

Wind Tunnel Demonstration

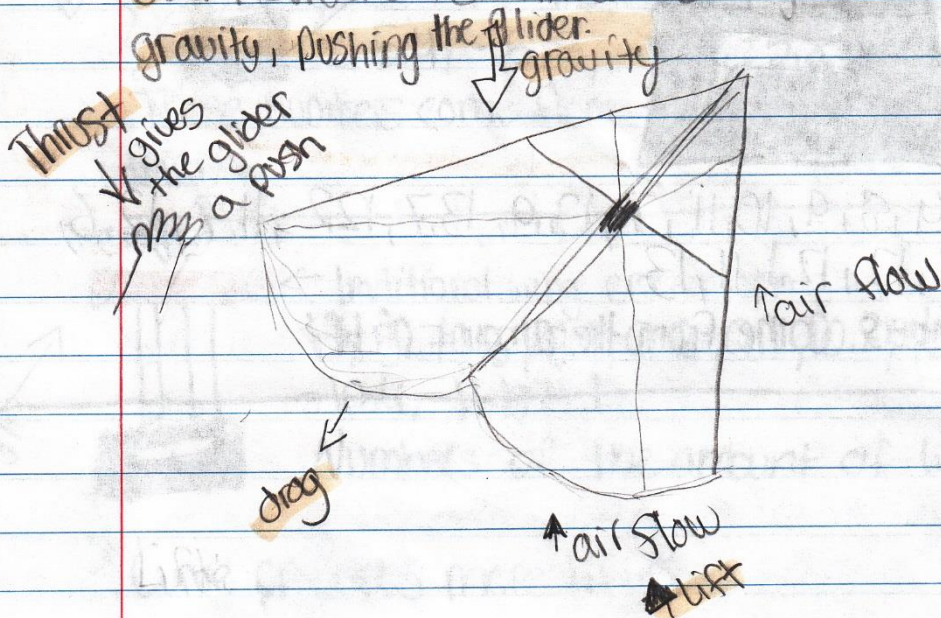
What happened & why!
COLOR

LT: Identify evidence for the four forces of flight: lift, thrust, drag, & gravity.

Gravity: Force that is pulling the airplane to the ground. Evidence: The airplane stopped & went to the ground.

Drag: What you encounter when you move through the air. It resistance from moving through the air, Slows plane down. Evidence: Using too high of an angle of attack.

Thrust: The forward force on an airplane. Once you get the plane going gravity takes over. Evidence: continued to fly even with gravity, pushing the glider.

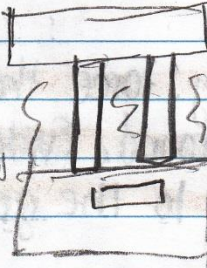


Data 8

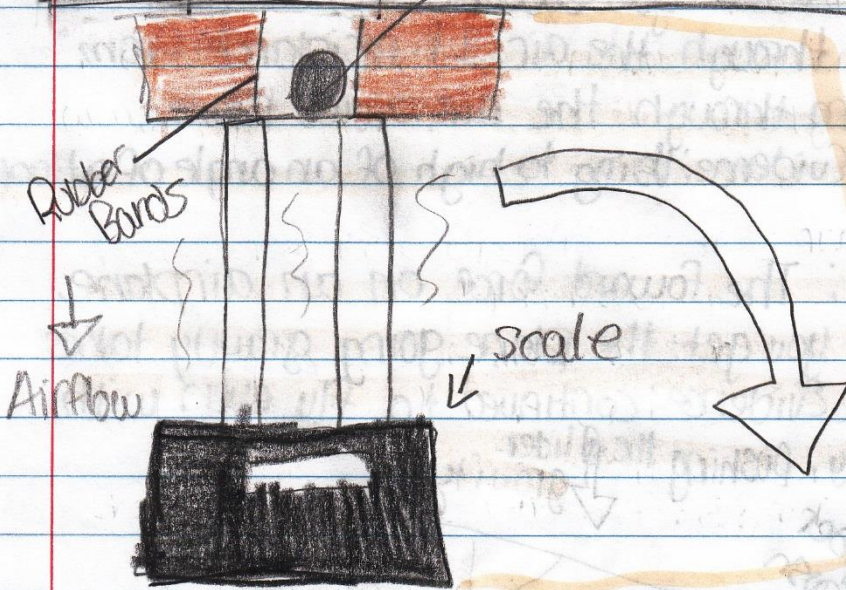
-4.5, -4.6, -4.7, -4.4, -4.5, -5, -5.6, -5.1, -4,
 -4.4 ← 3, -4, -5, -4.6, -5.2, -5.8
 -4.6
 -4.7
 -4
 -3.8
 -4.6
 -5

Amount of
Lift

Airflow



clay



2, 4, 8, 9, 10, 11, 7, 13, 9, 13.7, 12.2, 11.7, 12.6,
 12.8, 12, 12.1, 11, 13

Numbers come from the amount of lift

-9, -10, -11, -12, -15.4, -16, -17, -18
 -19.6, -19.6, -19.7, -17.3, -18.4,
 -20.2, -18.6, -19.1

The numbers are collected from how much lift is under the wing.

Negative Number means more lift

Slanted down

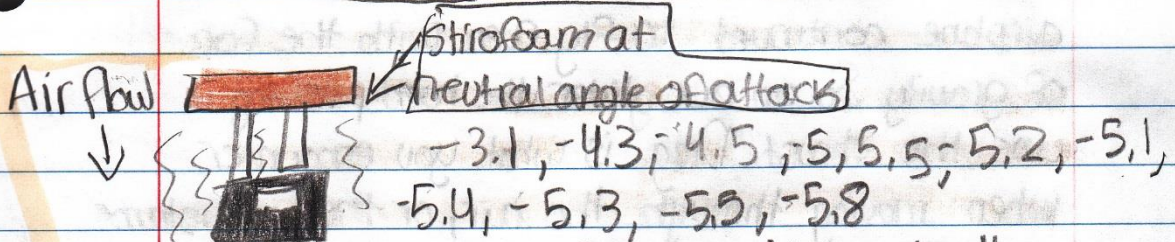


Neutral angle of attack \Rightarrow flat with the horizon.

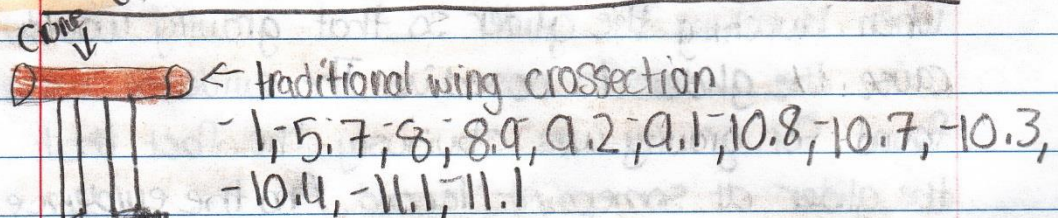
Negative angle of attack \Rightarrow nose pointed down.

Positive Angle of attack \Rightarrow nose pointed slightly up.

Newtonian Lift - action \Rightarrow reaction lift



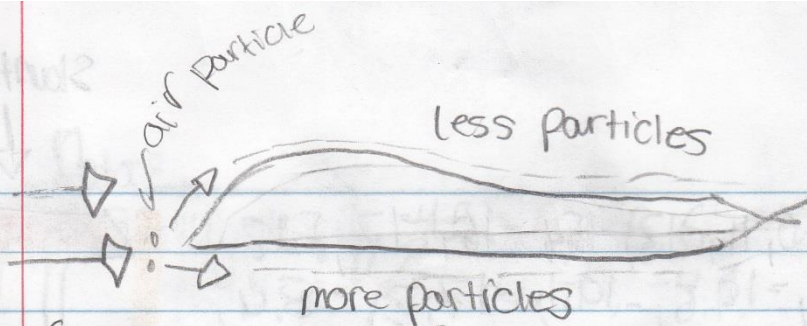
These numbers come from the lift under the wing.



Numbers of the amount of lift.

Neutral angle \nearrow

* Curve produces more lift *



Everything happens from high to low

Bernoulli Lift: When you increase the speed of a fluid, the pressure drops

Analysis: In this lab we talked about lift, thrust, drag, and gravity. Gravity is the force that is pulling down on the airplane, always. Lift is what holds the airplane up until gravity takes over. Thrust is the forward force on the airplane. The evidence of thrust is that the airplane continued to fly even with the force of gravity. So on our glider the hand pushing it was the thrust. Drag is what you encounter when moving through the air, or the resistance when the plane moves through the air (slows plane down). We had to use a high angle of attack when launching the glider so that gravity wouldn't cause the glider to nosedive. The evidence we found for gravity was obviously the fact that the glider at somepoint landed. And the evidence we found for lift was that the glider moved through the air for a given amount of time. So all these forces work together to make our gliders fly.