



## Project Skills:

Building a paper helicopter model

## Life Skills:

Problem solving  
WI Academic Standards:  
Science C.4. Science Inquiry;  
D.4. Physical Science

## Time:

20-30 minutes

## Supplies:

- 2-3 sheets of standard typing paper per youth
- Paper helicopter template
- 1 pencil per youth
- 1 pair of scissors per youth
- 6 sets of colored markers
- 1 small and 1 large sized paper clip per youth
- Stopwatch with a second hand (or digital)
- Helicopter Flight Recording Sheet
- Electronic calculator

## Getting Ready:

- Make a copy of the paper helicopter template for each youth.
- Make a copy of the Helicopter Flight Recording Sheet for each youth.
- Try making the paper helicopter yourself.
- Locate a high place where youth can drop their helicopter, such as a stairway or balcony.

Adapted from 4HCCS  
Aerospace project series  
Stage 2, Lift-Off (BU-6843),  
pages 26-27.

## WHAT TO DO

### *Make paper helicopters*

1. Give each youth a helicopter pattern sheet, several pieces of typing paper and a pencil.
2. Have the youth trace the helicopter pattern onto the typing paper.
3. Use crayons or markers to decorate their helicopter.
4. Cut the outside lines around the helicopter. Then cut the solid line between the rotors.
5. Fold one rotor blade inward and the other rotor blade outward.

### *Conduct flight tests*

1. One at a time, have youth hold their helicopter in the air and gently let go.
2. Use the stopwatch to measure the flight time. Tell each youth to record this time on his or her Helicopter Flight Recording Sheet in the appropriate cell (Round #1-No Paper Clip, 1<sup>st</sup> drop cell).
3. Repeat this procedure until each child has dropped and recorded their helicopter flight times for a total of three drops.
4. Have each youth add a SMALL paper clip to the tail of their helicopter and repeat the drop and record procedure until each child has recorded three drops.
5. Have each of the youth take off the small paper clip and add a LARGE paper clip to the tail of their helicopter and repeat the drop and recording procedure until each has recorded three drops.

### *Calculate the results*

1. Calculate the Average Time Aloft for rounds 1, 2 and 3 by adding the total time for each of the round 1 drops, then divide by 3 (or the number of drops). This will be the average flight time/per helicopter with no paper clip. Write this number in the far right column for round 1.
2. Repeat these steps to determine the average flight time for rounds 2 and 3.
3. Have youth report their drop times to the others. Congratulate the youth with the longest flight time in each of the three categories.

## TALK IT OVER

Try to get each youth to express his or her feelings and experiences.

### *Reflect:*

- Which of the changes made the biggest difference in how your helicopter flew? Why?
- How do you think this activity helped you to learn about how a helicopter flies?

### *Apply:*

- How do you typically go about solving problems?
- How can doing experiments help you become better at solving problems?



# Helicopter Flight Recording Sheet

ROUND & ROUND

Name:	1st Drop	2nd Drop	3rd Drop	Average Round #1
Round #1 No Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____
Round #2 Small Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____
Round #3 Large Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____

Name:	1st Drop	2nd Drop	3rd Drop	Average Round #1
Round #1 No Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____
Round #2 Small Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____
Round #3 Large Paper Clip	Time Aloft _____	Time Aloft _____	Time Aloft _____	Average Time Aloft _____

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# Paper helicopter template

Cut on solid lines  
Fold on dotted lines



Fold down Rotor



Fold Rotor  
(Opposite Direction)



Cut this section out

Cut this section out

Fold up

