Balloon Rockets

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Aerospace engineers apply Newton's Third Law ("to every action there is an equal and opposite reaction") to take us to the Moon and beyond.

Materials:

- Tape
- Clothes peg
- Straw
- Scissors
- Scrap paper
- Cereal box (or stiff paper, paper, or plastic cup)
- Balloon (long skinny ones work best)
- Long piece of fishing line (or smooth string)
- Bottle cap or marble (to use as cargo)

Instructions:

- Design and build a rocket that will transport cargo.

Guidelines:

- The propulsion for the rocket will be an inflated balloon.
- Build a cargo container from paper, a cereal box, or a paper or plastic cup.
- The rocket will travel along a piece of fishing line, which is threaded through a straw on the rocket. Remember to include the straw in the design.

Launching the Rocket:

- Blow up the balloon and use the clothes peg to hold it closed.
- Tape one end of the fishing line to a wall about chest high. Hold the other end at approximately the same height.
- Load the cargo (bottle cap, marble, or any other small, light object) into the container.
- Thread the fishing line through the straw attached to the balloon rocket.
- Unclip the clothes peg and watch the rocket fly!

What's Happening?

When you blow up a balloon, you force air into a small space. Air particles don't like to be squished (engineers call it "compressed"). The particles want to move to a less crowded area. When you let go of the clothes peg, the air in the balloon rushes out to the lower pressure (less crowded) room. All that air rushing out the back of the balloon pushes it forward. Remember, for every action—air rushing out the balloon opening—there is an equal and opposite reaction—the balloon rocket shooting off down the line.