

Year / Topic	Term	National Curriculum Links	Length of Topic
7.4 Drawing and Manipulating shapes & Representing Images	Spring 2	IT3.3, CS3.2, CS3.4, CS3.5	5 Weeks
Resources Compute – IT Book 1 MSW LOGO Scratch Internet GIMP	<p style="text-align: center;"><u>Key Classroom ICT Activity</u></p> <p>In this unit students will be exploring the links between maths, art and computer science. Students will begin to understand simple algorithm design and the importance of being able to identify the important ideas (abstraction) and breaking down the problem into manageable units (decomposition). Students will also be introduced to repetition (iteration) as one of the key constructs in programming as well as binary.</p> <p>By the end of this unit students will be able to:</p> <ul style="list-style-type: none"> • Know and understand how to write algorithms to create basic geometrical shapes • Recognise and correct errors in algorithms (debug) • Identify and action how to write algorithms using graphical and text-based programming software. • Understand how iteration can be used to create patterns using shapes. • produce an image on a pixel grid in one-bit colour from binary code • recognise a variety of image formats for vector and bitmap images <p>Assessment - Progression Pathways</p> <p>All children should: CS, Designs solutions (algorithms) that use repetition and two-way selection i.e.: if then and else. Uses diagrams to express solutions.</p> <p>All children could: CS, Designs solutions by decomposing a problem and creates a sub- solution for each of these parts (decomposition) Recognises that different solutions exist for the same problem.</p> <p>Some children should: CS, Understands that iteration is the repetition of a process such as a loop. Recognises that different algorithms exist for the same problem. Represents solutions using a structured notation. Can identify similarities and differences in situations and can use these to solve problems (pattern recognition)</p>		
Target Skills Programming Collaboration Teamwork Design			
Curriculum Links Maths: Binary, Geometrical shapes, patterns Art: Mosaics and Pixel art			
E-Safety Coverage Consider copyright when sourcing images. Reinforces messages around safe searching and evaluating the quality of online content.			

Assessment Criteria	7.4 Drawing and Manipulating shapes & Representing Images
Emerging	<ul style="list-style-type: none"> ✓ I can design solutions (algorithms) that use repetition. ✓ I can design solutions (algorithms) that use a two-way selection i.e. if then else.
Developing	<ul style="list-style-type: none"> ✓ I can use diagrams to express solutions.
Secure	<ul style="list-style-type: none"> ✓ I can design solutions by decomposing a problem. ✓ I can recognise that different solutions exist for the same problem. ✓ I can develop my own program and can demonstrate this by creating a simple program. ✓ I can use arithmetic operators, if statements and loops within programs.
Mastered	<ul style="list-style-type: none"> ✓ I can understand that iteration is the repetition of a process such as a loop. ✓ I can understand that different algorithms exist for the same problem. ✓ I can identify similarities and differences in situations and use these to solve problems (pattern recognition).