Averages and range from a list of values

Starter

1. **(Review of last lesson)**
    Work out the 4-point moving averages for this data: $5, 10, 11, 14, 13, 22, 27, 26$

2. **(Review of previous material)**
    Twenty customers gave a restaurant a mark out of 10. Their marks are below:
    $$3 \quad 7 \quad 4 \quad 8 \quad 3 \qquad 7 \quad 5 \quad 2 \quad 8 \quad 9 \qquad 9 \quad 6 \quad 1 \quad 3 \quad 4 \qquad 5 \quad 6 \quad 5 \quad 7 \quad 7$$
    Find:
    (a)   the mode.
    (b)   the median mark.
    (c)   mean mark.
    (d)   range

Notes

We have met the averages (mean, median, mode) and the range in previous years.

Mean $= \dfrac{\text{sum of values}}{\text{number of values}}$.

Median $=$ middle value when the values are written in increasing (or decreasing) order.
N.B.   If there is an even number of values, find the mean of the two middle values.

Mode (or modal value) $=$ the most common value.

Range $=$ largest value $-$ smallest value.

N.B.   The units of all the averages and the range are the same as the data values.
Always include units with your answer.

E.g. 2 The mean average salary of 6 employees at a company is £$23,000$. The boss earns
£$43,000$. What is the mean average, to the nearest £, of all people at the company?

> **Working:**   Total salaries $= 6 \times 23000 + 43000 = 181000$
> Mean average of employees $= \dfrac{181000}{7} = $ £25857 (nearest pound)

E.g. 3 The mean average for the first 7 long jump competitors was 4.52 m. After the 8th
competitor the mean changed to 4.56 m. How far did the 8th competitor jump?

E.g. 4 For a set of six data values the mode is 12, the median is 13, the mean is 14 and the
range is 11. Given that the maximum value is 20, find the other values.

Video:	**Mean**
Video:	**Mode**
Video:	**Median**
Video:	**Range**

Solutions to Starter and E.g.s

Exercise

9-1 class textbook: p469 M14.1 Qu 1-3, 5-13 (Qu 4 needs simultaneous equations)
A*-G class textbook: p423 M14.1 Qu 1-6, 8-15 (Qu 7 needs simultaneous equations)
9-1 homework book: p160 M14.1 Qu 1-4, 6-11 (Qu 5 needs simultaneous equations)
A*-G homework book: p117 M14.1 Qu 1-4, 6-10 (Qu 5 needs simultaneous equations)

Summary

$$\textbf{Mean} = \frac{\text{sum of values}}{\text{number of values}}.$$

Median = middle value when the values are written in increasing (or decreasing) order.

     N.B.   If there is an even number of values, find the mean of the two middle values.

Mode (or modal value) = the most common value.

Range = largest value − smallest value.