

Aircraft Weight and C.G.

Why Pilots Ask How Much You Weigh

Why is a person's weight important?

- For a commercial airliner, a single person's weight is not significant.
 - However, the Koreans have been known to ask periodically.
- For a general aviation aircraft, a single person can make up 5% to 20% of the total aircraft weight.
 - This weight drastically changes the performance of the aircraft

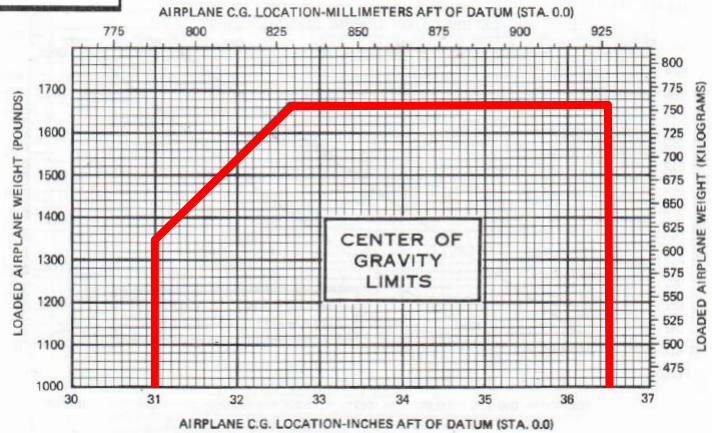
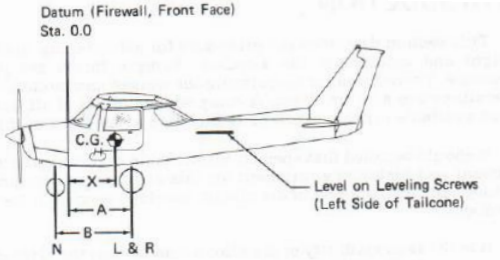
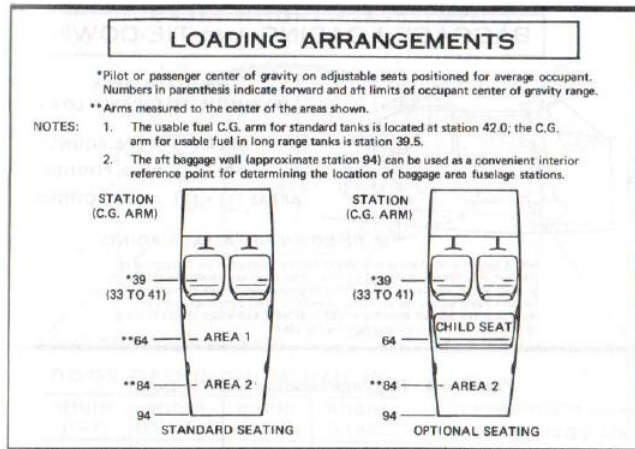
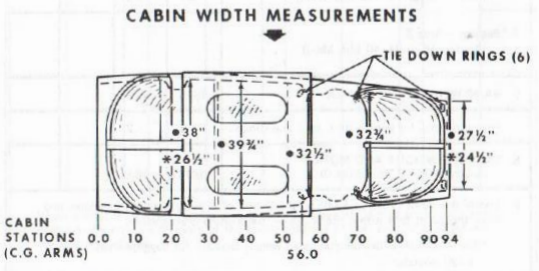
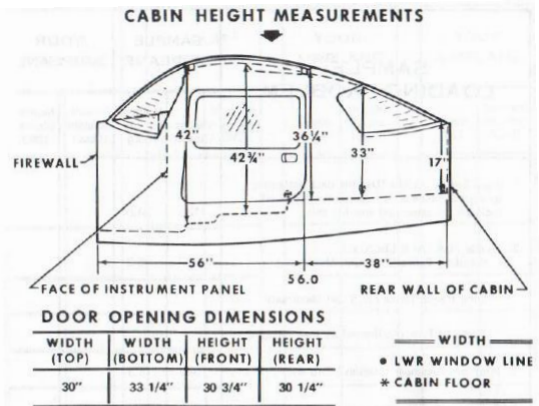
Pilot Training 101: All Pilots learn to calculate aircraft weight

- Pilot's consider the following
 - Aircraft Empty Weight
 - Airframe, engine, avionics, seats, etc.
 - Fuel Weight
 - Gasoline is approximately 6 lbs per gallon
 - People
 - Weigh as much or sometimes more than the total fuel onboard

Not only is the weight important, but also where it is located onboard!

Example: Cessna 152

From the Information Manual



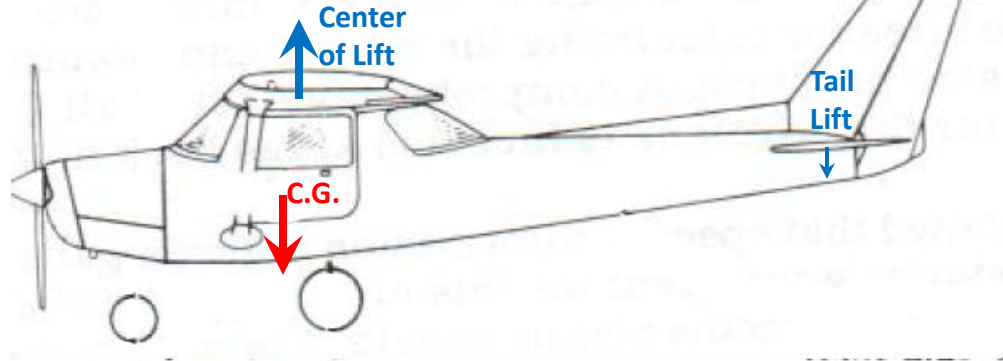
After weights are total, the moments (weight x distance) are totaled, then divided by the total weight to get the C.G. Location.

C.G. = Center of Gravity = location where weight is balanced

CONSTRUCT AN AIRPLANE

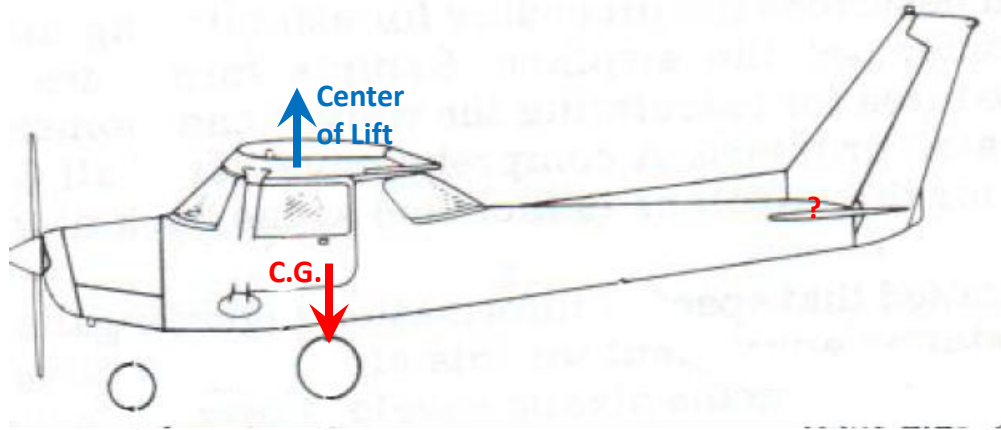
What Happened?

- An aircraft is considered stable (longitudinally stable to be precise) if the aircraft C.G. is forward of the center of lift.



Why is this Stable?

- An aircraft is considered unstable if the aircraft C.G. is aft of the center of lift



Why is this Unstable?