St White's Primary School - Science

Phase: UKS2 | Topic: Working Scientifically

What should I already know?

- I can asking relevant questions and use different types of scientific enquiries to answer them
- I can use a range of equipment to take measurements e.g. thermometers and data loggers.
- I can record and present data in different ways to help answer questions e.g. in a graph or table or with a labelled diagram
- I can make a conclusion based on what I have found out and make a prediction about future enquiries.
- I can use scientific evidence to support my findings.

Scientists

We are scientists. We ask questions about our world and technology and then explore and discover the answers with the aim of making the world a better place.

Technical vocabulary

variable	Anything that can be changed or measured.
Dependent variable	The variable being tested or measured during an enquiry.
Independent variable	The variable that is being changed during an enquiry.
Control variable	Variables that must be kept the same during an enquiry.
hypothesis	An idea about how something works that can be tested using enquiries.
conclusion	A conclusion sums up what has been found out during an enquiry.
refute	Prove to be wrong or false
accurate	How close the measurement is to the true value.
precise	How repeatable a measurement is

Pattern Seeking

I can make observations and measurements to explore natural events where there are variables that they can't easily control. I can seek to identify patterns in the measurements, which may lead to other investigations in an effort to try to explain why a particular pattern occurred.

Identifying, classifying & grouping

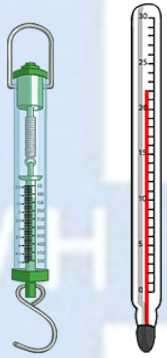
I can use a classification key, chart or another source of information to work out what something is. I can decide on my own criteria to sort different things into groups and explain my choices.

Observing over time

I can identify and measure events and changes in living things, materials and physical processes or events. These observations may take place over time spans of minutes or hours up to several weeks or months.

Research using secondary sources

I can use a range of secondary sources (books, websites, articles, people, videos etc.) to gather evidence to answer questions. I look for patterns in the information I collect. I evaluate the reliability and trustworthiness of the evidence I collect when drawing conclusions.



Thermometer

Newton meter

Measuring beakers and cylinders

Stopwatch

Comparative & Fair Testing

I can identify the effect of changing one variable on another whilst attempting to keep other variables constant. I know they are useful for gathering data that might inform predictions and further tests. In comparative tests I compare one event with another and identify different outcomes. With fair tests I look to identify a causal relationship between two variables.

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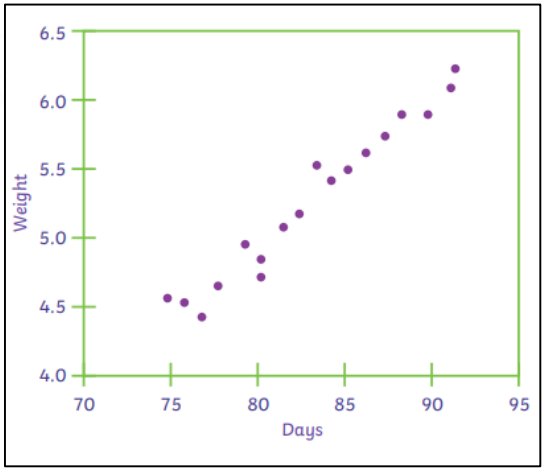
Ways of presenting data

Table	To show data in an order, eg biggest to smallest number. Also used to record results during an experiment.
Scatter graph	To find a link between variables. Both variables are quantitative and could be discrete or continuous. A scatter graph is a line graph but without the line joining the points.
Line graph	To show how the dependent variable affects the independent variable. Both variables are continuous. The points are joined with a line of best fit, which is straight or a smooth curve.
Bar chart	To compare sets of data. The independent variable is usually discrete and the dependent variable is quantitative.
Pie chart	To show proportions of a total. The independent variable is discrete or categoric. Often used when showing percentages of data.

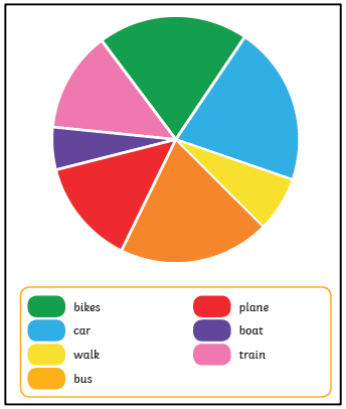
Table

Favourite Animal	Number of Children
Dog	10
Cat	8
Snake	2
Bear	4
Horse	6
Goose	

Scatter graph



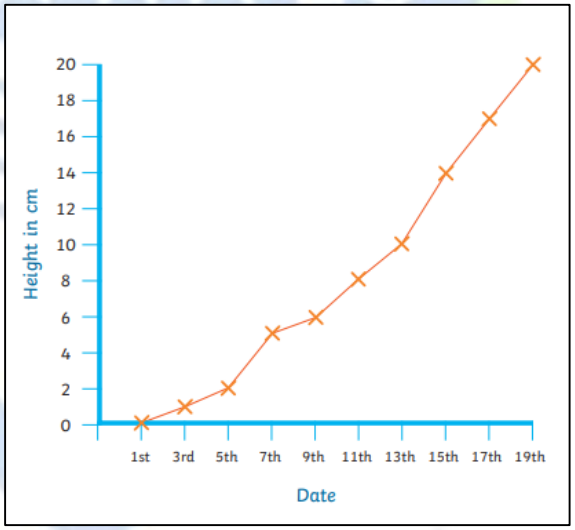
Pie chart



Data

- In science, enquiries involve the collection of data. The data collected can be qualitative (described in words) or quantitative (described in numbers).
- Data collected can be:
  - Continuous - numeric data can have any value within a range. Examples include time, height and temperature.
  - Discrete - numeric data that can only have certain values. Examples include shoe size, number of people in a room and the number of marks on a test.
  - Categoric - the data are words. Examples include colour such as 'red' or 'blue', and how an object feels like, eg: 'rough' or 'smooth'.

Line graph



Bar chart