

Fizzy Rockets

Name: _____

Date: _____

Lesson Focus

This lesson focuses on the concept of physical change versus chemical change. It also touches on three of the four forces of flight (thrust, drag, and gravity) and how changes in design can affect performance.

This lesson also covers Newton's third law of motion, which states that for every action (force), there is an equal and opposite reaction.

Materials

1. 1 canister
2. Tape
3. Scissors
4. Template for nose cone, fins, and canister cover
5. Markers or crayons to decorate rocket (optional)
6. Pencils or pens
7. Ruler
8. Water
9. 1.5 tablets of sodium bicarbonate
10. Safety goggles

Pre-Lab Questions: Please use complete sentences with correct punctuation.

1. What are Newton's three laws of motion? Write them down or look them up.

2. Read over the lab. Which law do you think applies and why?

3. Why should you wear goggles for this lab?

4. What is the difference between a chemical and physical change?

5. What factors influence the rate of reactions?

6. What are we changing in this experiment?

7. What are the four forces of flight and their definitions?

Procedure

1. Measure paper to cover the body of your film canister.



2. Use the template to create a nose cone. Attach the nose cone to the bottom of the canister.
3. Design your fins or use the template. Decide on the number of fins for your rocket.
4. Tape the paper body, nose cone, and fins onto the canister. Do not block the base or extend fins past the base. The canister lid has to be able to detach from the canister.



5. Hold the rocket upside-down and fill halfway with water.
6. Drop the tablet into the water and quickly snap on the lid.
7. Set the rocket on its base and step away.

Independent variable: the variable that is changed: _____

Dependent variable: the variable being measured due to the independent variable. _____

Hypothesis: I think the canister will go (higher or lower) with (one or half) of a tablet because _____

Data

Sample Data Table

Number of trials can be for group or individual, depending on number of tablets available.

Trial	Full tablet	Half tablet
1		
2		
3		
4		
5		

Present your conclusion to your peers. Was your hypothesis supported? How did your data support that conclusion? How could you change this experiment in the future?

Questions

1. Is this lab based on a chemical or physical change? Why?

2. How could you increase the height of the flight?

3. What provides the thrust for this rocket?

Extension

Look at the evolution of rockets. Use a variety of sources, including print and digital. Highlight design changes that improved the performance.