Balloon Rockets

Section: Forces & Interactions

Name: _____ Date: _____

Inquiry Question

Write down what you'll be learning today! What do you want to understand?

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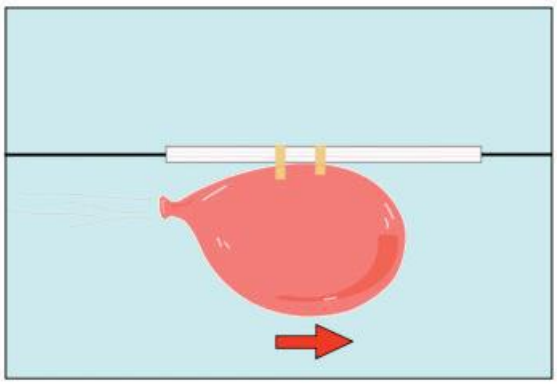
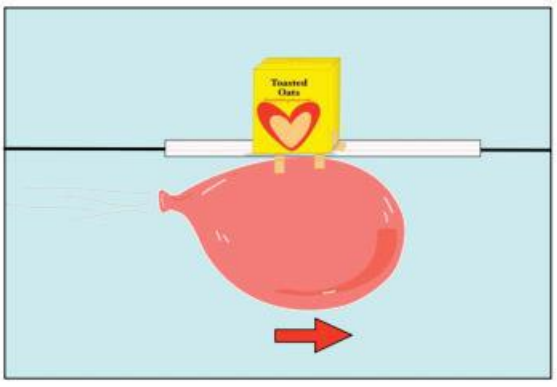
Procedure

1. Tie one end of the string to a chair, doorknob, or any stationary object on one side of the room.
2. Tie the other end of the string to a stationary object on the other side of the room, making sure that the string can easily be untied as needed.
3. Students should be tasked with attempting to get a piece of cargo (i.e. a paperclip, button – anything small) from one end of the room to the other using only the materials available and the string. There are lots of different ways to do this, and one example is outlined here:
    a. Untie one end of the string and put it through the piece of straw, then retie it so the straw is suspended on the string.
    b. Blow up a balloon and pinch the opening so it is closed, but do not tie the end.
    c. Tape the side of the balloon horizontally to the straw so the top of the balloon is facing one side of the room, and the opening of the balloon is facing the other end of the room, closest to the end of the string.
    d. Pull the balloon and straw back so they are at the end of the string, which is the starting line.
    e. Attach the 'cargo' to the straw.
4. Let go of the balloon opening and watch it zoom to the other end of the room, cargo in tow!
5. Use a marker to mark a spot on the string where the first trial stopped.
6. Have students create different designs or variations to make the contraption go further, faster, carry more cargo, etc.





Observations, Data Collection & Analysis

Write down your observations below.

1. Draw the setup at the start of the experiment. What do you predict will happen? What is the problem to solve, and what are some constraints you might face?

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2. What are some possible solutions? Draw some possible setups of the activity and how you may be able to get the cargo from one side of the string to the other. Can you add arrows indicating how air is moving and the motion of the balloon/straw/cargo?

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3. Draw the setup during the experiment. Can you add arrows indicating how air is moving and the motion of the balloon/straw/cargo?

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4. Once you have the balloon set, what happens when you let go of it? What causes this to happen?

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5. What do you think will make the balloon move faster?

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6. What happens when you add cargo to the balloon rocket?

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7. Draw the setup at the end of the experiment. What happened? Was it similar or different from your prediction? How? What worked and what didn't during this activity? What adjustments need to be made?

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