Algorithm

Knowledge Organiser

Algorithms basics

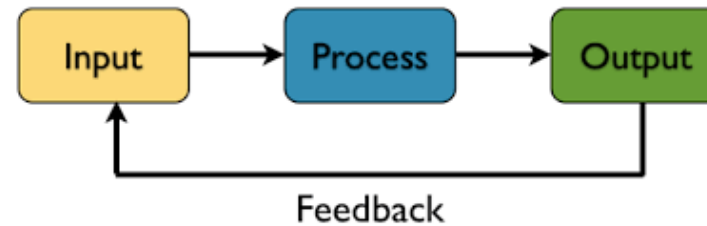| 1	Algorithm	is a sequence of steps that can be followed to complete a task
2	Flowchart	a diagrammatic representation of an algorithm
3	Program	A computer program is an implementation of an algorithm
4	Problem solving	The purpose of an algorithm is to solve real world problems Step by step

Computational Thinking

1	Computational Thinking	is all about the steps you take to solve a complex problem
2	Decomposition	means breaking a problem into a number of sub-problems
3	Abstraction	is the process of removing unnecessary detail from a problem.
4	Algorithmic Thinking	is a logical way of getting from the problem to the solution, following step by step instructions & rules precisely.

Input, process, output model

1	IPO model	is a widely used approach in systems analysis and software engineering
2	Input	to provide or give data to the computer.
3	Process	a series of actions or steps taken in order to achieve a particular end.
4	Output	the information produced by a computer process

Input → Process → Output

Feedback

Searching and sorting data

1	Linear search	a method for finding an element within a list.
2	Binary search	finds the position of a target value within a sorted array.
3	Merge sort	is a divide and conquer algorithm.
4	Bubble sort	a sinking sort, comparing and swapping items in list.

Key Vocabulary

1	Algorithm	is a sequence of steps that can be followed to complete a task
2	Flowchart	a diagrammatic representation of an algorithm
3	Pseudocode	is an artificial and informal language that helps programmers develop algorithms.
4	Decomposition	means breaking a problem into a number of sub-problems
5	Abstraction	is the process of removing unnecessary detail from a problem.
6	Input	to provide or give data to the computer.
7	Process	a series of actions or steps taken in order to achieve a particular end.
8	Output	the information produced by a computer process
9	Trace table	simulates the flow of execution showing the values of variables changing