



Curiosity Guide #307

Rockets

Accompanies Curious Crew, Season 3, Episode 7 (#307)

Balloon Rockets

Investigation #3

Description

How far will your balloon rocket go?

Materials

- Long-shaped balloons
- String
- Tape
- Straw
- Scissors
- Measuring tape
- 2 chairs or stools

Procedure

- 1) Cut a length of string about 10 feet in length.
- 2) Thread the string through a single straw.
- 3) Tie one end of the string to a door knob or chair. Tie the other end of the string to a second chair.
- 4) Position the chair or chairs so that the string is stretched tight.
- 5) Slide the straw along the string so that the straw is near one chair.
- 6) Cut two pieces of tape about 2 inches long. Drape the tape pieces over the straw, about 4 inches apart. Let the sticky ends hang below the straw.
- 7) Blow up a long balloon and pinch the neck to keep the air inside.
- 8) Position the inflated balloon under the straw.

- 9) Secure the balloon in place with the ends of the dangling tape.
- 10) Let the balloon go.
- 11) Did your balloon rocket go all the way to the other end?
- 12) What could you add to the balloon rocket to carry cargo?

My Results

Explanation

As the balloon is inflated, more and more gas molecules are forced into the balloon. As the number of air molecules increase, so do the number of collisions the air molecules have with one another inside the balloon. We say that the balloon has more pressure. Because the latex balloon is elastic, the balloon is squeezing the air molecules, making even more collisions and pressure in the balloon. When the neck of the balloon is released, the air quickly escapes out of the balloon. According to Newton's third law of motion, "Every action produces an equal and opposite reaction." Therefore, the action of the air escaping one way forces the balloon rocket to travel in the opposite direction. Placing the rocket on a string keeps the rocket flying the same direction. If you added a small box to the top of the straw, the balloon could also carry along some cargo as it travels.

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