

## Flight

Before a person can understand flight, they must first learn about forces that control flying.

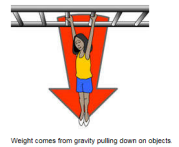
A force is a push or a pull in any direction

### Four Forces of Flight

#### 1) Gravity Force (Weight)

- Gravity is an invisible force that pulls towards the center of the earth. This is a downward "pull" that works against things that are trying to fly.

(Because Earth has a large mass, all objects near it are pulled toward the center of earth)



#### 2) Drag Force

- Drag is force that slows you down and works in the opposite direction than you are travelling. For example, when a parachute on a dragster opens up after the race, it creates a drag force that helps to slower the car down.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

# Gliders



Hang Glider



Sailplane



Toy Glider



Space Shuttle



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You need 3 pieces of paper

301-18 Design and demonstra  
methods for altering drag in  
flying devices

204-2, 205-5, 207-2

Part 1) I want you to design a glider of your choice. You must use the entire piece of provided paper (Controlled Variable - by folding, you may make slits but we want to keep the weight the same). Once it is complete we are going to get into groups of 4 and take turns throwing the gliders. I want you to record the flight time and flight distance for each glider. Which design flew the best? Why do you think this?

Part 2) Now I want you to switch gliders with a partner and record it's time and flight distance? Was it the exact same or different? If different what variables (ex. force,) may differ the results? (Record your answers) (Outcome 206-6)