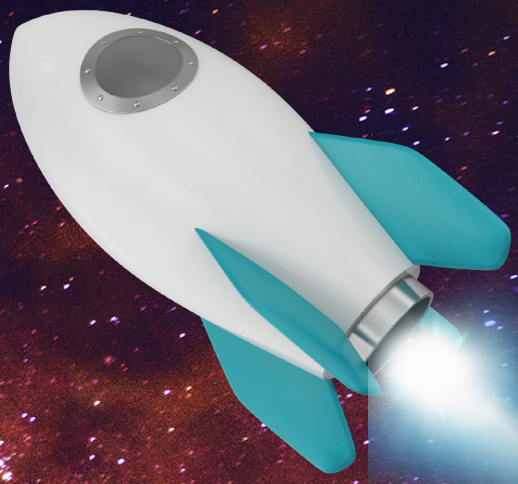
STEM WITH LM

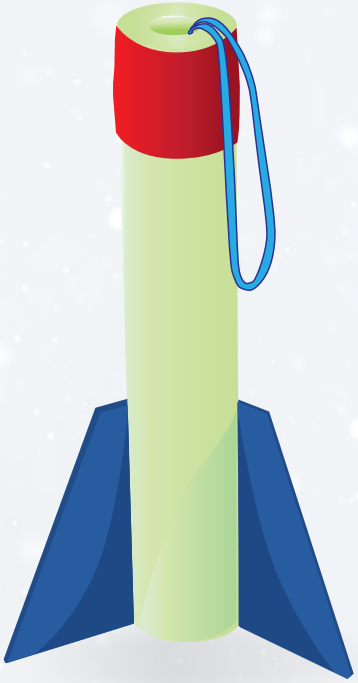
3... 2... 1... Lift-Off!



Engineer a Pool Noodle Rocket

Duration:	1 hour
Objective:	To engineer a rocket to fly the farthest and fastest based on results and modifications.
NGSS Standard:	K-PS2-2
Motion and Stability:	Forces and interactions; analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

POOL NOODLE ROCKET

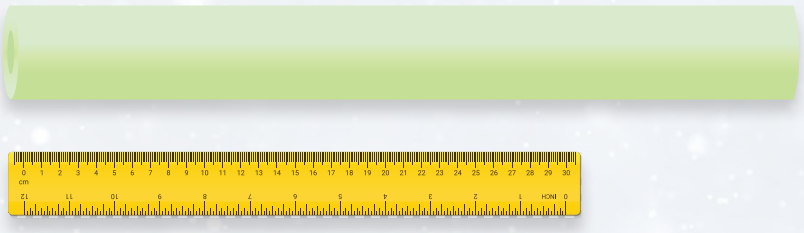


Materials needed:

- 18-inch pool noodle
- Small rubber band
- Large rubber band
- Paper, cardboard, or craft foam for fins
- Duct tape
- Additional weights

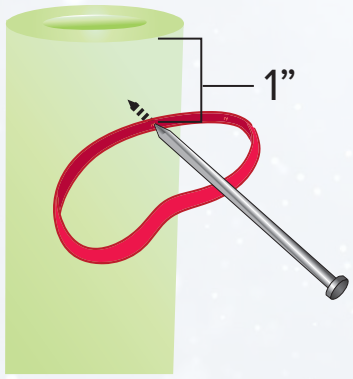
Instructions:

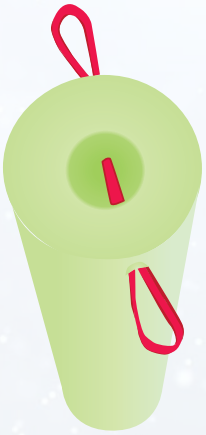
1. Optional: Ask an adult for help cutting the pool noodle. It shouldn't be shorter than 12 inches.



2. Recommended: Cut fins out of paper, cardboard, or craft foam. Tip: Try different sizes.

3. Ask an adult for help poking a hole one inch from the top of the pool noodle to thread the smaller rubber band through. The rubber band should stick out on both sides.

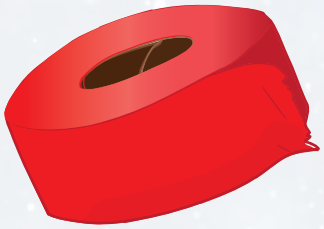


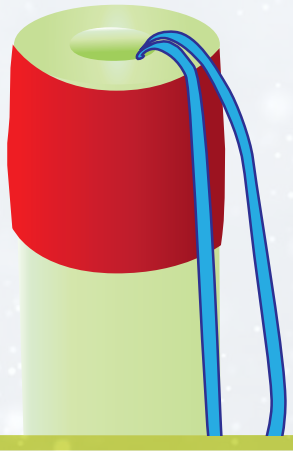


4. Loop each end of the rubber band around the pool noodle.

5. Loop the larger rubber band around the smaller rubber band inside the hole of the pool noodle. Pull one end of the large rubber band through the other end to knot it around the small rubber band.

6. Optional: Wrap duct tape around the top of the rocket to cover up the rubber band.





7. Recommended: Ask an adult for help securing the fins with either hot glue, tape, or by cutting fin slits at the bottom of the rocket.

8. Optional: Engineer and customize your rocket to achieve the fastest and farthest flight distance.

9. To launch the rocket, simply hold the bottom of your rocket in one hand and stretch the long rubber band in the other hand, aim, and let go!

HAVE FUN!

STEM Challenge Questions:

1. Record your results: How far did your rocket travel? Did it fly straight? Can it fly high? Does it fly fast or slow?

2. What can you do to improve your results?

3. What caused the force or movement of your rocket? How could you change it?

4. Did you decorate your rocket in a special way?

5. Do lighter or heavier rockets fly farther? What modification could you do that would add to or lessen the weight?

energy.gov/lm/stem-lm

For more fun activities, check out STEM with LM at: energy.gov/lm/stem-lm