ATP Written Formulas

Aerodynamics

ABSOLUTE Ceiling = ZERO rate of Climb

EQUILIBRIUM = NO accelerations

RETURN to equilibrium = POSITIVE static stability

LIFT is perpendicular to RELATIVE WIND

OUTBOARD ailerons for LOW speed flight

INBOARD ailerons for low-speed AND high-speed flight

MORE POWER by MORE OXYGEN & INCREASED AIR DENSITY

SERVO = OPPOSITE direction & REDUCE CONTROL forces

ANTISERVO = SAME direction & PREVENT FULL DEFLECTION

AILERON BALANCE PANEL ASSIST moving ailerons by DEFLECT a hinged panel

Control Tabs = MANUAL REVERSION

Spoilers REDUCE LIFT

VORTEX GENERATORS PREVENT FLOW SEPARATION

VORTEX GENERATORS REDUCE DRAG

Turbulent air CHANGES RELATIVE WIND

Engine failures reduce CLIMB performance

Aft CG's make airplanes UNSTABLE ABOUT THE LATERAL AXIS

Swept wing disadvantage is the stalling of the WING TIP BEFORE THE WING ROOT

Weight And Balance

Moment = Weight x Arm

CG = Total Moment / Total Weight

CG % MAC = (CG – LEMAC) / MAC x 100

Wt. On Pallet = Cargo + Pallet Weight + Tiedown

Pallet Area = (length x width) / 144 [square feet]

Floor Load Limit = Pallet Weight / Pallet Area

Minimum hydroplaning speed = $\sqrt{main\ \ gear\ \ tire\ \ pressure}$ x 9

Meteorology

INCREASED air density = INCREASED pressure

DECREASED air density = DECREASED Pressure

EARTHS weather = VARIATION in solar energy