



UNIVERSITY OF ILLINOIS
EXTENSION

Lesson Objectives:

Club members will:

- Learn about dynamics of aerospace
- Learn how weight can affect flight
- Learn how to make and test fly a paper helicopter. This is a part of the Aerospace series.

**Time: 20 to 30
minutes**

Equipment &

Supplies:

- Paper
- Paper helicopter template
- Pencils
- Crayons or markers
- Stopwatch
- Scissors
- Large Paper Clips
- Small Paper Clips
- Helicopter Flight Recording Sheet.

Preparations:

- Review Lesson
- Gather equipment and supplies

4-H Club GO TO Resources

February 2017

ROUND & ROUND - 4-H Aerospace Lesson

Make and test fly a paper helicopter

What to do:

Make paper helicopters

1. Give each youth a helicopter pattern sheet, several pieces of paper and a pencil.
2. Have the youth trace the helicopter pattern onto the 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 blade outward.

Conduct flight tests

1. One at a time, have youth hold their helicopter in the air and gently let go.
2. Use a stopwatch to measure the flight time. Tell each youth to record this time on his or her Helicopter Flight Recording Sheet. (Round #1—No Paper clip)
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 the 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.



ROUND & ROUND - 4-H Aerospace Lesson continued

Talk It Over

- Review with the youth what they might have learned from this experience.

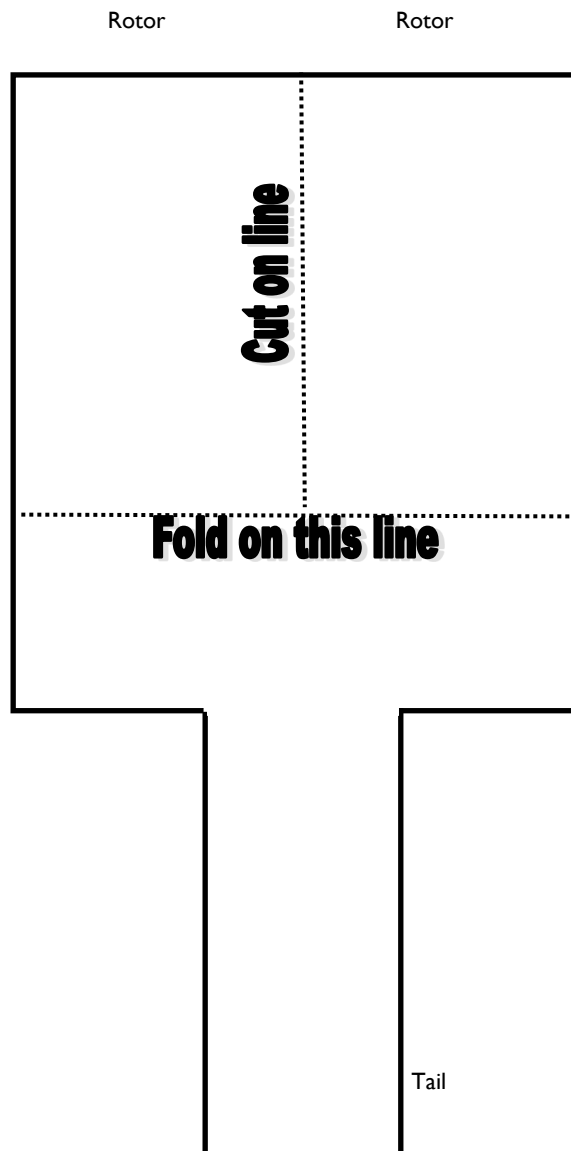
Reflect:

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

Template for Helicopter



Helicopter Flight Recording Sheet

Name:	1st Drop	2nd Drop	3rd Drop	Average from each Round
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 from each Round
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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Sources & Additional Lesson info:

4-H Club GO TO Resources is being offered to 4-H clubs in Boone, DeKalb and Ogle Counties as a way to enrich and enhance 4-H experiences and programming at the club level. It is the goal of the Extension staff to assist 4-H leaders and officers in providing simple hands-on activities on a monthly basis that can broaden the 4-H club experience and as a result heighten positive youth development.

The Round & Round 4-H Aerospace Lesson was adapted by the University of Wisconsin Extension from the 4HCCS Aerospace project series Stage 2, Lift-Off (BU-6843), pages 26-27.

For more information on 4-H Aerospace projects contact your local Extension office.

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University of Illinois College of Agricultural, Consumer & Environmental Sciences

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If you need a reasonable accommodation to participate in this program, please contact the Ogle County

Extension office at 815/732-2191.