

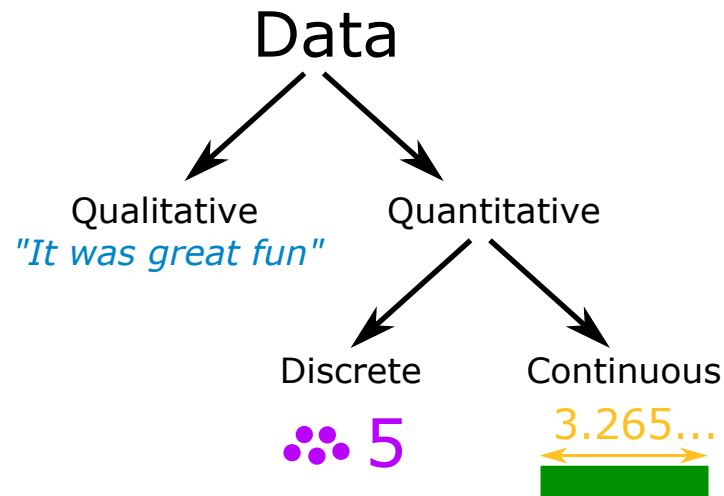
# What is Data?

Data is a collection of facts, such as numbers, words, measurements, observations or even just descriptions of things.

## Qualitative vs Quantitative

Data can be qualitative or quantitative.

- **Qualitative data** is descriptive information (it *describes* something)
- **Quantitative data** is numerical information (numbers)



**Quantitative data** can be Discrete or Continuous :

- **Discrete data** can only take certain values (like whole numbers)

- **Continuous data** can take any value (within a range)

Put simply: **Discrete data** is counted, **Continuous data** is measured

Example: What do we know about Arrow the Dog?

**Qualitative:**

- He is brown and black
- He has long hair
- He has lots of energy

**Quantitative:**

- Discrete:
  - He has 4 legs
  - He has 2 brothers
- Continuous:
  - He weighs 25.5 kg
  - He is 565 mm tall



To help you remember think "**Quantitative is Quantity**"

More Examples

**Qualitative:**

- Your friends' favorite holiday destination
- The most common given names in your town
- How people describe the smell of a new perfume

**Quantitative:**

- Height (Continuous)
- Weight (Continuous)
- Petals on a flower (Discrete)
- Customers in a shop (Discrete)

## Collecting

Data can be collected in many ways. The simplest way is direct observation.

### Example: Counting Cars



You want to find how many cars pass by a certain point on a road in a 10-minute interval.

So: stand near that road, and count the cars that pass by in 10 minutes.

You might want to count many 10-minute intervals at different times during the day, and on different days too!

We collect data by doing a [Survey](#).

## Census or Sample

A **Census** is when we collect data for **every** member of the group (the whole "population").

A **Sample** is when we collect data just for **selected members** of the group.

Example: 120 people in your local football club

You can ask everyone (all 120) what their age is. That is a census.

Or you could just choose the people that are there this afternoon. That is a sample.

A census is accurate, but hard to do. A sample is not as accurate, but may be good enough, and is a lot easier.

## Language

### Data or Datum?

The singular form is "datum", so we say "that datum **is** very high".

"Data" is the plural so we say "the data **are** available", but data is also a **collection** of facts, so "the data **is** available" is fine too.

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