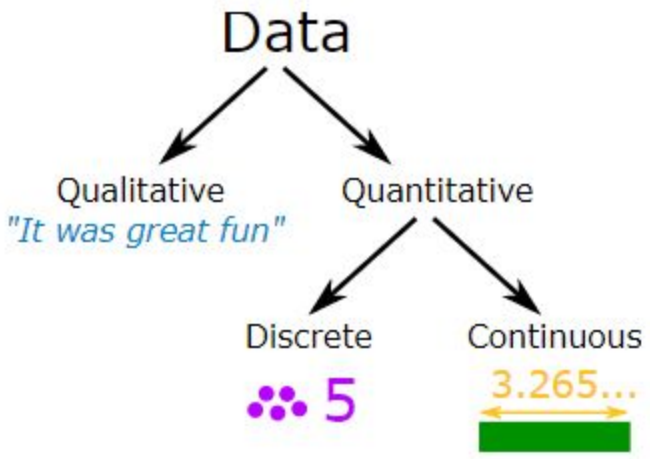
What is Data?

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,non-numeric)
- **Quantitative data** is numerical information (numbers,numeric)



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

More Examples

Qualitative:

1. Ordinal(grade,rank)
2. nominal(gender,name of person)

- 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!

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.

Example

Which one of the following is quantitative data?

A She is black and white.

B She has two ears.

C She has long hair.

D She has a long tail.

Which one of the following is continuous data?

A She has two eyes.	B She has five kittens.
C She weighs 5.4 kg.	D She has four paws.

Which one of the following is discrete data?

A She is 45.2 cm long.	B She is 22.3 cm high.
C She weighs 5.4 kg.	D She has 30 teeth.

A census collects information about:

A All members of the population.	B All adult members of the population.
C A large sample of the population.	D A small sample of the population.

Which one of the following is NOT quantitative data?

A The snake is 7 feet long	B The snake has two eyes
C The snake is green and yellow	D The snake has no legs

Which one of the following is discrete data?

A Sam is 160 cm tall	B Sam has two brothers and one sister
C Sam weighs 60 kg	D Sam ran 100 meters in 10.2 seconds

A sample collects information about:

A All members of the population.	B All adult members of the population.
C None of the population.	D Some, but not all, of the population.