

Exercise walk-through

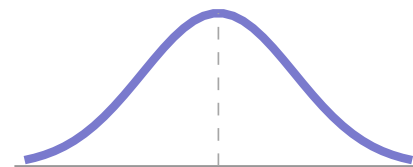
1.8

Graphical Representations of Summary Statistics

AP Statistics

What we will cover

- 1 Variables and data
- 2 Displaying categorical data
- 3 Displaying quantitative data
- 4 Describing a distribution
- 5 Summary statistics
- 6 The normal distribution

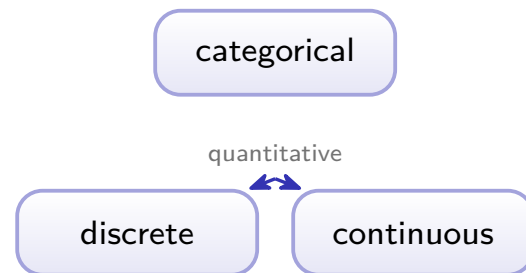


Variables and data

Statistics learns from **data** through **variability**. Each **variable** is one of two types:

- **categorical** : a group (eye colour)
- **quantitative** : a number (height)

Descriptive statistics summarize a sample; **inference** generalizes to a population.



The vocabulary the whole course rests on

statistics

the science of learning from **data**
the real world

– numbers or labels collected from

a parameter

a numerical summary of a whole **population**

a statistic

a numerical summary of a **sample** – and it varies from sample to sample

a variable

a characteristic that can differ between individuals

categorical

places an individual in a group – shown with **bar charts**
charts

and pie

quantitative

a numerical measurement – shown with dotplots, histograms and boxplots

Descriptive statistics summarises the sample; **inferential statistics**
something about the population. The whole course is the second.

uses it to say

Exercises 2.1-2.3

2.1 Name the five values in a five-number summary.

[2]

2.2 State the rule for identifying an outlier.

[1]

2.3 For a data set with $Q_1 = 10$ and $Q_3 = 20$, find the IQR.

[1]

Exercises 2.1-2.3

2.1 Name the five values in a five-number summary. [2]

2.1

- minimum, Q_1 , median, Q_3 , maximum
-

2.2 State the rule for identifying an outlier. [1]

2.2

- a value below $Q_1 - 1.5 \times \text{IQR}$ or above $Q_3 + 1.5 \times \text{IQR}$
-

2.3 For a data set with $Q_1 = 10$ and $Q_3 = 20$, find the IQR. [1]

2.3

- $20 - 10 = 10$

Exercises 3.1-3.2

3.1 A boxplot is built from the

[1]

☐

A mean and standard deviation

B five-number summary

C histogram

D z -scores

3.2 A value is an outlier if it is more than _____ $\times$ IQR beyond a quartile.

[1]

☐

A 1

B 1.5

C 2

D 3

Exercises 3.1-3.2

3.1 A boxplot is built from the

[1]

☐

A mean and standard deviation

B five-number summary

C histogram

D z -scores

3.1 B

- five-number summary.

3.2 A value is an outlier if it is more than _____ $\times$ IQR beyond a quartile.

[1]

☐

A 1

B 1.5

C 2

D 3

3.2 B

- 1.5.

Exercise 3.3 (a)

3.3 A data set has $Q_1 = 15$ and $Q_3 = 27$.

(a) Find the IQR.

[1]

Exercise 3.3 (a)

3.3 A data set has $Q_1 = 15$ and $Q_3 = 27$.

(a) Find the IQR.

[1]

(a)

- $27 - 15 = 12$

Exercise 3.3 (b)

3.3 A data set has $Q_1 = 15$ and $Q_3 = 27$.

(b) Find the upper outlier boundary, $Q_3 + 1.5 \times \text{IQR}$.

[2]

Exercise 3.3 (b)

3.3 A data set has $Q_1 = 15$ and $Q_3 = 27$.

(b) Find the upper outlier boundary, $Q_3 + 1.5 \times \text{IQR}$.

[2]

(b)

- $27 + 1.5 \times 12 = 27 + 18 = 45$