

# Logic of Flight

# Takeoff

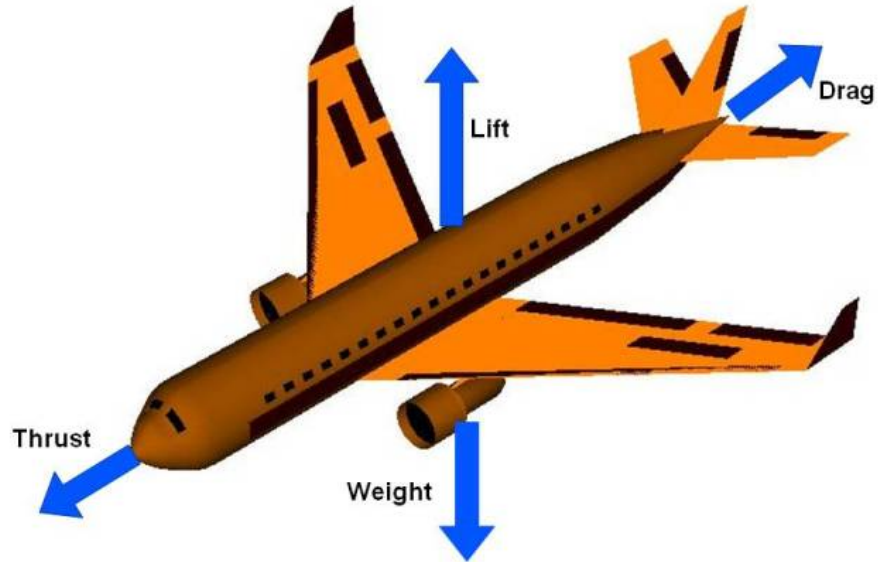


<https://www.youtube.com/watch?v=fAoMjiFPKUw>

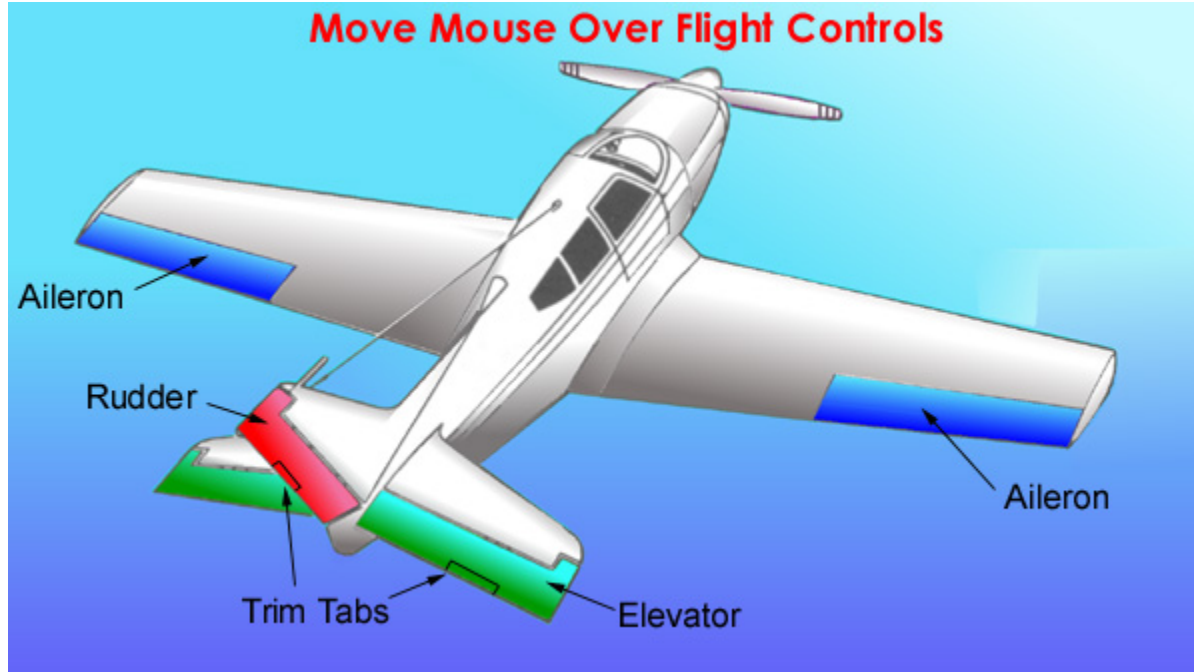
# Forces on an Airplane

National Aeronautics and Space Administration

## *Four Forces on an Airplane*

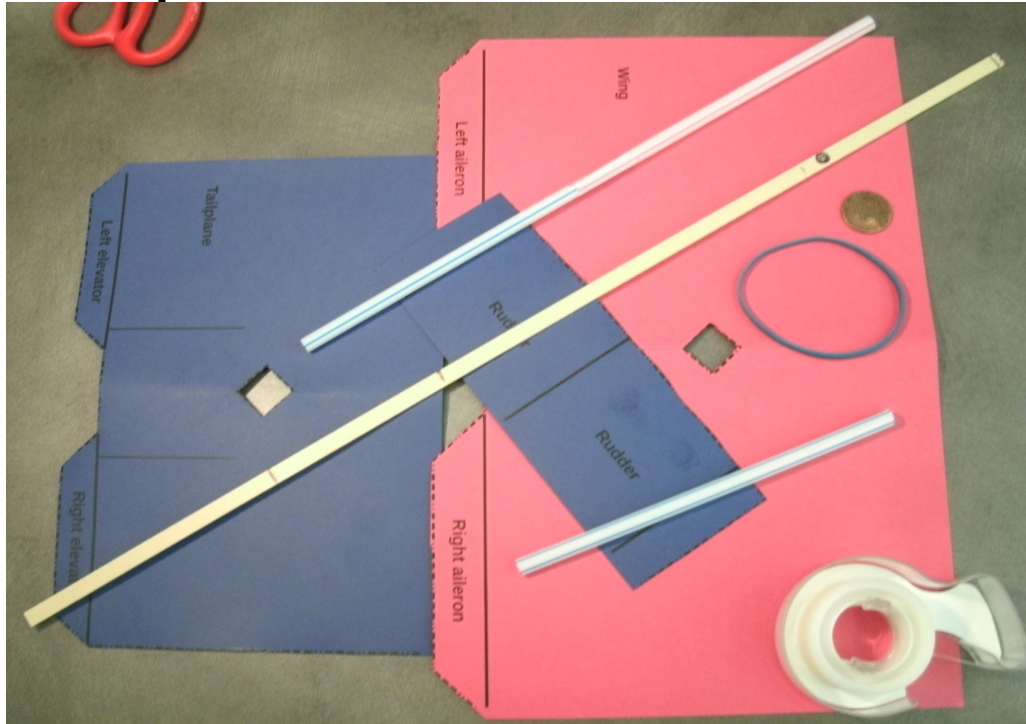


# Control Surfaces



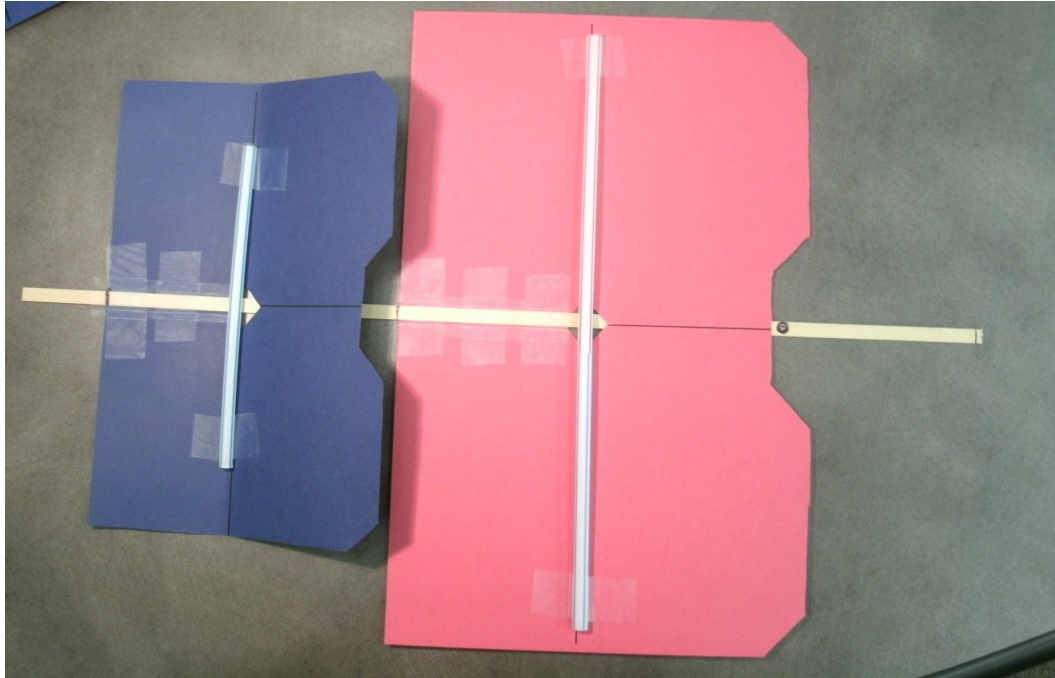
# Activity - Build the Glider

1. Cut the templates



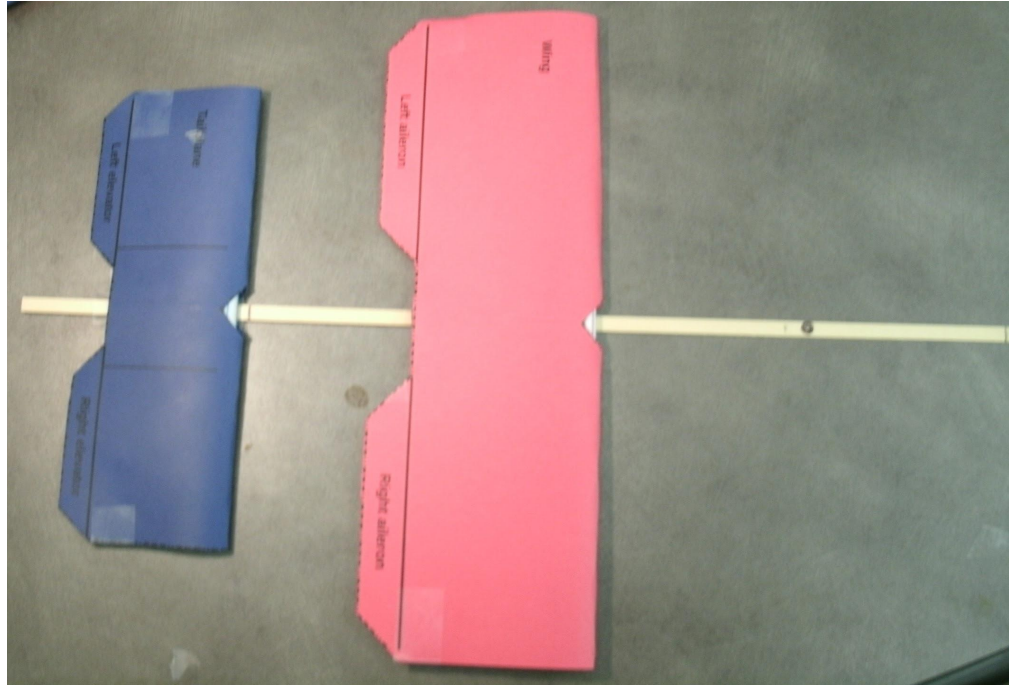
# Activity - Build the Glider

2. Connect straws, wing, and tailplane



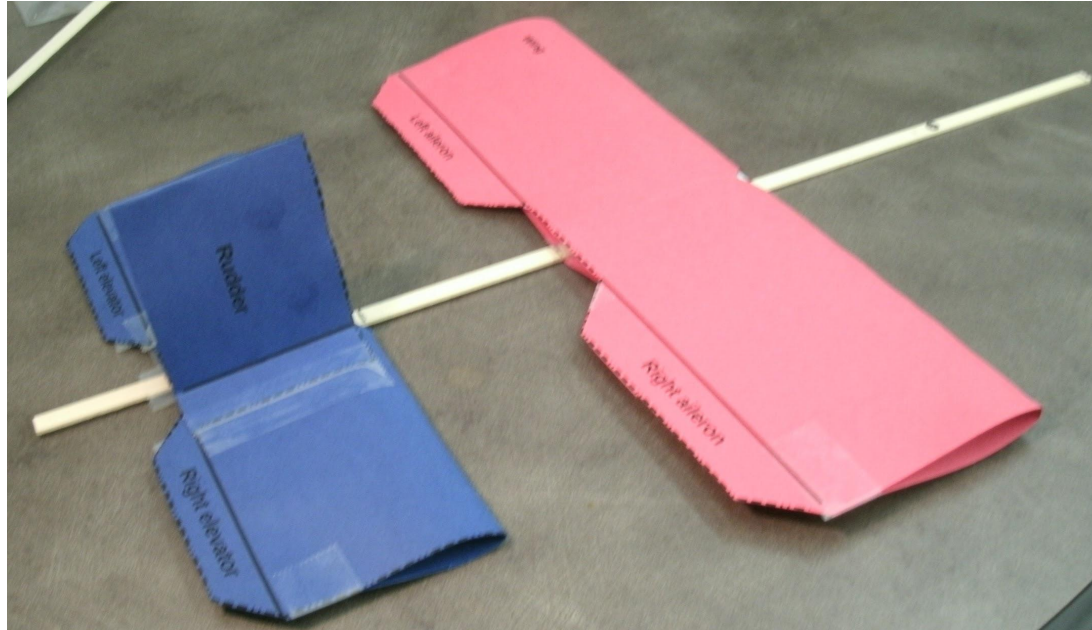
# Activity - Build the Glider

## 3. Bend wing and tailplane



# Activity - Build the Glider

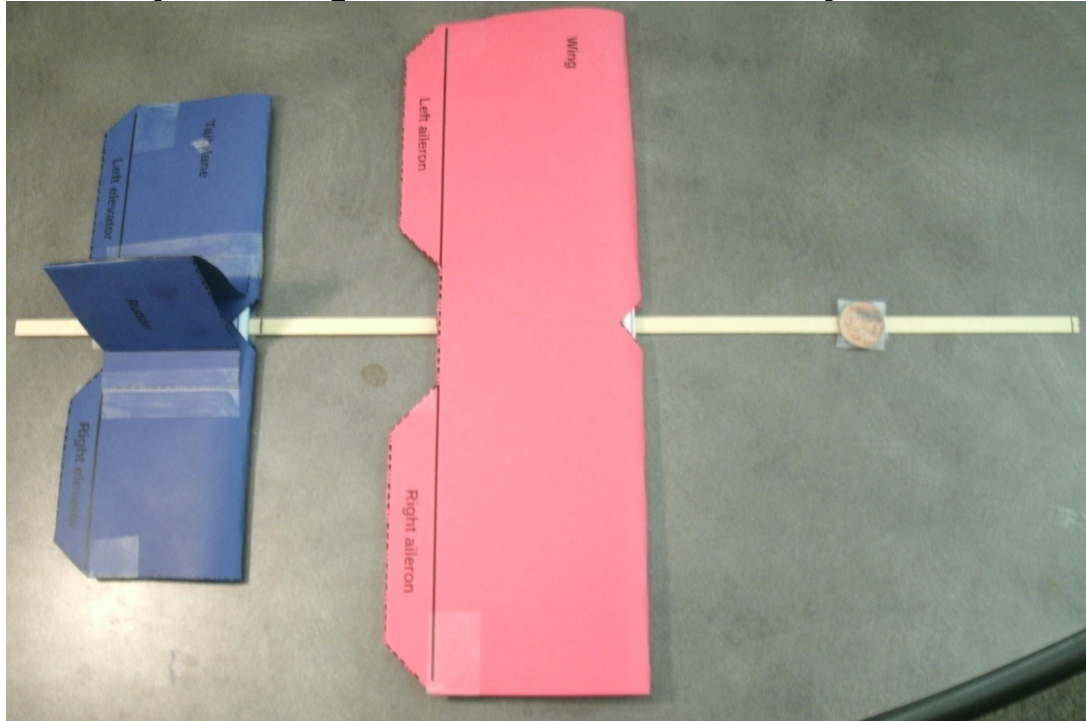
## 4. Connect the rudder





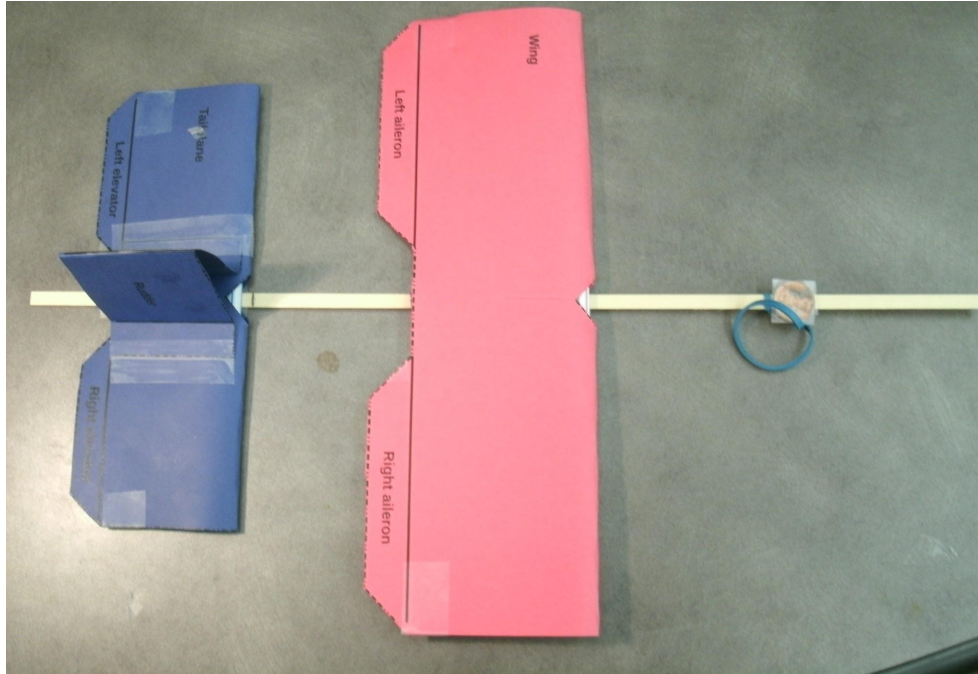
# Activity - Build the Glider

5. Attach a penny coin at the tip



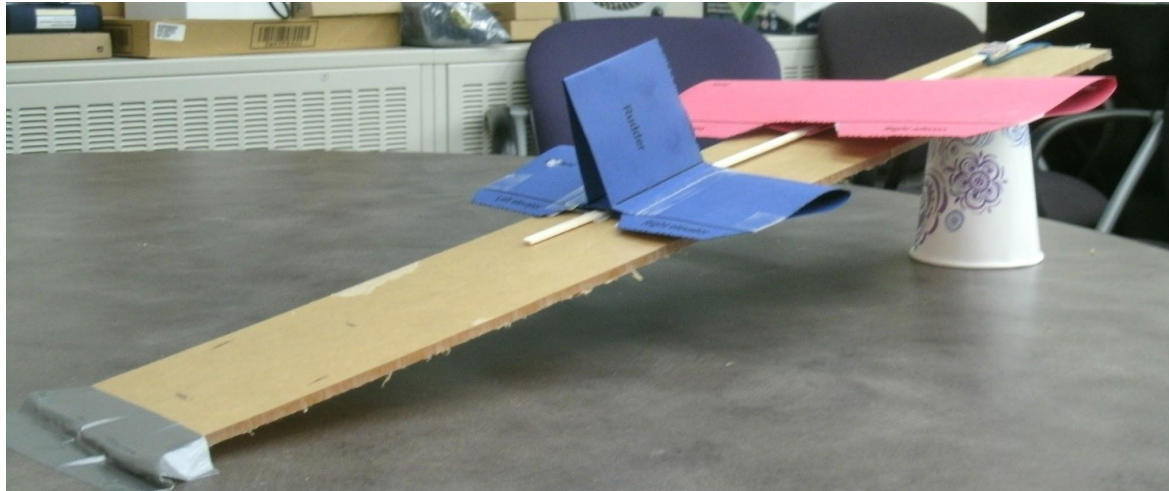
# Activity - Build the Glider

5. Attach the rubber band behind the coin



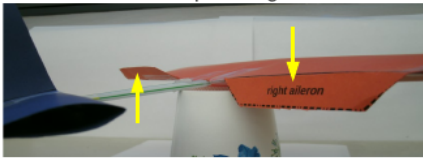



# Activity - Build the Glider

## 6. Launch!



# Activity - Build the Glider

6. Fill the table

Input	Output
<p data-bbox="904 252 1306 274">Bend left aileron up and right aileron down</p> 	
<p data-bbox="904 459 1306 481">Bend left aileron down and right aileron up</p> 	
<p data-bbox="904 667 1306 689">Bend left and right elevators up</p> 	
<p data-bbox="904 874 1306 896">Bend left and right elevators down</p> 	

# Research at UofM

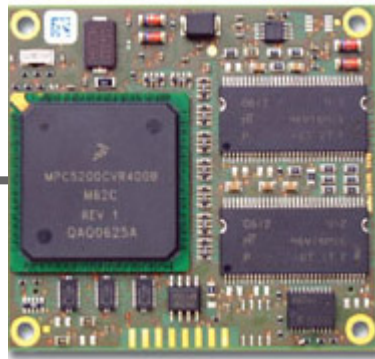


Photo from <https://www.flickr.com/photos/1322222222/N9912211222141/>