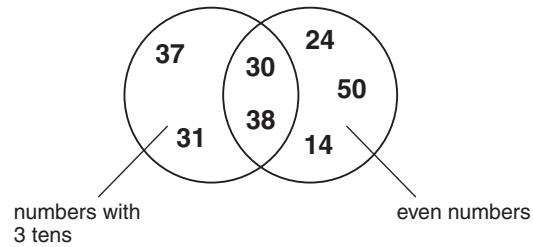Solve a problem by collecting, organising, representing, extracting and interpreting data in tables, graphs and charts (continued)

Use **sorting diagrams** such as two-way Venn and Carroll diagrams to display information about shapes or numbers.

For example:

- This **Venn diagram** records how some number cards were sorted.

numbers with 3 tens   even numbers

Put these numbers on the diagram: 8, 33, 36, 41.
Choose some other numbers. Add them to the diagram.

- This **Carroll diagram** records how some of the whole numbers from 20 to 39 were sorted.

	odd	not odd (even)
numbers that have 3 tens	37 31	38 30
numbers that do not have 3 tens	23 25	26 20

Add these numbers to the diagram: 24, 35.

Develop understanding of the **mode** (most common item) and the range (difference between greatest and least) of a set of data.

Test a prediction such as:
Most of our class will get 9 out of 10 questions right in a mental test and 8 out of 10 right in a spelling test.

Discuss questions like:
* How can we find out if this is true?
* What information shall we collect?
* How shall we organise it?

Make a simple **database on paper**. For example:

Scores for 10 spelling and 10 mental answers

| Name	Mental test score	Spelling test score
Danny	8	9
Elizabeth	10	7
Anil	7	9

Find the most common score in each test (mode). Put the scores for one of the tests in order to find the maximum and minimum score, and the difference between them (range). Repeat for the other test. Discuss outcomes, and the extent to which the prediction was true.

Draw and interpret a **line graph**. Understand that intermediate points may or may not have meaning. For example:

* In science, investigate room temperature. For example, use an IT sensor to collect, store and retrieve room temperature in a classroom. (Points in the resulting graph are joined to show trends.)

Room temperature on 19 May
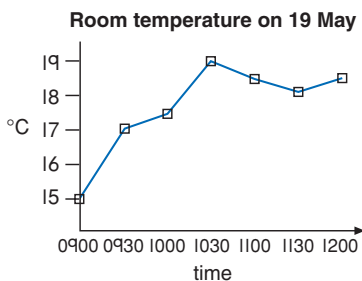
* This graph shows the level of water in a rain barrel during the month of April. Explain it by describing the pattern of rainfall throughout the month.

Level of water during April
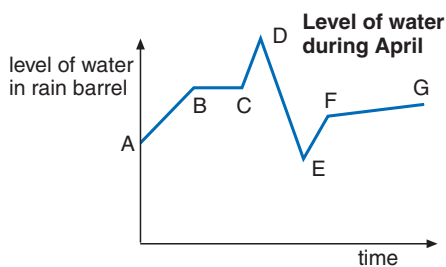
Find the **mode** and range of a simple set of data in a computer database. Begin to find the **mean** and **median**.

For example, make a simple **computer database**. Transfer the results of a spelling test and a mental test to it and then use its facilities to find out, for example:

* Who scored more than 7?
* What were the frequencies of scores of 10, 9, 8...?
* What was the most common score (the mode)?
* What was the difference between the greatest and least scores (the range)?
* What was the middle score (the median)?
* What was the mean score (the sum of all the scores divided by the total number of scores)?

In other subjects, test hypotheses by interrogating data in a **prepared computer database**, such as census data or data on road safety. For example:

Do people live longer today than 100 years ago?
Do most accidents occur when it is dark?

Use the facilities of the database to compare and contrast the presentation of data in different charts or graphs, deciding which is best for its purpose. Discuss the efficiency of a computer database compared with searching and sorting a paper database.

Begin to draw and interpret a **line graph, in which intermediate values have meaning**.
For example:

* This road sign is in miles. Use the conversion graph to rewrite the road sign in kilometres.

Darlington	15
Durham	35
Newcastle	45
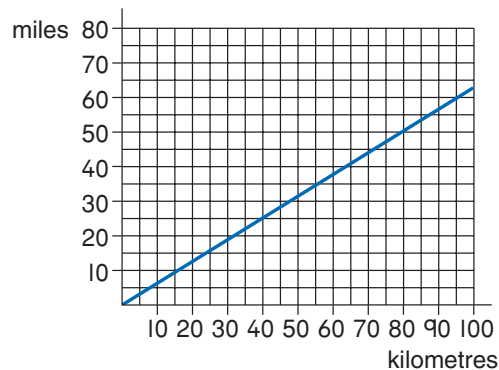
* The tourist rate for South Korea is 2000 won to £1. Construct a graph to convert pounds to won. Use the graph to find out what you get when you exchange:
£5, £8.50, 9000 won, 13 125 won.

* Draw and use a '3 times-table' graph.