



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at [www.projectexploration.org/stemathome](http://www.projectexploration.org/stemathome).

### In this activity, you will:

Design and build a helicopter



### Supplies Required:

- 1 craft stick
- 1 propeller
- Cardstock
- Paperclip
- Rubberband
- Tape

### Video

How do helicopters work? <https://tinyurl.com/2bh4sv4p>

### Overview

Helicopters use lift and drag to maneuver and fly in the air. Lift is when an object pushes against the air, which causes the object to rise upward, or descend slowly. Drag is when air pushes back against a moving object and slows it down. In the helicopter model, the rubberband has stored energy. When the rubber band is released, that release energy into the propeller, which causes the propeller to turn and to generate lift. Test your designs and see how high your helicopter can fly!



## Instructions

1. Attach the propeller to the craft stick.
2. Take the paperclip and bend it into an L shape.
3. On the craft stick, opposite to the propeller, create a tape flag at the end, and slide on one side of the paperclip.
4. Color and cut out a helicopter from the cardstock.
5. Tape the helicopter perpendicular to the craft stick, so the propeller is above the helicopter.
6. Loop a rubber band through the wire loop on the propeller and stretch it to loop around the leg of the paperclip.
7. Face the propeller toward you and twist it clockwise until it become difficult to
8. Hold the propeller with one hand, and pinch the bottom of the craft stick with the other.
9. Face the propeller up and away from your face. Let go and let it fly!

## Additional Resources

1. Force and motion: <https://tinyurl.com/unta5xn7>

## Share It Out

Share on social media: Record a video or take a picture of your activity and post the results online using the hashtags:

#Helicopters  
#ProjectExploration  
#StemAtHome

Tag a friend and challenge them to do it, too!

For more activities like this one, go to [www.projectexploration.org/stemhome](http://www.projectexploration.org/stemhome). If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!



Call or text us for help: 312-772-6634



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