

## Can I work out the mode and range of a set of data and use this to answer questions?

### Teaching guidance

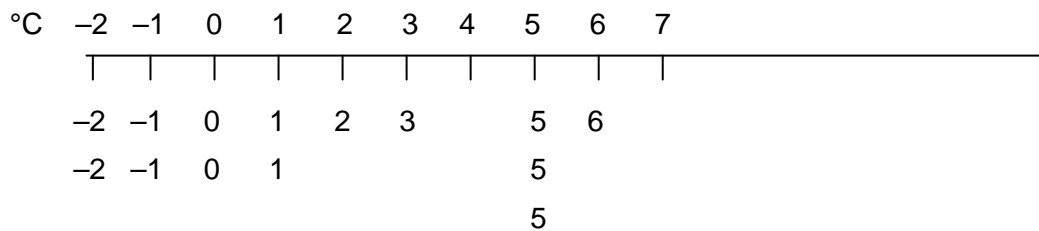
#### Key vocabulary

frequency, mode, maximum/minimum value, range, average, statistics, data, information, measure, survey, questionnaire, interval, explain, justify

#### Models and images

Use a number line to represent data given in a frequency table, to draw attention to where and how often each value occurs, for example:

Daily temperature (°C)	-2	-1	0	1	2	3	5	6
Frequency	2	2	2	2	1	1	3	1



The range is from -2 to 6, which is a difference of 8, and the mode is 5.

Use practical methods to help children physically identify the range. For example, ask groups of six children to take measurements of their hand spans for both hands, and to record the lengths on paper strips of two colours (one colour for the right hand, another for the left hand). Then, after they have written the lengths on the strips of paper, ask them to order the 12 strips of paper by size of the measurement, smallest to largest, and record the range of hand spans for their group as follows:

The range of hand spans for our group was ... .

The range of left-hand spans for our group was ... .

The range of right-hand spans for our group was ... .

This group data could then be pooled to produce the three ranges for the whole class.

## Teaching tips

- Introduce frequency and mode by giving children pieces of paper with the results of a simple survey written on them, and asking them to produce a human bar chart; the frequency for any number is the number of children in the queue and the mode is the number represented by the longest queue.
- Create a frequency chart to give a visual image of the data (see above). This gives an image of both mode and data range.
- Use a number line to model how to work out the range of a set of data.
- Make links between handling data in mathematics and its use in other areas of the curriculum, for example, finding the range of children's ages attending school in Victorian times and the present day or finding the mode and range of standing long-jumps in PE.
- Explore real-life examples of when the mode and range are useful tools, for example, when clothes manufacturers are making clothes and shops are ordering a number of garments in each size.
- Children need to understand that the range and mode describe aspects of the data set they are using or have generated. For example, give children two dice, one with even numbers 2, 4, 6, 8, 10 and 12; the other with the odd numbers 3, 5, 7, 9, 11 and 13. Ask the children to roll the two dice, find the difference between the two numbers displayed and place a cube above this number on a number line. After five rolls ask them to record:
  - The range of results was from... to...
  - The mode was...

Repeat the process after 10, 15, 20 and 25 rolls; then ask children to look at the emerging pattern in the results to try to predict the range and mode after 40 rolls.