

ASKING QUESTIONS



EYFS

Comment and ask questions about their experiences.



YEAR 1

Use everyday language to ask scientific questions.



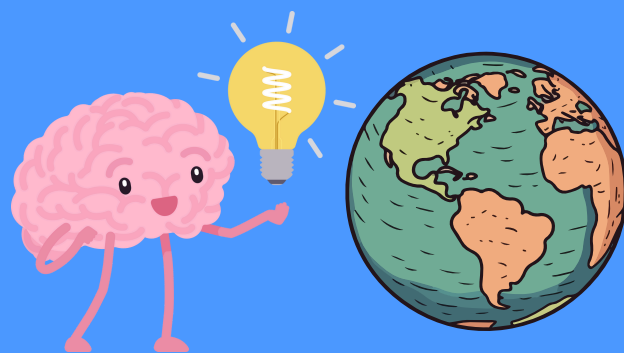
YEAR 2

Ask and answer questions using secondary sources.



YEAR 3

Use ideas to ask questions about the world around them.



YEAR 4

Begin to ask questions that can be investigated.



YEAR 5

Ask scientific questions and begin to suggest logical hypotheses.



YEAR 6

Suggest scientific questions that can be investigated and generate logical hypotheses. Begin to identify the most appropriate enquiry type to investigate these.



MAKING PREDICTIONS



EYFS

Show curiosity about objects, people and places by exploring.



YEAR 1

Say what they think may happen in an investigation.

I THINK...

YEAR 2

Begin to make predictions, with support.

Step 1: Predict

Taller children have bigger hands.



Taller children have smaller hands.



Height doesn't affect hand size.



YEAR 3

Make a prediction and begin to give reasons, with support.

I PREDICT ...

YEAR 4

Make predictions and give reasons. Begin to use scientific vocabulary to explain predictions.

I PREDICT ... BECAUSE

YEAR 5

Make predictions and use scientific vocabulary to explain.

I PREDICT ... BECAUSE



YEAR 6

Make a prediction and confidently use scientific vocabulary to explain. Begin to utilise prior knowledge as a basis for predictions.

I PREDICT ... BECAUSE...

I PREDICT THIS BECAUSE LAST YEAR, I LEARNED....

SETTING UP TESTS



EYFS

Find ways to solve problems or new ways to do things, and be able to test their ideas. Choose resources they need for chosen activities, and learn by trial and error.



YEAR 1

Follow adult instructions to complete a simple task.



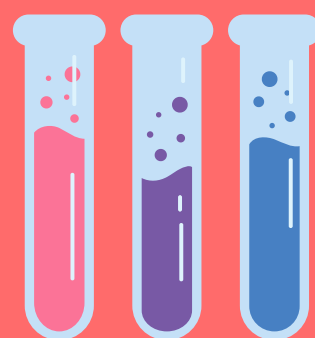
YEAR 2

Follow multiple steps in the correct order when completing an adult led task.



YEAR 3

Discuss enquiry methods and describe how to conduct a fair test. With support, be able to conduct an investigation.



YEAR 4

Make decisions about different enquiries, including recognising when a fair test needs to be conducted.



YEAR 5

Plan a range of scientific enquiries, including fair tests. Begin to identify variables with support.



YEAR 6

Select and plan the most suitable line of enquiry and be able to identify variables confidently.

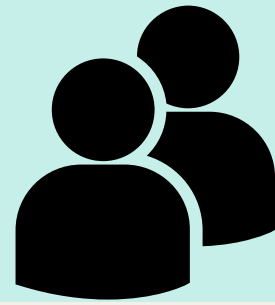


OBSERVING AND MEASURING



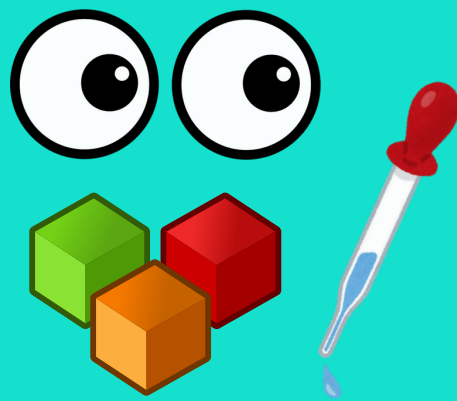
EYFS

Closely observe what animals, people and vehicles do. Handle equipment and tools effectively.



YEAR 1

Observe and describe what they see. Use non-standard measurements in a practical task (e.g. measuring with cubes) and use pipettes to measure liquids.



YEAR 2

Observe something closely and describe how something changes over time. Use simple equipment to take measurements e.g. egg timers, measuring up to 100cm.



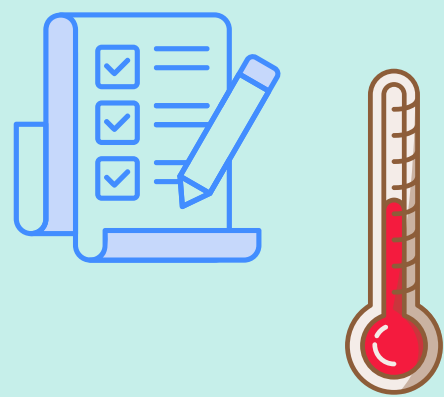
YEAR 3

Describe what to observe during an investigation. Take accurate measurements using standard units (cm, ml and g), and use stopwatches to measure time.



YEAR 4

Make systematic and careful observations. Take accurate measurements using standard units, and using a range of equipment including thermometers and data loggers.



YEAR 5

Plan and carry out fair tests with support, ensuring careful and systematic observations are taken. Take measurements using a range of scientific equipment with increasing accuracy and precision.



YEAR 6

Decide what they need to observe, and how they are going to do this (by taking repeat measurements, and finding the mean where appropriate - fair testing, by increasing the sample size - pattern seeking, by adjusting the observation period/frequency - observing over time). Choose their own equipment in order to take measurements and be able to explain how to use it. Independently make systematic and accurate observations.

RECORDING DATA



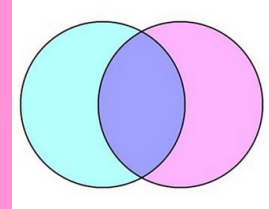
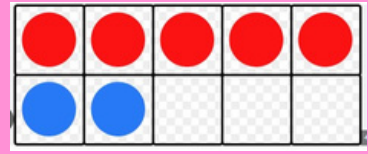
EYFS

Make simple representations of events, people and objects.



YEAR 1

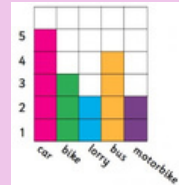
Begin to record simple data. This can be done in a range of ways - written sentences, through scribed discussions, observational drawings, labelled diagrams, pre-made tables, tens frames and Venn diagrams.



YEAR 2

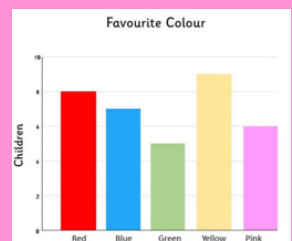
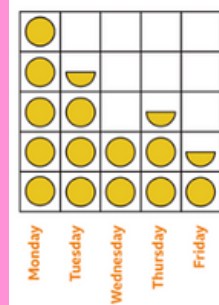
Gather data and record it in simple ways. This could be through written sentences, observational drawings, annotated diagrams, tally charts, pre-made tables, block diagrams or pictograms with 1-1 ratio.

	TALLY	NUMBER
spider		5
ant		8
snail		3
butterfly		4
bee		4



YEAR 3

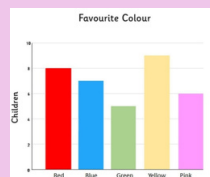
Record their findings using scientific language. Findings can be recorded in written form, using annotated diagrams, tables drawn by the children, pictograms, tally charts and bar charts with pre-drawn axis.



YEAR 4

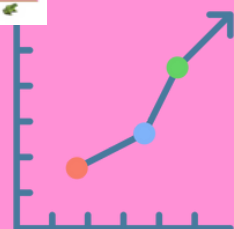
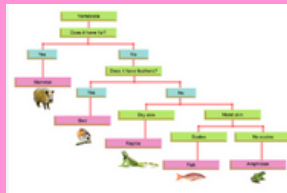
Children can begin to discuss and select the most appropriate ways to record their results and can utilise scientific vocabulary when doing so. They could select methods previously used such as written sentences, annotated diagrams, by drawing their own table, or by drawing bar charts independently.

Shoe Size	Number of people.
3	2
3 1/2	3
4	7
4 1/2	5
5	4
5 1/2	2
6	1



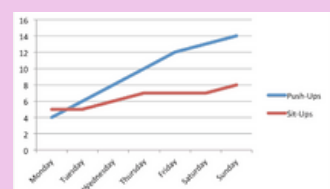
YEAR 5

Children can record data and results with increasing complexity. They may use annotated scientific diagrams, classification keys, tables, bar charts or line graphs.

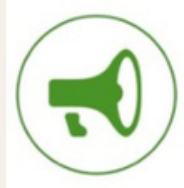


YEAR 6

Children choose the most effective approach to record their results. They can use previously taught ways to record results, but may also use line graphs with 2 lines, dual bar charts or pie charts. They will evidence conducting repeat tests and finding the mean, where appropriate.



INTERPRETING AND COMMUNICATING RESULTS



EYFS

Making links and notice patterns in their experiences. Answer how and why questions about their experiences.



YEAR 1

Explain verbally, and with help, what they think they have found out.



YEAR 2

With support, use simple scientific language to explain what they have found out.

I HAVE LEARNED...

YEAR 3

Draw, with help, a simple conclusion based on evidence from their investigation.

MY RESULTS SHOW ME...

YEAR 4

Identify, with help, changes, patterns, similarities and differences in data to help form conclusions.

FROM MY RESULTS, I CAN SEE THAT THERE IS A PATTERN...

YEAR 5

With increasing independence, draw conclusions based on evidence, identifying patterns. Use relevant scientific language to discuss, communicate and justify their findings.

**MY RESULTS SHOW ME...
LOOKING AT THE GRAPH, I CAN SEE..
THERE MAY BE A LINK BETWEEN...**

YEAR 6

Identify and explain relationships in data using scientific language. Identify where their evidence supports or refutes their findings, selecting fact from opinion.

**MY RESULTS SHOW ME...
I CAN SEE A LINK BETWEEN...
I CAN SEE THERE MAY BE AN ANOMALY...**

EVALUATING



EYFS

Develop their own narratives and explanations connecting ideas and events.



YEAR 1

Use everyday language to answer a question verbally.



YEAR 2

Answer questions with support from adults.



YEAR 3

With support, use recorded results to answer a question.



YEAR 4

With increasing independence, answer the research question using results. Reflect on earlier predictions.



YEAR 5

Answer the research question, using their own scientific knowledge and results. Reflect on their prediction and whether it was accurate or not. With support, pose new questions for further investigations, making predictions for these investigations based on their new found knowledge.

- MY RESULTS SHOW THAT
- MY PREDICTION WAS...
- NEXT, I WOULD INVESTIGATE

YEAR 6

Draw conclusions about the investigation conducted. Identify the validity of conclusions drawn with further secondary research. Suggest required improvements to methodology. Suggest further investigations and make predictions about what they believe to happen. Discuss how scientific ideas develop over time.

- ____ SUPPORTS/REFUTES MY RESEARCH
- IF I WAS TO DO THIS AGAIN...
- NEXT, I WOULD ASK THE QUESTION
- I PREDICT...