

LOOKING AT US

To collect accurate information and enter it into a computer database. To use the database to produce graphical illustrations.

†† Whole class and pairs.

⌚ Session 1: 45 minutes to collect data.

Session 2: 5 minutes per pair computer time; 15 minutes demonstration.

Previous skills/knowledge needed

The children will need to know how to measure their physical dimensions or attributes such as height, weight, foot length and so on.

Key background information

Computers are highly efficient at processing large amounts of data and storing it in a small amount of space. Data is usually handled on computers using a database system that allows easy storage of information and access to it in an organised way. The data is usually stored under particular headings, for example in a database containing information about a class of children, these could include height, weight or hair colour. Headings are referred to as fields within the database. Many databases also offer facilities to illustrate the data, chiefly in graph form. Often there is a choice of the type of graph drawn such as pie chart, histogram or line graph. Certain graphs are more appropriate than others, depending on the type of data being displayed. A line graph is appropriate for displaying a variation over time (change in temperature, for example), a pie chart would be suitable to compare proportions such as the number of children with blue, brown or green eyes in your class.

A sophisticated database will offer search facilities which further simplify access to the required information. Searches may be carried out using either keywords or a logical search, depending on the sophistication of the database.

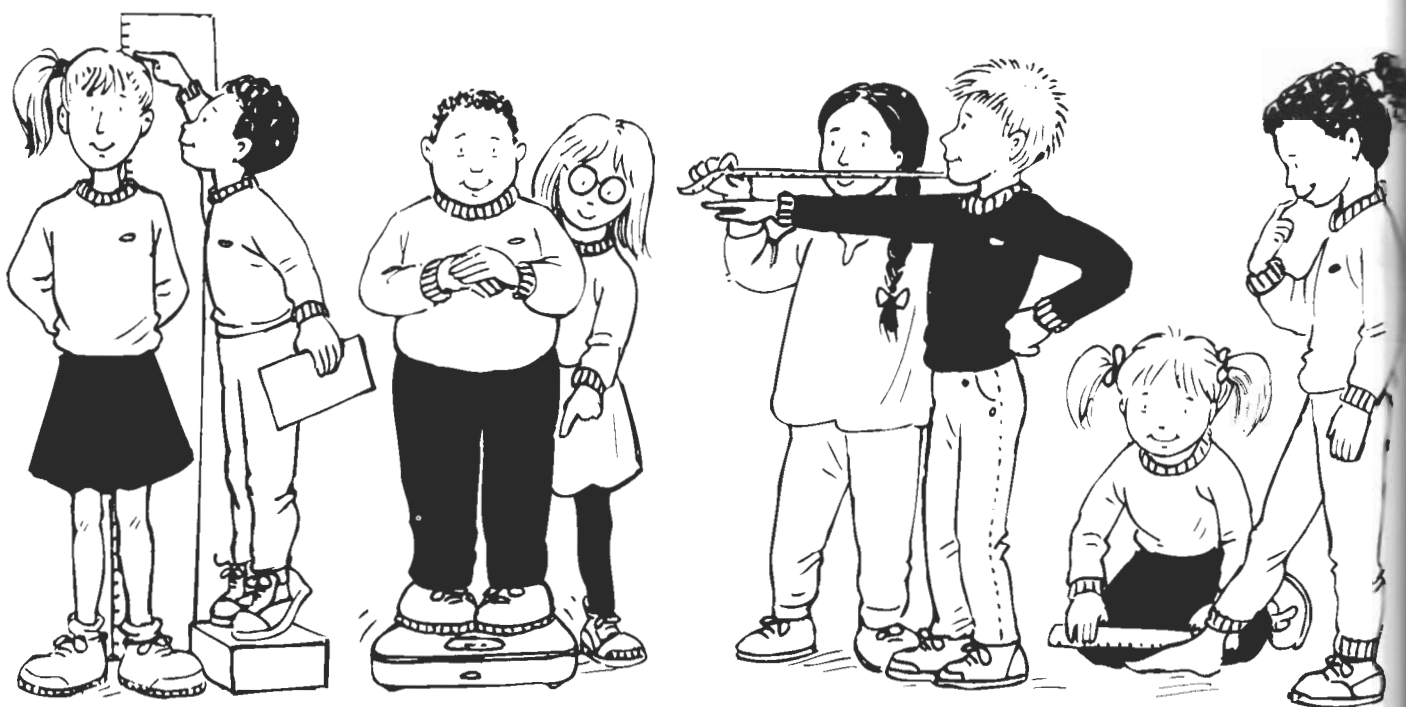
Vocabulary

Data, information, database, field, interpretation, graphical illustration, data collection sheet, conclusion, cubit (forearm measurement), reach (fingertip to fingertip with outstretched arms), bicep, span.

Preparation

Set up some facilities in the classroom for measuring physical attributes such as a vertical tape for height measurements, bathroom scales to measure weight, string and metre rules to measure reach, stride, head circumference and so on. You might also like to organise access to the hall so that the children can record timings of their pulse rates following exercise.

Photocopiable page 140 contains a data collection sheet which requires the children to collect measurements for a range of different physical attributes. Make one copy for each child, or use it as a basis for devising your own sheet. Once you and your class have decided what attributes will be measured, set up a suitable database for the children's findings so that they can type in their data. The way this is organised will depend on the database used. However, any field used must be either alphanumeric or numeric, meaning that the data entered is either in words or in numbers. When entering numerical data, ensure that only numbers are entered into the field – do not include the units. If a child is 123cm tall, then the number only must be entered. Prepare a list of short questions which will encourage the children



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to use the database to draw some conclusions from their data. For example:

- ▲ Who are the four tallest children in our class?
- ▲ Who are the four shortest children in our class?
- ▲ By how much are the tallest group taller than the shortest group?
- ▲ Do the four in the tallest group have longer hand spans?
- ▲ Do children with big feet have longer index fingers?
- ▲ Is there any connection between height and reach?

Resources needed

A computer, software in the form of a card-index type database which allows fields to be chosen and has options to display graphs, a printer (preferably colour), measuring equipment (bathroom scales, tape measures, a stop watch, metre rules and string), pens and paper, photocopiable page 140.

What to do

In both sessions of this activity, the children are encouraged to compare a variety of measurements of physical attributes. There are opportunities to talk openly about similarities and differences and what makes each of us individual and unique.

Session 1

In this activity the children collect data on a variety of measurements of their physical attributes and, in Session 2 enter the data into the computer and then examine it for any connections. For example, is there a connection between height and foot size, stride length, index finger length, reach or head circumference? Are tall children faster runners? The children should notice that there is a close connection between height and reach. Measuring

someone's reach provides a good estimate of their height. There are other connections between height and foot size, height and span, height and pace and height and cubit.

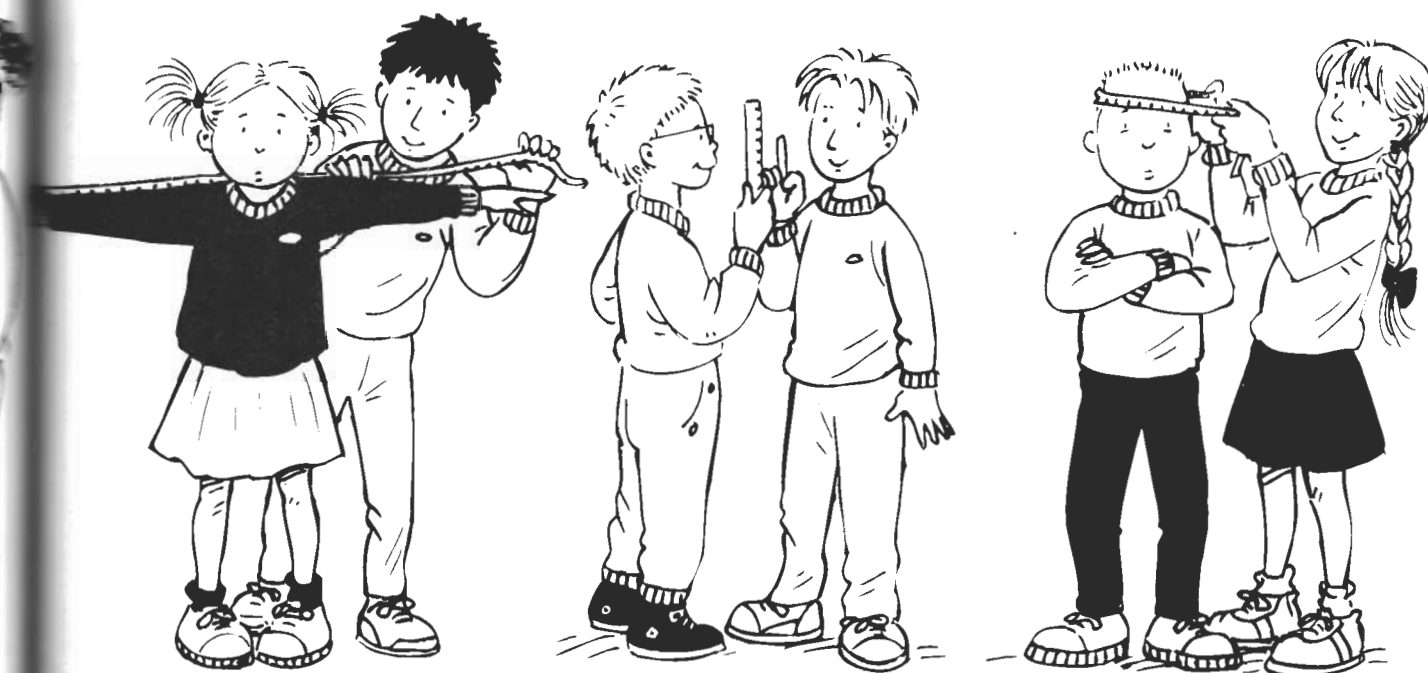
Before the children begin to collect data, raise their curiosity by asking them questions about their physical attributes, such as whether they think tall people have longer strides or whether big feet are found on tall people. Next, give each child a copy of photocopiable page 140 or your own data collection sheet and provide some measuring equipment (see Resources needed). Ask them to measure the items listed on the sheet and write these down.

Collecting data in this way will take time, especially if it involves time measurements during PE lessons. Ensure that the activity is carried out sensitively, as some children may be self-conscious about their weight or size. In these cases it may be wise to avoid such measurements.

Session 2

Once the data has been collected the children need to enter it and then save it into the computer database. Provide a whole class or group demonstration of how to do this, then allow the children to work in pairs on the computer. The most important thing is that they learn the process of entering data. Once they are familiar with this, you may wish to ask an adult or older pupil to enter the remaining data to save time and to avoid the children losing interest.

When the data entry is complete, show the children how to use the database for information sorting and plotting graphs, so that they are able to access the database facilities themselves. The children will need to be able to access the graph plotting facilities and print out a variety of graphs from which to draw simple conclusions and comparisons. For example, by producing graphs of height and foot size, visual comparisons may be made which can be further



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Suggestion(s) for support

Ensure that the less confident children have completed their data sheet (some measurements may not be accurate but this is not essential). They should be paired up with a more able child for the data input session.

Assessment opportunities

This activity will enable you to assess how accurately the children classify and prepare information for IT processing. One would hope for accurate measurements here. However, any mistakes will be obvious from the graphs drawn and will add to the interpretational importance. You can also assess how well the children interpret and check the plausibility of information held in the database, especially from the graphical illustrations they use.

Display ideas

Use the children's graphs and other printouts to create a display on the variety of physical attributes of your class, perhaps with some humorous illustrations. Brief conclusions drawn from the data can be enlarged and printed as headings for the display. If the database allows the combined totalling of the children's height, you can repeat the measurements at a later date to see how much the whole class has grown.

Reference to photocopiable sheet

Photocopiable page 140 is a data collection sheet which requires the children to take measurements of different physical attributes such as height, weight and so on. They fill this in and enter the data into the computer.

substantiated by adding up the totals of the children concerned. You may also use a particular graph, say the length of pupils' cubits, and ask the children to think up three or four facts obtained from the graph. These may include 'Most of the class have cubits between 25 and 35 centimetres', 'Only three children have cubits above 37 centimetres'. This gives them opportunities for interpreting the graphs in a more open-ended fashion. Provide a short questionnaire requiring them to use the database to draw these types of conclusions (see Preparation). Asking them to plot different graphs in response to your questions will help the children to understand how the database can help with these inquiries.

Suggestion(s) for extension

More able children could collect additional data such as their heartbeat measured before exercise and after a 50 metre sprint. They could extend their IT skills by setting up their own database to contain these additional findings. They could measure the 'index of Elegance' (length of arm plus extended hand divided by the length of the middle finger); the 'index of Strength' (circumference of biceps divided into the chest circumference) or the 'index of Power' (distance jumped from a standstill divided by circumference around calf). Looking at these aspects gives the children the opportunity to compare and discuss their physical attributes.

How do you measure up?

Name _____ Date _____

▲ Use this sheet to record your measurements of the attributes listed in the box.

Age and birthday date _____	
Boy/girl _____	
Height _____ cm	
Weight _____ kg	
Foot length _____ cm	
Reach _____ cm	
Cubit _____ cm	
Arm length (hand extended) _____ cm	
Stride _____ cm	
Middle finger _____ cm	
Span _____ cm	
	Biceps circumference _____ cm Chest measurement _____ cm Standing jump distance _____ cm Calf circumference _____ cm Pulse normal _____ beats per minute Pulse after 50m run _____ beats per minute Pulse after one minute's rest _____ beats per minute

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Name _____

Date _____

▲ Use this sheet to record your measurements of the attributes listed in the box.

Age and birthday date

Boy/girl _____

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Weight _____ kg

Foot length _____ cm

Reach _____ cm

Cubit _____ cm

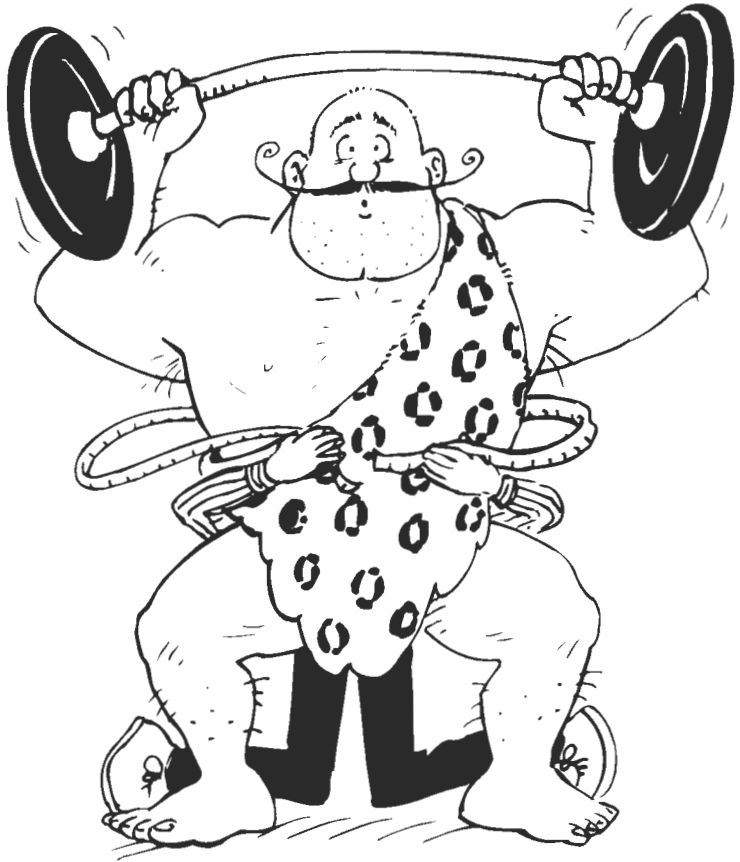
Arm length (hand extended)

_____ cm

Stride _____ cm

Middle finger _____ cm

Span _____ cm



Biceps circumference _____ cm

Chest measurement _____ cm

Standing jump distance _____ cm

Calf circumference _____ cm

Pulse normal _____ beats per minute

Pulse after 50m run _____ beats per minute

Pulse after one minute's rest _____ beats per minute

