

Dynamic Design: Launch and Propulsion

Pop Rocket Variables

STUDENT ACTIVITY

BACKGROUND INFORMATION

In this introductory activity, you will study the concept of variables in relation to launching pop rockets. You will begin by completing a concept map for the word “rocket.” Following this, your teacher may show clips from the movie *October Sky* for further discussion and conversation about rockets and their history. You will then use a variable wheel to make operational definitions and list all of the variables that may affect the flight of the pop rocket. Finally, you will choose a variable to test, then write a research question and complete the investigation.

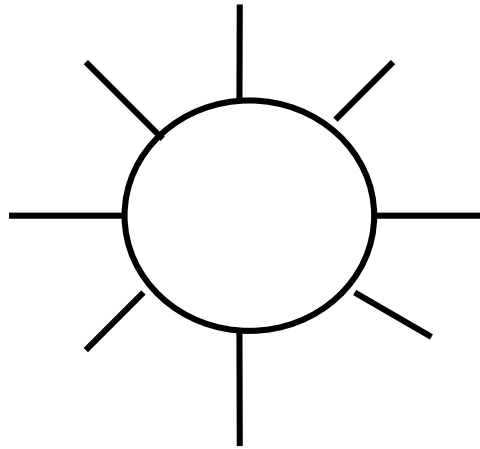
PROCEDURE

1. In your small groups, or individually, write down as much as you can about what your group knows about rockets (sentence fragments are acceptable).
2. Complete the “[Rocket Concept Definition Map](#).”
3. If you watched *October Sky*, respond to the following questions dealing with the video clips from the movie.
 - a. How do you think Americans felt when the Soviet Union launched Sputnik in 1957? Why?
 - b. What was Wernher von Braun’s response to Sputnik? What was America’s long term response?
 - c. What variable did they measure during the successful launch of Homer’s rocket?





4. Use the following variable wheel during the class discussion.



5. Write your group's operational definitions of one of the manipulated variables.
6. Why is it important to keep all variables constant except the manipulated variable?
7. What variables in the wheel above would be the most difficult to keep constant?
8. What should be done if a variable cannot be kept constant during an experiment?
9. Using your variable wheel, write your research question.



10. Complete the operational definitions and label the procedure and operational definitions for the pop rocket variable experiment. This should be approved before you launch.

11. Use this space to continue with your procedure, results (data table), and conclusion. The conclusion should answer the research question and be based on the results in your data table. Label the procedure, results, and conclusion. You may use the back of the sheet if you need more space.