

# Discrete vs. Continuous Data

by Sophia



## WHAT'S COVERED

This tutorial will discuss types of data by contrasting the following types of data:

1. [Discrete Data](#)
2. [Continuous Data](#)
3. [Discrete and Continuous Data in Practice](#)

## 1. Discrete Data

Usain Bolt is widely considered the greatest sprinter of all time. Let's consider some data on Mr. Bolt

- Gold medals: 8
- World records: 3
- 100 meter time: 9.58 seconds
- Weight: 207 lbs

All of these are numerical or quantitative data, but **discrete data** can only take on certain values within a range. Examples of discrete data would be the number of gold medals and world records. Those can only take whole number values. You can't have half of a medal. His race times and weight could be any value that we have the precision to measure.

The number of rail cars in a train and shoe sizes are also examples of discrete data. You can have half size shoe sizes, but that's all you can have. You can't have quarter size shoe sizes, or eighth of size shoe sizes, or 0.01 shoe sizes. You can't say that you're a size 9 and an eighth. So there are only certain values that shoe size can take. That makes it discrete.



### TERM TO KNOW

#### Discrete Data

Data that can only take so many different values.

## 2. Continuous Data

Now the difference between discrete and continuous is **continuous data** can take any value within a range. Some examples of data that are continuous are temperature, commute time, and wait. With all of these examples, you can take on any value within a range. So for instance, suppose you're talking about daytime temperature.

The daytime temperature could be something between 50 and 80 degrees on a summer's day, and it takes on any value between those. Same with commute time. One day it might take you 30 minutes and five seconds to get to work. The next day it might take you 32 minutes and 17 seconds.

And weight, one person might weigh 150.75 pounds, and one person might weigh 102.62 pounds. They can take on any value within a spectrum. As opposed to discrete values can only take certain values within a spectrum.



### TERM TO KNOW

#### Continuous Data

Data that can take any value within an interval.

## 3. Discrete and Continuous Data in Practice

Determine if each situation is discrete or continuous.



### WATCH



### TRY IT

Determine if the following are discrete or continuous.

Is barometric pressure discrete or continuous?



You should have said that barometric pressure is continuous because it can take any value within a certain range, usually somewhere around 30.

Is the number of pairs of shoes someone owns discrete or continuous?



Discrete. You can't have half a pair--I suppose you can half a pair of shoes if you've lost one--but you can't have any number of pairs of shoes within a certain range. Typically, it takes only whole number values.

Is the time for a light bulb to burn out discrete or continuous?



That's continuous. It could take any length of time from zero seconds all the way to a couple of years.

**Question:** Number of green M&Ms in a bag?

**Answer:** Discrete. Typically, again, we're dealing only with whole number values.



## SUMMARY

Quantitative data can be broken down into two subcategories. It can be called continuous. It can take on a range of values, or if it can only take certain values, we call it discrete. And every quantitative data measurement that we get is either going to be continuous or discrete. And the terms we used are continuous data, which can take on any number in a range; and discrete data, which can only take on certain values. This tutorial also put discrete and continuous data in practice to allow for some application!

Good Luck!

Source: THIS TUTORIAL WAS AUTHORED BY JONATHAN OSTERS FOR SOPHIA LEARNING. PLEASE SEE OUR [TERMS OF USE](#).



## TERMS TO KNOW

### Continuous Data

Data that can take any value within an interval.

### Discrete Data

Data that can only take so many different values.