What are algorithms?

An **algorithm** is a set of instructions to complete a task

What are algorithms?

Etymology:

From the name of the Persian scientist Al-Khwarizmi who wrote in about CE 825

Later the Greek word arithmos was added to get **algorithm**

What are algorithms?

An **algorithm** is a set of instructions to complete a task

- the instructions need to break the task down step by step
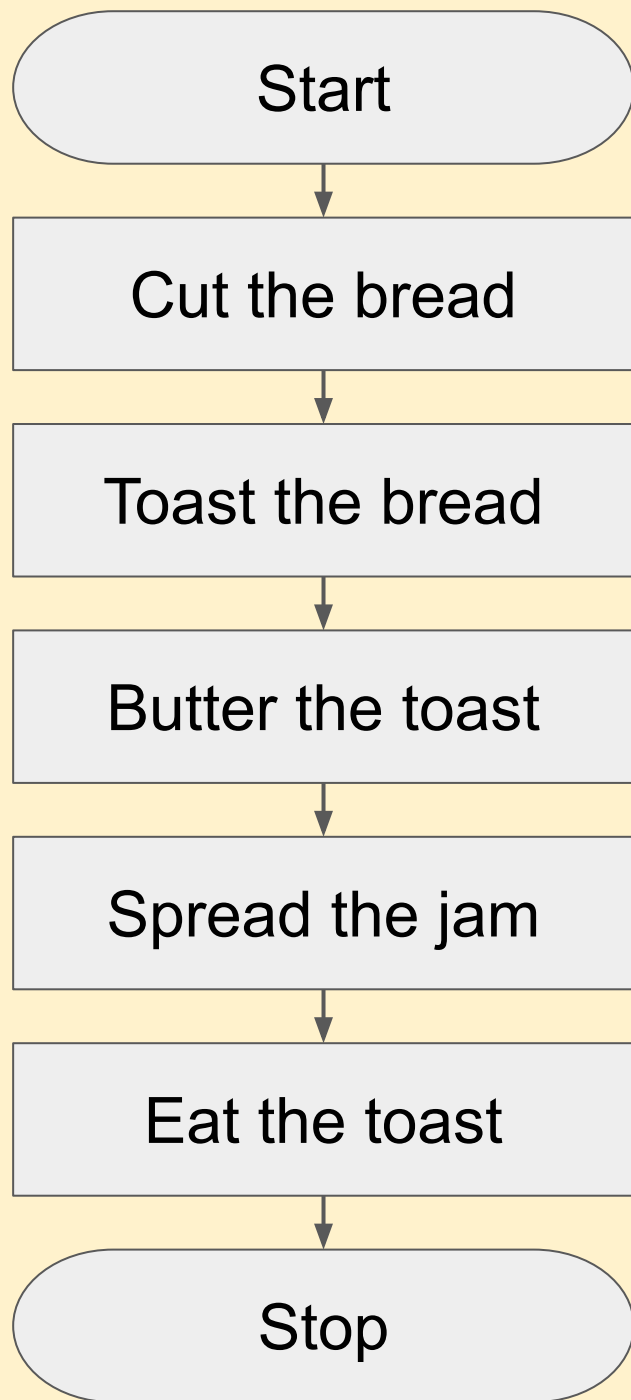- they need to be easy to follow

What are algorithms?

1. Start

2. Spread the jam

3. Slice the bread

4. Toast the bread

5. Eat the toast

6. Butter the toast

7. Stop

An algorithm is:
- step by step instructions
- in the right order
- break the problem down
- clear and unambiguous
- get the same result each time

This algorithm is written using **Structured English** instructions

```
Start
  │
  ▼
Cut the bread
  │
  ▼
Toast the bread
  │
  ▼
Butter the toast
  │
  ▼
Spread the jam
  │
  ▼
Eat the toast
  │
  ▼
Stop
```

Getting instructions in the right order is important

We call this **sequence**

This algorithm is written using a **flowchart**

What are algorithms?

Algorithms use:

- sequence

- selection

- repetition

Computer scientists use algorithms to plan how to write computer code

What are algorithms?

Computer algorithms are everywhere in the modern world:

- the YouTube algorithm tells use what to watch next

- Spotify* uses algorithms to recommend music to us

- shopping websites use algorithms to suggest things we might want to buy

What are algorithms?

Other key terms:

- A computer **program** is an algorithm that has been coded so that it runs on a computer

- **Sequence** means getting instructions in the right order

- **Repetition** means doing things more than once. **Iteration** is another word for repetition

- **Selection** means making a decision in an algorithm

- A **variable** is an area of computer memory where a value can be stored