

# Knowledge Organizer- iAlgorithm (Year 4 iCompute)

## Algorithms

### Key Vocabulary



**Instruction:** how something should be done



**Algorithm:** a set of instructions



**Program:** algorithms given in a language a computer can understand



**Test:** checking things work as expected



**Debug:** fixing problems



**Precise:** being very clear



**Sort:** putting data into a particular order



**Decomposition:** break a problem down into smaller parts to make the easier to solve

### What should I know about Algorithms?

**What is an algorithm?**

Algorithms are instructions that need to be followed in order to perform a task

**Who uses algorithms?**

Computers and people use algorithms every day to do things

**How are algorithms different for computers?**

People are clever and can make guesses about things. Computers are not clever and need instructions to be given to them very precisely

**How do we know an algorithm is correct?**

We can **test** algorithms by following the instructions and checking that what actually happens is what we want to happen

**How do you give a computer an algorithm precisely?**

People convert algorithms into a language that computers can understand. This is called a **computer program**.

**What if an algorithm is incorrect?**

If testing shows problems, we can change the algorithm to fix it. This is called **debugging**

**Why are sorting algorithms useful?**

Computers spend a lot of time sorting things in to order. They can usually only compare two values at once.

### Examples of Algorithms



**Quick Sort**

Repeatedly dividing a list of values into smaller parts



**Making a sandwich**

Adding spread to bread can be repeated for more than one slice



**Finding fewest ice cream vans needed**

On street corners so that people walk one street at the most to get icecream