AIRCRAFT DATA SHEET
PA-30 N7261Y & N84JS

ENGINE:

Engine Type________________________
Oil Capacity_____QTS
Fuel Octane_________
Cabin Heater Type_________

AIRSPEEDS: MPH

Maneuvering (V_A)___________
Max Cruising (V_{NO})_________
Never Exceed (V_{NE})_________
Flap Extended (V_{FE})________
Gear Extended (V_{LE})________
Best Rate (V_Y)_____________
Best Angle (V_X)____________
Normal Climb Enroute ________
Stall Speed (V_{S1})___________
Stall Speed (V_{S0})___________
Service Ceiling_____________

SINGLE ENGINE PERFORMANCE:

V_{MC} ___________
V_{XSE} __________
V_{YSE} __________

Single Engine Service Ceiling (SESC) _____________
Single Engine Absolute Ceiling (SEAC) _____________

Props: **Type:**_________________

________ Oil pressure drives the props to flat pitch (HIGH RPM). Complete loss of oil pressure allows the props to go to ____________.

During ground operations, ___________fall into place at approx__________RPM to prevent the props from going to full feather.

Any over speed greater than 2700 RPM - Nitrogen charge
2700 RPM - prop linkage or similar **Schrader Valve - 50 PSI**

ELECTRICAL SYSTEM:

	84JS	7261Y
System Volts	______ Volts	______ Volts
Battery Amps	______ Amp Hour	______ Amp Hour
Power Source	______ Alternators	______ Alternators
Power Source Amps	______ Amps	______ Amps

FUEL SYSTEM:

Normal fuel consumption for the PA-30 is ________GPH per engine @ 75% power.

______Tanks ______Main______Gallons Each ____Usable

______ Aux______ Gallons Each____ Usable

______Fuel Pumps ______Engine Driven ______Electrical Boost

****84JS ONLY* - ___ Transfer Tanks in nacelles. ___ Gallons Cap., ___ Gallons Usable
****84JS ONLY* - ___ Transfer Pumps. Used to transfer fuel from Transfer Tanks to Mains

Cross Feed: To extend single engine range

1) Decide which tank you want fuel to come from (on INOP engine)
2) Put selector valve on that tank (INOP engine)
3) Operating engine selector valve on cross feed

Fuel Travel:

Tanks->selector valves->aux fuel pumps->engine driven pump->fuel servo-spider->

1) Cylinders
2) Fuel flow gauge

Heater uses ______ gallon per hour from the ________ fuel injector.

GEAR SYSTEM:

The PA-30 has an electric gear system. A _______ switch located on the left main gear prevents inadvertently raising the gear on the ground.

A gear warning **LIGHT** flashes when ________ throttle is reduced below _____ and the gear is not down and locked.
A gear warning **HORN** sounds when ________ throttles are reduced below _____ and the gear is not down and locked.

VACUUM SYSTEM: ***N84JS ONLY

There are ____ vacuum pumps. Vacuum gauge has ____ pop out red buttons that suck in along with “Check Valves” that suck open. When a pump fails check valve closes via a spring on door and red button is out in cockpit. Suction is taken over by operating pump.

FLAP SYSTEM:

Electric motor down- air springs up,”a” symmetrical flap when one comes up and one doesn’t-lower to equal -land

ACCESSORY CASE:

1) 2 Mags
2) Prop gov
3) Engine driven fuel pump
4) Oil filter
5) *Vacuum Pump (***84JS ONLY)*

VMC:

Defined as the slowest speed at which directional control can be maintained if the critical engine is suddenly made inoperative.

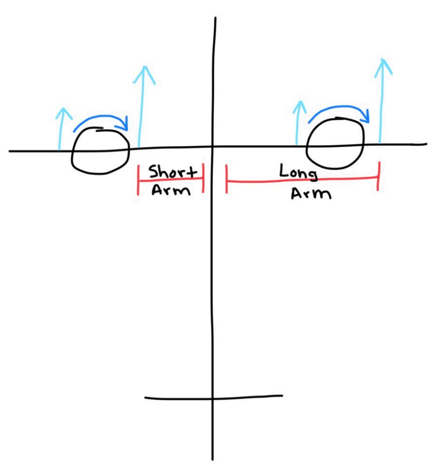
CRITICAL ENGINE:

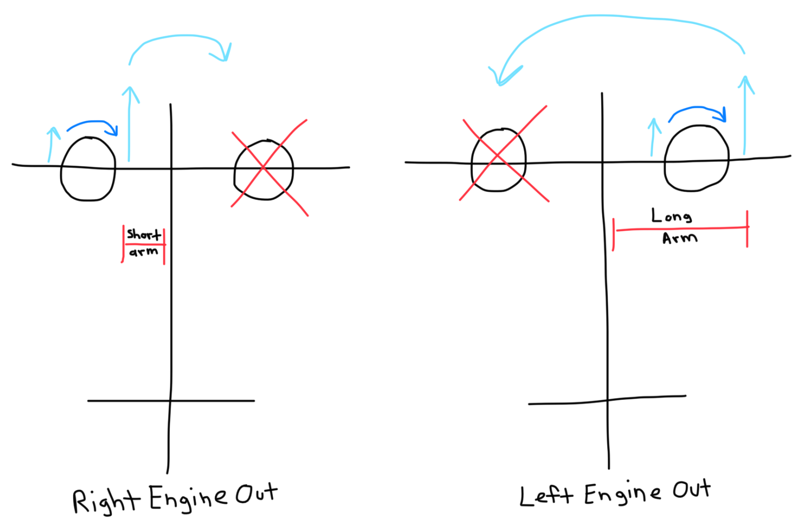
The engine that, if failed, would most adversely affect the aerodynamic control of the aircraft.

On U.S. manufactured aircraft with clockwise rotating props, the _______ engine is critical.

What makes the left engine critical? "***PAST***" Acronym:

P ______________





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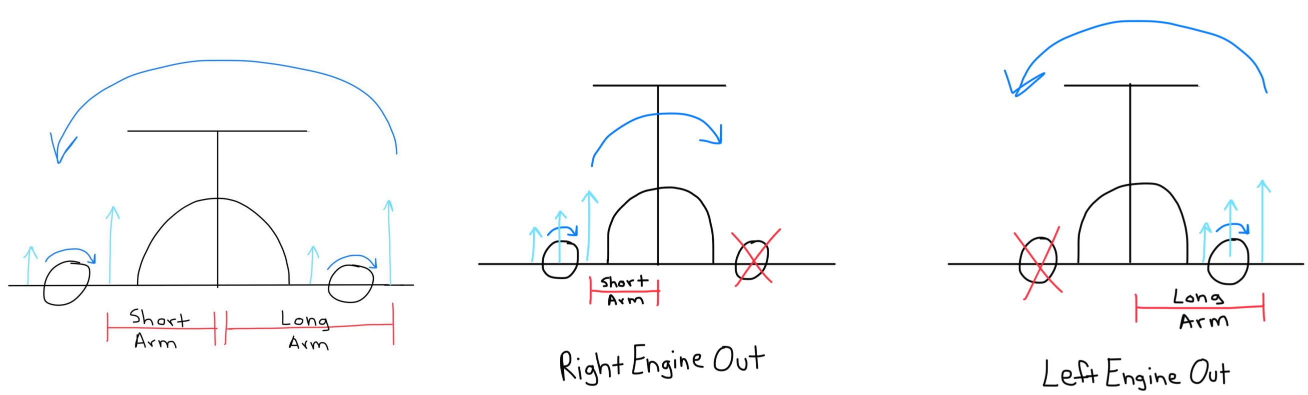

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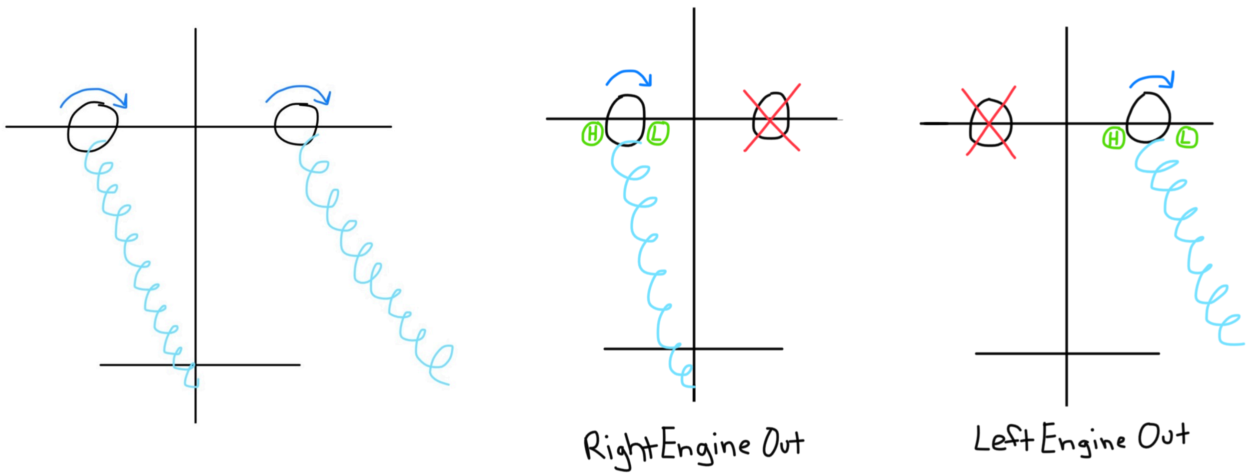

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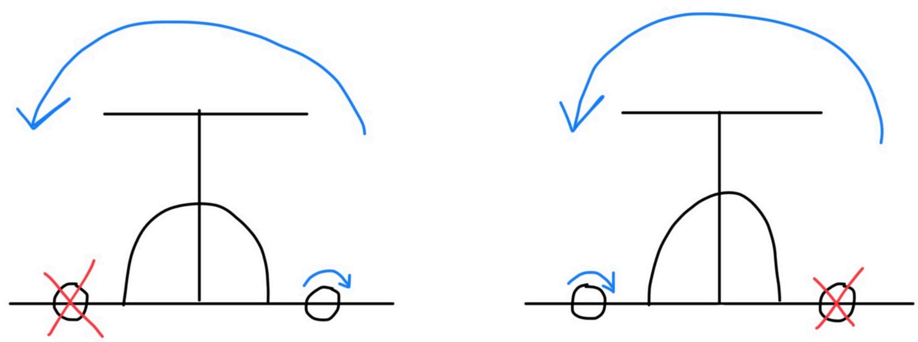

Factors stipulated in FAR 23 which regulate the manufacturer's determination of the published VMC:

(1) Prop of the critical engine
  (A) Windmilling or
  (B) ___________, if the airplane has an ____________ device.
(2) Full power on the ______________ engine at sea level, standard temperature: (59^{o} F , 29.92)
(3) Most unfavorable ____________
(4) Aircraft ___________ for take-off
(5) Aircraft weight most ___________
(6) Flaps___________
(7) Cowl Flaps ___________
(8) Landing Gear ___________
(9) Airborne and out of ________________
(10) Aircraft bank angle: Max _____ Degrees into the ___________ engine

VMC AND ALTITUDE:

As altitude is increased, VMC _______________
As altitude is increased, indicated stall speed __________

TAKE-OFF PROFILE:

Takeoff Roll…

1) Rotate at Vmc, 90mph
2) Positive Rate, Gear Up
3) Climb at Vy, 112 mph
4) 1000 FT checks
    a. Pumps off
    b. 25” MP / 2500 RPM — “25 Squared”
    c. Accelerate to cruise climb, 130 MPH

CRUISING FOR INSTRUCTION PURPOSES:

Throttles:	20 inches
Props:	2300 RPM

TRAFFIC PATTERN:

Throttles:	16 inches
Props:	2300 RPM

GUMPS

Gas, mains (Pumps on before switching tanks)
Undercarriage (gear down), check mirrors
Mixtures (rich below 4,000)
Props(forward) (save until final)
Switches (pumps on)

Downwind	120 mph
Base	110 mph
Final	90-100 mph
Power:	As needed 10-12 inches

Use a gradual power reduction technique from 16” mp to idle

Aircraft Pressurization

Air is pressurized by the engines. Turbofan engines compress intake air with a series of vaned rotors right behind the fan. At each stage of compression, the air gets hotter, and at the point where the heat and pressure are highest, some air is diverted. Some of the hot, high-pressure air, called *bleed air*, is sent to de-ice wings and other surfaces, some goes to systems operated by air pressure, and some starts its journey to the cabin.

The cabin-bound air has to be cooled first in an *intercooler*, a device like a car radiator that sheds the heat to the ambient air scooped aboard for that purpose. From there the air travels into the airplane's belly, where *air packs* cool it further using air cycle refrigeration. An air cycle cooler is perhaps the simplest air conditioner ever invented, because it doesn't need a refrigerant as an intermediate fluid to dump heat. The air packs compress the incoming air to heat it before sending it to another intercooler to dump the heat to the outside. The air then expands through an expansion turbine, which cools it the way blowing with your lips pursed results in a cool flow of air. (Test the principle by blowing with your mouth wide open to see how warm the air would be if it weren't compressed and then allowed to expand.)

Now the air is ready to mix with air from the cabin in a mixer, or *manifold*, that adds the new air to the recirculating cabin air, which is moved by fans. To maintain a comfortable temperature for the passengers, automatic systems regulate the mixture of heat from the engines and cold from the air packs. To maintain the pressure in the cabin equal to that at low altitude, even while the airplane is at 30,000 feet, the incoming air is held within the cabin by opening and closing an *outflow valve*, which releases the incoming air at a rate regulated by pressure sensors. Think of a pressurized cabin as a balloon that has a leak but is being inflated continuously.

On the ground, the airplane is unpressurized and the outflow valve is wide open. During preflight, the pilot sets the cruise altitude on a *cabin pressure controller*. As soon as the weight is off the main wheels at takeoff, the outflow valve begins to close and the cabin starts to pressurize. The airplane may be climbing at thousands of feet per minute, but inside the cabin, the rate of "climb" is approximately what you might experience driving up a hill. It might take an average airliner about 20 minutes to reach a cruise altitude of, say, 35,000 feet, at which point the pressurization system might maintain the cabin at the pressure you'd experience at 7,000 feet: about 11 pounds per square inch. Your ears may pop, but the effect is mild because the climb rate is only 350 feet per minute. When the airplane descends, the pilot sets the system controller to the altitude of the destination airport, and the process works in reverse.

The structural strength of the airplane determines how much differential pressure the cabin can tolerate—a typical figure is eight pounds per square inch—and the fuselages of new airplane designs are pressurized and depressurized many thousands of times during testing to ensure their integrity. The higher the maximum differential pressure, the closer to sea level the system can maintain the cabin. Federal Aviation Regulations say that without pressurization, pilots begin to need oxygen when they fly above 12,500 feet for more than 30 minutes, and passengers have to use it continuously above 15,000. On airliners that operate at altitudes well above that, regulations require that everyone aboard be supplied with 10 minutes of oxygen in the event the cabin pressure can't be maintained, which brings us to the dramatic scenario known as *explosive decompression*.

If the door blew off a jet at altitude, all the air in the cabin would depart very quickly and a momentary thick fog would envelope the cabin as the water vapor in the air condensed instantly. Loose articles would fly around and foam rubber would burst as the tiny air bubbles within it expanded. Within a couple of seconds, oxygen masks would drop down from the overhead panels, and you would have to pull yours toward you and place it over your mouth and nose. The act of donning the mask tugs on a lanyard that starts the flow of life-sustaining oxygen.