

	Key Term	Definition
1	Computational Thinking	Computational Thinking is creating a solution to a problem, that either a human, computer or machine can understand.
2	Decomposition	Decomposition, is the breaking down of a larger problem , into more manageable chunks, making it easier to understand
3	Abstraction	Removing unnecessary information from a problem to make it easier to solve
4	Pattern Recognition	Identifying patterns or trends within a problem
6	Algorithm	Step by Step instructions to solve a problem or task.
7	Algorithm Design	The process of designing step by step instructions to solve a problem, that can then be used on similar problems.

Computational thinking is a process that can be used to solve complex problems.

It is used in Computing, but the same techniques can help you solve real-life problems.

It has 4 main parts:

- <u>Decomposition</u> splitting up the problem
- <u>Abstraction</u> finding the important information
- <u>Writing Algorithms</u> solving the problem in a logical way
- <u>Pattern Recognition</u> looking for patterns in the problem

## **Decomposition**



Programmers use decomposition by breaking down a problem into smaller chunks. They do this instead of writing a whole program in one go.

For example a game developer wants to create a racing game. This is how they could break down the tasks:

- 1. Create graphics (cars, people, tracks)
- 2. Create sound effects
- 3. Program how the car moves

Each smaller task is easier to test than the whole game at once.



## **Abstraction**

Picks out the important bits and removes any unnecessary information. This makes a problem easier to solve as only the important information is left.

Hazel watches a chef bake some cookies on TV. How could she use abstraction to write a recipe for the cookies?

Relevant information	Unnecessary information
The amount of each ingredient	The brand names of the ingredients
The order to mix the ingredients	The equipment used to mix them