

Dynamic Design: Launch and Propulsion

What a Drag!

STUDENT ACTIVITY

PROCEDURE

Directions: In your expert groups complete the following.

1. What is the first thing you think of when you hear the word "aerodynamic?" Where have you heard the term before?



2. Using the resources on the Internet or in your library, find information on aerodynamics and the importance of the use of wind tunnels. Give several examples.

3. What is drag as it relates to aerodynamics? What are some things that can be done to an object to decrease its drag?

4. What are the parts of a rocket that may result in drag?

5. Using the patterns in Appendix C, cut out three different nosecone shapes from card stock. Assemble the nosecones onto paper towel tubes. The tubes will be tested with the leaf blower as shown below.



- List the variables that need to be controlled in this activity.

- Use a commercial leaf blower or vacuum set to blow air to force the rocket backwards. This should be done between two rows of books to keep the rocket in line with the wind. Place the nosecone design in front of the blower, as shown below. While holding the blower, turn the blower on until the nosecone design stops moving.



- Measure the distance the rocket traveled backwards. Record results in the data table below.

- Set up a data table in your journal similar to what is below to record your results.

Shape of Nosecone	Distance Traveled			
	Trial 1	Trial 2	Trial 3	Average



10. Construct more tubes as in procedure 5 above. This time modeling clay can be used inside the nosecone to provide mass. Write down the amount of clay used and where in the nosecone it was placed. Describe which nosecone you used. Make a table for your results.

11. Write down what you learned about nosecones from this activity and write a recommendation of which nosecone your design group should choose. Make a data table here for recording results of adding mass (clay).

12. Be prepared to report your results to your design group.