Private Pilot
New Student Packet

Revised October 2020

CONTENTS

Aircraft Systems

Engine/Propeller

1. Manufacture - Lycoming
2. Designator: O-320-E2A
    a. O = Horizontally **O**pposed cylinders
    b. 320 = cubic inches of displacement
    c. E2A = Parts Compatibility code
3. Produces 140HP @ 2450RPMs
4. Air Cooled
5. Normally Aspirated (no turbo)
6. Direct Drive
7. Carbureted

Oil System

1. Wet Sump
2. System Capacity
    a. MAX = 8qts
    b. MIN = 2qts

Landing Gear/Brakes

1. Tricycle configuration
2. Fixed Gear (Non-retractable)
3. Brakes
    a. Hydraulically Actuated
    b. Differential Braking
    c. Parking Brake

Flaps

1. Manually extended
2. Degree increments
    a. 10
    b. 25
    c. 40

Electrical System

1. 12 Volt battery
2. 25 ampere alternator

Fuel System

1. 87 octane minimum
    a. 100LL preferred
2. 50 gal total capacity
    a. 48 gal usable
    b. 2 tanks (25 gal each)
3. Burn rate
    a. 8.4 gal/hr at 75% power
4. Two fuel pumps
    a. One engine driven
    b. One electrically driven

Pitot Static System

Pitot and static pressure are both received from a pitot head installed on the bottom of the left-wing. This system is what is used to give pilots performance information such as airspeed, altitude, and rate of climb/descent.

Heating Elements

The PA-28 is not certified to fly into known icing conditions and therefore the heating elements are for emergencies only.

1. Pitot Heat - used to electrically heat the pitot mast incase of ice accumulation.
2. Window defrost/Cabin Heat - Used to heat the cabin interior during cooler temperatures and defrost windows in case of ice accumulation.

Stall Warning

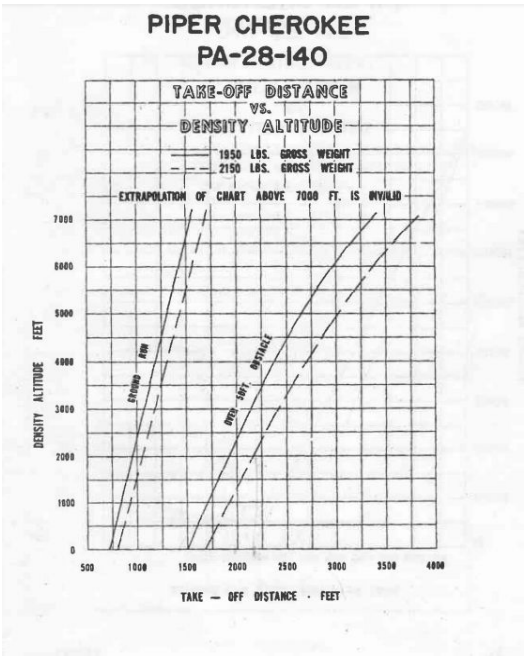
When approaching an aerodynamic stall a switch located on the left wing is pushed up by air pressure activating a red warning light/horn inside the aircraft to alert the pilot.

Performance / Weight & Balance

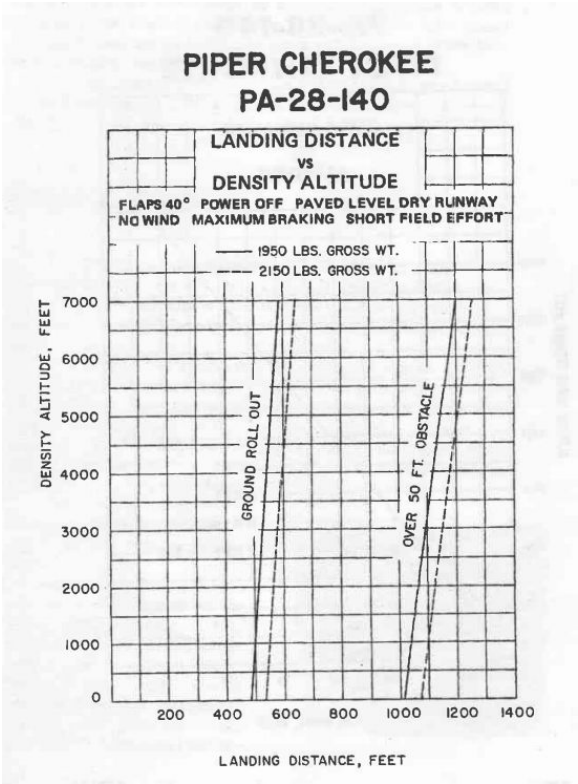
1. Piper Cherokee 140 V-Speeds
    a. Vx - Best Angle of Climb
        i. (74 mph)
    b. Vy - Best Rate of Climb
        i. (85 mph)
    c. Vg - Best Glide
        i. (85 mph)
    d. Vr - Rotate Speed
        i. (70 mph)
    e. Vno - Maximum Structural Cruising speed
        i. (139 mph)
    f. Va - Maneuvering Speed
        i. (129 mph)
    g. Vne - Never Exceed Speed
        i. (168 mph)
    h. Vfe - Flaps Extended Speed
        i. (110 mph)
    i. Vs - Stall Speed Flaps Up
        i. (65 mph)
    j. Vso - Stall Speed Flaps Down
        i. (55 mph)

2. Performance Charts

Takeoff Distance



a. Landing Distance

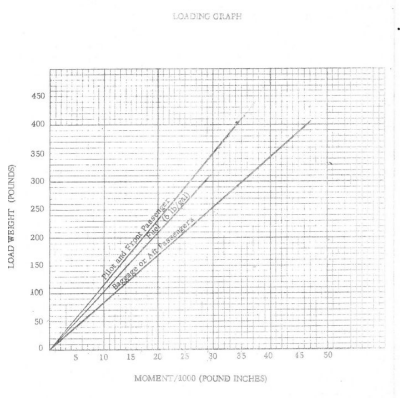


3. Weight & Balance Sample
    a. Weight & balance calculations are meant to determine the aircraft total

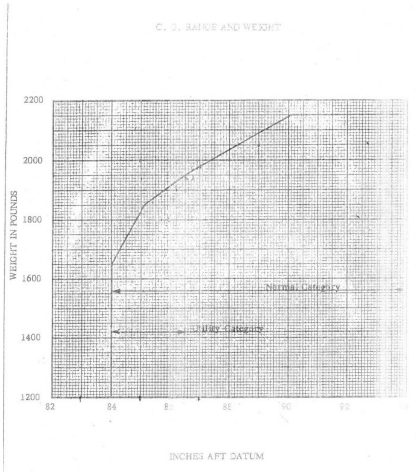
weight and center of gravity to make sure both are within limits

b. Center of Gravity (CG) is found by dividing the aircraft's total "moment" by its total "weight"

c.



d.



Departure Procedures

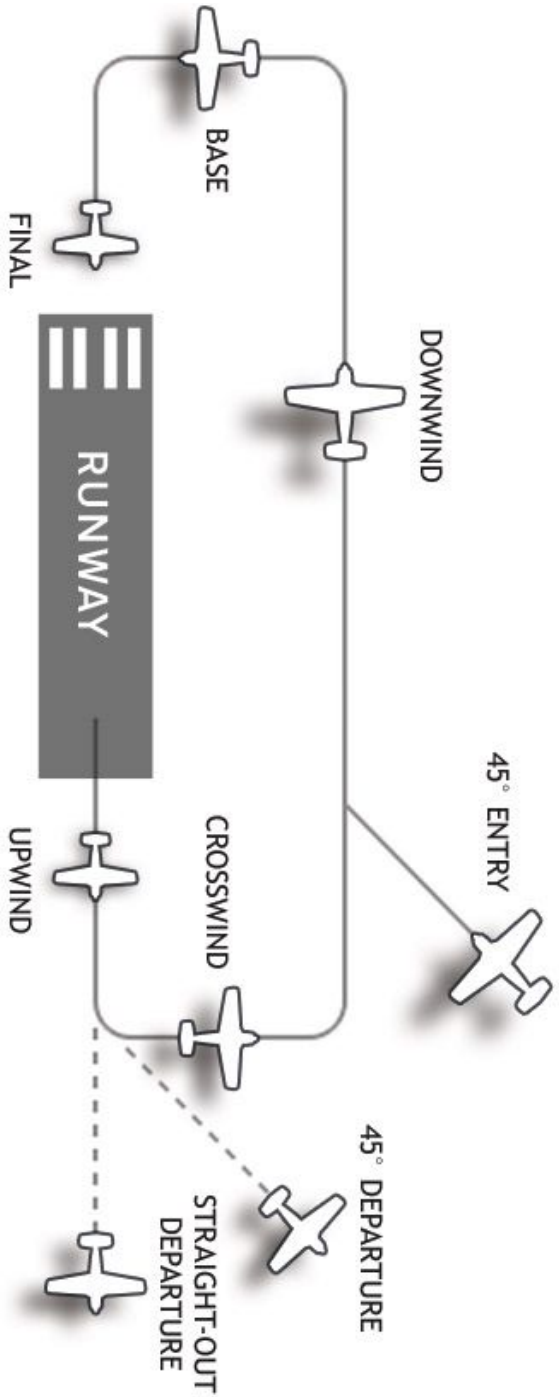
1. Departure Briefing
    a. The purpose of the departure briefing is to have a plan of action for any issues that may arise during takeoff. It can be broken down into 4 stages
        i. Before rotation
        ii. After rotation with useable runway
        iii. After rotation with NO usable runway below 800ft AGL
        iv. After rotation and above 800ft AGL
    b. 800ft AGL is the altitude at which the PA28 can make a successful turn back to the runway and land if the pilot maintains Vy during climb out and turns immediately while maintaining Vg. This is commonly referred to as the "impossible turn."
2. Normal Takeoff
    a. Flaps 0
    b. Rotate at 70 mph
    c. Climb out at 85 mph
3. Soft Field Takeoff
    a. Flaps 10
    b. No brakes after passing the hold short and yoke back
    c. Rotate early and stay in ground effect until 85 mph
    d. Climb out at 85 mph
    e. Clear of obstacles flaps 0
4. Short Field Takeoff
    a. Flaps 10
    b. Line up on the centerline
    c. Heavy braking and apply full power
    d. Release brakes once full power
    e. Rotate at 70mph
    f. Climb out at 74 mph
    g. Clear of obstacles pitch for 85 mph
    h. Once climbing at 85 mph flaps 0

Arrival Procedures

1. Normal Landing
    a. For landings on any paved runway with more than sufficient length. Can be accomplished with any flap degree increment.
2. Short Field Landing
    a. For landing on any paved runway with less than sufficient length for a normal landing
        i. Flaps 40
        ii. Cross threshold at 75mph
        iii. Touchdown mains as soon as able
        iv. Retract flaps to 0 on the ground in the roll-out
        v. Apply efficient braking
        vi. Pull back on the yoke for aerodynamic braking if needed
3. Soft Field Landing
    a. For any landing not on a paved runway
        i. Flaps 40
        ii. Cross threshold between 75mph and 80mph
        iii. Use ground effect to make mains touch down as softly as possible
        iv. Once on the ground hold the yoke back to keep pressure off the nose gear
4. Crosswind Landing
    a. Apply the concept to any landing mentioned above
    b. On final approach
        i. Upwind wing slightly low (turn into the wind)
        ii. Upwind main touches down first
        iii. Downwind main touches down second
        iv. Then nose gear touches down
5. Importance of a Stabilized Approach and Go-Around
    a. A stable approach leads to a good landing
    b. Appropriate control inputs to maintain runway centerline when dealing with crosswinds/wake turbulence/short approaches are considered stable
    c. If at any point the control inputs required to make a safe landing exceed the pilot's or aircraft's capability a "GO-AROUND" should be executed
    d. Steps for Go-Around (Flaps 40 situation)
        i. Full power within 3 seconds
        ii. Retract flaps to 25
        iii. Establish a positive rate of climb
        iv. Once a positive rate of climb with increasing airspeed is achieved retract flaps to 10

v. Once a positive rate of climb with airspeed at Vy (85mph) is achieved retract flaps to 0 and maintain Vy climb

6. Traffic Pattern Procedures
    a. Legs of the Traffic Pattern
        i. Departure
        ii. Cross-wind
        iii. Downwind
        iv. Base
        v. Final
        vi. Upwind
    b. Safety Tips
        i. On downwind the runway should appear ½-¾ of the way up the wing
        ii. Never exceed 30 degrees of bank at any point in the traffic pattern
        iii. Once power is reduced for descent the nose should never rise above the horizon (keep the attitude indicator out of the blue)
    c. "360s and Extended Legs"
        i. Sometimes in the traffic pattern, it is required to maneuver the aircraft to create space between you and another aircraft
        ii. This can be accomplished by extending a leg further than normal or making a 360-degree turn
        iii. Extended Legs
            1. Only extend the upwind or downwind legs
        iv. 360s
            1. Can be made on any leg of the traffic pattern when safe to do so
            2. Turns should be made at no greater than 30 degrees of bank



In-Flight Maneuvers

1. Clearing Turns
    a. The purpose of clearing turns is to visually clear the area of any possible conflict with other aircraft or obstacles. At a minimum, one clearing turn should be made before beginning any airwork once established in a practice area, but once before every new maneuver is recommended.
    b. Clearing turns are to be made at 30 degrees of bank while maintaining an altitude of choice.
    c. Two ways to do clearing turns
        i. One 180 degrees turn to the left
        ii. One 90 degrees turn to the left then turn back 90 degrees to the right to your original heading
2. Steep Turns
    a. To be accomplished at or above 2,500ft AGL. Roll into one coordinated 360 degrees turn then roll out and into another 360 degrees turn in the opposite direction while maintaining a specific altitude
        i. Start and end on a specific heading (+/- 10 degrees)
        ii. Start and end on specific altitude (+/- 100ft)
        iii. Turns to be made at 45 degrees of bank
        iv. Add back pressure during turns to hold altitude, adding

100-200 RPMs and or slight trim up is recommended

3. Slow Flight
    a. To be accomplished at or above 2,500ft AGL. Establish and maintain an airspeed at which any further increase in the angle of attack, increase in load factor, or reduction of power would result in a stall warning while maintaining a specific altitude and heading
    b. Slow Flight Clean
        i. 1500 RPMs
        ii. Hold altitude by pulling back on the yoke which will also slow the aircraft
        iii. Flaps 0 (retracted)
        iv. Once airspeed and altitude are achieved increase power to maintain that altitude and adjust pitch to maintain airspeed (5-10 mph above stall speed)
    c. Slow Flight Dirty
        i. 1500 RPMs
        ii. Hold altitude by pulling back on the yoke which will also slow the aircraft
        iii. Flaps 40 (Full down)
        iv. Once airspeed and altitude are achieved increase power to maintain that altitude and adjust pitch to maintain airspeed (5-10 mph above stall speed)
    d. Recovery
        i. Max Power
        ii. Lower the nose while maintaining altitude
        iii. Retract flaps to 0 as needed
4. Stalls and Recovery
    a. Stalls and recovery are meant to simulate an aerodynamic stall situation happening just after takeoff (PWR ON) and just prior to landing (PWR OFF)
    b. It is very important to maintain wings level and remain coordinated with the rudder to avoid a spin situation
    c. Power ON Stall/Recovery
        i. Slow flight clean set up to reduce airspeed to about 70mph
        ii. Once airspeed and altitude are established increase power to full and pitch up to no greater than 30 degrees nose up
        iii. Hold back pressure until the full stall occurs
        iv. Once the stall occurs release back pressure and allow the nose to come down to the horizon

v. Allow airspeed to increase and climb back up to starting altitude if needed

d. Power OFF Stall/Recovery
   i. Slow flight dirty set up to reduce airspeed to about 55mph
   ii. Once airspeed and altitude are established reduce power to idle and pitch up to no greater than 30 degrees nose up
   iii. Hold back pressure until the full stall occurs
   iv. Once the stall occurs release the back pressure allowing the nose to come down just under the horizon
   v. Immediately apply full power within 2 seconds, reduce flaps to 25, and establish a positive rate of climb
   vi. Once a positive rate of climb is established, with increasing airspeed, reduce flaps to 10
   vii. Continue the positive rate of climb with increasing airspeed and once reaching Vy (85mph) retract flaps to 0
   viii. Allow airspeed to increase and climb back up to starting altitude if needed

5. Emergency Procedures
   a. Power Loss in Flight
      i. Purpose is to simulate an engine failure while in flight. Student objective is to demonstrate ability to find a safe place to land while also attempting to restart the engine and making emergency calls
      ii. Refer to PA28 Emergency Checklist for full procedures
   b. Emergency Descent
      i. Purpose is to demonstrate the aircraft's ability to descend rapidly
      ii. Steps
         1. Power Idle
         2. Bank left/right to 45 degrees
         3. Allow nose to pitch down until reaching -2000ft per min descent rate
         4. Recover by rolling wings level and pulling back on the yoke to

bring the nose up to the horizon

c. Power OFF 180
    i. Purpose is to simulate an engine failure in the traffic pattern. Student objective is to make it back to the runway and land safely
    ii. Steps
        1. Power to idle a beam aiming points
        2. Immediately pitch for Vg (85mph)
        3. Once Vg is established, immediately begin to turn towards the runway and land. (Do NOT worry about making a rectangular traffic pattern if unable due to lack of altitude)

6. Ground Reference Maneuvers
    a. The purpose of ground reference maneuvers is to teach wind correction in flight
    b. Turns About a Point
        i. Objective: Maintain equal distance radius around a point in a 360 degree turn while maintaining an altitude
        ii. Entry
            1. Downwind
            2. 1000ft AGL
            3. Wings level till point is a beam wing on pilot's side recommended

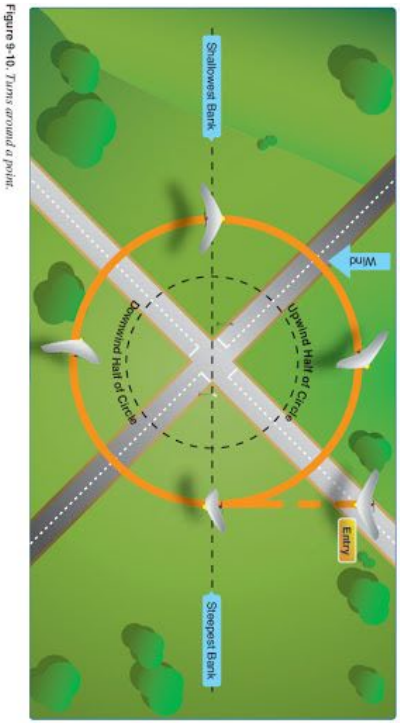
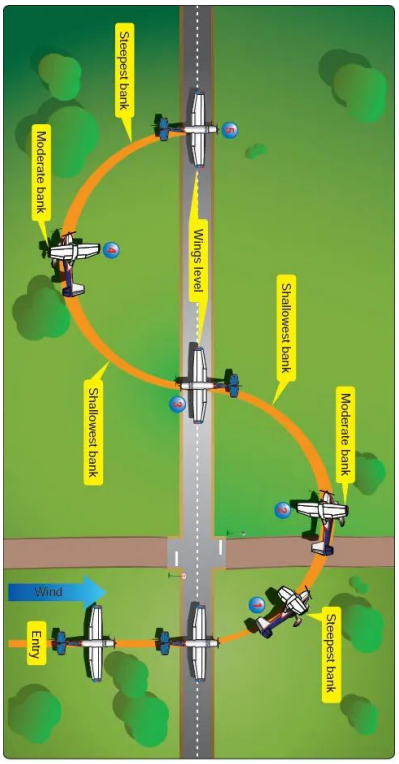
c. 

Figure 9-10. *Turns around a point.*

d. S-Turns
    i. Objective: Maintain equal distance radius from a straight line in two 180 degree turns while maintaining an altitude

ii. Entry
    1. Downwind
    2. 1000ft AGL
    3. Wings level until aircraft crosses over line

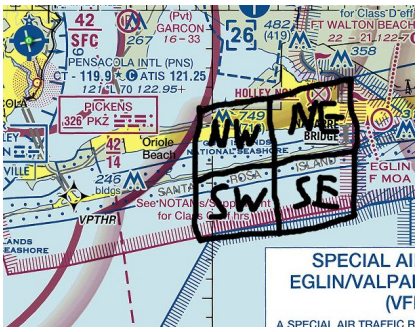
iii.



Local Procedures

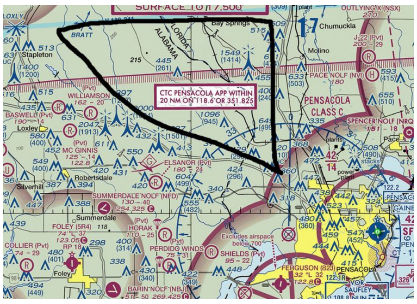
1. Pensacola Air Callsign
    a. Callsign: "<u>STINGRAY</u>"
    b. Pensacola Air Flight School has a letter of agreement with the P31 TRACON (Pensacola Air Traffic Control) to use the "stingray" callsign within pensacola airspace ONLY. During cross country flights, and or flights outside Pensacola's airspace, the aircraft's full tail number will be utilized.
    c. Ex inside P31: "Stingray-9TM"
    d. Ex outside P31: "Cherokee-989TM"
2. Practice Areas
    a. The Pensacola Airport has two designated practice areas to allow aircraft to conduct flight training operations away from the inbound and outbound traffic around the airport
    b. <u>Beach Practice Area</u>
        i. The beach practice area's boundaries are as shown below. It has 4 quadrants: Northwest, Northeast, Southwest, Southeast. It's vertical boundaries are from the surface up to 3000ft MSL

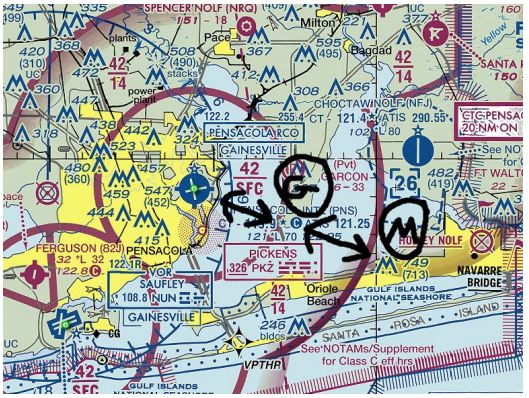
ii.



        iii. The advisory frequency for the beach practice area is

126.850 and is ultimately the CFIs responsibility to make position reports

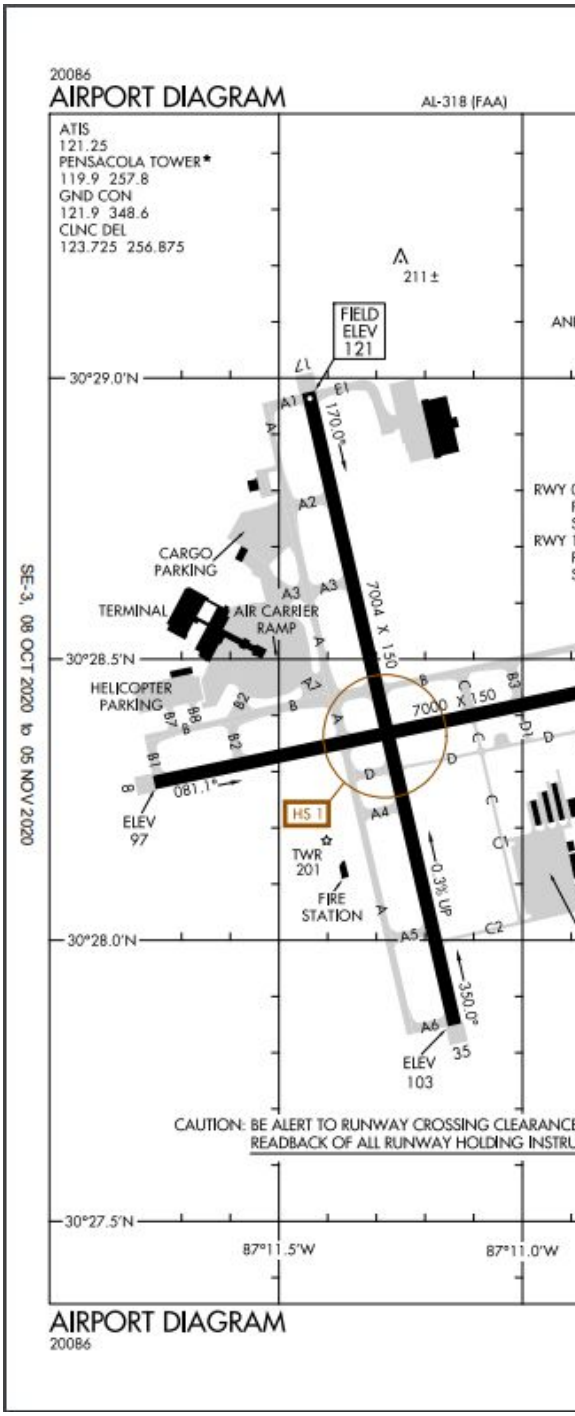
c. <u>Northwest Practice Area</u>
   i. The Northwest Practice area's boundaries are shown below. It is just one big area and the vertical boundaries are defined by ATC on a day to day basis
   ii. 
   iii. There is no advisory frequency for this practice area and pilot's should remain on the appropriate pensacola approach control frequency when operating within the NW practice area

3. The Garson Transition
   a. This is a local ATC procedure and is not charted on any FAA chart. The "Garson Transition" is typically used when going to or coming back from the "Beach Practice Area"
   b. <u>Outbound from PNS:</u> After takeoff climb to 1000ft and turn direct to Garson Point (Point G). Then fly direct to the "Midway Antenas" (Point M) to enter the practice area. Stay on Pensacola Approach frequency until told to switch to advisories.
   c. <u>Inbound to PNS:</u> Contact Pensacola Approach prior to reaching the "Midway Atenas" (Point M) with the current ATIS and advise them of intentions. Once cleared on the transition fly direct to Garson Point (Point G) then direct the airport. Stay on Pensacola Approach frequency until told to contact Pensacola Tower.
   d. 

4. Common Frequencies
   a. PNS Clearance: 123.725
   b. PNS Ground: 121.900
   c. PNS Tower: 119.900
   d. PNS E APP: 119.000
   e. PNS W APP: 118.600
   f. Beach Practice Area: 126.850 "Midway Traffic"

5. Pensacola International Airport Diagram
    a. NOT INTENDED FOR OFFICIAL USE

b.



a. Pilot's Handbook of Aeronautical Knowledge (PHAK)
b. Airplane Flying Manual (AFM)
c. Private Pilot Oral Exam Guide
d. FAR/AIM

2. In-Flight Material
    a. Headset
    b. Kneeboard
    c. VFR Sectional Charts
    d. VFR Plotter
    e. E-6B Flight Computer
    f. iPad (not needed but recommended)
        i. Foreflight App
        ii. Garmin Pilot App

Private Pilot Minimum Hour Breakdown

Note: This is the bare minimum required hours to be eligible to apply to take the practical exam. National average times will be shown last.

Official requirements can be confirmed via 14 CFR Part 61.109 in the FAR/AIM

Other Recommended Items

1. Study Material

Flight Experience: 40 Hours Total

1. 3 hours of cross country flight training
2. 3 hours of night flight training
    a. To include a 100nm night cross country
    b. To include 10 takeoffs and 10 landings at night
3. 3 hours of IFR flight training
4. 10 hours of solo flight time
    a. To include a 5 hours of solo cross country time
    b. To include a 150nm solo cross country flight with 3 landings at 3 different airports, and one leg of 50nm or greater
5. 3 hours of flight training with a CFI within the 2 months leading up to the exam

Required Ground Training: 10 Hours Total

National Averages:

~ 65-70 Flight Hours (total)

~ 10 - 15 hours of flight experience before ready solo

~ 30 Hours of Ground Instruction