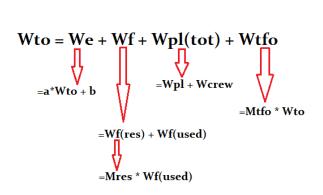
Preliminary weight estimation

Short summary of all weight estimation formulas:



Wto = Woe + Wpl + Wf

Wto = takeoff weight Woe = operational empty weight Wpl = payload weight Wf = fuel weight

We = empty weight Wpl(tot) = total payload weight Wtfo = trapped fuel weight

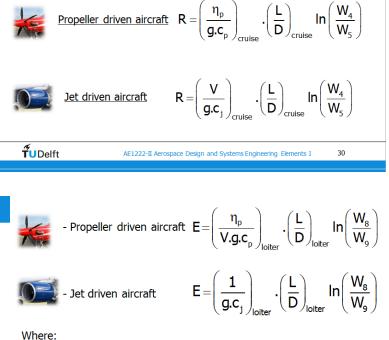
a and b = constant from We vs. Wto graph

Wf(res) = reserve fuel weight Wf(used) = usable fuel weight Mres = fraction of mission fuel

Wcrew = crew weight

Mtfo = fraction of takeoff weight

Additional equations for range and endurance:



E = endurance (in sec):

 $(L/D)_{loiter}$ = aerodynamic efficiency for maximum loiter time

Important references from slides:

