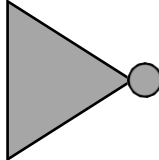
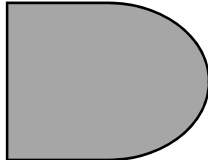
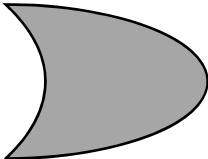
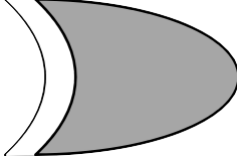


# Computing Y10 – Computational Thinking Skills

Key terms	
<b>Algorithm</b>	A set of instructions which is followed to solve a given problem. Can be represented using a flowchart or Pseudocode.
<b>Abstraction</b>	Removing any unnecessary detail from a problem in order to solve it. Identifies the information that can be removed from the problem without changing it.
<b>Decomposition</b>	Breaking a large problem down with no known solution into smaller steps and stages.
<b>Algorithmic thinking</b>	Algorithmic thinking is a way of getting to a solution through the clear definition of the steps needed – nothing happens by magic.
<b>Searching algorithm</b>	An algorithm for finding values within a set of data.
<b>Linear search</b>	When a list is unsorted and an item needs to be found the algorithm will start at the beginning and move through until it finds the required value.
<b>Binary search</b>	If a list is sorted, an efficient search can be undertaken. It works by repeatedly dividing the set in half and checking where the value is in relation to the current one. It continues until the list has been fully checked or the search term found.
<b>Sorting Algorithm</b>	An algorithm used to sort a set of data into a given order. Examples include bubble sort, insertion sort and merge sort.
<b>Sequencing</b>	Writing steps down in an order in which they must happen.
<b>Selection</b>	Being able to select between different options or scenarios.
<b>Iteration</b>	Iteration is the act of repeating a process, either to generate an unbounded sequence of outcomes, or with the aim of approaching a desired goal, target or result.
<b>Variable</b>	A value, which can change when a program is run. A variable is a memory location. It has a name that is associated with that location; the location stores some data.

Data types		
<b>Integer</b>	A whole number, such as 3, -45, 108	2 or 4 bytes
<b>Real/ Float</b>	A number with a fractional part such as 43.69, -9.32.	4 or 8 bytes
<b>Char / Character</b>	A single character where a character can be any letter, digit, punctuation mark or symbol that can be typed.	1 byte
<b>String</b>	Zero or more characters. A string can be null (empty), just one, or several character.	1 byte per character
<b>Boolean</b>	A Boolean variable has the value of True or False.	1 byte

Binary Logic Gate Diagrams				
<b>NOT</b>		<b>A</b>		<b>Out</b>
		0	1	1
		1	0	0
<b>AND</b>		<b>A</b>	<b>B</b>	<b>Out</b>
		0	0	0
		0	1	0
		1	0	0
<b>OR</b>		<b>A</b>	<b>B</b>	<b>Out</b>
		0	0	0
		0	1	1
		1	0	1
<b>XOR</b>		<b>A</b>	<b>B</b>	<b>Out</b>
		0	0	0
		0	1	1
		1	0	1
		1	1	0