Can I explain what different diagrams and graphs represent, read information from them and draw conclusions from this information?

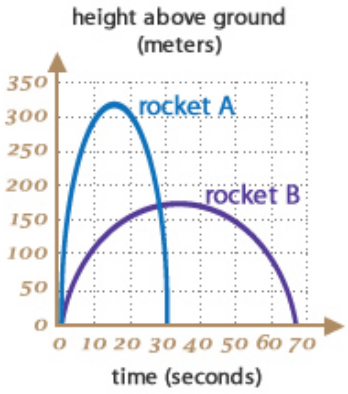
Teaching guidance

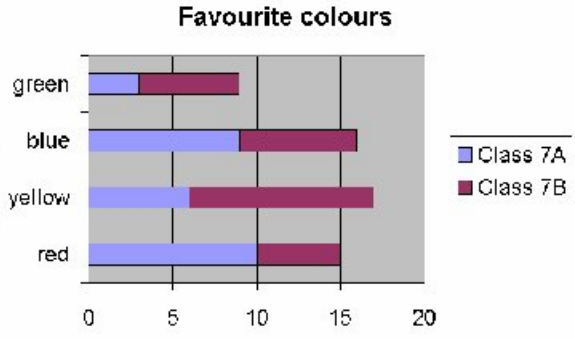
Key vocabulary

data, graph, chart, scale, interval, axis/axes, pictogram, bar chart, bar-line chart, line graph, pie chart, frequency, mode, range, mean, average, median, continuous data, discrete data, grouped data

Models, images and resources

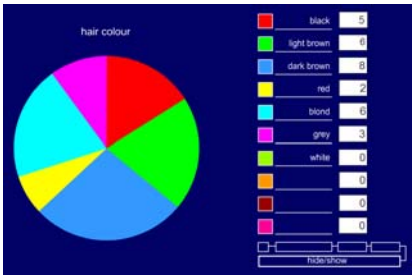
A variety of graphs and charts including unfamiliar forms

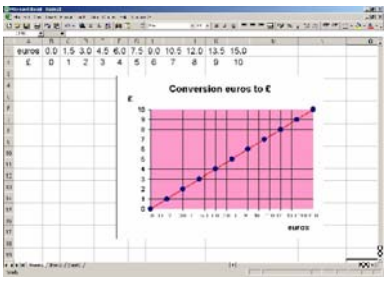




Computer programs

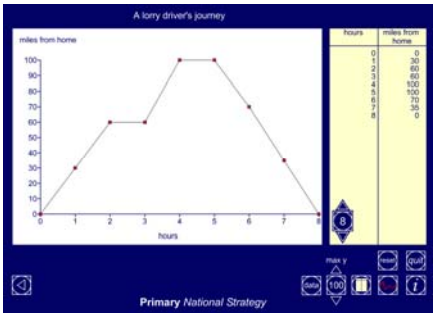
Data handling ITP





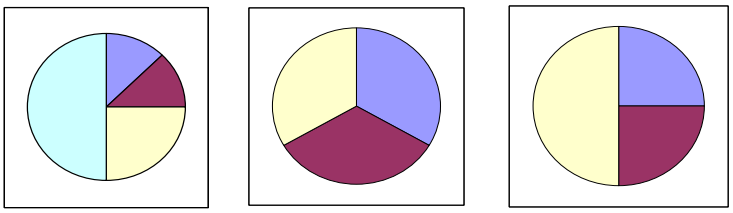
Spreadsheets

Line graph ITP



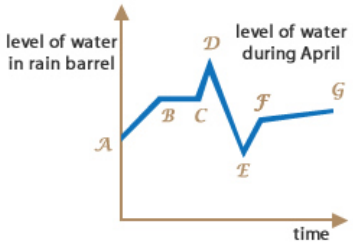
Teaching tips

- When looking at the information contained within a chart or diagram it is useful to consider with children the following constituents (as appropriate) of the diagram:
  - title
  - source of the data
  - size of the population and size of the sample from it that was used
  - date the diagram was produced
  - labels on the axes
  - scale or scales used, and their relevance to the specific data
  - interval sizes
  - any overall impression of the data represented by the diagram, as an overview (for example, any trends, apparent distinctions between contrasting information recorded).
- Use Data handling ITP (or another similar resource) to show a series of simple pie charts, for example:

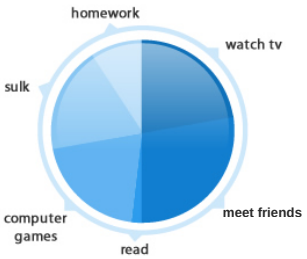


- Ask children to make comparisons between the charts, such as:
  - fractions or percentages of the charts in each colour and what this could represent
  - sizes of the angles and the way these relate to the proportion represented by a section of the chart
  - number of people represented by each section if the whole pie represents, for example, 12 people.
- Make statements (a mixture of true and false) for children to decide whether the data has been interpreted correctly or incorrectly. Get children to explain and justify their answers.

- Explore and interpret a wide range of representations of data including:
  - horizontal bar graphs
  - grouped data
  - line and bar graphs representing more than one set of information
  - conversion graphs.
- Collect graphs from a variety of sources, including some of the less familiar formats of graphs in end of Key Stage 2 tests, diagrams from newspapers and magazines, diagrams from publicity material (such as supermarket healthy eating advice leaflets), graphs used in other subjects such as science and geography.
- Use data to describe patterns, for example in the weather:
  - This graph shows the level of water in a rain barrel during the month of April in the UK. Explain what is happening to the level of water in the barrel over the course of the month. Next, as children to suggest possible explanations for what could have been happening during this period (for example, evaporation due to hot weather, someone removing some of the water to label their plants. Label parts of the line to which you want pupils to pay particular attention in their explanations.



  - Ask pupils to suggest a suitable scale, explaining reasons for their suggestions.
- Develop the interpretation of pie charts by:
  - relating fractions to the sectors of the pie chart
  - using the fractions of amounts to find out the value of the sectors
  - using the value of one sector to find out the value of other sectors
  - drawing conclusions from pie charts, and explaining how these relate to the charts.



  For example:
  - This chart shows what 80 12-year olds like to do in the evenings.
  - What observations can pupils make about preferences of the children surveyed?

- Explore connections with time–distance graphs and miles or kilometres per hour (mph or kph). Support pupils in making observations about differences and similarities between graphs showing the same journey in miles per hour and kilometres per hour. Help them to explain what they notice.
- Use prompts to guide pupils in drawing conclusions and considering extensions, for example
  - I have noticed that … … and the graph tells me this because …
  - This agrees/disagrees with my interpretation because …
  - I was surprised that …
  - This might be because …
  - Because the graph gives the information that … … , I would expect that …