# Year 7 - Unit 12: Handling Data & Statistical Diagrams

## Learning Journey:

**Prior Learning**

- Read and interpret simple charts, tables and pictograms.
- Add, subtract, multiply and divide whole numbers and decimals accurately.

**Next Steps**

- Analyse grouped data and calculate averages from more complex frequency tables.
- Apply statistical skills to GCSE data handling, probability and problem-solving.

**By the end of this unit, you should be able to:**

- Calculate and interpret the mean, median, mode and range from data sets and frequency tables.
- Draw, interpret and compare data presented in bar charts, pictograms, tally charts and two-way tables.

## Keywords:

**Mean –** The total of the values divided by how many there are.
**Median –** The middle value when the data is in order.
**Mode –** The value that appears most often.
**Range –** The difference between the highest and lowest values.
**Frequency –** The number of times a value occurs.
**Two-way table –** A table that organises data into two categories.

## Working out mean, mode, median and range

| MEAN | MEDIAN | MODE |
|---|---|---|
| Find the mean for the data set:<br>$10, 8, 5, 5, 6, 7, 5, 11, 4, 9, 3$<br>$\text{Mean} = \frac{\text{total}}{\text{number of values}}$<br>$\text{Mean} = \frac{10+8+5+5+6+7+5+11+4+9+3}{11}$<br>$\text{Mean} = \frac{73}{11}$<br>Mean $= 6.64$ (rounded to 2 decimal places) | Find the median for the data set:<br>$10, 8, 5, 5, 6, 7, 5, 11, 4, 9, 3$<br>The median is the middle number.<br>List the numbers in order from least to greatest:<br>~~3~~ ~~4~~ ~~5~~ ~~5~~ ~~5~~ 6 ~~7~~ ~~8~~ ~~9~~ ~~10~~ ~~11~~<br>***Median*** is **6**. | Find the median for the data set:<br>$10, 8, 5, 5, 6, 7, 5, 11, 4, 9, 3$<br>The mode is the number that has the highest frequency in the data values. Putting the numbers in order from least to greatest is helpful.<br>3 4 5 5 5 6 7 8 9 10 11<br>***Mode*** is **5**. |

RANGE
3 4 5 5 5 6 7 8 9 10 11
$11 - 3 = 8$
Range $= 8$

## Frequency Tables

A **frequency table** is a way of organising collected data. To do this we draw a table with **three columns**:

- The first column is for the different items in the data set.
- The second column is for the tally marks.
- The last column is the frequency column where we can add up the tally marks and write in the corresponding frequencies.

We can add up all of the frequencies to find the total frequency of the set of data.

E.g. Colours of 12 shirts in a wardrobe,

| | | | | | |
|---|---|---|---|---|---|
| blue | pink | blue | white | white | blue |
| black | white | blue | pink | blue | white |

| Colour | Tally marks | Frequency |
|---|---|---|
| Black | \| | 1 |
| Blue | 𝍸 | 5 |
| Pink | \|\| | 2 |
| White | \|\|\|\| | 4 |
| | | Total = 12 |

## Two-way tables

A **two way table** is a type of **frequency table** used for **organising data**.
We need a data set with two **categorical variables**.

Example This two way table shows a data set about what students eat for lunch.

The first column shows the type of food chosen.

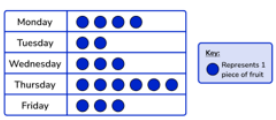
| | Boys | Girls | Total |
|---|---|---|---|
| Cooked food | 18 | 22 | 40 |
| Packed lunch | 17 | 33 | 50 |
| Total | 35 | 55 | 90 |

The top row shows boy or girl.

## Pictograms

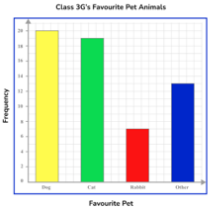
To draw a pictogram, we use a **graphic symbol** that is associated with a **frequency or value**. Each pictogram requires a **key** that explains the value that the symbol represents.

For example, the pictogram below shows the number of pieces of fruit a person has eaten in one week.




## Bar Charts

A **bar chart** represents a data set by using vertical or horizontal bars. The larger the bar, the higher the value for the individual category.




To draw a **bar chart** we need the following:

- A pair of axes. Usually the horizontal axis is labelled with the categories of the data set and the vertical axis is the frequency. Your axes must be labelled.
- The frequencies need to be labelled on the vertical axis in equal intervals.
- The bars need to have equal gaps between them as it is representing discrete data.
- The bars need to be of equal width.
- The chart needs a title.