motor control issues in using the mouse carefully.</p>

			<p>Demonstrate how to log in. Give the pupils a printout of their login information. For the rest of the lesson, the children will explore Sketchpad. Show the children how to select different brushes within the software and see if they can figure out what each one does. For now,</p>  <p>ensure pupils stay on the 'Tools' tab in the top left of the site.</p> <p>Encourage the children to test out each tool, thinking about the following skills:</p> <ul style="list-style-type: none"> <li>• <b>Predict</b> – thinking about what they're going to do first</li> <li>• <b>Explore</b> – trying it out</li> <li>• <b>Explain</b> – seeing if they were right</li> </ul>	<p><b>Pupils working at greater depth:</b> Encourage pupils to explore more complex tools such as 'Clipart' or some of the sliding scales under the 'Shapes' toolkit.</p> <p><b>Key Questions</b></p> <p>What items can you think of that are password protected? (Phones, computers, tablets, etc.)</p> <p>Why might we need passwords on our computers? (To keep things safe or to stop someone else from accessing our information.)</p>
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				<p>Can you choose different colours for your shapes?</p>
<p>Lesson 2</p>		<p>I can log in and log out of an account on my computer</p> <p>I can use Sketchpad to fill sections and stamp Clipart into place</p> <p>I can navigate a computer using a mouse</p> <p>I understand what we mean by drag and click</p>	<p>The key words this lesson are 'drag' and 'click', so emphasise them whenever you use them.</p> <p><b>Step 1: Create a background</b></p> <p>Change the background colour of the page in Sketchpad by clicking the 'Fill tool' icon and selecting 'Vector Fill'.</p>  <p><b>Step 2: Add Clipart stamps</b></p> <ul style="list-style-type: none"> <li>• Click on the smiley face – this represents Clipart.</li> <li>• Click on the arrow, which allows you to 'Choose Graphic'.</li> </ul> 	<p><b>Pupils needing extra support:</b> Should use only one Clipart file.</p> <p><b>Pupils working at greater depth:</b> Should use multiple Clipart files and investigate the other tools available in Sketchpad.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Which pictures did they like?</li> <li>• What tools were used to create each piece?</li> </ul>

			<p>Select an image from the Clipart bank.</p> <p>Hold down the mouse button and drag it across the screen to create your stamp.</p> <p>Move the mouse sideways whilst dragging to make the Clipart stamp bigger or smaller.</p> <p>Rotate the Clipart stamp by moving the mouse in a circle.</p> <p>Demonstrate moving a Clipart stamp by using the 'Select' tool. Clicking and dragging changes the stamp's position.</p> <p><b>Step 3: Undo button</b></p> <p>Show the children the 'Undo' button, which will 'undo' the most recent action.</p> <p>Get the children to demonstrate their understanding by opening a blank document in Sketchpad and talking you through changing the background colour and selecting a Clipart stamp.</p> <p>Ask the children to create their own repeating pattern using stamps and a coloured background.</p> <p><b>Step 4: Duplicating Clipart stamps</b></p> <p>Once the children are comfortable creating Clipart stamps, demonstrate how to duplicate an image to make an exact copy.</p>	
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<p>Lesson 3</p>		<p>I can log into a computer</p> <p>I can click and drag objects to change their size or position</p> <p>I can use a mouse to carefully position shapes</p> <p>I can move shapes in front of or behind each other</p>	<p>We use “Sketchpad” to create some work in the style of Wassily <b>Kandinsky</b></p> <ul style="list-style-type: none"> <li>• Follow the link: “Wiki Art – Squares with concentric circles by Wassily Kandinsky”.</li> <li>• Ask the children what they can see (the key features are circles within circles and lots of different colours).</li> <li>• Pupils may point out that there are squares around each set of circles, these could be used as an extension activity.</li> </ul> <p>Show slide 9. We will focus on the ‘Shape’ tool. We used the ‘Fill’ tool to change the background of our page.</p> <ul style="list-style-type: none"> <li>• Ask the children if they can remember how to change the background of their work.</li> <li>• Demonstrate this on the board.</li> </ul>  <p>Demonstrate the ‘Shape Selection’ tool to select a circle.</p>	<p><b>Pupils needing extra support:</b> Stick to circles and think carefully about colours used. Aim to draw at least three circles one inside the other.</p> <p><b>Pupils working at greater depth:</b> Should be challenged to describe shapes without looking at them. Should consider drawing squares to go behind circles to make the artwork more like Kandinsky and to try and adjust the position of the squares to place them at the back of the artwork.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Can you remember</li> </ul>
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			<ul style="list-style-type: none"> <li>• Remind the children that they can hold down the mouse button and drag the circle to be any size.</li> <li>• Ask the children what they think 'Fill' and 'Outline' mean. The 'Shape' tool enables us to alter both the colour of the inside of the shape and the colour of the line around the outside.</li> </ul> <p>Using the 'Shape' tool:</p> <ul style="list-style-type: none"> <li>• Demonstrate drawing circles of different sizes and colours, starting with a large circle and making the rest gradually smaller.</li> <li>• Explain that using 'drag and drop' we can move an object from one place to another.</li> <li>• Tell the children that 'drag and drop' means we hold down the mouse button over the object we want to move.</li> <li>• Then the show the children that by carefully moving the mouse whilst holding down the button, we can move the shape until we are happy with the new position.</li> </ul> <p>Demonstrate placing circles on top of each other to build up your shape, pointing out the need to draw the biggest circle first before then adding smaller circles on top.</p> <p>Once the children have drawn their coloured circles and understood how to drag and drop them on top of each other, they can try other shapes.</p>	<p>how to change the background of your page?</p> <ul style="list-style-type: none"> <li>• What do you think 'Fill' and 'Outline' mean?</li> </ul>
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			<p>When building up layers of shapes you may find that the top shape hides all the others. For your more confident children, you could explain how to bring a shape to the front or send a shape to the back:</p> <ul style="list-style-type: none"> <li>• Press 'Right click' (or ctrl click) to bring up the menu.</li> <li>• Select 'Bring to front'- this will bring the shape in front of the other shapes or 'Send to Back'- which will do the opposite.</li> </ul> <p>If the children are struggling with this, investigate the 'Layers' tab, which allows you to drag and drop objects to different layers of the artwork</p>	
Lesson 4		<p>I can log into a computer</p> <p>I can identify key aspects from a story for my illustration</p> <p>I can use drag and drop to resize and reposition objects</p> <p>I can use a variety of digital painting tools to create different effects</p>	<p>Display slides 3 to 19 of the <i>Presentation: Drawing a story</i>, then:</p> <ul style="list-style-type: none"> <li>• Read the story of the 'Three Little Pigs'.</li> <li>• Discuss the key features of the story.</li> <li>• Ask the children about any images that came to mind whilst going through the story.</li> </ul> <p>Explain that the children will be drawing pictures of scenes from the story. The children will need to think about the paintbrushes that they will use to create the different textures, for example: 'Sketchy', 'Fur' and 'Web' might be useful for creating the straw house.</p> <p>Show the <i>Three Little Pigs image</i>. Discuss the different tools used:</p>	<p><b>Pupils needing extra support:</b> Should focus on a specific house, such as the house of straw. Keep objects within the scene simple. Might benefit from working with a more confident partner.</p> <p><b>Pupils working at greater depth:</b> Encourage pupils to save their work and create a second scene</p>

			<ul style="list-style-type: none"> <li>• The clouds have been drawn using a different brush size to the hills (the hills were drawn using a larger brush).</li> <li>• The straw house is textured differently from the hills (the house has been drawn using the 'Fur' brush).</li> <li>• Ask children how they think the path was created? (using the 'Stamp' brush).</li> </ul> <p>Before the children work independently in Sketchpad model:</p> <ul style="list-style-type: none"> <li>• Changing the brush by dragging the 'Size' scale, explain that: <ul style="list-style-type: none"> <li>○ using a small brush enables the children to add detail.</li> <li>○ a big brush allows the children to colour in the backgrounds quickly.</li> </ul> </li> <li>• Drawing or pasting Clipart images of the characters, these are added last so that the children do not have to move objects using layers.</li> </ul>	<p>reflecting a different part of the story.</p> <p><b>Key Questions</b> What types of paintbrushes will you use and why?</p>
Lesson 5		<p>I can identify key features of my face, breaking it down into simple shapes</p> <p>I can use click and drag to create and layer simple shapes</p>	<p>The children are now going to draw self-portraits using Sketchpad. Ask the children to log in to their computers, as they learned in some children may still need support.</p> <p>Hand out mirrors or set up computers to take a photograph of each child.</p>	<p><b>Pupils needing extra support:</b> Provide shapes made out of coloured paper to help the children consider the different shapes and colours they will need, and the order</p>

		<p>I can use different tools to create a desired effect</p> <p>I can resize, reposition and change the order of shapes</p>	<p>The children choose tools to create their self-portraits. Ask the children to suggest which tools in Sketchpad could be used to draw each facial feature:</p> <ul style="list-style-type: none"> <li>• For the face shape, we could use the 'Shape' tool to draw an oval (called an ellipse on Sketchpad).</li> <li>• The 'Fur' brush could be used for hair.</li> <li>• The 'Pencil' tool could be used to draw big circles for eyes.</li> </ul> <p>The children should use the list of the similarities and differences which they made at the start of the lesson. Encourage the children to suggest tools or ask each other how to access certain tools.</p>	<p>in which they should layer them (for example, large oval, small brown/blue circles).</p> <p><b>Pupils working at greater depth:</b> Encourage pupils to use a variety of tools to make their self-portrait more interesting. Could they also draw a picture of their friend, teacher or family member</p> <p><b>Key Questions</b></p> <p>Which tools could we use to draw each facial feature?</p>
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Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
<p>Algorithms Unplugged – Programming</p> <p>Pupils should be taught to:</p> <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</li> </ul>	<ul style="list-style-type: none"> <li>▪ To understand that an algorithm is when instructions are put in an exact order.</li> <li>▪ To know that input devices get information into a computer and that output devices get information out of a computer.</li> <li>▪ To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To understand what an algorithm is</li> <li>▪ To follow instructions precisely to carry out an action</li> <li>▪ To understand that computers and devices around us use inputs and outputs</li> <li>▪ To understand and be able to explain what decomposition is</li> </ul>	<p>Web Browser</p>	<p><u>English</u></p> <p>Pupils should be taught to write sentences by:</p> <ul style="list-style-type: none"> <li>• saying out loud what they are going to write about</li> <li>• composing a sentence orally before writing it</li> <li>• sequencing sentences to form short narratives</li> <li>• re-reading what they have written to check that it makes sense</li> <li>• discuss what they have written with the teacher or other pupils</li> </ul>	<ul style="list-style-type: none"> <li>• Algorithm</li> <li>• Instructions</li> <li>• Computer</li> <li>• Tasks</li> <li>• Order</li> <li>• Instructions</li> <li>• Specific</li> <li>• Solution</li> </ul>

simple programs	<ul style="list-style-type: none"> <li>▪ To know that we call errors in an algorithm “bugs” and fixing these is “debugging”.</li> </ul>			
Lesson		Success Criteria	Lesson Outline	Differentiation & Key Questions
Lesson 1	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I can explain that an algorithm is a set of instructions to carry out a task</li> <li>• I know that these instructions need to be carried out in a specific order</li> <li>• I know that computers use algorithms to help them carry out tasks correctly</li> <li>• I can show that there can be more than one solution to solve a problem</li> </ul>	<p><i>What is an algorithm?</i></p> <ul style="list-style-type: none"> <li>• Give each pair of children a set of cards and six blank cards from the <i>Activity: Crossing the road cards</i>.</li> <li>• Ask the children to put the cards into the correct order.</li> <li>• Challenge the children to write additional steps on the blank cards to add greater detail and precision to the instructions.</li> </ul> <p>The children must find out how detailed the instructions need to be. Ask the children:</p> <ul style="list-style-type: none"> <li>• Where should the person stop?</li> <li>• If they hear traffic, should the person still walk across the road?</li> <li>• What should they look both ways for?</li> <li>• What should they do if they spot cars or bicycles?</li> </ul> <p>Ask pupils to share the algorithms as a class and discuss:</p>	<p><b>Pupils needing extra support:</b> Give pupils the doll and clothes from the <i>Activity: Doll and clothes</i> already cut up.</p> <p><b>Pupils working at greater depth:</b> Should be challenged to work independently rather than in a group and should add more steps in their algorithm for the <i>Activity: Crossing the road</i>.</p> <p><b><u>Key Questions</u></b></p>

			<ul style="list-style-type: none"> <li>• Could any of the algorithms have been more detailed?</li> <li>• Were all steps necessary</li> </ul>	<p>What is an algorithm? (A set of instructions.)</p> <p>What algorithms do we use in our lives?</p> <p>Is there only one correct solution?</p> <p>How else can we solve the problem?</p>
Lesson 2	•	<ul style="list-style-type: none"> <li>• I can explain why an algorithm must be clear and precise</li> <li>• I can explain the problems a robot can have following our instructions</li> </ul>	<p>Ask pupils to turn to a partner and to explain what an algorithm is. If necessary, show the link: <a href="#">“BBC Bitesize KS1 – What is an algorithm?”</a> to help the children to improve their definitions.</p> <p>Show the children the link: to demonstrate an algorithm going wrong and to emphasise the importance of precise instructions.</p> <p><b>Drawing a figure together</b></p> <p>Display slide 5 of <i>Presentation: Algorithm pictures</i> and ask pupils to follow your algorithm (below), drawing on their whiteboards or paper. Emphasise that they <b>only</b> draw <b>exactly</b> what the instruction says:</p> <ul style="list-style-type: none"> <li>• Draw a large head</li> </ul>	<p><b>Pupils needing extra support:</b> May need instructions repeating and would benefit from working with a partner.</p> <p><b>Pupils working at greater depth:</b> Should sort the creatures into different groups</p>

			<ul style="list-style-type: none"> <li>• Draw a face</li> <li>• Draw two ears</li> <li>• Draw a neck</li> <li>• Draw a body</li> <li>• Draw five arms</li> <li>• Draw three legs</li> <li>• Draw three feet</li> </ul> <p>Ask the children to show what they have drawn at the same time. Feign shock that they are not the same. Ask pupils to help you to understand why they don't look the same. Ask how the algorithm could be improved so that they look similar.</p> <p>Group the drawings together according to the features that they have in common. Show your own version of the drawing.</p> <p><b>Creating a creature</b></p> <p>Show slide 7. Pupils work in pairs to complete a similar activity with dice and the <i>Activity: Body part table</i>. The children take it in turns to roll the dice and then draw what they roll. For example: if they roll a four- they draw arms. If they roll a six- they draw a tail.</p> <ul style="list-style-type: none"> <li>• one: head</li> <li>• two: body</li> <li>• three: face</li> <li>• four: arms</li> </ul>	<p>based upon similar features.</p> <p><b>Key Questions</b></p> <p>What is an algorithm?</p> <p>What is a bug and how can it cause problems in algorithms?</p> <p>How could the algorithm be improved so the drawings look similar?</p> <p>What key words or language make your instructions clearer to follow?</p>
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			<ul style="list-style-type: none"> <li>• five: legs</li> <li>• six: tail</li> </ul> <p>When the children have all had a few turns, stop the class. Ask the children how it is going. The children should report that if they repeatedly throw the same number, then their creature will have extra body parts, but if they don't throw some numbers, then their creature will be missing body parts.</p> <p>Discuss what the children must write as their algorithm to make a body (for example, they must re-throw the dice if they have already thrown a number or they must re-throw the dice until they have thrown a 2 for the body etc).</p> <p>Allow the children to write their algorithm and then to test it and amend their algorithms. Ask the children to think carefully about the language that they use. You will find that their algorithms become more precise over time.</p> <p>Ask for volunteers to share their algorithm with the class.</p>	
Lesson 3	•	• I can identify some input devices	Ask pupils to look around the classroom and point out any input or output devices which they can spot. Are there any buttons or switches? What do they control?	<b>Pupils needing extra support:</b> Suggest actions for the virtual assistant



		<ul style="list-style-type: none"> <li>• I can identify some output devices</li> <li>• I can identify some devices that are both input and output devices</li> </ul>	<p><b>Controlling your class</b></p> <p>Ask your class if they have heard of Siri, Alexa or Cortana. Explain that these are all examples of virtual assistants.</p> <p>Ask the children if they have ever had problems with these virtual assistants understanding them or following their instructions (or their parents' instructions). Point out that Siri, Alexa and Cortana are computers. Because they are computers, instructions need to be clear, and the virtual assistant may say that they do not understand what they have been asked to do.</p> <p>Explain that the children are going to be virtual assistants and must do what they are programmed to do by you. As a class, come up with a name for your virtual assistant.</p> <p>The children must respond when you speak to them. For example, let's call the virtual assistant 'Geoffrey':</p> <ul style="list-style-type: none"> <li>• Hey Geoffrey, when I clap, I want you to jump.</li> <li>• Hey Geoffrey, when I turn off the light, I want you to go to sleep.</li> <li>• Hey Geoffrey, when I say 'sing', I want you to sing 'Heads, Shoulders, Knees and Toes'.</li> </ul>	<p>program, such as close door, sing, jump, say "How can I help you?"</p> <p><b>Pupils working at greater depth:</b> Encourage them to identify other devices that can be both inputs and outputs (including devices they may see in the wider world around them).</p> <p><b>Key Questions</b></p> <p>What is a virtual assistant?</p> <p>How does the virtual assistant know when you require their</p>
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			<p>Explain that this is how you program your virtual assistant.</p> <p>Test your class virtual assistant and say:</p> <ul style="list-style-type: none"> <li>• Clap.</li> <li>• Turn the light off.</li> <li>• Sing.</li> </ul> <p><b>Programming their virtual assistant</b></p> <p>The children work in groups of three or four using the <i>Activity: Virtual assistant sheet</i> to plan what the virtual assistant will do. The children will then take it in turns to be the virtual assistant.</p> <p>Ask some of the groups to demonstrate their commands.</p>	<p>assistance? (Programmed by the user with a trigger, for example, a clap or voice command.)</p>
Lesson 4	•	• I can explain that decomposition is where you break a problem into small	<p>Model the process of designing and decomposing before the children work independently. Draw around several 2D shapes to create a picture. Then ask the pupils to tell you each of the steps you took to create this picture. Present these as diagrams or drawings.</p>	<p><b>Pupils needing extra support:</b> May need help holding shapes whilst drawing around them and should</p>

		<p>manageable chunks</p> <ul style="list-style-type: none"> <li>• I understand how decomposition allows you to solve a problem more easily</li> <li>• I can explain how we use decomposition in our everyday lives</li> </ul>	<p><b>Designing</b></p> <p>Ask pupils to design a picture, drawing around 2D shapes. Give the children a limit on the number of shapes that can be used.</p> <p><b>Decomposing</b></p> <p>Give each pupil a copy of the <i>Activity: Decomposition comic strip sheet</i>. Ask the children to break down their design. Draw it in step-by-step stages, so that someone else could recreate it. Remind the children that the more precise and detailed, the better. They may want to include labels, arrows or numbers.</p> <p><b>Matching challenge</b></p> <ul style="list-style-type: none"> <li>• Spread the children’s designs out around the room.</li> <li>• Give each pupil a decomposed version of someone else’s design.</li> <li>• Ask the children to follow it and to try to recreate the original design.</li> </ul> <p>The children go around the room to try to find the design which their drawing belongs to. Once the children think that they have found the matching design, they should check with the original pupil</p>	<p>be encouraged to make a simpler design with fewer shapes or stages.</p> <p><b>Pupils working at greater depth:</b> Should be encouraged to make a more complex design, reminding them that they will need to be able to record how it was designed</p> <p><b>Key Questions</b></p> <p>How would you recreate the Super Mario game?</p> <p>Can you think of a computer game you have played –</p>
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			that the design and the decomposition are the same.	what sections are there?
Lesson 5	•	<ul style="list-style-type: none"> <li>• I can spot bugs in algorithms</li> <li>• I can fix the error (debug it) and explain the problem it caused</li> </ul>	<p>The children are going to use decomposition and debugging skills to solve problems with directions (algorithms) intended to guide them between two areas of a map. Unfortunately, the person who wrote the directions wasn't very good at reading maps and there are lots of 'bugs' (mistakes) in the directions (algorithms).</p> <p><i>Using Activity: Maps with landmarks and paths</i> organise the children into groups of five. The children are familiar with these types of directions from their work with Bee-Bots. Encourage the children to use the <i>Activity: Direction cards</i> to remind themselves of the direction symbol and to help solve the problems.</p> <p>In their groups, the children go from table to table solving the bugs. The children need to:</p> <ul style="list-style-type: none"> <li>• Work out where the algorithm went wrong.</li> <li>• Cross out the incorrect direction.</li> <li>• Write in the correct direction to show how the algorithm should be changed to make it work.</li> </ul> <p>Each time the children move to a new table, collect their amended algorithms and then put out a fresh</p>	<p><b>Pupils needing extra support:</b> Should be encouraged to step and turn according to the instructions on the map.</p> <p><b>Pupils working at greater depth:</b> Could create their own buggy algorithms (and the correct answer) to match the maps.</p> <p><b>Key Questions</b></p> <p>How can you debug the algorithm?</p>

			copy of each set of directions on the tables for the next groups.	What was causing the bug?
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Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
Rocket to the Moon – <b>Skill Showcase</b>  Pupils should be taught to: <ul style="list-style-type: none"> <li>Use technology purposefully to create, organise, store, manipulate and</li> </ul>	<ul style="list-style-type: none"> <li>To know that when we create something on a computer it can be more easily saved and shared than a paper version.</li> </ul>	<ul style="list-style-type: none"> <li>To recognise that digital content can be represented in many forms</li> <li>To add data to a table or spreadsheet</li> </ul>	Web Browser  Word Processor  SketchPad	<u>Science</u>  Pupils should be taught to: <ul style="list-style-type: none"> <li>Describe the simple physical properties of a variety of everyday materials</li> </ul> <u>Design and Technology</u>	<ul style="list-style-type: none"> <li>Rocket</li> <li>Materials</li> <li>Digital content</li> <li>List</li> <li>Create</li> <li>Identify</li> <li>Physical properties</li> <li>Computer</li> <li>Saved</li> <li>Shared</li> </ul>

retrieve digital content	<ul style="list-style-type: none"> <li>▪ To know some of the simple graphic design features of online software.</li> <li>▪ To know that a spreadsheet is an electronic “table” for sorting data.</li> </ul>			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> <li>• Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> </ul>	
Lesson		Success Criteria	Lesson Outline		Differentiation & Key Questions
Lesson 1	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I can use a computer to create a list</li> </ul>	Using your school’s preferred KS1 word processing software (e.g. Microsoft Office, Google Docs, Busy Things or Purple Mash), model how to open the		<b>Pupils needing extra support:</b> Might prefer to use a

		<ul style="list-style-type: none"> <li>• I can identify which materials are best for my rocket and describe their physical properties</li> <li>• I can identify different types of digital content (words and pictures)</li> <li>• I can explain how a list made on a computer can be saved and</li> </ul>	<p>software and type a simple list of materials, discussing the properties of them (e.g. metal is a good material as it does not catch fire, but it is very heavy).</p> <p>Explain that later in the topic they are going to work in pairs to make a model rocket using junk modelling materials, which will either be thrown across the playground or launched using 'The Royal Institution – How to make fizzy bottle rockets' video. But first, they need to think about what items and materials they will need to use to create their rockets.</p> <p>Watch this 'BBC Cbeebies' Make a rocket with Justin' video, which shows a simple method for the construction of a rocket and the materials that they might want to use.</p> <p>Now need to create a list of the equipment and materials they will need to make their rocket, but stress the</p>	<p>drawing program, such as <a href="#">'Sketchpad'</a>; however, it's good to try and get each item in the list written out as this builds the necessary skills for creating tables and spreadsheets.</p> <p><b>Pupils working at greater depth:</b> Could be encouraged to use a spreadsheet (e.g. Microsoft Excel or Google Sheets). Could use the internet to research the variety of</p>
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		<p>shared more easily</p>	<p>importance of not losing their lists once they've written them, and explain that this is where a computer is useful.</p> <p>Ask how they think a computer could be used to make the list and discuss the following ideas:</p> <ul style="list-style-type: none"> <li>• Drawing pictures of the objects and materials.</li> <li>• Typing into a word processing program/spreadsheet.</li> <li>• Using the internet to find pictures which they could copy and paste into a document.</li> <li>• Recording an audio-memo style list.</li> </ul> <p><b>Materials list activity</b></p> <p>As a class, discuss the materials that they might want to use to create a rocket (refer to the 'BBC Cbeebies' <b>Make a rocket with Justin'</b> video if</p>	<p>methods to make the rockets move (e.g. using balloons, water pressure, blowing through a straw).</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• How could we use a computer to make the list we need?</li> <li>• Which materials might we want to use to create a rocket?</li> </ul>
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			<p>needed). Then, using computers, in groups of two or three, children create a list of equipment that they will need. You could use this as an opportunity for assessment or to familiarise them with software.</p> <p>One of the key focuses for this lesson is for pupils to consider using computers for a purpose, so encourage them to think about different options rather than specifying what they should use, as this will foster a greater sense of independence.</p>	
Lesson 2	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I can open a graphics editing program</li> <li>• I can create a digital image using</li> </ul>	<p>Ask pupils to work in the same groups as the previous lesson to create their design for their rockets. If they haven't already done so, ask them to open up their list of materials. Recap why it was a good idea to save these on the</p>	<p><b>Pupils needing extra support:</b> May benefit from watching their peers create their designs first.</p>

		<p>a graphics editor</p> <ul style="list-style-type: none"> <li>• I can save my digital image to the correct folder</li> </ul>	<p>computer – so that they would be easy to find and wouldn't get lost.</p> <p>As a class, discuss and record the components that they will need to include in their rocket designs: a nose cone, fins and a main body or structure.</p> <p>Set children off on their challenge of drawing their rockets using 'Sketchpad', as modelled in the 'Attention Grabber'. They should continue to discuss ideas with their group throughout the activity and annotate their design with the materials they will use.</p> <p>Encourage them to consider the following questions, making sure that each member of the group has something to be doing or thinking about:</p>	<p>Children with poor motor skills will require support with mouse control. You could consider using a touchscreen graphics editing program. Provide children with a pre-cut nose cone template and they should design just the steepness of the nose cone and the exact location of where it should attach.</p> <p><b>Pupils working at greater depth:</b> Should be</p>
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			<ul style="list-style-type: none"><li>• What materials will each component be made out of?</li><li>• Where will we find these materials?</li><li>• What do we want our rocket to the moon to do?</li><li>• What would we do if we went to the moon?</li><li>• What would we like to find out about the moon?</li></ul>	<p>challenged to use a greater range of the tools within Sketchpad and could even use it to design an image which could be printed and stuck to the their rocket.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"><li>• What components we will need to include in our rocket designs?</li><li>• What materials will each component be made out of?</li></ul>
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				<ul style="list-style-type: none"> <li>• Where will we find these materials?</li> <li>• What do we want our rocket to the moon to do?</li> <li>• What would we do if we went to the moon?</li> <li>• What would we like to find out about the moon?</li> </ul>
Lesson 3	•	• I can put a set of instructions in the right order	Hand out the <i>Activity: Steps to making a rocket</i> . Ask pupils to work in groups to put the steps into the correct order. Once they have done this, discuss what	<b>Pupils needing extra support:</b> May need more time to discuss what

		<ul style="list-style-type: none"> <li>• I understand the importance of instructions being in the right order in Computing</li> <li>• I know how to build a model rocket</li> </ul>	<p>they found and ask them how they knew the correct order.</p> <p>What would happen if the fins were stuck on before they had been decorated? What would happen if the nose cone was added before it had even been cut out?</p> <p>Ask children what they would do if they were a rocket-building robot and had been asked to add the nose cone before cutting the shape out. Discuss how sometimes they would just do the wrong thing but sometimes they would show an error message (say "Error, does not compute!") because they can't carry out the instruction.</p> <p>Finally, ask pupils if they noticed anything that was missing. Explain that there was no picture showing the fins being made.</p>	<p>the missing image should look like before drawing.</p> <p><b>Pupils working at greater depth:</b> Should try the challenging extension task and consider what they would program the rocket to do. Should use appropriate vocabulary,</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• What have you found?</li> </ul>
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			<p>Hand out a square of paper – the same size as the rest of the images – so that children can draw their version of what this should look like and add it to the correct place in the sequence.</p> <p>Then stick all the images down, in the correct order. They will need this as they will be acting like rocket-building robots themselves, following the instructions.</p> <p>Extension: If anyone finishes the activity, ask them to add more features to their rocket and then draw the extra steps in their instructions to reflect this.</p> <p>To really challenge pupils, get them to consider what they would program the rocket to do to help them find out more about the moon, e.g. take photos, measure the temperature, test for water, record the sound, drop two objects at the same time (<a href="#"><u>'NASA – Apollo 15 Hammer-Feather</u></a>)</p>	<ul style="list-style-type: none"> <li>• How did you know the correct order?</li> <li>• What would happen if the fins were stuck on before they had been decorated?</li> <li>• What would happen if the nose cone was added before it had even been cut out?</li> <li>• What would you do if you were a rocket-</li> </ul>
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			<p><a href="#">Drop'</a> video). They could also think about the set of instructions they would need to give the rocket to be able to carry these out.</p>	<p>building robot and had been asked to add the nose cone before cutting the shape out?</p> <ul style="list-style-type: none"> <li>• Had you noticed anything that was missing?</li> </ul>
Lesson 4	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I can build a rocket according to instructions</li> <li>• I can refer to my rocket design</li> <li>• I can take a clear photo</li> </ul>	<p>If you think any pupils still need some inspiration or are unsure of what to do first, show them the '<a href="#">BBC Cbeebies' Make a rocket with Justin'</a> video again.</p> <p>Make sure that there are a range of resources available in the classroom.</p>	<p><b>Pupils needing extra support:</b> Might need access to the <a href="#">BBC Cbeebies 'Make a rocket with Justin'</a> video to see what different</p>

		<p>of my finished rocket</p> <ul style="list-style-type: none"> <li>• I can add text to evaluate it</li> </ul>	<p>Pupils work through their instructions one at a time to complete their rockets, making sure that they use the materials from their lists and follow the design exactly.</p> <p>Reiterate the point that although we could change our minds during the creation process, because they are acting like computers for this activity, they have to follow the list of materials and instructions precisely.</p> <p>If any group needs to deviate from their instructions because they realise something won't actually work, explain that this is called 'debugging' and they will need to change their instructions/materials.</p> <p>Once all groups have finished their rockets, get them to prepare the space around them to take a photo. Encourage them to discuss what they</p>	<p>components might look like.</p> <p><b>Pupils working at greater depth:</b> Should lead the group during the 'Wrapping up' by helping to take a clear photo and typing the evaluation points discussed within the group.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• What you like about your rocket?</li> <li>• What aspects of</li> </ul>
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			like about their rocket and what they'd improve.	you rocket would you improve upon? Why?
Lesson 5	•	<ul style="list-style-type: none"> <li>• I can open a spreadsheet</li> <li>• I can input data into cells of a spreadsheet</li> <li>• I can measure distances accurately</li> </ul>	<p>As a class, go outside with the rockets, something to measure long distances with (ideally a trundle wheel) and pencil and paper – asking the children why they might need to take these.</p> <p>Model how to launch an object (possibly a foam javelin or your own bottle rocket if you've made one) and accurately measure the distance travelled.</p> <p>Point out the importance of having a marker for where the rocket was launched and model how to measure a straight line from this point to where it lands. Ensure that the children understand what they're measuring in</p>	<p><b>Pupils needing extra support:</b> Might need support in finding the correct cell to put their information.</p> <p><b>Pupils working at greater depth:</b> Could insert a row at the top of their spreadsheet and add their name and can compare</p>

			<p>(cm) and understand that each metre is worth 100cm.</p> <p>Pupils then launch their rockets, measure the distance they travelled and note the distance down. Each group should launch their rocket at least three times.</p> <p>Back in the classroom, model how to put the data into a spreadsheet (see teacher video), creating two columns, one for number of attempts and the other for the distance travelled.</p> <p>Pupils then add their data into a spreadsheet or table.</p>	<p>the values in different cells and order the distances travelled by different groups.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"><li>• Which rocket went the furthest?</li><li>• How do they know? (Get them to describe the process of comparing the numbers to see which is the largest.)</li></ul>
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				<ul style="list-style-type: none"><li>• Which rocket travelled the shortest distance?</li><li>• How much farther did Rocket A travel than Rocket B? (Get them to compare the rockets of two different groups)</li></ul>
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Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
<p>BeeBots – <b>Programming</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• Use logical reasoning to predict the behaviour of simple programs</li> <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> </ul>	<ul style="list-style-type: none"> <li>▪ To understand the basic functions of a Bee-Bot</li> <li>▪ To know that you can use a camera/tablet to make simple videos.</li> <li>▪ To know that algorithms move a Bee-Bot accurately to a chosen destination.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To explore a new device</li> <li>▪ To create a demonstration video</li> <li>▪ To program a device</li> </ul>	<p>Web Browser</p> <p>BeeBots</p>	<p><u>English</u></p> <p><b>Speaking and listening</b></p> <ul style="list-style-type: none"> <li>• use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Bee-Bot</li> <li>• Algorithm</li> <li>• Code</li> <li>• Instruction</li> </ul>

Lesson		Success Criteria	Lesson Outline	Differentiation & Key Questions
Lesson 1	•	<ul style="list-style-type: none"> <li>• I can 'tinker' with the buttons of a Bee-Bot to see what they do</li> <li>• I can complete a number of challenges by:</li> </ul> <p>thinking first about what they might do first ('predict')</p> <p>trying it out ('explore')</p> <p>seeing if I were right ('explain')</p>	<p>Using the <i>Activity: Bee-Bot challenge cards</i>, explain each of the three challenges:</p> <ul style="list-style-type: none"> <li>• <b>Challenge one:</b> Can you build a bridge for the Bee-Bot out of blocks and make the Bee-Bot drive through?</li> <li>• <b>Challenge two:</b> Can you make the Bee-Bot turn all the way around in a circle without moving off the starting spot?</li> <li>• <b>Challenge three:</b> Can you work together to get the Bee-Bot from the start position to as close to the wall as you can without crashing?</li> </ul> <p>Introduce the success criteria and outline how to tackle the challenges:</p> <ol style="list-style-type: none"> <li>1. Thinking about what they are going to do first ('predict')</li> </ol>	<p><b>Pupils needing extra support:</b> This lesson is about exploration at whatever level the children can access. You could vocalise the actions the child is doing/did to reinforce concepts of cause and effect for example, "You pressed forward two times and it got to here".</p> <p><b>Pupils working at greater depth:</b> Increase the challenges by getting them to plan further ahead</p>

			<p>2. Trying it out ('explore')</p> <p>3. Seeing if they were right ('explain')</p> <p>The children are completing a cycle of predict, test and review.</p> <p>Divide the class into six groups, with two groups carrying out each activity at once. This gives you time for every group to do every challenge.</p> <p>Give eight to ten minutes per challenge, but if your class are not used to carousel activities, you may need to make allowances for changeover times.</p>	<p>before testing with the Bee-Bot, for example, how far from here to the wall without trial turns first?</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Can you build a bridge for the Bee-Bot out of blocks and then make it drive through?</li> <li>• Can you make the Bee-Bot turn all the way around in a circle without moving off</li> </ul>
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				<p>the starting spot?</p> <ul style="list-style-type: none"> <li>• Can you work together to get the Bee-Bot from the start position to as close to the wall as you can without crashing?</li> </ul>
Lesson 2		<p>I can create a video to explain how to use a Bee-Bot by:</p> <ul style="list-style-type: none"> <li>• taking a video recording</li> <li>• explaining what the buttons of a Bee-Bot do</li> </ul>	<p>Ask the children what the most important things are to know about a Bee-Bot. How will the children:</p> <ul style="list-style-type: none"> <li>• Explain what a Bee-Bot is and how to turn it on/off.</li> <li>• Show how to make the Bee-Bot move forward using 'Forward' and 'Go' buttons.</li> </ul>	<p><b>Pupils needing extra support:</b> Rehearse a sentence the children wish to record. Draw attention to where the children are on</p>

		<ul style="list-style-type: none"> <li>• showing how the Bee-Bot moves when you press the different buttons</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how to make the Bee-Bot move backwards and how to clear the instructions.</li> <li>• Show how to make the Bee-Bot turn left or right.</li> <li>• Demonstrate how to pause the Bee-Bot in the middle of a set of instructions.</li> <li>• Show how to use these skills to complete a challenge card from last lesson.</li> </ul> <p>Make links between the Bee-Bot filming plan and the storyboard in English, to help the children to understand the importance of following a sequence.</p> <p><i>Making a Bee-Bot video, then:</i></p> <ul style="list-style-type: none"> <li>• Organise the children into groups of four or five.</li> <li>• Give each group a copy of the <i>Activity: Bee-Bot filming plan</i>.</li> </ul>	<p>the screen as they are recording.</p> <p><b>Pupils working at greater depth:</b> Plan what they are going to do or say before they begin filming. Discuss what will make it easier for other children to understand, for example, moving the camera closer to the Bee-Bot.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• What are the most important things to know about a Bee-Bot?</li> </ul>
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			<ul style="list-style-type: none"> <li>Encourage the children to work together and take turns to make their videos.</li> </ul> <p>Two children are behind the camera recording and watching. Two children are on-screen. The children on-screen should take it in turns to discuss and demonstrate the various buttons and subsequent movements of the Bee-Bot.</p> <p>Children should keep rotating roles so that everyone gets a turn on each side of the camera.</p> <p>Depending on your class size, you may need to adjust the number of children to each camera.</p>	<ul style="list-style-type: none"> <li>Have you explained what button 'x' does?</li> </ul>
Lesson 3		I can take on all of the following roles:	Tell the 'Controllers' that they should only give the human 'Bee-Bot' a single directional arrow at a time. For	<b>Pupils needing extra support:</b> Keep executing the programs with

		<ul style="list-style-type: none"> <li>• 'Bee-Bot' (following instructions given by the controller)</li> <li>• 'Controller' (giving instructions to the Bee-Bot)</li> <li>• 'Judge' (checking that the instructions given by the 'controller' are correct)</li> </ul>	<p>example, they could press on the cardboard:</p> <p>'X' (clear) &gt; 'Forward' (direction) &gt; 'Go'</p> <p>This gets the children used to pressing 'clear' every time and then 'Go' to run their 'code'. Make sure that the children are swapping roles.</p> <p>Stop the children when they have assigned one direction using 'X' and 'Go'.</p> <p>To introduce the next challenge, ask for a volunteer to be your 'Bee-Bot'.</p> <p>With a specific cone as a destination, demonstrate pressing two to three directions before setting your volunteer 'Bee-Bot' off. Discuss:</p> <ul style="list-style-type: none"> <li>• What cone did you aim for?</li> <li>• Did your 'Bee-Bot' reach it?</li> <li>• Children often think that turning like a 'Bee-Bot' is the same as taking a step, but a Bee-Bot rotates on the spot- did your</li> </ul>	<p>single directional commands.</p> <p><b>Pupils working at greater depth:</b> Challenge the pupils by starting the Bee-Bot child facing away from the goal.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Which cone did you have in mind?</li> <li>• Did the 'Bee-Bot' reach it?</li> <li>• Did the 'Bee-Bot' turn on the spot and not move in the direction of the turn?</li> </ul>
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			<p>'Bee-Bot' turn on the spot instead of moving in the direction of the turn?</p> <p>If your volunteer 'Bee-Bot' did not follow your instructions correctly, take their place and model the correct moves.</p> <p>Set the children the task of moving the 'Bee-Bots' to the chosen cones. The cones should be quite near as the 'Controller' should not enter more than three direction instructions.</p> <p>The 'Controller' should secretly tell the 'Judge' which cone they are aiming for before they give the 'Bee-Bot' instructions by 'pushing' buttons on the cardboard controller and saying out loud what the instructions are.</p> <p>Use a whistle every few minutes to indicate to the children that they should swap roles within their groups.</p>	<ul style="list-style-type: none"><li>• Did you remember to give clear instructions?</li><li>• Did you wait until you were told to 'Go'?</li><li>• Did you direct your partner to where you were meant to?</li></ul>
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			<p>It is important to circulate to listen to what the children are saying and to watch what they are pressing. Clear instructions are crucial both for the 'Bee-Bot' and the 'Judge'.</p>	
Lesson 4	•	<ul style="list-style-type: none"> <li>• I can personalise my Bee-Bot world</li> <li>• I can consider how the Bee-Bot can move from one place to another</li> <li>• I can plan a Bee-Bot route</li> <li>• I can program a Bee-Bot to follow my planned route</li> </ul>	<p>Introducing the word 'program', the children will make simple 'programs' that involve one or more algorithm to navigate their Bee-Bot around their mats from picture to picture.</p> <p>Use this time to model the activity. Sit in a circle with a <i>Bee-Bot world mat</i> in the centre. demonstrate sentences that you want the children to use. For example, "I am going to program the Bee-Bot to reach the frog by pressing ['x', 'x', 'x']".</p> <p>Ask the children which buttons they need to press to make this happen.</p> <p><b>Bee-Bot exploration</b> (15 minutes)</p>	<p><b>Pupils needing extra support:</b> Still take navigating the mat one step at a time.</p> <p><b>Pupils working at greater depth:</b> Plan their route getting from A to C while missing out B (see the 'Wrapping up' section).</p> <p><b><u>Key Questions</u></b></p>

			<p>Show slide 5 of the <i>Presentation: Bee-Bot world</i>. Working in pairs, the children take it in turns to program the Bee-Bot to navigate the mat to their intended destination. For example:</p> <ul style="list-style-type: none"> <li>Partner A says, “I’m going to program the Bee-Bot to the [x].”</li> </ul> <p>Partner A then tries to get the Bee-Bot to the declared destination. Emphasise the need to declare the destination first.</p> <p>The children should never touch the Bee-Bot. The children should be able to give complex instructions including complex moves such as turning.</p> <p>Use mini-plenaries to reiterate children’s use of the word ‘program’ throughout the activity.</p>	<ul style="list-style-type: none"> <li>How many buttons do you need to press to get there?</li> <li>Do you think you need to turn?</li> <li>Where will that code get you to?</li> </ul>
Lesson 5	•	• I know I should not pick up the Bee-Bot	Get the children into pairs, give each pair a Bee-Bot and a copy of the <i>Activity: Three Little Pigs Bee-Bot mat</i> .	<b>Pupils needing extra support:</b> Take the route one square at a time.

		<ul style="list-style-type: none"> <li>• I know how to use programming to give the Bee-Bot clear instructions</li> <li>• I can debug my instructions if they go wrong by identifying and correcting the mistake</li> </ul>	<p>Do a few warm-up exercises, for example:</p> <ul style="list-style-type: none"> <li>• ‘Can Partner One get the Bee-Bot to the wolf?’</li> <li>• ‘Can Partner Two get Bee-Bot to the blowing picture?’</li> <li>• Model fixing mistakes and learning from them, rather than worrying about them.</li> </ul> <p>Explain that you are now going to read the story of the ‘Three Little Pigs’. Instruct the children that when one of the pictures from the <i>Activity: Three Little Pigs Bee-Bot mat</i> is mentioned in the story, one child in each pair should program their Bee-Bot to move to that character (from the Bee-Bot’s last position).</p> <ul style="list-style-type: none"> <li>• Partner one: moves the Bee-Bot to the red spaces in the story.</li> <li>• Partner two: moves the Bee-Bot to the blue spaces in the story.</li> </ul>	<p><b>Pupils working at greater depth:</b> Can they explain the shortest route? What about the longest route possible?</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Who can get to the target straight away?</li> <li>• Who panics when they make a mistake and who can fix it?</li> </ul>
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			<p>Read through the story, using the prompts as necessary. Pause reading while the children program the Bee-Bots.</p> <p>Display slide 5. Encourage co-operation, but emphasise the rule: 'no lifting the Bee-Bot!'. Encourage the children to think carefully about completing the challenge, by inputting more than one instruction at a time.</p> <p>As this is the final week in this topic, now is a good time for observational assessment:</p> <ul style="list-style-type: none"><li>• Take note of who takes several steps to reach their target.</li><li>• Who can get to their target straight away?</li><li>• Who panics when they make a mistake?</li><li>• Who can fix a mistake?</li></ul>	
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Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
<p>Digital Imagery – <b>Creating Media</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <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> <li>• Recognise common uses of Information</li> </ul>	<ul style="list-style-type: none"> <li>▪ To understand that holding the camera still and considering angles and light are important to take good pictures.</li> <li>▪ To know that you can edit, crop and filter photographs.</li> <li>▪ To know how to search safely for images online.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To understand and create a sequence of pictures</li> <li>▪ To take clear photos</li> <li>▪ To edit photos</li> <li>▪ To search for and import images</li> </ul>	<p>Web Browser</p> <p>BeeBots</p> <p>iPads</p> <p>Excel</p>	<p><b>English</b></p> <p><u>Reading</u></p> <ul style="list-style-type: none"> <li>• making inferences on the basis of what is being said and done</li> <li>• predicting what might happen on the basis of what has been read so far</li> <li>• participate in discussion about books, poems and other works that are read to them and those that they can read for themselves, taking turns and</li> </ul>	<ul style="list-style-type: none"> <li>• Pictorial story</li> <li>• Image</li> <li>• Sequence</li> <li>• Plan</li> <li>• Photo</li> <li>• Pictures</li> </ul>



technology beyond school				listening to what others say	
Lesson		Success Criteria	Lesson Outline	Differentiation & Key Questions	
Lesson 1	•	<ul style="list-style-type: none"> <li>• I can explain what is happening in a pictorial story</li> <li>• I can recognise the importance of sequencing</li> <li>• I know that sequencing is important in Computing</li> <li>• I can plan my own pictorial story</li> </ul>	<p>The children will learn about pictorial stories. The objective is that the children will make their own.</p> <p>The children should be confident that stories can be made from pictures alone. The children also need to understand how pictorial stories work. Ask the children:</p> <ul style="list-style-type: none"> <li>• What sort of pictures need to be at the start? (Make cross-curricular links to story structures like characters and settings).</li> <li>• What needs to happen in the middle? (something exciting).</li> <li>• What needs to happen in the end?</li> </ul>	<p><b>Pupils with secure understanding indicated by:</b> Explaining what is happening in a photo story. Planning three distinct parts of a photo story.</p> <p><b>Pupils working at greater depth indicated by:</b> Explaining how their photos will show their story. Discussing where</p>	

			<ul style="list-style-type: none"> <li>• What do the characters do next?</li> </ul> <p>Show the children the <i>Which comes first?</i> images. Several picture stories are muddled. The children work out the correct sequence. Ask the children how they did it.</p> <p>The children have understood stories, introduce them to the characters. These characters can be whatever you have in school (you may need to ask EYFS if your Year 1 don't have access to small world resources). Lego or Playmobil people work well. An animal/dinosaur could play the 'baddie' in the story.</p> <p>Show the children the <i>Activity: 3 box planning sheet</i>. The children draw what they intend to photograph in next week's lesson. There are three boxes in the main planning sheet.</p>	<p>characters will be placed.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Who are the characters?</li> <li>• What is the exciting middle scene?</li> <li>• How have they shown the ending?</li> </ul>
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			<p>Three is a realistic amount of photos for each child to take in Lesson 2.</p> <p>There is also an <i>Activity: 5 box planning sheet</i> for pupils working at greater depth, who may require more challenges. There are lines underneath for the children to write what is happening in each picture – this could be just words or full sentences. This will not be included in their photographs, but it does make remembering their plans easier for next week.</p> <p>The children complete the <i>Activity: 3 box planning sheet</i> or <i>Activity: 5 box planning sheet</i>.</p>	
Lesson 2	•	• I can get down to the level of my character	Introduce the children to the device that they are going to be using. Show the children how to turn it on, use the screen to focus on what	<b>Pupils needing extra support:</b> May need support

		<ul style="list-style-type: none"> <li>• I can look at the screen and check what is in frame</li> <li>• I can press the button carefully to ensure nothing changes</li> <li>• I understand that moving can create a blurred image</li> <li>• I can ensure that my surroundings are bright enough</li> </ul>	<p>they are capturing and take the photo. Divide the children into their groups.</p> <p>It is possible for all the children in the group to take (at least) the three photos that they need within the time. Although they are helping each other out, the children should create their own story.</p> <p>Go over the rules for working in these groups:</p> <ul style="list-style-type: none"> <li>• Take one photo – pass it on</li> <li>• No more than one retake per go (wait until your next turn)</li> <li>• No deleting – even if you have not shown the children how to use this, they may work it out. The children might accidentally lose other photos as well.</li> </ul>	<p>working in a group. Making the roles, rules and expectations explicit gives these children structure.</p> <p><b>Pupils working at greater depth:</b> You could group these children together to give them more opportunity to work on their longer stories. You could also model how to discuss improving photos as they're taking them, asking:</p>
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			<ul style="list-style-type: none"> <li>To stop things getting lost, each child is responsible for looking after something.</li> </ul> <p>This activity works best outside. Putting small characters on a playground/field immediately creates the setting of wilderness, as the grass and flowers etc are so tall compared to the character. If this is not possible, you could source some props to give an idea of scale.</p> <p>Discuss the Success Criteria and look at last week's plans. Children often take lots of photos rather than a few good quality photos. Encourage the children to arrange the position of objects before they take the photo. This reduces time wasted taking photos and saves storage space on devices.</p>	<ul style="list-style-type: none"> <li>Would it be better if..?</li> <li>Could we put the character..?</li> <li>How can I do..?</li> </ul> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>Is the character full height?</li> <li>What's in the background?</li> <li>Can you see any children?</li> <li>Would the photo look better if you moved so the sun</li> </ul>
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			<p>When outside, go through the Success Criteria again, modelling the following:</p> <ul style="list-style-type: none"><li>• Placing the character on the floor and getting the camera really close. (Even if your camera/tablet has a zoom option, it is best not to use it if you don't need to. The more you zoom, the less quality your photo has.)</li><li>• Explain what you're looking at on the screen. Is the character full height? If not, get closer. What's in the background? Can you see any children? If so, politely ask them to move to one side. Would the photo look better if you moved so the sun wasn't so bright? etc.</li><li>• Explain the importance of keeping the camera still. If you're using tablets that are quite heavy, suggest that they</li></ul>	<p>wasn't so bright?</p>
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			<p>keep both hands holding the tablet, whilst someone from their group presses the 'capture' button.</p> <p>Give the children 10 to 15 minutes to take their photos.</p>	
Lesson 3	•	<ul style="list-style-type: none"> <li>• I can explain that photos can be changed after they have been taken</li> <li>• I can identify ways to improve my photo</li> <li>• I can crop, resize and add a colour filter to my photo</li> </ul>	<p>Explain to the children that they will explore editing the photos they took in the last lesson.</p> <p>In groups or pairs, children edit one photo together depending on the number of devices available. The point is to understand the different changes they can make to images.</p> <p>They should focus mainly on:</p> <ul style="list-style-type: none"> <li>• Cropping – considering which parts of the image are most important.</li> </ul>	<p><b>Pupils needing extra support:</b> May need adult help with loading the images onto the app or computer. Model the process of editing an image and repeat key vocabulary such as uploading, importing,</p>

			<ul style="list-style-type: none"><li>• Changing colour-effects – discussing how this affects the mood of the picture.</li></ul> <p>While the children work, note any exciting effects that you see them use. Refer back to the best effects at the end of the lesson.</p>	<p>cropping, settings, etc.</p> <p><b>Pupils working at greater depth:</b> Should discuss why they would make changes to a photo and the impact this has and be able to apply a wider range of effects to their photo, experimenting with new editing tools. They should then create a guide called 'How to edit an image'</p>
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				<p>in a document of their choosing.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"><li>• When would it be a good time to use that effect, and why?</li><li>• Does it make it look older or more vibrant?</li><li>• Does it focus attention on a smaller part of the image?</li></ul>
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Lesson 4	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I know images can be found online</li> <li>• I can think of a keyword to search with</li> <li>• I know what to do if I find something uncomfortable</li> </ul>	<p>Give children their completed <i>Activity: Planning sheets</i> (from 'Lesson 1: Planning a photo story') to talk through and remind them what they have been working towards. Explain that today they will add props to the photos they took in 'Lesson 2: taking photos'.</p> <p>We can add photos to our computers ourselves in many ways, either by downloading them from an email, importing them from a USB device or locating them on personal cloud storage programs such as Microsoft OneDrive. Ask the children if they know of any other ways to access images on a computer. Explain that online stock photography providers have thousands of images sent in by lots of different people. Usually, you will need to pay the website to access their images, and in most cases,</p>	<p><b>Pupils needing extra support:</b> May need an alphabet sheet to match upper and lowercase letters to help them use the keyboard more easily.</p> <p><b>Pupils working at greater depth:</b> Can manipulate the image to suit a purpose and explain why the size is important. Should find and use png images to avoid a white box</p>
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			<p>these images are 'copyrighted', meaning you have to credit or ask permission from whoever took the photo to use it.</p> <p>Discuss the question: What does the word 'copyright' mean? (Is the legal way of protecting a creator's piece of work). Remind children how to search for copyright-free images via sites such as <a href="https://pixabay.com">Pixabay.com</a> or using the appropriate filtering on search engines such as Microsoft Bing and Google.</p> <p>Show children how to search for images and save them using an internet browser</p>	<p>blocking their original image.</p> <p><b><u>Key Questions</u></b></p> <ul style="list-style-type: none"> <li>• Have you been able to edit your photo effectively?</li> <li>• What else could you add in if you had more time?</li> </ul>
Lesson 5	•	• I can download the photos I want	<p>Explain to the children that they will choose a minimum of three photos for their collage story. Do not worry about which child took the photo –</p>	<p><b>Pupils needing extra support:</b> May need help navigating to the</p>


		<ul style="list-style-type: none"> <li>• I can organise them on to the page</li> <li>• I can resize and change the orientation of my images</li> <li>• I can add numbers to show their order</li> </ul>	<p>they can choose whichever they think will work.</p> <p>Children should start by opening up a blank presentation in Microsoft PowerPoint. They should then go to 'Insert', 'Pictures' and select to insert picture 'from this device'. In the image downloads menu, the children can select 'OneDrive', where they can find the images they have taken and created over the course of this unit. They should add these images one at a time by clicking on an individual image and clicking 'Insert'. Pupils should repeat this process until all images they want are inserted into their Microsoft PowerPoint presentation.</p> <p>If you used tablets to save the edited photos, make sure each group has the same device to access their images. They can then use 'Microsoft PowerPoint',</p>	<p>right page and downloading the files so they can then work independently on their collage.</p> <p><b>Pupils working at greater depth:</b> Could add in further decoration such as shapes and use 'fill' to add colour to the</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Can you remember how to resize the pictures so</li> </ul>
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			<p>'LunaPic', 'Pixlr', 'BeFunky' or any other relevant app to insert and manipulate images from the device's gallery.</p> <p>Once all children have at least three photos dragged onto their page, bring the class back together.</p> <p>Ask if they can remember how to resize the pictures so that they are not all on top of each other—model how to do this. Ask how we could make the order of the pictures clearer – what could we use? Show the children how to add a text box to type a number. Drag it next to the picture. Show the children how to add a final box with their name in it.</p> <p>Give the children the rest of the lesson to arrange their pictures.</p>	<p>they are not all on top of each other?</p> <ul style="list-style-type: none"><li>• How could we make the order of the pictures clearer?</li><li>• What could we use?</li></ul>
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			If they finish, they can add shapes and colours.	
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Computing Strand & Link to National Curriculum	Progression of Knowledge	Learning Objectives & Skills Progression	Hardware & Software	Cross Curricular Links	Key Vocabulary
<p>Introduction to Data – <b>Data Handling</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> </ul>	<ul style="list-style-type: none"> <li>To know that charts and pictograms can be created using a computer.</li> <li>To understand that a branching database is a way of classifying a group of objects.</li> <li>To know that computers understand different</li> </ul>	<ul style="list-style-type: none"> <li>To represent data in different ways</li> <li>To use technology to represent data in different ways</li> <li>To collect and record data</li> </ul>	<p>Web Browser</p> <p>iPads</p>	<p><u>Mathematics</u></p> <p>Pupils should be taught to:</p> <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> <li>Read and write numbers from 1 to 20 in numerals and words</li> <li>interpret and construct simple pictograms, tally</li> </ul>	<ul style="list-style-type: none"> <li>Data</li> <li>Representation</li> <li>Map</li> <li>Information</li> <li>Objects</li> </ul>

	types of "input".		charts, block diagrams and simple tables <ul style="list-style-type: none"> <li>ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> </ul>	
Lesson		Success Criteria	Lesson Outline	Differentiation & Key Questions
Lesson 1	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>I know that data can be shown in different ways</li> <li>I can represent data in different ways</li> <li>I can answer questions about the data using my representation</li> </ul>	<p>Show children the <i>Zoo map</i>, showing different numbers of animals in each enclosure.</p> <p>Explain that you want to remember how many of each animal there are so that you could tell someone at home. You are not allowed to take the <i>Zoo map</i> with you.</p> <p>Tell children to use lolly sticks, cubes, paper, colouring pencils or other objects they find, to represent the animals and show how many of each animal there are at the zoo.</p> <p>Encourage the children to find easy ways of showing which animals there are more, or fewer of. Rather than having a pile of lolly sticks or cubes, they may prefer to line them up or put them in piles.</p>	<p><b>Pupils needing extra support:</b> May benefit from working as part of a pair to share ideas with and get reassurance. They may need reminding that there is no right or wrong way to show the information.</p> <p><b>Pupils working at greater depth:</b> Should be encouraged to explore a variety of different ways, including incorporating numerals.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>What do you think about this?</li> </ul>

			<p>Halfway through, ask the children to try representing the information in a different way. If the children have used objects, then encourage them to use drawings (either pictures of the animals or something more abstract, e.g. lines, circles, dots, tally chart). And vice versa, if the children have used drawings, then encourage them to use objects.</p> <p>If someone needs a challenge, task them with representing the information using numbers.</p> <p>Take photos of all the different ways the children find to show the data, getting them to describe what they've done and why it works well.</p>	<ul style="list-style-type: none"> <li>Is it easy to quickly compare the number of each animal?</li> </ul>
Lesson 2	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>I can navigate a computer using a mouse</li> <li>I can type using a keyboard</li> <li>I understand that data can be shown in different ways</li> <li>I can represent data in</li> </ul>	<p><b>Pictograms</b></p> <p>Show children how to navigate to '<a href="#">J2E's JIT5</a>' by: setting up a desktop shortcut, adding it as a favourite in their web browsers or finding it by searching for JIT5.</p>  <p>Then, demonstrate clicking on the red tab in the top right called 'pictogram'. At each stage of the lesson, get children to predict what will happen if they click a certain button, encouraging them to be brave and have a go. They can then share what they have learned with the rest of the class.</p>	<p><b>Pupils needing extra support:</b> Should be positioned with a good view of the board so that they can quickly and easily refer to the table of results. May benefit from working with a partner.</p> <p><b>Pupils working at greater depth:</b> Should add appropriate labels to column headings and group titles, e.g. lions. They should also try changing the colour of each animal by clicking the square to the right of the number.</p>

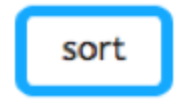
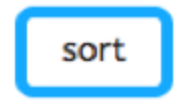


		<p>different ways</p>	<p>Once everyone is on the pictogram page, they click on the arrow buttons next to the picture of a lion to scroll through the different animal pictures available.</p>  <p>When they find an animal that was seen at the zoo (lion, zebra, elephant, flamingo, monkey) they either click and drag it to one of the rectangular boxes at the bottom, or click the animal and then click the box they want it to go to.</p>  <p>They should give each animal a label by typing this in at the bottom. Encourage children to have a go at spelling the words themselves.</p> <p>Once they have added all of the animals to the label boxes, they can then click the + to add these to the pictogram. For example, if there are three lions, they should click the + sign three times.</p> <p>They continue this process for all of the animals.</p> <p>Ask pupils the following questions to assess their understanding.</p>	<p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Why did adding lots of one animal made the size of the pictures change?</li> <li>• Why did this resize all of the other animal images in their pictogram?</li> </ul>
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			<ul style="list-style-type: none"> <li>Why did adding lots of one animal made the size of the pictures change? So that all of the images would fit in a straight line on the page.</li> <li>Why did this resize all of the other animal images in their pictogram? To ensure that they all lined up so that they could easily see which animals there are more of/fewer of.</li> </ul> <p>Show how all the images are the same height to make it easier to compare the number of them.</p>	
Lesson 3	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>I can identify different minibeasts</li> <li>I can record the number of different minibeasts I see</li> <li>I can represent this data digitally</li> </ul>	<p>You can share the minibeasts depicted on 'J2E's J1T5' if pupils want to show their data in a pictogram. There is the option of drawing their own on the website if the creature they want is not included, but for ease, the predrawn images are:</p> <ul style="list-style-type: none"> <li>Minibeasts &gt; bee, butterfly, caterpillar, dragonfly, fly, grasshopper, ladybird, slug, snail, spider, stick insect, woodlouse, ant</li> <li>Animals section &gt; millipede and worm</li> </ul> <p><b>Collect data (10 minutes)</b></p>	<p><b>Pupils needing extra support:</b> Might need to stick to creating a pictogram and would benefit from working with more confident pupils.</p> <p><b>Pupils working at greater depth:</b> Should represent their data in multiple ways, adapting the colours to suit their preferences, and selecting a preferred graphic representation of data, explaining their choice.</p> <p><b><u>Key Questions</u></b></p>

			<p>Go outside on your minibeast hunt, with children taking photos where necessary and making a note on their sheets of how many of each creature they spot.</p> <p>Make sure that groups focus on different areas so that they can cover as much of the outdoor space as possible in the shortest amount of time. It also avoids them counting the same minibeasts twice, which would give inaccurate results.</p> <p>When finished, they come back to the classroom to represent the data they have collected.</p> <p><b>Represent Data (20 minutes)</b></p> <p>Get children onto the '<b>J2E's JIT5</b>' in the same way as the previous lesson, explaining that they are going to use their skills from Lesson 2 to represent the data they have just collected. If they worked in groups of three, they should all work together to do this, but if they worked in a group of four, they should split into two pairs to make sure they are involved in the process.</p> <p>Explain that they're going to select the five minibeasts they found the most of and represent the data in different ways.</p> <p>This is a great opportunity to give pupils some autonomy over how they show the information</p>	<ul style="list-style-type: none"> <li>• Why do you think it's good way to carry out <b>data collection</b>?</li> <li>• What is the best way to approach <b>representing</b> the <b>data</b>?</li> <li>• Which are the five most common minibeast you have found?</li> <li>• How many were there of each?</li> </ul>
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			<p>they have collected, encouraging them to consider which way would be best suited to this data.</p> <p>If they choose the 'chart' tab, they can put the information in a table – naming each of the minibeasts they encountered – but then show the data in multiple different ways.</p> <p>If they select the 'pictogram' tab, they will need to find and select appropriate images or draw those that are not available. As mentioned earlier, most of the relevant images are in the minibeasts category, but two are found in the animals category.</p> <p>Explain to any pupils that ask that all of these creatures could be in both the minibeasts and animals categories, which could lead to a discussion about groups within the umbrella term of animals.</p>	
Lesson 4	•	<ul style="list-style-type: none"> <li>• I can identify and categorise different animals</li> <li>• I can click and drag objects</li> </ul>	<p>As a class discuss the most effective questions from the Attention Grabber, i.e. which ones narrowed down the selection of data the most.</p> <p>Explain that they are going to make their own version of the 'Guess Who®' game, using JIT5's</p>	<p><b>Pupils needing extra support:</b> Could use just four animals in their branching database to minimise the amount of typing, clicking and dragging.</p>

		<ul style="list-style-type: none"> <li>• I can identify questions to sort data in the most efficient way</li> <li>• I can create a branching database</li> </ul>	<p>branching database. Show children the 'sort' button at the bottom right:</p>  <p>It will ask you to type a question which will split this group of animals (get them to consider the questions from the 'Attention Grabber'). Encourage them to use words like mammal, fish, herbivore, carnivore, etc.</p> <p>If any pupils struggle with typing, they could limit their question to one or two words with a question mark; e.g. Carnivore? Four legs? Or ask simple questions, such as: Does it have a beak? Has it got a black stripe on it?</p> <p>Once you have typed your question, click and drag the animals into either the 'thumbs up for yes', or 'thumbs down for no' groups then click 'done'.</p>  <p>Explain that they will repeat this process until all of their animals are sorted. Set pupils off on this task, recommending that they start with a maximum of six animals. They should work in pairs to create questions to sort the animals</p>	<p><b>Pupils working at greater depth:</b> Should be encouraged to use many animals in their database, sorting the data in the most efficient way possible (i.e. using the fewest number of questions).</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Can you sort the data using the fewest number of questions?</li> <li>• Carnivore?</li> <li>• Four legs?</li> <li>• Does it have a beak? Has it got a black stripe on it?</li> </ul>
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			<p>then practise their mouse skills to click and drag the correct animals into either the yes or no boxes.</p> <p>Once they've finished, the program asks if they want to play. They can test their game by clicking 'play' and choosing one of the animals from the left hand side and remembering that animal. They then need to test if their branching database can accurately figure out the animal they chose by answering the questions.</p> <p>If they notice a question isn't right, they can click on the edit pencil icon in the left of each box to change it.</p>	
Lesson 5	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• I understand that computers understand different types of input</li> <li>• I can design a computerised invention to gather data</li> <li>• I can explain how my</li> </ul>	<p>Explain to pupils that they are going to be inventors! They can be very creative with their design (i.e. it doesn't have to be something that they could actually make); however, it does have to behave like a computer.</p> <p>In pairs, pupils come up with ideas for an invention, which would collect data in order to help them to answer a question of their choosing, e.g.</p> <ul style="list-style-type: none"> <li>• When is the most popular time to visit the park?</li> </ul>	<p><b>Pupils needing extra support:</b> May need to talk through their ideas more at the beginning to help clarify what they need their computerised invention to do. They could always describe and explain its function or write one word labels.</p> <p><b>Pupils working at greater depth:</b> Should add detailed labels to</p>

		<p>invention works</p>	<ul style="list-style-type: none"> <li>• What is the most popular toy in the shop?</li> <li>• What is the loudest part of the school?</li> <li>• What time of the day is the school hall the warmest?</li> </ul> <p>Once they have come up with their idea, they go to 'Sketchpad' (which they should be familiar with from the Year 1 topic, <i>Getting started</i>). Tell them that you want them to draw their inventions, adding labels and information to explain:</p> <ul style="list-style-type: none"> <li>• What their computerised machine would need to count or measure</li> <li>• Roughly how long it would need to gather data</li> <li>• What type of input it would need (movement, pressure, level of sound, level of light, image recognition)</li> </ul> <p>Demonstrate how to click the 'Text' button to type labels for their computerised invention and challenge them to experiment with changing the colour, size and font of the text.</p>	<p>their design, experimenting with different colours, sizes and fonts.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• When is the most popular time to visit the park?</li> <li>• What is the most popular toy in the shop?</li> <li>• What is the loudest part of the school?</li> <li>• What time of the day is the school hall the warmest?</li> </ul>
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