

# Fondamenti di volo 1

Addendum



**Gianni** NPV1435

**napulevola.it**

# Le 4 forze del volo

## **Thrust**

Thrust is the force generated by the propeller(s) or jet engines on an airplane. It is opposed by drag, and the combination of the two account for the airplane's horizontal speed in straight-and-level flight.

## **Drag**

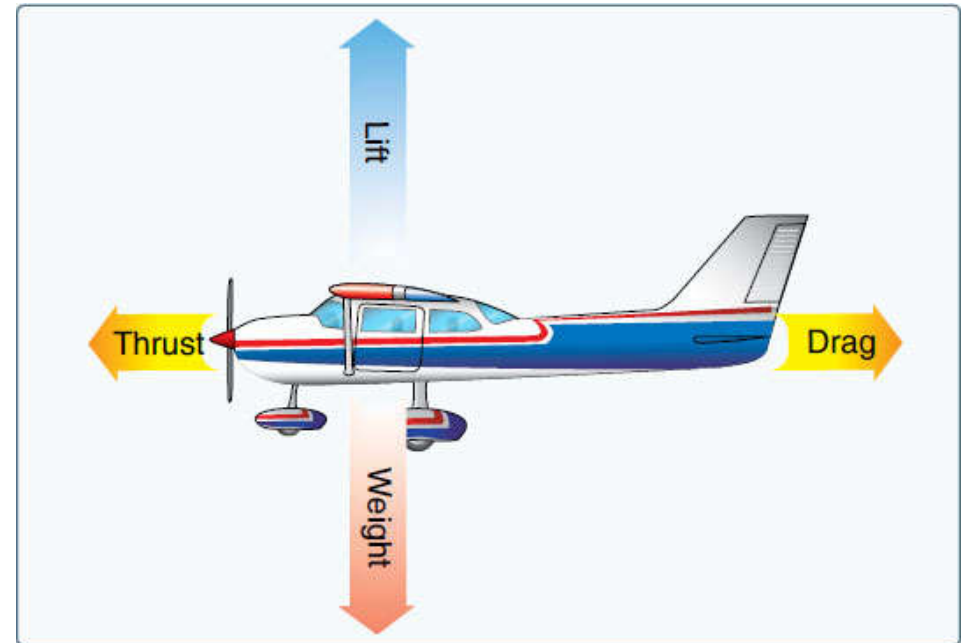
Drag, as said above, is the force that opposes thrust. Drag is created by many surfaces on the airplane, including the wings (lift-induced drag), but they can be simplified to a single force in a free-body diagram.

## **Lift**

The wings of an airplane generate lift. Though it will be explained more in another page, the angle of attack of the wings is what determines how much lift is produced. Normally, but not always in aerobatics, lift is greater than weight.

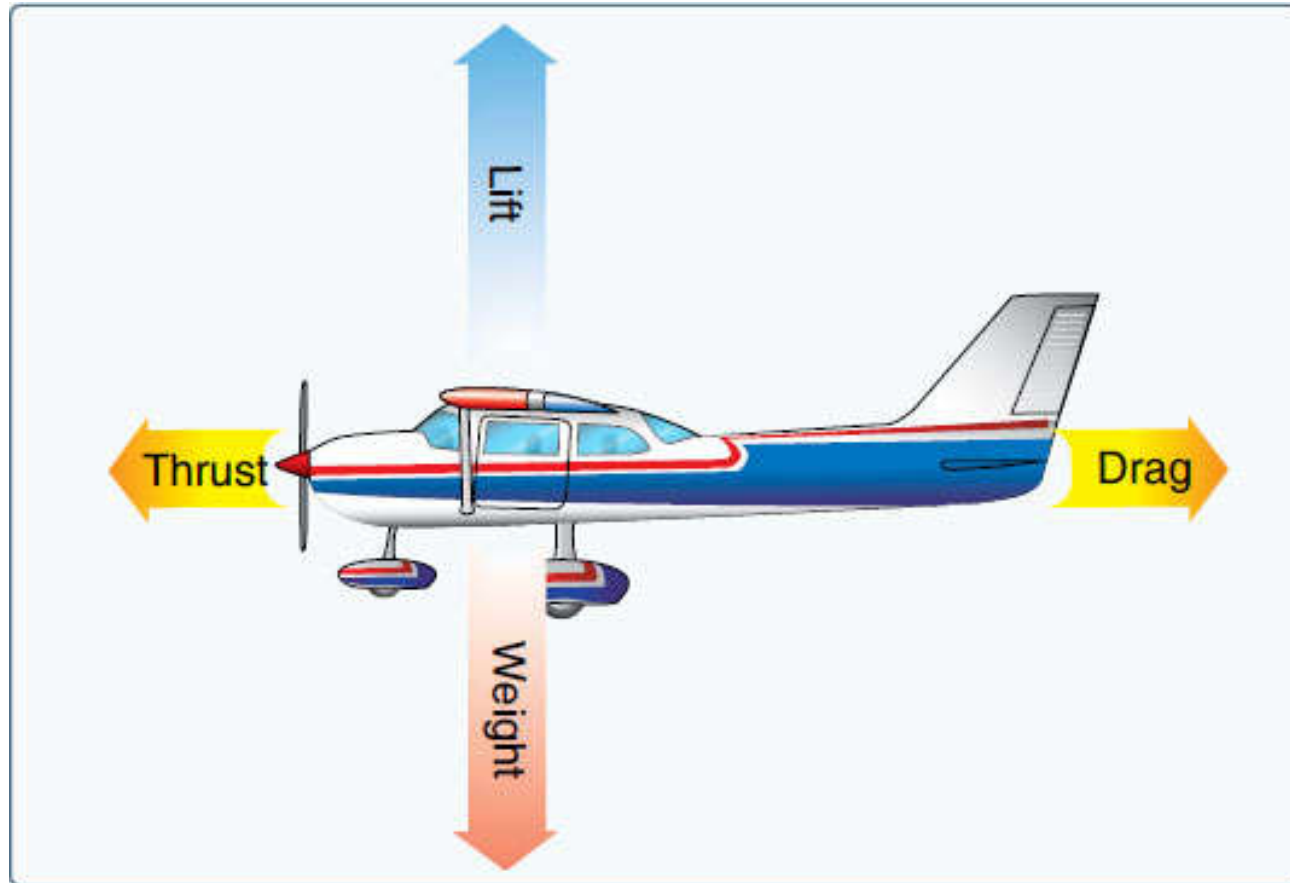
## **Weight**

Weight is also known as the force of gravity, and it is the gravitational force due to the acceleration of gravity on the airplane, as with any mass. Weight can increase due to maneuvers performed in flight.



# Volo rettilineo e livellato

Obiettivo: volare ad un'altezza, prua e velocità costanti  
Come si ottiene: le 4 forze sono in equilibrio tra loro

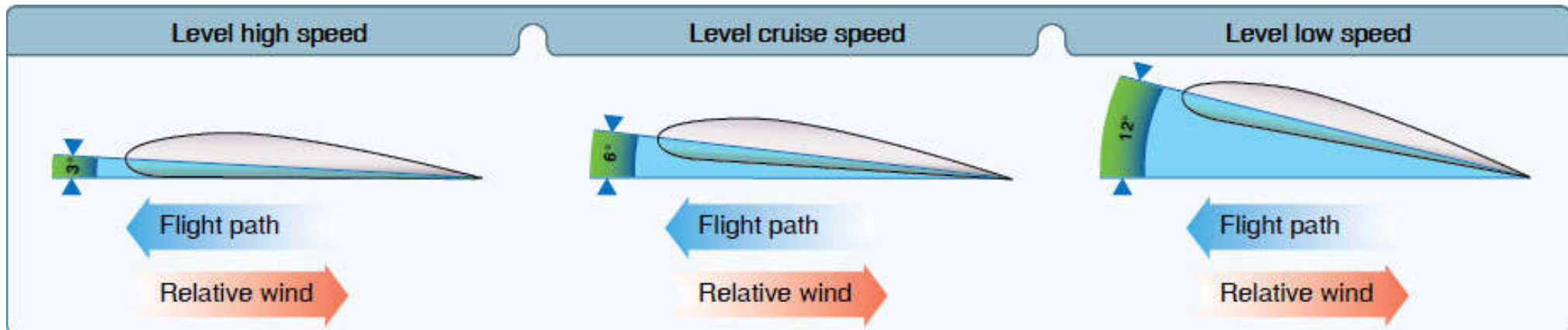


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# Volo rettilineo e livellato a velocità predefinite

Obiettivo: volare ad un'altezza, prua e velocità costanti

Come si ottiene: le 4 forze sono in equilibrio tra loro. L'equilibrio si ottiene scegliendo il corretto angolo di attacco dell'ala rispetto al vento relativo

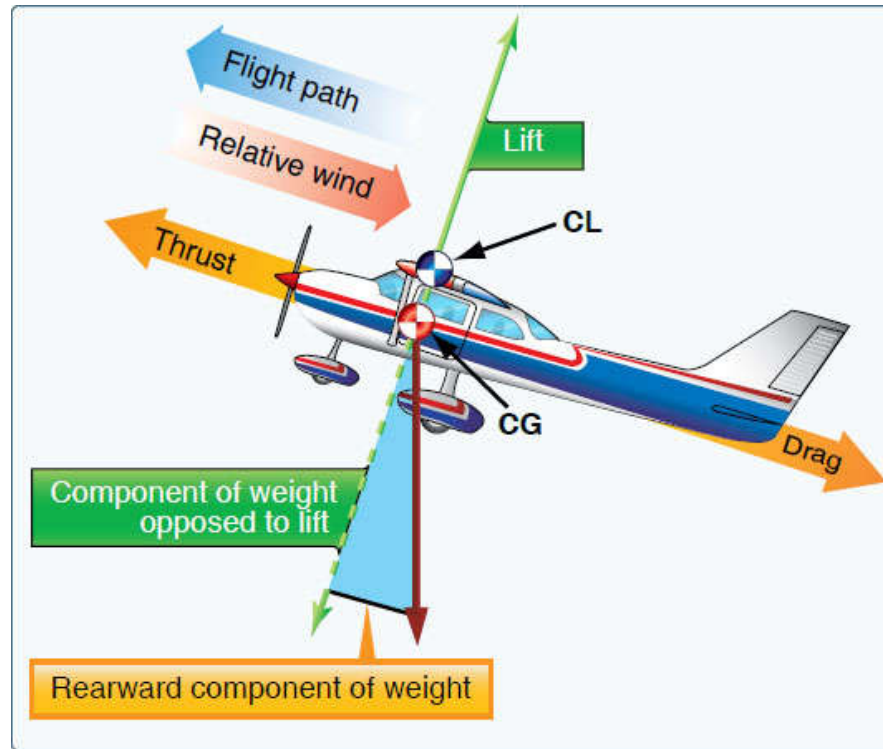


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# Salite

Obiettivo: eseguire una salita stabile e livellare ad una altitudine prescelta

Come si ottiene: Il thrust in eccesso supera la somma del peso e della resistenza



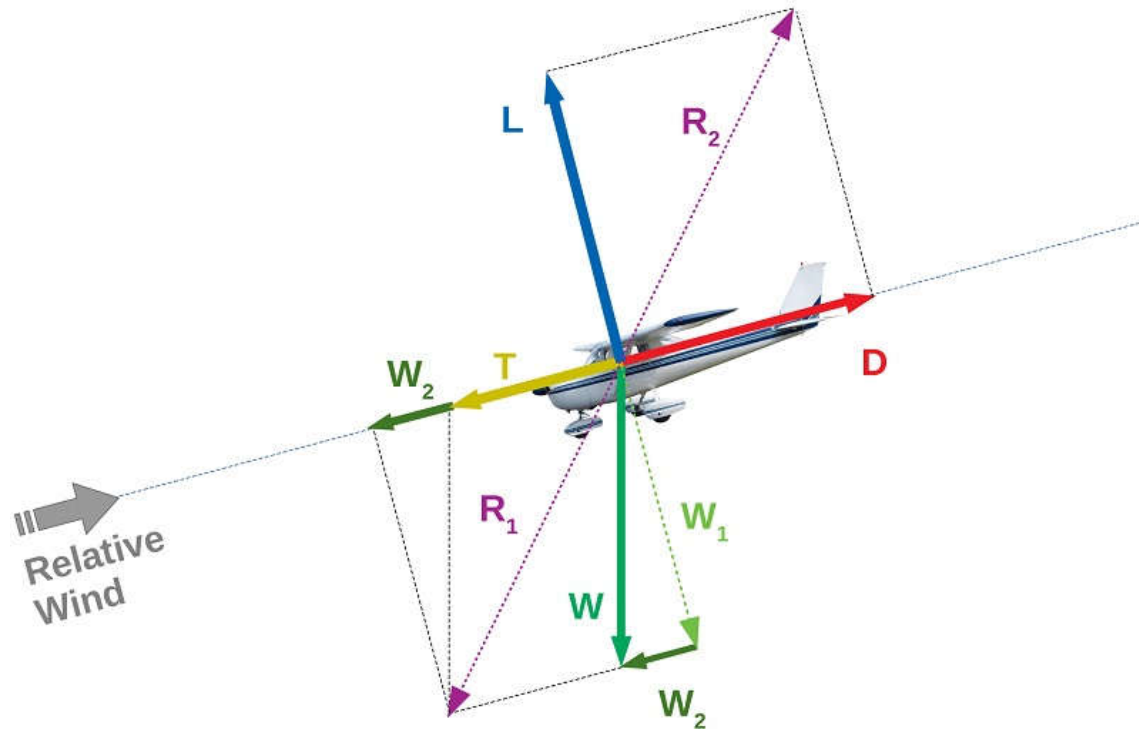
<https://www.boldmethod.com/cfi-tools/forces-in-a-climb-or-descent/>

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# Discese

Obiettivo: eseguire una discesa stabile e livellare ad una altitudine prescelta

Come si ottiene: la componente del peso in direzione della discesa vince la resistenza



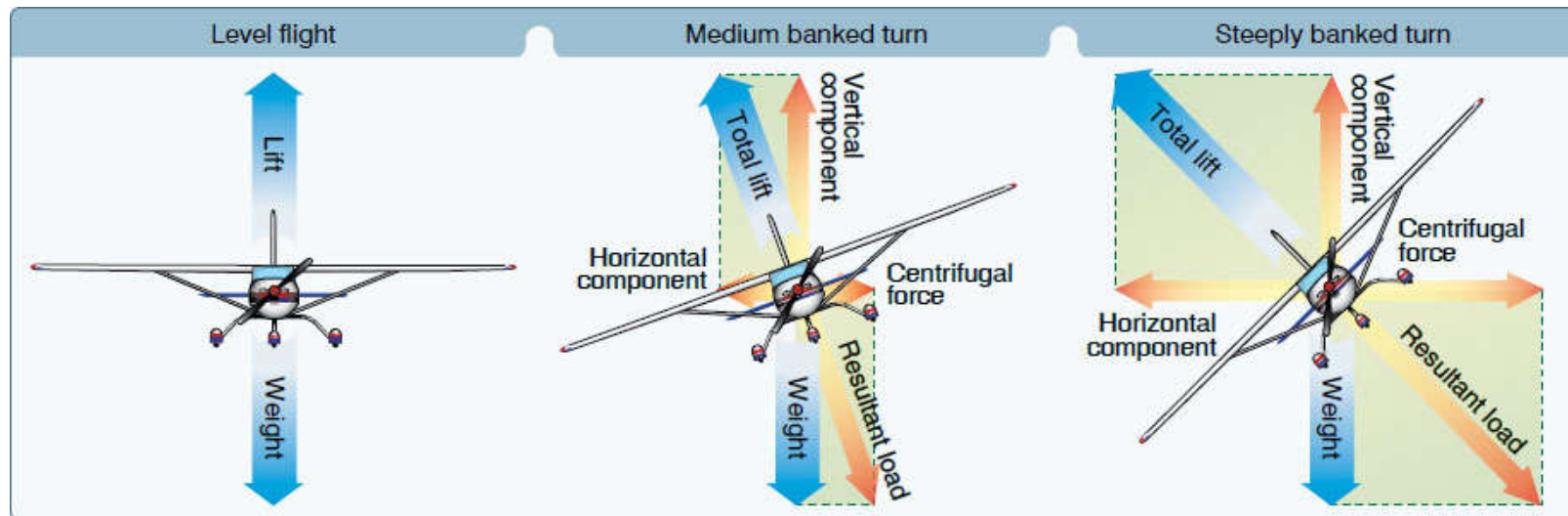
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# Virate standard a 30° di bank

Obiettivo: entrare e mantenere una virata media (30° AoB) e ritornare livellati

Come si ottiene: la portanza totale è la somma della componente per contrastare il peso più la forza centrifuga



<https://www.boldmethod.com/cfi-tools/forces-in-a-turn/>

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