

# Mini Jet Test Flight Data 小型喷气机试飞数据

## Identifying All The Variables 识别变量

- What are the **'independent variables'** in your experiment?  
i.e., what did you change to make your 'mini jet' fly better?  
实验中的“自变量”是什么?  
即：你做了什么改变，让你的“小型喷气机”飞得更好？

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- What are the **'dependant variables'** in your experiment?  
i.e., what do you expect to change (increase / decrease) in response to your changes?  
你的实验中的“因变量”是什么？  
即：你希望根据你的变化改变什么（增加/减少）？

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- What are the **'controlled variable'** in your experiment?  
i.e., what will you keep the same to ensure that you get consistent & accurate results?  
你的实验中的“受控变量”是什么？  
即：你将保持什么样的东西以确保你得到准确的测试结果？

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## Procedures 步骤

Describe how your group will conduct this experiment. List who will do each task, why each person has been assigned to their task, and what is needed to properly complete each task. 描述你将如何进行实验。列出每个任务的执行者、为什么分配给该成员以及每个任务的完成方式。

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## Overview 概述

Only one report needs to be submitted per group; however, it is recommended that you use your individual copies of the report to take rough notes during your practice flights and then neatly consolidate all of your data in a new report booklet and submit that copy to your teacher.

每组只需提交一份报告；但是，建议你在试飞行的时候，用你个人的报告纸进行粗略记录，然后将所有数据整理到一个新的报告册里，并将该新报告提交给你的老师。

Please indicate all the group members that are in your group for this experiment. 请列出所有小组成员。

\_\_\_\_\_  
Member A 成员 A

\_\_\_\_\_  
Member B 成员 B

\_\_\_\_\_  
Member C 成员 C

Please indicate which group member that has completed the **'Flight Test Data'**. 请列出已经完成“飞行测试数据报告”的小组成员。

**'Flight Test Data' completed by / 飞行测试数据完成人 :** \_\_\_\_\_

## Introduction 介绍

How you throw your **'mini jet'** will greatly affect how it will fly. Therefore, before you start conducting your experiment and recording data you should first determine how you will throw your **'mini jet'** during the experiment.

你投掷小型喷气机的方式将极大地影响它的飞行情况。因此，在你开始进行你的实验和记录数据之前，你应该先确定你将如何投掷。

Before you conduct your formal experiment, you will need to experiment with different ways to throw your **'mini jet'** and observe how the plane flies each time. At this stage you should not be concerned about recording **'quantitative data'** about your group's **'mini jet'** flies. Instead, you should be making **'qualitative observations'** (specifically observations about what we can see) during your practice flights.

在你进行正式的实验之前，你需要用不同的方法来投掷你的飞机，并观察每次飞机是如何飞行的。在实验的这个阶段，我们不关心记录飞机飞行的定量数据。相反，我们将在飞行练习中进行定性观察(特别是注意观察我们能看到的東西)。

## Mini Jet Test Flight Data 小型喷气机试飞数据

### Qualitative Data 定性数据

With your partners you must determine a minimum of 2 ways to throw your **'mini jet'** and then conduct test flights to determine which method will result in the best results. 你和你的小伙伴们必须确定至少 2 种方式来投掷你们的飞机，然后进行试飞，以确定哪种投掷方式最好。

Draw a diagram to illustrate the different ways you experimented with throwing your **'mini jet'**. Your diagram should focus on illustrating how to throw the **'mini jet'** properly and is not meant to be an artistic illustration. The use of labels and arrows to illustrate force and flight vectors is highly recommended. You should also indicate the optimal location to hold the **'mini jet'** when you throw it (i.e., the front, middle, or back of the **'mini jet'**). 画一张图来说明你是如何投掷飞机的。你的示意图应着重说明如何正确地投掷飞机，而不是一个艺术性的说明。强烈建议使用**标签**和**箭头**辅助说明力和飞行矢量。

Approach 1 方法 1	Approach 2 方法 2

Describe both methods of throwing the plane that your group experimented with during the initial testing of your **'mini jet'**. 请描述在飞机试飞期间你和你的小伙伴尝试的两种投掷飞机的方法。

Approach 1 方法 1	Approach 2 方法 2

Which approach to throwing your **'mini jet'** did your group determine to be the most effective method, and what evidence do you have to support your claim? 哪种投掷飞机的方法是最成功的?为什么?

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## Mini Jet Test Flight Data 小型喷气机试飞数据

### Quantitative Data 定量数据

Now that you have determined the most effective way of throwing your glider you are now ready to conduct your experiment and record data. It is very important that you throw your glider the exact same way each time you test your **'mini jet'** so that your results are not skewed by different methods of throwing your plane (i.e., an uncontrolled variable). 现在，既然你已经确定了最有效的投掷飞机的方式，所以你可以开始准备进行实验和记录数据。请记住，非常重要的一点是：每次测试飞机时，你都要以完全相同的方式投掷，这样“飞机的发射方式”这个因素就不会影响你的测试结果。

Record all your data from your **'mini jet'** test flights. Make sure that you include all relevant units and maintain an appropriate number of significant figures for all measurements. Once you have completed your test flights, calculate the **'minimum'**, **'maximum'**, and **'averages'**. 记录所有的测试数据。确保你的记录包括了所有相关的单元，并为所有的测量数据保留适当的有效数字。完成测试飞行后，计算所有测试实验中的“最小值”、“最大值”和平均值。

	Distance / 距离	Time / 时间
<b>Test 1</b>		
<b>Test 2</b>		
<b>Test 3</b>		
<b>Minimum/最小值</b>		
<b>Maximum/最大值</b>		
<b>Average/平均值</b>		

Briefly describe each test flight. Make sure your record any anomalies (i.e., did the **'mini jet'** collided with another object, did the tester trip while throwing the plane, etc.). 简要描述每一次的试飞情况。确保你的记录中没有任何异常(例如，飞行时飞机与另一个物体相撞、测试者在投掷飞机时绊倒)。

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### State Your Hypothesis 陈述你的假设

With your **'pre lab observations'** completed you are now ready to state your groups **'hypothesis'** (i.e., will your **'mini jet'** better or worse than the class average and why). 完成实验室前的观察后，现在可以陈述你的小组假设了（即，你们的“迷你喷气式飞机”比班级平均水平更好还是差，以及原因）。

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