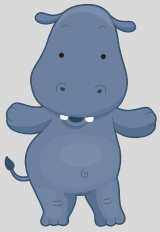
# MAKER EXCHANGE
AT CORONA PUBLIC LIBRARY

# activity:
## BOTTLE TOP ROCKET

## THE CHALLENGE:

Make a high-flying rocket powered by the blast of air from a soda bottle!



## RECOMMENDED AGE

12 and up

## TIME NEEDED

45 min - 1 hr 30 min

## TOOLS & MATERIALS

- Two sheets of paper (printer or construction paper)
- Cardstock, cardboard, or foam paper
- 2L Soda Bottle
- 2 plastic straws
- Scissors
- Tape
- Ruler

**SECRET CODE**
UNEARTH

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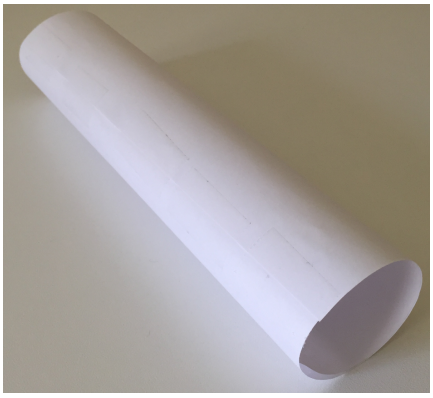
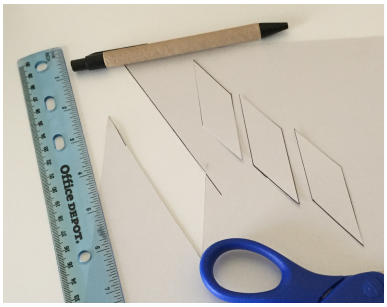
## GETTING STARTED-INSTRUCTIONS

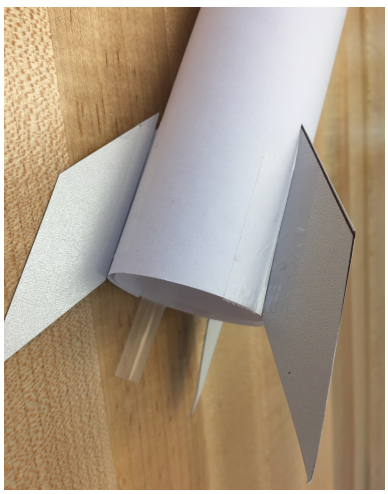
### STEP 1:BUILD THE ROCKET BODY

Begin by rolling a piece of paper into a cylinder. Adjust your design to be as thin or thick as you like. Apply tape to the top, middle, and bottom of the crease.

Fold one end of a straw as tightly as you can and tape it down. Tape this straw to the inside of the rocket. Use the inside crease to make sure your straw is straight!





### STEP 2: ADD SOME FLAIR! (AND STABILITY)

Using the thick paper material you've selected, trace a stabilizing fin design and cut it out. Use this cutout to make two, three, or four fins.

Once fins are cut out, use the tape to attach them to the rocket body . Use the edge of the fins to ensure you are attaching them at equal height from the base, as pictured here.

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## QUESTIONS TO CONSIDER

What materials can you change to make the rocket fly higher?
Can you adjust the base to provide more power?

## KEY TERMS

- Friction (drag)
- Pressure
- Acceleration

## SIMPLIFY

Simply roll half of a piece of paper around a straw, fold the tip and tape it down. Then blow through the straw!

## EXTRA CHALLENGE

Can you find a way to land your rocket safely? How can you give your launcher more power?

## RELATED RESOURCES

NASA JPL Stomp Rockets

- https://www.jpl.nasa.gov/edu/teach/activity/stomp-rockets/

NASA STEM Activities

- https://www.nasa.gov/stem

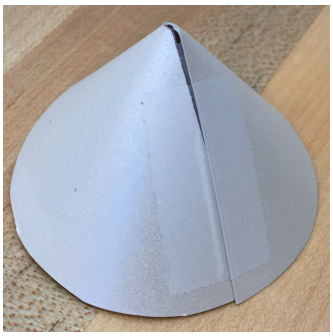
## INSTRUCTIONS CONTINUED...

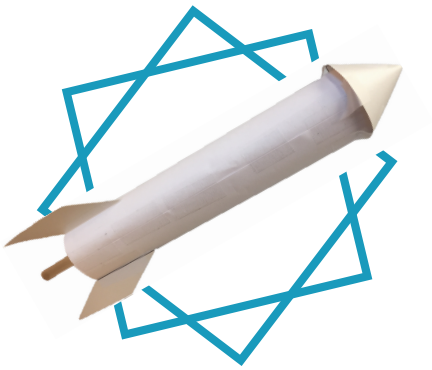
### STEP 3: THE NOSE CONE

Using a bowl, cup, or other wide circular object, trace a circle onto the thick paper material. Cut out the circle.

Cut a straight line from the outer edge to the center. Push the two loose edges past each other to create a cone. Do a rough fit of the cone on the body of the rocket. Trim parts of the circle and bring the two edges together, taping them to seal the shape of the cone once the desired shape is achieved.

Tape the cone onto the rocket. Try to not warp the shape of the cone.





### STEP 4:COUNTDOWN AND LAUNCH!

Use a thumbtack to poke a hole in the bottlecap of your bottle. Widen the hole using the pointed edge of a pencil. Stop until your straw fits snugly through the hole. If it's too loose, simply tape down the gaps between cap and straw.

Place your rocket on the launch straw, and count down from 10. Squish the bottle as hard as you can and send your rocket flying!