

JAMMIN' JETS!

An aircraft in straight and level flight is acted upon by four forces: lift, gravity, thrust, and drag. The opposing forces balance each other; lift equals gravity and thrust equals drag. Any inequality between thrust and drag, while maintaining straight and level flight, will result in acceleration and deceleration until the two forces become balanced.

In this activity future aviators will experiment with thrust: the force that moves a plane forward through the air. Thrust is created by a propeller or a jet engine. Airplane designers try to increase airplane thrust by making more powerful jet engines and propellers.

Objective:

To use thrust as the main force while manipulating the design of an aircraft to increase the distance.

Problem:

When using thrust to fly a Jammin' Jet, how do changes to the design affect the distance it can travel?

Materials:

2 straws with different diameters

Scissors

Rulers

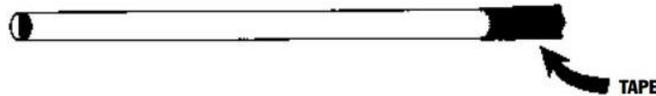
Index cards

Tape measures

Masking tape

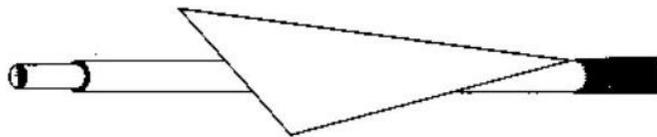
Procedure:

1. Wrap a piece of tape around the front end of the straw with the larger diameter so that the opening is taped shut.



3. Make more than one prototype and experiment by placing wings on different parts of the straw.

4. Insert the smaller straw into the larger straw, leaving an inch at the end of the smaller straw.



5. Demonstrate thrust by blowing into the smaller straw. This projects the jet forward.

6. If the front of the jet rises, wrap some tape near the front of it until it flies level. If the front of the jet falls, wrap some tape around the straw just behind the wings.

7. Practice flying the different jets and choose the best jet. Fly three trials recording the distance on the Data Sheet.

DATA SHEET

Jammin' Jets Captain: _____

Distance Traveled

Trial 1	Trial 2	Trial 3	Average

Diagram and label your best design.

What changes to the jet's design were not successful?

Why do you think these changes were successful?

Source: **Women in Aviation, International**

<https://www.wai.org/sites/default/files/assets/EducationKit/1%20fourforces%20thrust.pdf>