

# PRIMARY SCIENCE

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LEARNING ABOUT A TRUE TEST

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## WHAT IS SCIENCE?

Science is an organised way of looking at the world to discover how the world works or refine our understanding of something we already know something about.

# PRIMARY SCIENCE

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Science very rarely proclaims something as fact. Much of what we know changes as we do more research, discover and use new technologies. Research tells us about something, but sometimes new research adds to what we know or overturns what we thought we knew.

# PRIMARY SCIENCE

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In the end Science is about a method.

This is, not surprisingly called, the Scientific Method.

This begins with a question. An answer is suggested and is called an hypothesis.

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The hypothesis is then tested by establishing an experiment. Data is collected and collated and then the hypothesis is evaluated in the light of the data and interpretation of data.

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If the experiment appears to add weight to the hypothesis, further experiments are conducted, or if not, the hypothesis is altered or abandoned. This process is repeated over and over until the data is seen to confirm the hypothesis.

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- Eventually, the hypothesis is deemed to be a theory. It is important to note that any conclusions the researchers make must be open to replication by other people in different institutions or parts of the world. This ensures the process is rigorous and can be trusted.

# PRIMARY SCIENCE

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Various elements of the theory then form the basis of many more experiments. These may be based directly on the theory, but also may be to establish the safety or environmental impact of the experiments or environmental implications of products related to the testing process or the possible outcome of the theory.



# PRIMARY SCIENCE

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This process could eventually result in a published paper or a product which may solve the original question asked. A theory is not regarded as total fact and can be challenged by further research, even after years of a product being used.

Published papers are subjected to immense scrutiny by other scholars as part of the process.

# WHAT DOES AN EXPERIMENT LOOK LIKE?

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An experiment tests one part of an hypothesis by looking at only one aspect. This aspect is called a variable. This is called a fair test.

In the experiment, all the elements of what is to be tested must be the same, with the variable changed in some way in each experiment.

# PRIMARY SCIENCE

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This way researchers know what it is they are testing and can draw meaningful conclusions.

Children can learn what a fair test is and how to conduct an experiment during their Primary years.

The activity that we will do, helps children to conduct a fair test.

# PRIMARY SCIENCE

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## **PAPER HELICOPTERS**

### **You need:**

Two strips of A4 paper cut about 2 cm wide and the length of the width of the paper.

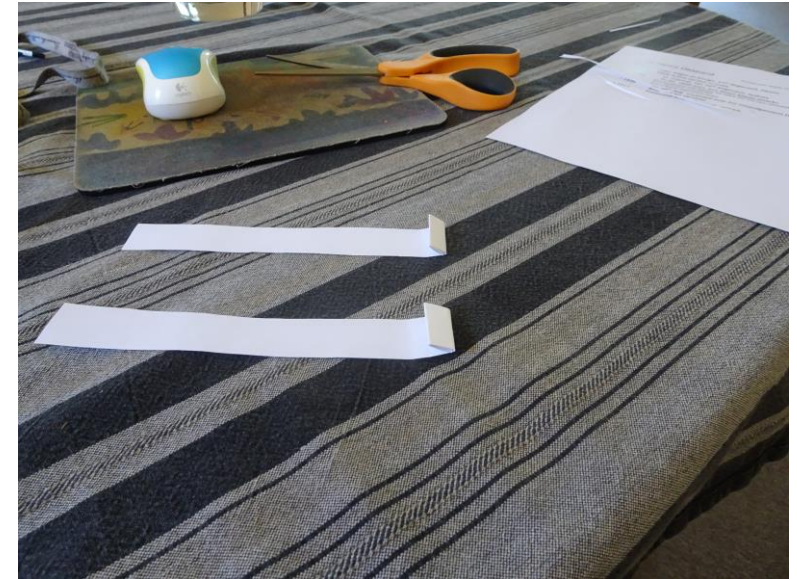
I fold the paper first so the strips are as close to identical as possible.

# PRIMARY SCIENCE

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Cut the folded piece from the page.

Then cut down the middle to give two strips of paper. Put both strips together and place a small fold about one third up the strips. Straighten out the paper and make a series of small folds up to the mark.



# PRIMARY SCIENCE

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From the other end, make a cut of about 5cm down the middle of the strip of paper.

On the second strip of paper, make a 7cm cut down the middle.

On the first helicopter fold the end of the cut outwards. Fold the second end in the opposite direction.

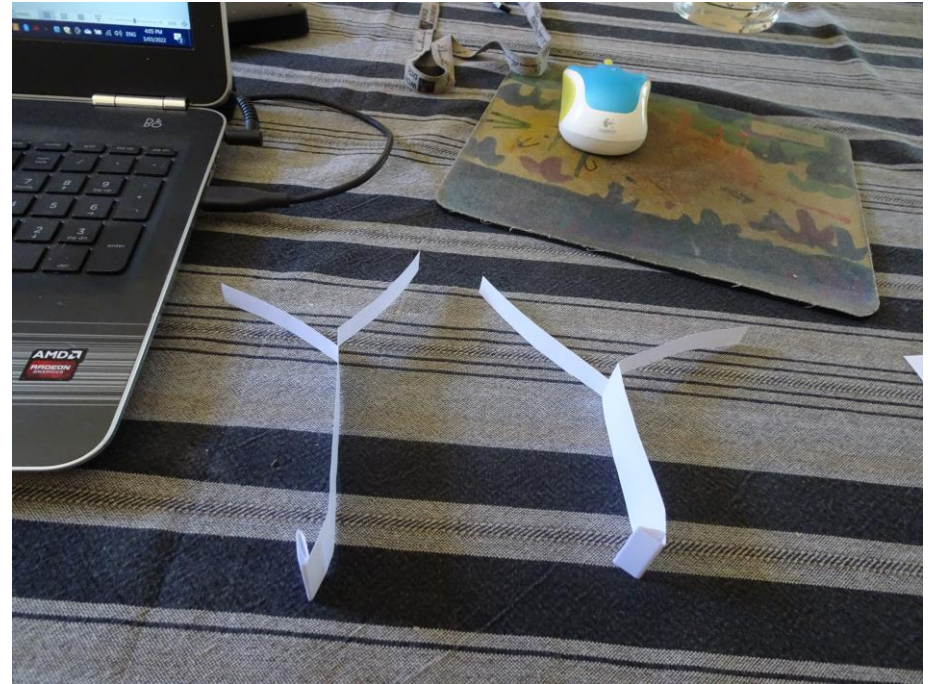
Repeat with the other helicopter.



# PRIMARY SCIENCE

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Now make sure the folded arms are at about 45 degrees. The arms are called rotors. One helicopter has a 5cm rotor, the other a 7cm rotor. Otherwise they are identical. The variable is the length of the rotors.



# PRIMARY SCIENCE

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Hold the helicopters at the same height and drop them simultaneously. Which one hits the ground first? Children should repeat this many times before drawing conclusions.





# PRIMARY SCIENCE

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They can then be asked to share their conclusions.  
(The one with the 7cm rotors stays up longer!!)

The children can time how long each helicopter stays up.

Make sure to remind them NOT to stand on chairs or tables for safety reasons.