

**Dynamic Design:  
Launch and Propulsion**

# Investigating Fin Number and Placement

## STUDENT ACTIVITY

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### PROCEDURE

#### Fin Number and Placement

**Problem:** Which fin number and placement is the most stable? Remember that right now you are testing for fin number; all other variables (including fin shape and size) should remain constant. If time permits, try testing the same number of fins with different spacing between them.



**Background:** Research information on fin number and placement at any of the web sites in the bibliography or other resources you may have and make notes.

What numbers and placement will you test?

**Procedure:**

1. Using tag board, design one type of fin that could be attached to a paper towel tube. The fins should all be the same size and shape.
2. Make 5-6 fins that are identical.
3. Construct a simple rocket using the paper towel tube and a nosecone covering, and attach the fins you have designed.
4. Record the number of fins and their placement on your data table.
5. Put your rocket on the ground so it faces a leaf blower or vacuum cleaner. Direct the air from the leaf blower or vacuum cleaner toward the rocket. Turn on the blower until the rocket starts moving.
6. "Launch" your rocket three times, recording each of the three distances on the data table.



- Determine the average distance and record it.
- Record any other observations on the data table.
- Complete the same procedure with at least two other numbers of fins.
- Graph your results.
- Write your conclusions based on you data.

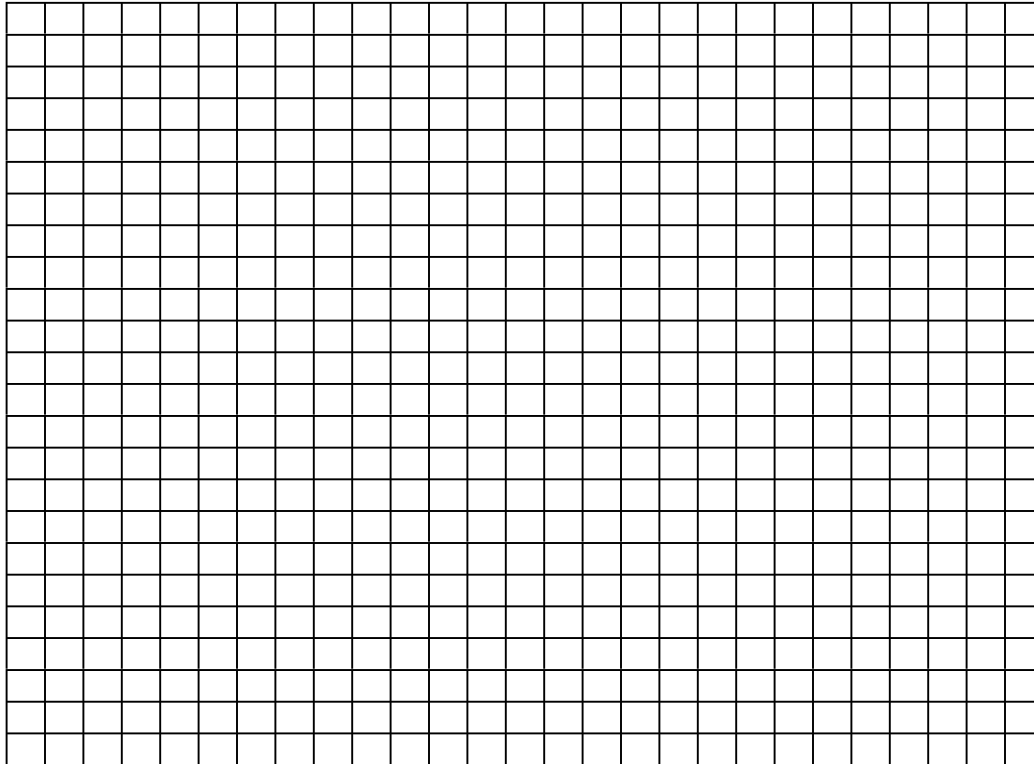
**Data:**

Diagram of Fin Number	Trial 1 Distance (cm)	Trial 2 Distance (cm)	Trial 3 Distance (cm)	Average Distance (cm)	Flight Observations



**Results:**

(Graph Distance vs. Fin Number and Placement)



**Conclusion:** What did you learn from these experiences? Support your understanding with data from the activities.