Nasco education LESSON PLAN
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VOL. 22

MINI ROCKETS: HOW DOES MASS AFFECT THE PERFORMANCE OF A MINI ROCKET?

Developed by Linda Roberts Grades 5-8

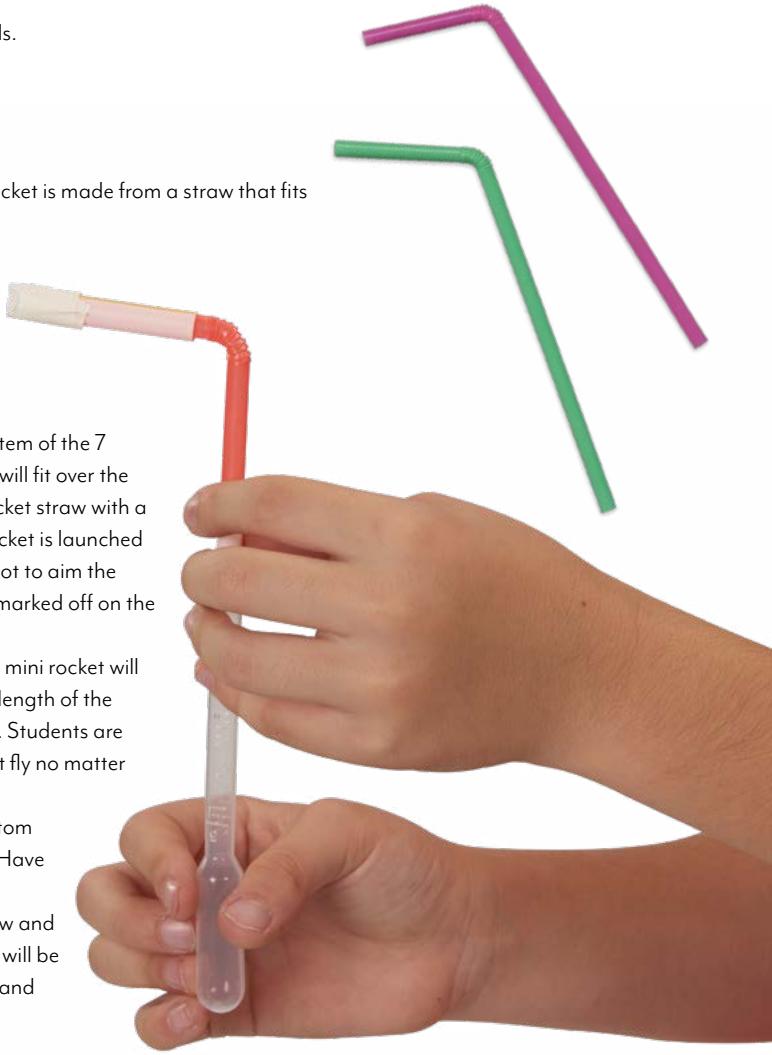
Objectives

Students will...

- Learn how the mass of a rocket affects the distance it travels.

Materials

- Plastic Transfer Pipettes, sizes 7 ml & 5 ml, pkg. of 100 (Cat. No. SB50476 & SB50475)
- 2 Sizes of Drinking Straws (launch tube is a bendy straw; rocket is made from a straw that fits over bendy straw) (Cat. No. KI03462GB & KI05640)
- Masking Tape (Cat. No. 9722434)
- Measuring Tape (Cat. No. TB15105)
- Safety Goggles (Cat. No. SB46780)
- Scissors (Cat. No. 9727220)
- Notebook (Cat. No. SB46968)



Activity

- Have students attach the end of the bendy straw over the stem of the 7 ml pipette and secure with masking tape. Use a straw that will fit over the bendy straw to make a mini rocket. Cover the end of the rocket straw with a small piece of masking tape to make it airtight. The mini rocket is launched by sharply pressing on the pipette bulb. Caution students not to aim the rockets at another person. A separate launch area can be marked off on the classroom floor.
- Have students write a prediction on how far they think their mini rocket will travel on the first attempt. Then make a chart showing the length of the straw rocket and how far it travels on subsequent attempts. Students are usually surprised to find out that a long straw rocket will not fly no matter how hard they press on the pipette bulb.
- For a second attempt, have students cut off part of the bottom of the mini rocket straw, measure the straw, then launch it. Have them record information in their notebook.
- For each subsequent trial, have students cut the rocket straw and measure the length before launching. Eventually the rocket will be light enough to fly. Have them measure the distance it flies and record the information in their notebook.

Discussion

Q: How did the length of the mini rocket (and thus the mass) affect the distance the rocket traveled?

Q: How far did the rocket travel?

Q: Repeat the process using the 5 ml pipette. Have students predict which size pipette will be able to launch the rocket the longest distance. Why?

A: The smaller pipette has a smaller bulb and cannot hold as much air for launching.

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