

The Principles & Physics of Flight Power Point Note Guide 13 & 14 Nov 2013
(PS-AFSF-7)

First & Last Names: _____ **Period/Flight:** ___/___

1. Newton's laws have to do with _____
2. Newton's first law: a body at rest tends to remain at rest and a body in motion tends to remain in motion unless an _____ force _____ on the body. Inertia= lacking the ability to _____
3. List the two primary outside forces that help aircraft move: a) _____ & b) _____
4. Newton's second law: the _____ of a body is directly proportional to the force causing it and inversely proportional to the _____ of the body. Three basic assertions: a. When you hit something it picks up _____: b). the _____ the object, the less rapidly it picks up speed; c) the object picks up speed and continues to move in the _____ direction from which you hit it.
5. The engine size required to provide the force needed for different aircraft varies with the _____ of the aircraft and its _____
6. Newton's third law: for every _____ there is an _____ and opposite _____; for an aircraft engine the release of gas particles exiting the engine provides a forward force in the front of the body to which the engine is attached
7. Bernoulli principle: as air velocity increase, the _____ decreases; as the velocity decreases, the pressure increase.
8. Velocity: rate of _____ in a given direction. Speed: rate of _____ of the rate of motion; how _____ it is going.
9. Four force of flight:
 - a. Thrust: a force which gives _____ motion to aircraft. Aircraft force provided by the jet _____ (ts placement, number, and type) and the _____.
10. Lift: the _____ force of an object; the _____ a it impacts with the aircraft's _____ and _____.
11. Lift is impacted by: a) _____ (speed and direction of the aircraft); b) _____ (increasing the AoA increases lift); c) air _____ (determined by air pressure, temperature, and humidity) = _____ you are, the less dense the air, _____ air is less dense than cool air, and _____ air is less dense than dry air.
12. Drag: the force that _____ the forward motion of the aircraft; drag is caused by the resistance of the air to the _____ passing through it.
13. Drag results from: air resisting the aircraft's _____ motion; and an aircraft's _____, its _____, and the air viscosity (stickiness of molecules to the airfoil surface, not allowing the air to pass)
14. The types of drag:
 - a. Parasite drag: 1) form drag = air going over aircraft _____, like the _____, engine covers etc., having to split and rejoin; 2) interference drag = air meeting at perpendicular _____ of the aircraft flows over each in different _____/_____; 3) skin friction drag: molecules _____ to the aircraft parts
 - b. Induced drag: low and high pressure air _____ and heading toward the wing's upper surface
15. Gravity: a natural force of the earth that pulls _____ an object; _____: a measure of gravity; includes the aircraft itself, fuel, passengers, cargo