

## STATISTICS

### Specifying a problem, planning and collecting data

Pupils should learn to:	As outcomes, Year 7 pupils should, for example:
<b>Decide which data to collect and identify possible sources</b>	<p><b>Decide which data would be relevant to the enquiry and possible sources.</b></p> <p>Relevant data might be obtained from:</p> <ul style="list-style-type: none"><li>• a survey of a sample of people;</li><li>• an experiment involving observation, counting or measuring;</li><li>• secondary sources such as tables, charts or graphs, from reference books, newspapers, <b>websites</b>, <b>CD-ROMs</b> and so on.</li></ul> <p>For example:</p> <ul style="list-style-type: none"><li>• <i>How do pupils travel to school?</i> Data needed for each individual pupil: the method of travel, why that method is used, how long the journey takes, the distance to school.</li><li>• <i>Do different types of newspaper use words (or sentences) of different lengths?</i> Data needed from each newspaper: a count of an agreed number of words (or sentences) from each paper.</li><li>• <i>How does the population vary from one country to another?</i> Data needed for each country: population figures, e.g. from books, <b>websites</b> or <b>CD-ROMs</b>.</li><li>• <i>Can taller people hold their breath longer than shorter people?</i> Data needed for each person: height, time that they can hold their breath.</li></ul> <p>Determine the sample size and type, e.g. who to ask, how many to ask, where and when the sample should be taken.</p> <p>Decide what units to use for measurements such as pupils' heights, distances travelled, times of journeys...</p>

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As outcomes, Year 8 pupils should, for example:

Decide which data to collect to answer a question, and the degree of accuracy needed; identify possible sources.

Relevant data might be obtained from:

- a questionnaire or survey of a sample of people;
- an experiment involving the use of hand-held technology such as **data-loggers** with **graphic calculators** or **computers**;
- secondary sources, such as reference materials, including **websites**, **CD-ROMs**, newspapers, directories, historical records...

For example:

- Plan a questionnaire to find out how often and how people travel to shopping centres, or what their TV viewing habits are.
- Plan an experiment using hand-held data-logging equipment to measure light intensity in different parts of a stream, or to measure cooling rates.
- Plan how to research sports results on the **internet**, including what to look for and what to record.

Recognise that data from primary sources may take more time and resources to collect than from secondary sources but may give more insight and address more precisely the problem being explored.

Determine the sample size and type, e.g. who and how many to ask, how, where and when the sample should be taken. Recognise that too small a sample may give unrepresentative results, while too large a sample may be expensive in resources and time.

As outcomes, Year 9 pupils should, for example:

Discuss how data relate to the enquiry and identify possible sources, including primary and secondary sources.

Relevant data might be obtained from:

- a questionnaire or survey of a sample of people;
- printed tables and lists;
- the **internet**;
- other **computer databases**.

For example:

- Plan how to conduct a survey into long jumps or throws with different lengths of run-up.
- Identify magazines and books with information on engine sizes of cars and acceleration times for 0–60 mph.
- *Determine a range of countries with different sizes of population, development and income. Search the **internet**, **CD-ROMs** or printed sources of information for relevant information.*
- *Visit the library to access census data for the local area, relating to a study of housing.*
- *Construct a questionnaire to explore attitudes to fairly-traded goods and a survey for shops.*