D4.2 Median

This spread will show you how to:

- Calculate the median of small sets of data

Keywords
Average
Median
Representative value

You can use an **average** to represent a set of data.
One **representative value** is called the median.

- **The median is the middle value when the data are arranged in order of size.**

The data must be in numerical order.

Example

Lisa catches a bus each day.
The number of minutes that the bus is late is shown.

1, 3, 1, 4, 0, 2, 2

Calculate the median number of minutes late.

First arrange the data in numerical order.

0, 1, 1, 2, 2, 3, 4
↑
middle value

Median = 2 minutes

- **When there are two middle numbers, the median is the number that is halfway between these two middle numbers.**

Example

The numbers of passengers in 10 cars were counted. The results were

2 0 1 0 3 2 0 0 4 0

Calculate the median number of passengers.

First arrange the data in numerical order.

0 0 0 0 (0 1) 2 2 3 4
↑
two middle values

Median = (0 + 1) ÷ 2
= 0.5 passengers

For an even number of data items, there will be two middle values.

Exercise D4.2

1 **a** Write these numbers in order, smallest first.

i 7, 8, 8, 5, 4, 3, 3 **ii** 11, 12, 10, 9, 9

iii 38, 35, 30, 37, 34 **iv** 101, 98, 103, 97, 99, 97, 95

v 3, 2, 0, 0, 1, 2, 1, 2, 3

b Use your answers to find the median of each set of numbers.

2 The weights of five boys are given.

a Arrange the weights in order, smallest first.

b Find the median weight.

c Which boy has the median weight?

Tony	71 kg
Tom	64 kg
Tim	61 kg
Tariq	70 kg
Thomas	66 kg

3 Eleven students were asked how many hours of television they had watched yesterday. The results were

4, $3\frac{1}{2}$, 0, 1, $\frac{1}{2}$, 5, 2, $2\frac{1}{2}$, 10, 1, $1\frac{1}{2}$

Find the median number of hours of television watched.

4 The numbers of tomatoes on each of seven plants in a greenhouse are

12, 6, 9, 15, 10, 9, 7

Find the median number of tomatoes on the plants.

5 The ages, in years, of eight children in a creche are:

2, 4, 2, 3, 5, 1, 3, 4

Find the median age for the children.

6 Ten students were asked to estimate a minute.
Their attempts, in seconds, were

65, 71, 57, 41, 56, 68, 85, 42, 58, 60

Calculate the median time in seconds.

7 The numbers of passengers in 20 cars are recorded. The numbers are

1, 0, 0, 1, 2, 3, 5, 0, 1, 2, 1, 1, 2, 0, 0, 0, 4, 2, 1, 1

Calculate the median number of passengers.

8 Explain why these statements are wrong.

a The median of 3, 2, 1, 5, 6 is 1.

b The median of 1, 1, 2, 3 is 1 or 2.

c You cannot find the median of 8, 8, 9, 10 because there is no middle number.