Kemnal Technology College – Computer Science Kemnal Key – Year 8 Term 4

KEMNAL KEY QUESTIONS

1. **Explain what Algorithms are?**
2. **What are the advantages of using Decomposition and Abstraction?**

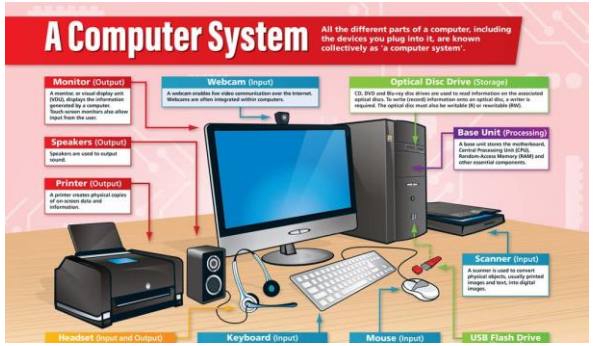
Computer Systems

A computer system is a programmable electronic device that can accept input; store data; and retrieve, process and output information.

Purpose of a Computer System

The purpose of the computer is to perform calculations, store information, retrieve data and process information. A computer has programmed data or computer language that tells the computer how to fulfil its purpose. The computer will only do what it is programmed to do.

Hence, the saying: "computers do not make mistakes; people do."

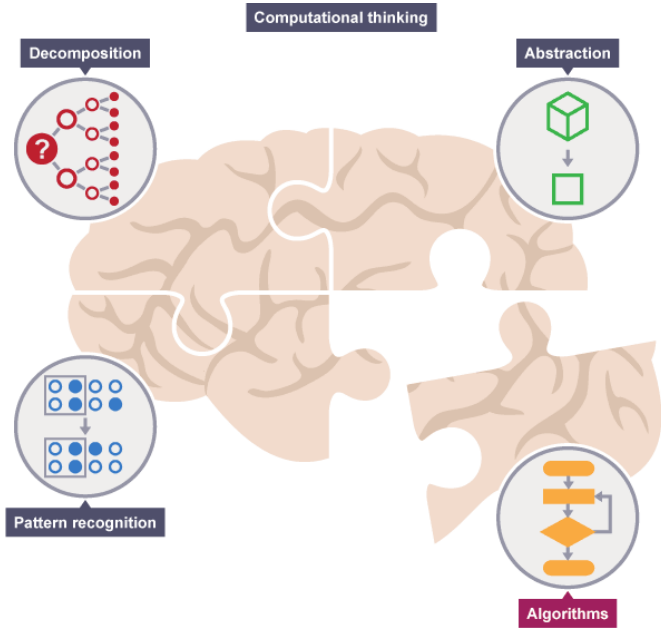


In programming, > means 'greater than', < means 'less than', ≥ means 'greater than or equal to' and ≤ means 'less than or equal to'.

Algorithm	Another way of saying rules and instructions in Computer Science. An Algorithm is a step-by-step procedure or set of instructions to achieve an outcome.
Decomposition	Each sub-problem accomplishes a clear, identifiable task. Sub-programs may be further broken down if needed.
Abstraction	Using symbols and variables to represent a real-world problem using a computer program and removing unnecessary detail.
Variables	a box in which data may be stored. The value can be changed as needed whilst the program is running.
Constants	a fixed value used by the program such as pi. The value cannot be changed whilst the program is running.
Declaring	a process to 'create' a variable or constant before it can be used
Assignment	assigning a value to a variable
Iteration	Repeating a set of steps several times.
Sub Programs	Small programs which form part of a larger program.

Capacity

Size	Unit
8 bits	1 byte (B)
1,000 bytes (1,000 B)	1 kilobyte (KB)
1,000 kilobytes (1,000 KB)	1 megabyte (MB)
1,000 megabytes (1,000 MB)	1 gigabyte (GB)
1,000 gigabytes (1,000 GB)	1 terabyte (TB)



Making a plan - It is important to plan out the solution to a problem to make sure that it will be correct. Using computational thinking and decomposition we can break down the problem into smaller parts and then we can plan out how they fit back together in a suitable order to solve the problem.

This order can be represented as an algorithm. An algorithm must be clear. It must have a starting point, a finishing point and a set of clear instructions in between.