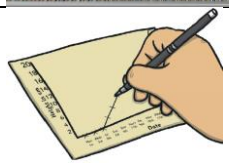
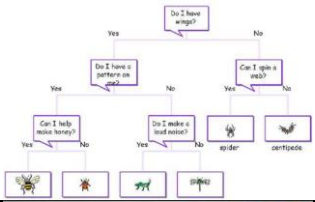
SCIENCE INVESTIGATIONS: PARENT INFORMATION SHEET

Science in primary school is preparation for STEM-related careers.

What is a science investigation?

A science investigation is when we ask questions about how something works, and then investigate it using a step-by-step process.

What are the main types of investigation?

Controlled Testing – Fair Test or Comparative Test – both need you to control variables and make comparisons. In a fair test, only one variable should be changed with the rest remaining constant so this is more scientific than a comparative test where children will have less control over all the variables.	
Observing – looking carefully at something that is changing over time and recording the changes e.g. how something grows (plant), develops (frogspawn metamorphosis, chicks hatching and growing and caterpillar metamorphosis) or melts (ice).	
Pattern Seeking – taking measurements to find patterns/links e.g. measure the length of people's legs and measure how high or far they can jump – is there a pattern/link? A scatter graph could highlight any patterns.	
Classifying and Grouping – grouping into categories based on appearance or behaviour e.g. using tables or classification trees.	
Scientific Modelling – a simple model, picture or re-enactment showing how something works – use when it would be difficult to carryout experiments and take accurate measurements in the real environment e.g. Y5 space/planets models or re-enactments, Y4 create a model digestive system.	
Research - e.g. using **books, the internet, watching videos, visiting museums or asking experts** in order to find out and record some kind of **scientific knowledge** e.g. **facts** about an animal, or learning about **scientific discoveries or theories**. This is even better if the research is based on the children's own questions. Using their findings, children can create **fact files, documentaries, presentations, models, recreate experiments** etc.	

*STEM = science, technology, engineering and mathematics

How do children go about investigating?

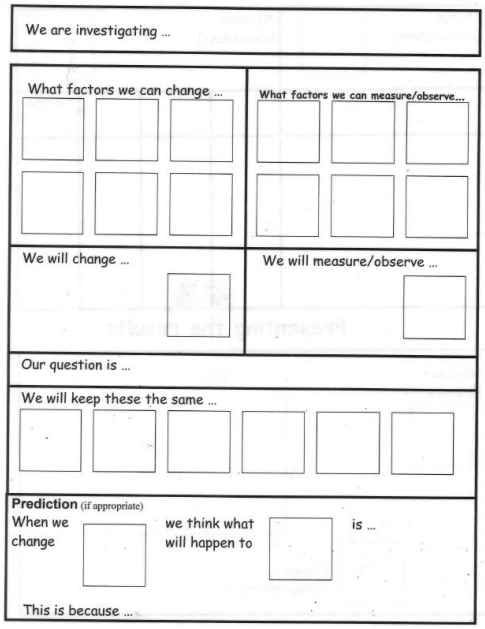
Research – it's useful for children to have some knowledge about the topic, as this will help them to come up with a question, have ideas about how to test it and make a prediction.

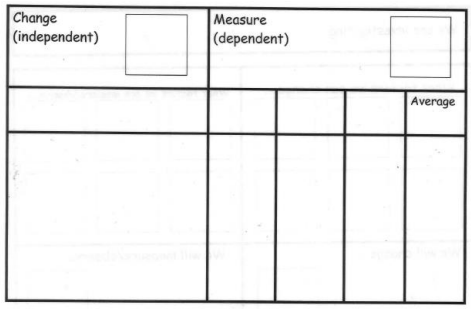
1) Investigation question – write a question based on what you want to prove.
Other example questions: Does heart rate increase with exercise? With which type of exercise does heart rate increase the most? Which material melts the quickest?

2) Aim – the reason for doing the experiment/to find out the answer to your question. E.g. I want to find out…

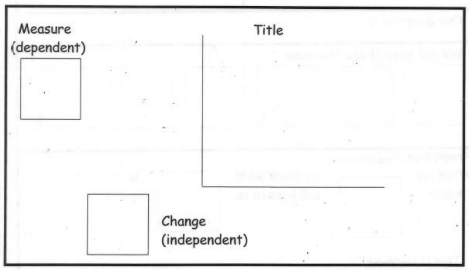
3) For an experiment, plan a fair test – recap what this is: In science, a **fair test** means that you should **change no more than one thing (the independent variable)** every time you repeat the test e.g. it could be a type of ball if you're looking at which ball bounces the highest. All other conditions should stay the same **(constants).**

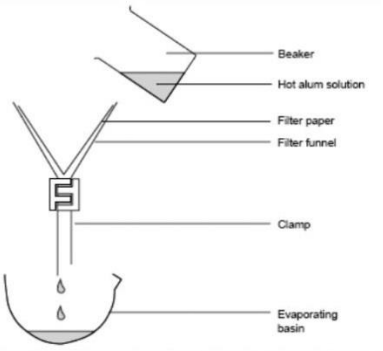
Children can use a science planning sheet to support the above:





Presenting the results





4) Method – list (and number) the points of what you are going to do (like instructions) using imperative (bossy) verbs (put, take, measure etc.).

5) Prediction/hypothesis (an educated guess about what will happen) – What do you think will happen based on your science knowledge?

6) Labelled diagram – basic drawing showing the method – clearly label what each item is; use arrows to show directions etc. (see example diagram above).

7) Take accurate measurements – distance/length, volume, mass, weight (N), time, temperature etc. – think about the **units** of measurement you will use.

8) Other types of recording – sketches, diagrams, photographs, writing observations

9) Results – usually recorded in a table. Tests can be repeated to gain 2 or 3 sets of results for more accuracy – an average can be calculated and written in an extra column.

10) Present results in a graph or chart – this illustrates results and can make patterns or links clear to see e.g. pictogram, bar chart, pie chart, line graph, scatter graph.

11) Conclusion – an explanation of the results/what happened including whether your prediction was correct or not. Extend this by explaining why/how this happened with your scientific theory or knowledge.

Conclusion sentence starters:
-The results matched/didn't match my prediction.
-The results show …
-This suggests … /It is believed this happened because scientific theory suggests …