COME FLY WITH US
EXPLORING EXPERIMENTAL DESIGN
Purpose

How will changing the direction that the paper helicopter blades are folded affect the “flight” of the helicopter?

- Skip a line.

Hypothesis

- What do you think will happen?
- What is your educated guess?

If we change the direction of the paper helicopter blades, then we think______________________________.
Purpose
How will changing the direction that the paper helicopter blades are folded affect the “flight” of the helicopter?

Hypothesis
If we change the direction of the paper helicopter blades, then we think_______________________________.

Materials
• Model of helicopter
• Scissors
• Pen or pencil
Procedure

1. Cut out the helicopter.
2. Cut along the dotted lines.
3. Fold along the solid lines: section C behind section B, section A behind sections B and C, and section D behind sections A, B, and C.
4. Complete the helicopter by folding blades perpendicular to the body of the helicopter.
5. Blade X should have the dot up and blade Y should be in the opposite direction with the square down.
Come Fly With Us

Data

<table>
<thead>
<tr>
<th>X-up &amp; Y-down</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your name</td>
<td></td>
<td></td>
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<tr>
<td>Partner’s Name</td>
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- Write the title – Data on the left margin
- Create two data tables

September 3
6. Stand on a chair and hold helicopter by the top of the “T” at shoulder level.

7. Drop the helicopter and observe whether it spins clockwise (cw) or counterclockwise (ccw). Repeat this test three times.

8. Refold the blades so that the square on blade Y is facing up and blade X is facing down.

9. Stand on a chair and hold helicopter by the top of the “T” at shoulder level.

10. Drop the helicopter and observe whether it spins clockwise or counterclockwise. Repeat this test three times.
What was the independent variable?
What was the one thing that was changed?

The independent variable was folding the blades in different directions, with the black circle up and the white square down, or with the black circle down and the white square up.
-What was the dependent variable?
  -What data did you collect?

The dependent variable is the direction of spin, clockwise or counterclockwise.
List at least 3 things you should try to keep constant. (controlled variables)

- holding the helicopter in the same place (on the body versus the wing)
- holding it at the same height
- making sure there is no cross breeze each time
- using the same helicopter
- adding no extra force when letting it go each time
Remember the Purpose?

Purpose
How will changing the direction that the paper helicopter blades are folded affect the “flight” of the helicopter?

Do you have a question you would like to test?
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- Title pg. 8 Come Fly With Us
- Write the title – My Questions on the left margin

My Questions
- Write at least three questions you could test with your helicopter.

***Remember that a question has a capital letter at the beginning and a question mark at the end.

- Skip a line.
- Write the title – Class Questions on the left margin

Class Questions
Come Fly With Us

- Title pg. 9 Come Fly With Us
- Write the title – Purpose on the left margin

Purpose
- Write the question you would like to test.
- Skip a line.
- Write the title – Hypothesis on the left margin

Hypothesis
- What do you think will happen?
- What is your educated guess?

Example: If we hold the helicopter from the bottom, then we think it will take 30 minutes to land.
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- Skip a line.
- Write the title – **Procedure** on the left margin
- A procedure is written without using pronouns (I, you, & we).

Procedure
1.
2.
3.
4.
5.
Come Fly With Us  
September 5

Data

• Record measurements in a data table.

<table>
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Title bottom half of page  Observations

Observations

• Record (write down) observations.
- Summarize your data. Tell me about your results and observations.
Title page 12 Conclusion

I did this experiment to learn____. I found out that____. I know this because____. This information would be useful to ____ because____.