* What are the layers of air on a wing in flight? Describe them.

Boundary, laminar, transition, turbulent

* Conventional airfoil thickest; laminar thickets
c - 25% of chord; l- 50% of chord
* Define span and chord
span- wing tip to wing tip
chord – leading edge to trailing edge
* What is aspect ratio?
wing span divided by average chord of airfoil
* What is the angle of incidence?
angle at which wing is to the horizontal
* Wash-in: high angle of incidence at tip
Wash-out: low angle of incidence at tip
* Increase lift/reduce drag devices:
wing-tip fuel tanks
Winglets
Drooping wing-tips
* What are wing fences?
aerodynamic plates running chordwise which disrupt airflow to wing tip to reduce stalling
* Slats; slots; flaps
slats- move out ifo leading edge at high angles of attack
slots – permanent gaps ifo leading edge for use at high angles of attack
flaps – trailing edge to increase surface area and camber of wing; increase lift and increase drag
* Camber
* Weather in an airmass is determined by:
moisture content, cooling process and air stability
* Air mass has two equal properties in the horizontal - ?
* Katabatic and anabatic winds
* Gust
* Stable air: stratus clouds and poor vis
Unstable air: cumulus clouds and good vis
* Warm air rises; cold air sinks
* True heading – longitudinal axis of a/c with true meridian
Magnetic heading-
Compass heading-
* Magnetic dip – as you get closer to the pole the needle tries to point straight down causing it to skew and read incorrectly
Turning error – turns away from north lag; toward north lead
Acceleration
* TvMdC –
True heading – variation – Magnetic heading – deviation – Compass heading
* Gyroscopic inertia, precession
* Isobaric lines-lines joining places of equal pressure
Isogonic lines-lines joining places of equal variation
Agonic lines-lines joining places of zero variation
* Rhumb lines-lines cutting every meridian at the same angle; direction/heading constant
Great circle-shortest distance between two points on surface of earth
* What is variation?
* Lubber line on a compass is a painted white line indicating heading, parallel to longitudinal axis of a/c, where the compass is read
* Compass directions: North 000/360; South 180; East 090; West 270
* Meridians of longitude: 0-180 degrees E/W of Prime Meridian
Measured in degrees, minutes and seconds
Meet at the poles; semi-great circles
* Parallels of latitude: 0-90 degrees N/S of Equator
Measured in degrees, minutes and seconds
Never meet
* Parts of a fuel system:
Left/right tanks
Air vent
Selector valve
Primer
Strainer
Carburetor
* Pitot pressure
* Pitot and static sources
* Density errors in Air Speed Indicator occur when there is a decrease in the density of the air as the altitude increases
* High to low look out below – low to high, clear blue sky
* Density altitude – pressure altitude corrected for temperature
* VSI, ASI, Altimeter – attached to static and/or pitot pressure system
* Where should fuel tank be positioned with respect to carburetor in gravity feed fuel system
* What does fuel selector valve do
* Forward movement of throttle opens throttle valve, increasing fuel/air mixture increasing engine power
* Gauges that measure engine oil properties – oil pressure and temperature
* What is maintained throughout diameter of propeller in variations of airfoil sections and angle of attack? – Thrust
* Distance forward in one revolution of propeller – pitch
* Colour codes on tachometer
* On manifold pressure gauge on the ground when engine is not running – will indicate atmospheric pressure
* When altitude increases, air density decreases, engine power decreases
* Surface friction effect on winds
* Review the engines worksheet: propellors