

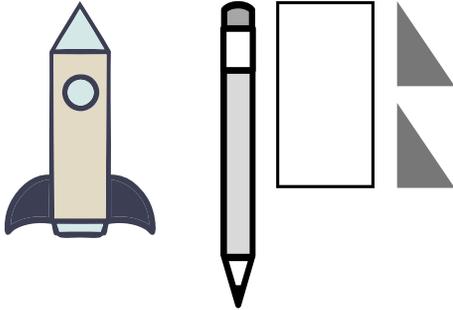


STRAW ROCKETS

Practice engineering and design by making your own rockets.

Materials

- Pencil
- Scissors
- Tape
- Straws
- Ruler
- Paper
- Crayons, markers or colored pencils



Procedure

- Cut out a strip of paper that is 3 X 5.5 inches and two right-angle triangles 1 inch in height. Color these pieces before making your rocket.
- Roll the strip of paper lengthwise around the pencil and tape it closed to form a tube. Tape your triangles to either side at the end of the tube. You may want to put tape on top and underneath your triangles to make a more secure bond.
- Twist the top of your tube around the pointed end of your pencil to make a "nose cone" for your rocket. Tape the nose cone to prevent air from escaping and to keep from untwisting. Take measurements and record the design of your first rocket on a piece of paper.
- Remove the rocket from the pencil and place it on the straw. In an area pointed away from people and breakable items, blow into the straw to launch the rocket. Be sure to mark where your rocket lands and record your findings.
- You may now build as many rockets as you'd like. Try changing only one thing every time you make a new rocket so you can record which changes were successful. Combine all of your successful changes into your ultimate rocket design and challenge others to make a rocket better than yours.

Results

The length of the rocket, shape of the fins, and type of nose cone can change how the rocket launch performs.

Why?

The faster things move, the more their shape disturbs the air, which creates 'drag.' Drag is when air pulls at a moving object, which makes the object use more energy to reach a certain speed or distance. That's why scientists and engineers design fast-moving things—jet airplanes, high-speed trains, and space rockets—to be long, thin and tube-shaped. These shapes are known to be less affected by drag.

A space rocket is designed to carry people or equipment beyond Earth and out into space. The force that pushes a rocket upward is called thrust and when a rocket's engine develops enough power, the thrust force pushing it upward will be bigger than its own weight (the force of gravity) pulling it down. As the rocket climbs into the atmosphere, air resistance (drag) will try to pull it back to Earth, fighting against the thrust. In an upward-climbing rocket, thrust has to fight both drag and weight to break through the Earth's atmosphere.