

Newton's Laws

- ① An object at rest will remain at rest and an object in motion will continue in motion at a constant speed in a straight line unless a resultant force acts on it.

→ Means:

- Eg. if a ball is stationary on the ground and nobody kicks or touches it, it will stay stationary.

- Eg. if a moving car suddenly stops, the people in the car will continue moving forward.
↳ called ~~inertia~~ inertia.

Inertia

→ The tendency of an object to continue in its current state at rest or in uniform velocity.

→ All objects have it.

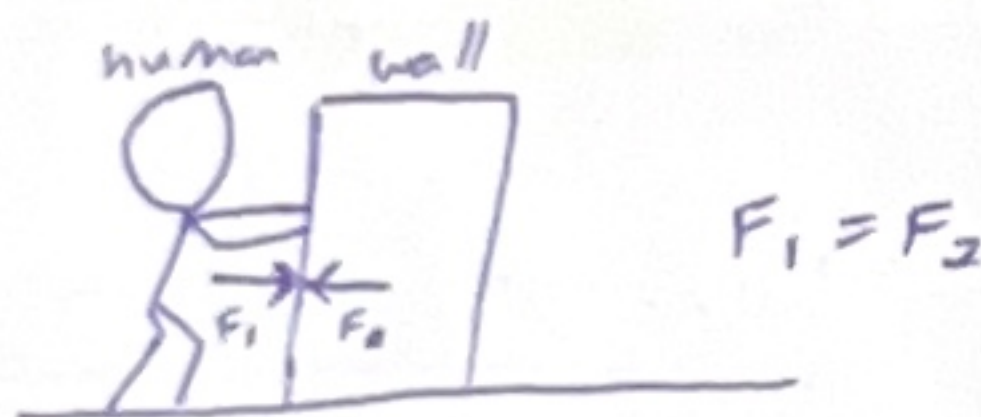
→ The greater the MASS of the object, the greater the inertia will be.

- ② When a resultant force acts on an object of constant mass, the object will move at an increasing speed in the direction of the resultant force.

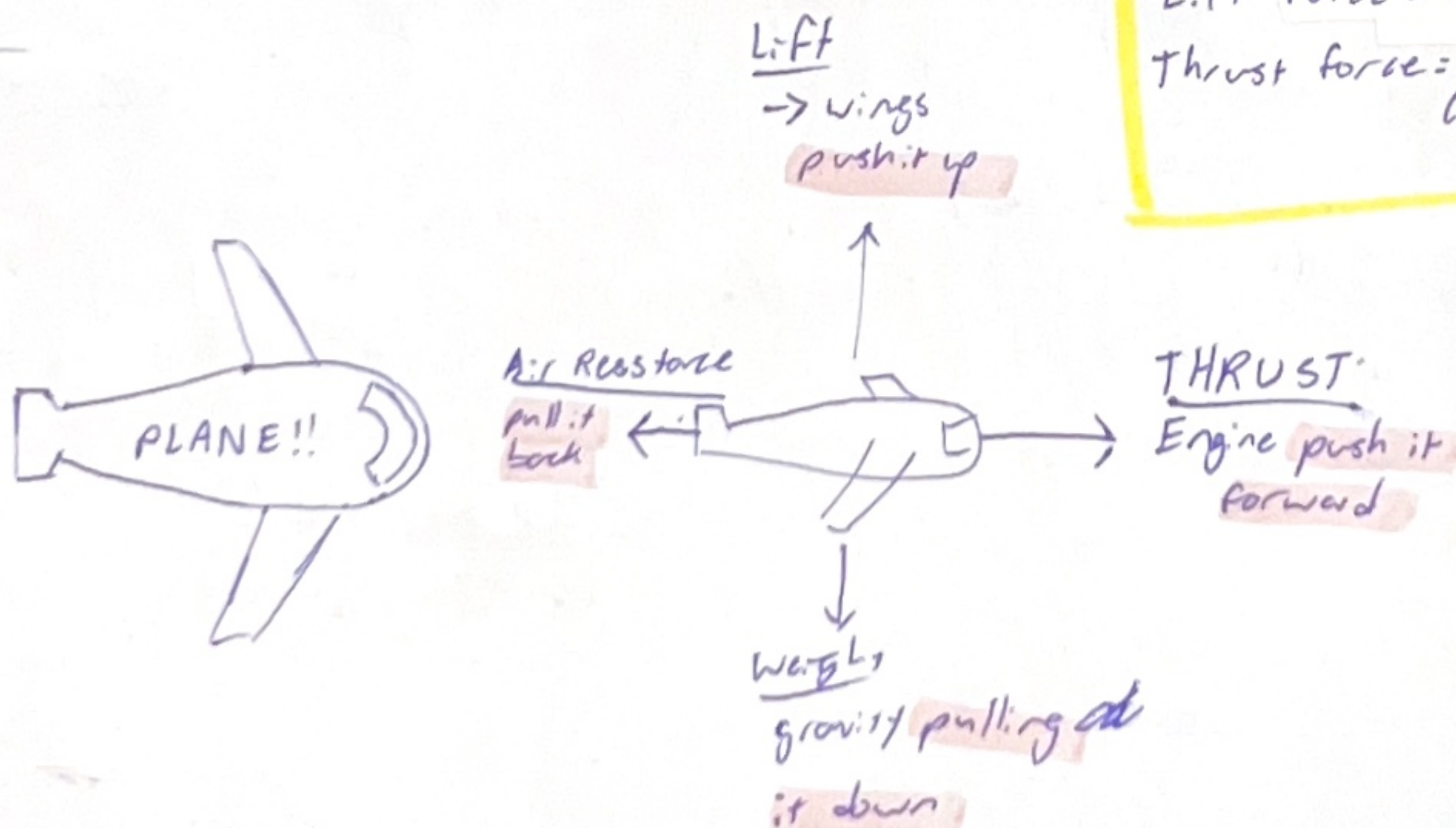
→ Means:

- Eg. If you kick a stationary ball, it will start moving, and as it is moving, it will increase in speed.

- ③ If Body A exerts a force on Body B, then Body B will exert an equal and opposite force on Body A.



★ Scenario



Lift force = Weight force
Thrust force = Air resistance force (frictional force)

★ Plane is moving horizontally at a constant speed.

★ Even though the net force = 0N,

the plane was already moving to begin with. (Initial thrust by engine is more than the initial air resistance)

- As it speeds up, air resistance increases.

⇒ net forward force

⇒ Resultant force = 0N

∴ the plane stops accelerating and starts moving at a constant speed.

