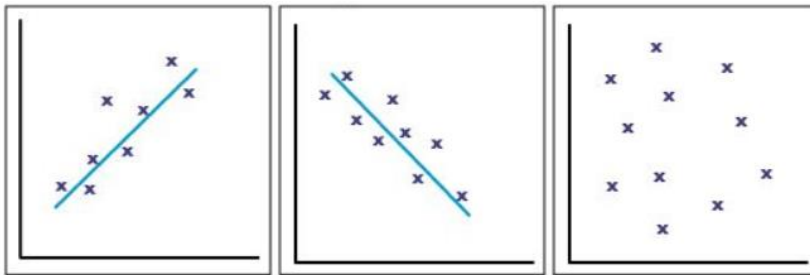# Y8 Maths Knowledge Organiser Topic 14: Handling data 2

What must I be able to do?

You may need to revise the following:
- Year 7 Topic 13: Averages
- Year 7 Topic 14: Handling Data

New content:
- ☐ Find the mode, median and mean from tables and graphical representations
  - ➢ Mathswatch S10a
- ☐ Explore methods of data collection including surveys, questionnaires and the use of secondary data
- ☐ Appreciate the difference between discrete and continuous data
  - ➢ Mathswatch 63 (GCSE)
- ☐ Describe simple mathematical relationships between two variables (bivariate data) and illustrate using scattergraphs
  - ➢ Mathswatch S8

Key vocabulary

Discrete data	Data which takes <u>fixed</u> values. E.g. Shoe sizes, number of people.
Continuous data	Data which can take <u>any</u> <u>value</u>. Usually any data which is measured, e.g. height, weight.
Bivariate data	Data for <u>two variables</u>.
Correlation	A measure of <u>relationship</u> between <u>two variables</u>.

Types of correlation

Positive correlation:
As one value increases, so does the second.

Negative correlation:
As one value increases, the second decreases

No correlation.

Drawing and using scatter graphs

e.g.

Ice Cream Sales vs Temperature	
Temperature °C	**Ice Cream Sales**
14.2°	$215
16.4°	$325
11.9°	$185
15.2°	$332
18.5°	$406
22.1°	$522
19.4°	$412
25.1°	$614
23.4°	$544
18.1°	$421
22.6°	$445
17.2°	$408

Line of best fit.

Drawn by hand **using a ruler** to fit the data as best as possible.

Shows the general trend and can be used to make predictions if you only knew one value

e.g. if the temperature was to be 21°C you would predict sales of about $480 by reading up to the line of best fit from 21°C.

The line of best fit does not usually go through (0, 0).

Each pair of values is plotted as a point on the scatter graph

e.g. (17.2, $408)

Averages from tables

e.g. This table shows the number of people travelling in each of 21 cars

# of people	Frequency
1	8
2	6
3	3
4	4
	Total = 21 cars

The average will be related to these values

The **mode** will be the group with the largest frequency. The highest frequency is 8 so the mode is 1 person in a car.

The **median** is the middle value. There are 21 values in total (the sum of the frequency) so the middle value will be the 11th. The first 8 values are all 1s, the next 6 values are all 2s which is 14 values in total. So the 11th value was a 2. The median is 2 people in a car.

The **mean** is the average number of people per car:

# of people	Frequency	Total
1	8	8 x 1 = 8
2	6	6 x 2 = 12
3	3	3 x 3 = 9
4	4	4 x 4 = 16
	21 cars	45 people

8 cars have 1 person. 8 x 1 = 8.

6 cars have 2 people. 6 x 2 = 12.

3 cars have 3 people. 3 x 3 = 9.

4 cars have 4 people. 4 x 4 = 16.

So the total is 8 + 12 + 9 + 16 = 45 people.
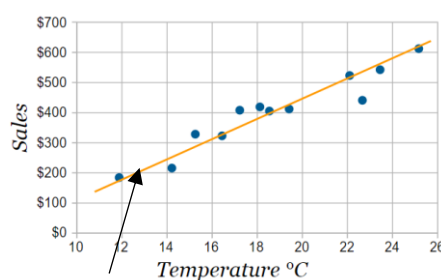
45 ÷ 21 = 2.14 people per car (2.d.p.)