



# Make a Paper Mars Helicopter

**Make, Test,** and **Experiment** with a paper mars helicopter.

Things to consider:

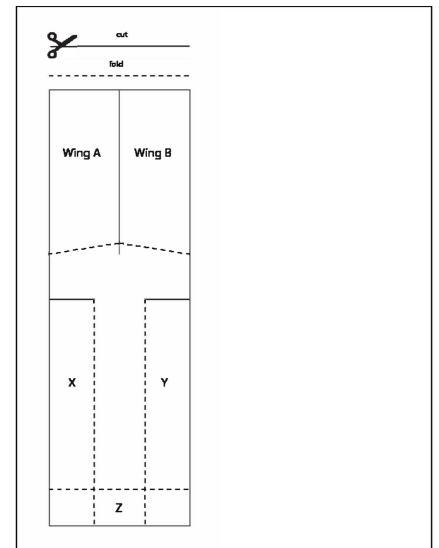
- The shown design is a basic suggestion. Experiment by making changes to the design. Can you make a better paper helicopter?

## **Materials:**

- Plain Paper or printed template
- Scissors
- Pencil
- Measuring Tape (optional)

## **Make:**

1. Draw the helicopter on a piece of paper OR Print the template
2. Cut all the solid lines.
  - a. Cut around the border.
  - b. Cut between Wing A and Wing B.
  - c. Cut the top line of rectangles X and Y.
3. Fold all dotted lines.
  - a. Fold back rectangle X.
  - b. Fold back rectangle Y.
  - c. Fold up Z.
  - d. Fold Wing A and Wing B down; one forward and the other back.



## **Test:**

1. Hold the helicopter by the bottom (folded up Z)
  - a. Hold it as high as you can; standing with arm over your head.
2. Drop the helicopter

## **Ask:**

1. What do you observe?
2. Which way do the blades turn?
3. What if you dropped your helicopter from a higher spot?  
*\*\*Ask an adult if there is a safe place and way to test a higher drop (stool, stair, etc)\*\**
4. Was the helicopter flight from a higher drop different? How?



## **Experiment:**

1. Make one change to your helicopter. Some suggestions are:
  - a. Fold the bottom up one more fold, or
  - b. Make the wings shorter, or
  - c. Make the wings a different shape

*\*\*You may want to make another helicopter, making a change, so you can compare them\*\**

## **Ask:**

1. Does it fly differently? How is it different?
2. Would a different change have the same result or a different one?

## **Want to Keep Experimenting?**

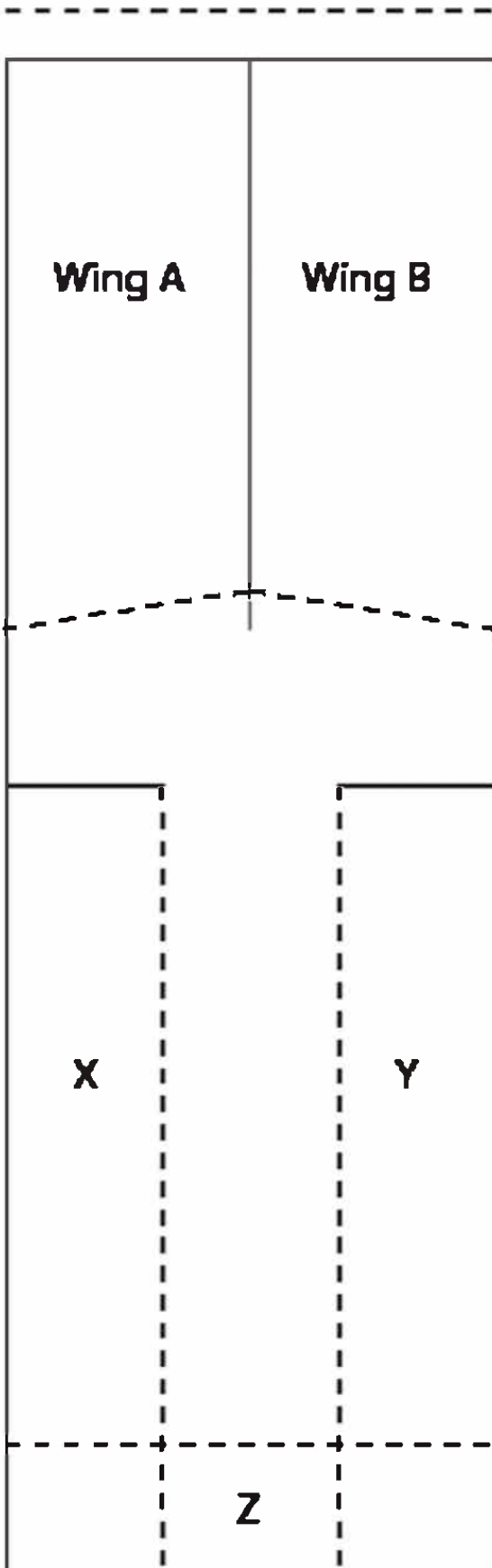
1. Choose a way you'd like to improve your helicopter. Such as:
  - a. Making the wings spin faster.
  - b. Making the wings spin slower.
  - c. Make the helicopter rotate (spin) more times during flight.
  - d. Have a longer flight (more time before hitting the ground).
  - e. Make it spin in the opposite direction.
2. Make a change to your helicopter design that you think will make the improvement you chose.
3. Test your new design.
4. Redesign
  - a. Make changes and test until you have your best paper Mars Helicopter design.

## **Counting rotations (spins)**

Counting the number of times your helicopter rotates (spins) while it's flying, can be difficult. One way to do it is to count after.

1. Tape a long strip of a light material to the bottom of your helicopter. (Ribbon, streamer, other light and long material)
2. Hold the helicopter up with the material hanging straight (untwisted) below.
3. Step on the loose end of the material, or place a weight on it.
4. Drop the helicopter.
5. Pick up the helicopter without turning it and count the twists in the material.

fold



cut

