

Knowledge Organiser for Computing: Logical Thinking and Coding

Key Enquiry Questions:	
What is logical or computational thinking?	<ul style="list-style-type: none">• Describes decision making process used in programming and writing algorithms.• It is a way of looking at problems that allows a computer to help us solve them.

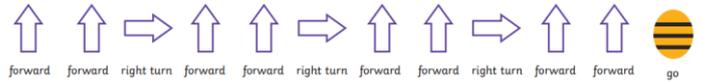
Key Vocabulary	
logical thinking	Process used to find a solution to a problem (doesn't necessarily require a computer).
computational thinking	Process used to find a solution to a problem (usually using a computer).
Step 1: decomposition	Breaks down a problem into smaller parts that are easier to understand.
Step 2: pattern recognition/match	Looking for similarities among different problems and within the same problem.
Step 3: abstraction	Through abstraction we decide what information to focus on when solving a particular problem. Identify specific similarities and differences among similar problems to work towards a solution.
Step 4: algorithm	A set of instructions to help us solve the problem.
definition video of 4 main steps	https://youtu.be/TIAakIrolAO
example of 4 main steps in practice	https://www.youtube.com/watch?v=qbnTZCj0ugI
flow chart	A series of steps (algorithm) shown in a chart which uses two key components processes and decisions.
process	When we do something.
decision	When a choice is made.
Scratch	Block Coding Software.
Kodu	Block Coding Software.
'if' statements	A line of code which will dictate a certain outcome based on what 'if' has occurred.
'then' statements	A line of code which responds to an 'if' statement or the outcome which occurs based on the 'if' statement.

Examples:

Year 1: Students should use a Bee robot and will write computational logic to decide what command to run next.



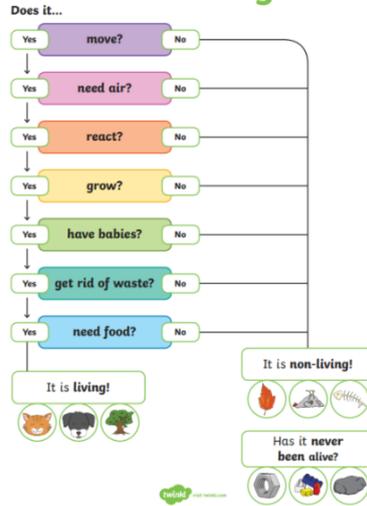
1. Follow these programming commands and match to the shape it makes.



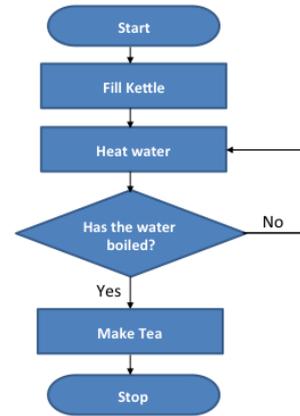
Can you make the same shape using different commands?

Year 2: Introduced to writing simple flow charts that include some basic decision making.

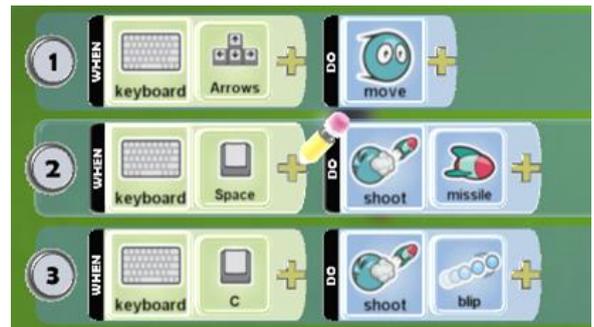
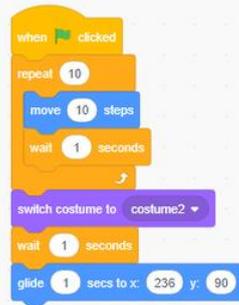
Is It Living?



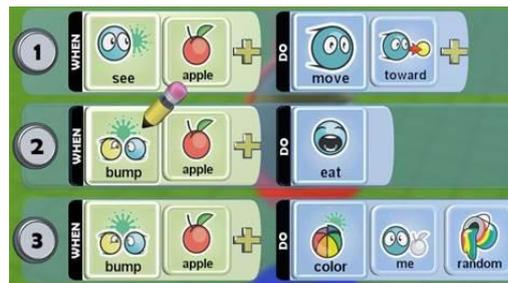
Example (Making the Tea)



Year 3: Using a visual programming language (Scratch, Kodu etc.), students will start to implement very simple logic such as yes and no answers.



Year 4: Students will start to write code that can respond to a variety of conditions being true or false (if/then statements).



Year 5 and 6: The concept of computational logic will be expanded further to build complex programs and games that students plan and build themselves using Scratch or another visual programming language.

