moxi at home

Mini Air Rockets.

Tinker like an aerospace engineer and launch paper rockets using the power of your breath.

The inspiration for this activity!

MOXI Exhibit Connection	Rocket Launcher
Age	6+
Time	30+ min
Category	Motion, Tinkering

Educational Value

Based on Next Generation Science Standards (NGSS)

Grade	Standard
K-2	K-2-ETS1-3
3-5	3-5-ETS1-2,3
6+	MS-ETS1-2,3,4

*May include opportunities to employ the following Science and Engineering Practices:

- Asking questions
- Defining problems
- Designing solutions
- Obtaining, evaluating, and communicating information

↖*For Educators*

Design Challenge

Build a rocket, test different designs, and make adjustments so it flies as straight and as far as possible.

Materials

Below are some ideas for supplies, but be creative! What else could you use for each of the categories below? Your home is a creative tool chest waiting to be discovered!

Launcher	*Body*	*Fins*	*Tools*
• *Straw*	• *Scrap paper*	• *Foil*	• *Scissors*
• *Paper*	• *Newspapers*	• *Construction paper*	• *Tape*
	• *Magazines*	• *Cardboard*	• *Pens/pencils*
		• *Cardstock*	

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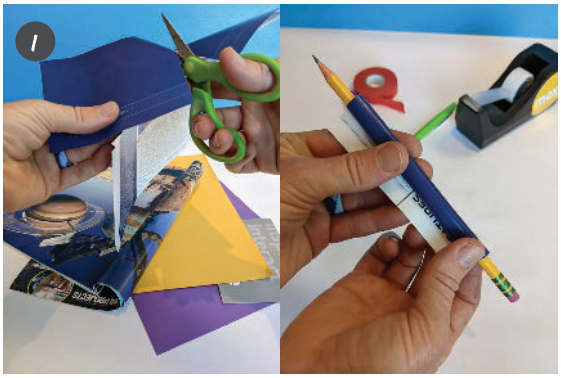
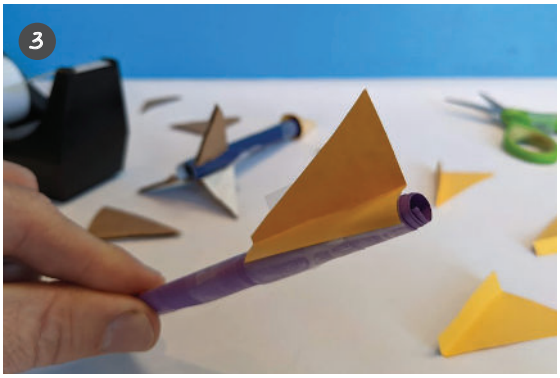
Instructions





1. Create the body of your rocket. Cut out a small rectangle of paper about the size of your palm.

   Roll the paper rectangle into a tube-shape (it helps to roll it around something sturdy like a pencil). Use tape to keep the tube from unrolling.

2. Close one end of the tube to create a rocket nose. You can try taping it closed or adding a cone shape made out of another scrap of paper.

3. Add fins. Attach small pieces of material that stick out like wings from the bottom of the tube. You can experiment with different shapes, sizes, placements, and materials to change how your rocket flies.

4. Launch! Slide the rocket onto a straw. Blow a puff of air into the straw to shoot the rocket. Always point the rocket into the air and away from people! As you launch your rocket, observe how it flies. What can you change or add to make it fly straighter and farther?

Try bending your fins to make your rocket spin and flip.

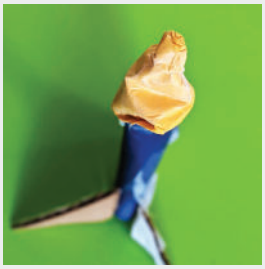
Can't find a straw?

You can roll up a piece of paper (like in step one) to make your own. Make sure it's skinny enough for your rocket to slide onto.

Activity Extensions

Why stop here?
Keep the MOXI fun going!

imagine There's a meteor headed straight toward your home. Your only hope is to hit it out of the sky with a rocket. Use crumpled pieces of paper for meteors and try to hit them in mid-air. Your rocket will have to be accurate!



investigate What are fins for? Try launching a rocket with no fins. How is it different from a rocket with fins?

improve How can you make your rocket more sturdy so it can withstand multiple flights? Find the failure points (where your rocket breaks) and design ways to make those areas stronger.

Curiosity Corner

What is a rocket engine?

Photo credit: NASA

To learn more about rockets, we went to the experts. This is what NASA has to say about rocket engines:

"Like most engines, rockets burn fuel. Most rocket engines turn the fuel into hot gas. The engine pushes the gas out its back. The gas makes the rocket move forward.

A rocket is different from a jet engine. A jet engine needs air to work. A rocket engine doesn't need air. It carries with it everything it needs. A rocket engine works in space, where there is no air.

The first rockets we know about were used in China in the 1200s. These solid rockets were used for fireworks. Armies also used them in wars. In the next 700 years, people made bigger and better solid rockets. In 1969, the United States launched the first people to land on the moon using a Saturn V rocket."

May, S. (Ed.). (2010, September 21). What Is a Rocket? Retrieved from http://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-a-rocket-58.html.

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