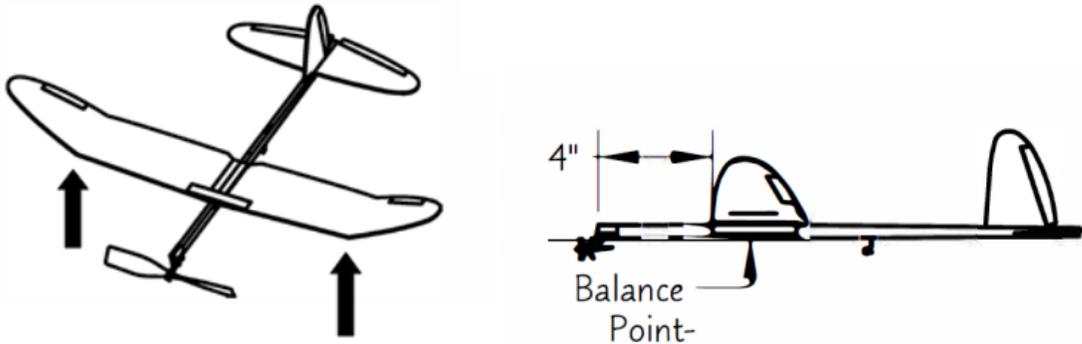


Directions: You will be working with a partner to wind the motor and fly the plane to determine how changing the center of gravity (CG) affects the flight of the ALPHA. Follow the steps below.

- 1) As shown in the illustration below, position the front of the wing about 4 inches behind the propeller assembly.
- 2) Use your fingers to support your plane at the end of each wing. Doing this will give you a good starting point.



3) How does your model balance now when you hold it by its wings? Check one:

- Nose pointed up
- Plane is level and balanced
- Nose pointed down

4) Move the wing clip forward a little and try again. Which way did the nose move? Is the plane nose-heavy or tail-heavy? Move the wing clip back a little and try again, noticing how this changes the way the nose moves. Make small adjustments until the plane rests level on your fingertips.



# AEROLAB

AMA ALPHA:  
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5) Wind the rubber motor the same number of times for each trial (recommend 35 full turns of the 20:1 winder). Launch the plane and time its flight. Repeat this procedure two more times and record your data in the table below.

Wing Placement (cm)	Time Aloft			Average Time in the Air
	Trial 1	Trial 2	Trial 3	
Directly over estimated CG				
0.5 cm forward				
1 cm forward				
0.5 cm back				
1 cm back				

6) Calculate average time aloft (time the plane spends in the air). To do this, add the three trial times together, and divide the result by 3.

7) Now try moving the wing slightly forward so that it is positioned *ahead* of the CG. How does your plane behave during flight? Draw and explain.

8) Now try moving the wing slightly back so that it is positioned *behind* the CG. How does your plane behave during flight? Draw and explain.

9) Which wing placement results in the greatest average time aloft? Check one:

Positioned slightly ahead of the CG

Positioned directly on the CG

Positioned a bit behind the CG

10) Mark the location of the optimal CG carefully on the aircraft with a pen or marker. That way when you assemble it another day, you know where to start!

