



# Paper Aeroplane Investigation

**Important!** Your work will be graded (marked) by a Webcats teacher . All students must register for this task on the Webcats site.

## Objective

The aim of this investigation is to find out what changes (or design modifications) will make a paper aeroplane fly further.

Antoine de Saint-Exupery was a pilot who often had to make modifications or repairs to his aeroplane. To find out whether the repairs or changes had been effective, he had to have information (statistical data) so he could compare the changes and decide whether they made a difference or not.

## Materials

Gather all materials before you start:

- These instructions printed out
- Data Recording Sheets (pages 3, 4 & 5: printed single-sided)
- writing pencil or pen for recording results
- Up to 6 sheets of A4 copy paper
- sticky tape, glue stick, stapler, felt tip pens, calculator
- retractable tape measure (a sports one for measuring long jump is ideal)
- iPad, iPod or digital camera

**Allow 60 mins to complete this activity**

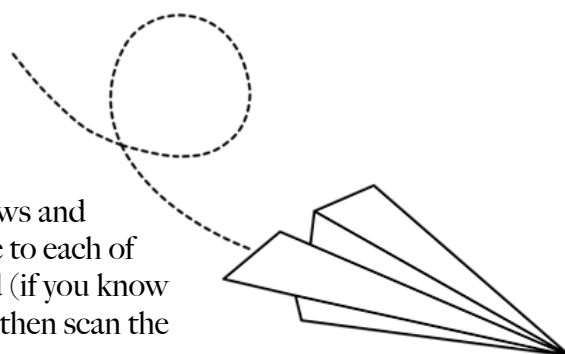
**Max score = 100 marks**

**Procedure (read all instructions before you begin)**

1. Make 5 identical paper aeroplanes to your own original design using only one sheet of A4 paper for each (sticky tape, glue or staples are optional). This is your Base Model #1 plane. (5 marks)
2. Use a felt tipped pen to label each plane with your name and its model number (1, 2, 3, 4, 5). Take a photo of your plane clearly showing the Model # label and its design features. (10 marks)
3. Launch your plane from a marked spot, aiming towards a flat, open landing area with a distant target. You must launch from the same spot each time, aiming towards the same target. Make sure there are no people or obstacles in the way. Try to conduct the investigation when there is no wind.
4. Measure and record the distance (in centimetres) between the launch pad and where the plane has landed.
5. IMPORTANT: For fair testing, launch your plane another 4 times from the same spot under the same conditions and record the results. Work out the average distance by adding all the measurements together and dividing by 5 (calculators OK). Record the average distance on your sheet.
6. Pick up the next plane. You are going to change (or modify) just one aspect of your Base Model's design and, on your sheet, carefully record what you have changed. Clearly sketch and label the modification in the box provided.
7. Repeat steps 1 to 6 four (4) more times. (Steps 3 to 7 = 50 marks)
8. Compare the scores and analyse your results.
9. Results: which model of the plane performed the best? (1 mark)
10. Explanation: How can you explain this result? (9 marks)
11. Evaluation: How do you think this investigation could be improved? (10 marks)
12. Submit (hand in) your work to Webcats for marking and feedback. Send an email with all files attached.

Here's what to submit:

- your completed Paper Plane Record Sheet. Ask an adult to help scan all the pages and place the file on your thumb drive or have it sent to your school email.
- a Word (or Pages) page with the photos of each of your plane models (you might need help getting your images off the camera or iPad/iPod and onto a computer. Pay attention so you can do it by yourself next time.) Then drag the pictures into a Word document and arrange them in the right order on the page. Label them, if you can. (10 marks)
- annotate (add notes to) the photos by adding arrows and bits of text to describe the modifications you made to each of your plane models. You can either do this in Word (if you know how) or print the page out and add notes by hand then scan the page and save the file to send. (5 marks)



# Paper Plane Investigation Recording Sheet

Name:

Date:

School:

Plane Model #	Design Feature / Modification	Distance Flown
1		1
		2
Drawing		3
		4
		5
		Average:
Observations:		

Plane Model #	Design Feature / Modification	Distance Flown
2		1
		2
Drawing		3
		4
		5
		Average:
Observations:		

Plane Model #	Design Feature / Modification	Distance Flown
3		1
		2
Drawing		3
		4
		5
		Average:
Observations:		

# Paper Plane Investigation Recording Sheet

Plane Model #	Design Feature / Modification	Distance Flown
4		1
		2
		3
		4
		5
		Average:
Observations:		

Plane Model #	Design Feature / Modification	Distance Flown
5		1
		2
		3
		4
		5
		Average:
Observations:		

# Paper Plane Investigation Recording Sheet

## Result:

Which model of the plane performed the best? .....

## Explanation: (please write in full sentences)

How can you explain this result? .....

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## Evaluation: (please write in full sentences)

If you were to do this again, how do you think the investigation method could be modified to give more accurate measurements or more useful information?

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## Curriculum Standards (for teachers)

This investigation addresses the following standards from the Australian Curriculum V8.1 F-10

**Subject area:** Science

**Grade level:** 6

**Standard:**

(ACSI103)

**Inquiry skills:**

Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks

**Standard:**

(ACSI104)

**Inquiry skills:**

Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriate

**Standard:**

(ACSI107)

**Inquiry skills:**

Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate

**Standard:**

(ACSI221)

**Inquiry skills:**

Compare data with predictions and use as evidence in developing explanations

**Standard:**

(ACSI108)

**Inquiry skills:**

Reflect on and suggest improvements to scientific investigations

**Standard:**

(ACSI110)

**Inquiry skills:**

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts