



Standard Flight Training Procedures - Cessna 172R

The following guide is intended to reduce both student and instructor frustration by standardizing most of the maneuvers you will encounter during your flight training. By no means is this document intended to replace governing directives, manuals and procedures. It merely supplements established FAA guidance and is specific to the aircraft you will train in at AIA Academy. It should be noted that sometimes it might be necessary to deviate from these standards depending on conditions. These standards are based on procedures derived from the FARs/AIM, FAA handbooks, FAA evaluators and our very own flight instructors. Additionally, your flight instructor will provide more details and techniques for performing the various maneuvers.



CAUTION

- ENSURE YOU CONDUCT ALL MANEUVER PRACTICE TRAINING WITHIN THE SCHOOL'S ALLOCATED PRACTICE AREAS. FAMILIARIZE THEM AND ITS BOUNDARIES.
- BE AWARE OF THE APPROACH & DEPARTURE PATH OF LOCAL AIRPORTS. AVOID LINGERING IN THOSE AREAS WHILE PRACTICING MANEUVERS.
- ENSURE ALL STALLS, SLOW FLIGHT, AND STEEP TURNS ARE PERFORMED ABOVE 3000' AGL.
- MINIMUM ALTITUDE TO ENTER SPIN PRACTICE IS 6000' AND A MAXIMUM OF A 2-TURN SPIN ONLY.
- KEEP IN MIND AN INADVERTANT SPIN CAN OCCUR WHILE PRACTICING STALLS DUE TO MISS HANDLING OF CONTROLS. BE PREPARED AND KNOW HOW TO RECOVER FROM A SPIN OR SPIRAL.
- ENSURE THAT STALLS AND SPINS ARE NOT BE PERFORMED WITH ANY PASSENGERS OR BAGGAGE ONBOARD.
- CONFIRM SUFFICIENT FUEL AVAILABLE FOR FLIGHT AT ALL TIMES AND THAT THE FUEL SELECTOR VALVE IS IN THE CORRECT POSITION.
- ALWAYS USE THE CORRECT METHOD FOR EXCHANGE OF CONTROLS.
- BE VIGILANT OF TRAFFIC AND BIRDS, ESPECIALLY IN THE TRAFFIC PATTERN.
- DO NOT SIMULATE ENGINE FAILURE ON TAKE OFF OR APPROACH BELOW 1000'.
- YOUR HAND SHOULD ALWAYS REMAIN ON THE THROTTLE CONTROL DURING TAKE OFF OR LANDING.
- Practice all call outs as required by AIA ACADEMY TRAINING, listed below.
- Do not OVER CONTROL the aircraft. Learn to be smooth.
- Before each solo, get a detailed briefing and required endorsements from your instructor. Perform only those maneuvers briefed and approved by your instructor for that flight.
- Do not get in the habit of automatically applying rudder to the side you are rolling. Check the ball and coordinate.
- Checklists for critical emergencies should be memorized and practiced to get quick, immediate recall and action. Practice emergencies by moving your hand to simulate the appropriate action, with your eyes looking at the location of the instrument. It is harder to perform during an emergency without good practice.



Pre-Flight

- Be sure to arrive for each flight WELL prepared. After you've been trained to do the pre-flight, you will be expected to arrive 15 TO 20 MINUTES early to have the pre-flight done prior to your scheduled lesson time.
- **Please note that if an aircraft needs to be removed from the hangar, you must have an AIA ACADEMY staff person assist with aircraft handling.**
- You should have studied the flight maneuvers/briefing items and checked the weather, NOTAMS, Weight & Balance and Performance Data prior to every flight. Your flight instructor will assist you with this in the early part of your training and then you will be expected to do this on your own before each flight.
- Pick up your dispatch paperwork and keys from the front desk PERSONNEL ONLY, prior to pre-flight.
- The interior/exterior aircraft inspection should be conducted in accordance with the checklist. Be sure to have the checklist in hand as you perform the inspection.
- Practice SRM & ADM for every flight. Ask your instructor if you are not fluent in this.
- ALWAYS CHECK FUEL AND OIL, ADD AS REQUIRED FOR THE FLIGHT. **Minimum fuel for training flight is 1 hour Reserve after landing.**
- There are also checklists for before starting, starting engines, taxi and before takeoff. Be sure to use them!

Taxi

- **Perform all Checks as per check list.** Hold check list high enough to see outside the aircraft while performing the checks (or clip it on the yoke).
- Call out the name of the CHECK before performing the list (i.e. "Checks Before Taxi"). Have a finger on the checklist item as you perform them so you don't skip any.
- Prior to taxi, set radios, navigation, and the altimeters per the checklist. Have an airport diagram for reference and note the "Hot Spots."
- **Perform a flight control check prior to engine start, call out "full and free control surface movement," listen, and make sure there are no abnormal rubbing or grinding noises.**
- **Confirm engine instruments IN THE GREEN after startup (oil pressure, electrical, etc.).**
- **Be alert for aircraft rolling forward. Make sure the brakes are holding properly immediately after engine start.**
- **Confirm and say "wingtips clear." In turns, check and call out "Tail wing area clear."**
- Check the brakes GENTLY, as you start moving forward. DO NOT brake with power on.
- Slow down, before entering any taxiway to ensure it is clear in both directions before entering. Call out "taxiway clear."
- Taxi speed should always be at a walking pace and at a slower pace when close to other aircraft. Keep a close eye on your wing tips as you taxi by other aircraft or obstacles. Once clear of obstacles you may taxi at a brisk walking speed.
- Always keep the nose wheel centered on the taxiway line.



- Don't ride the brakes with "power on." If you are taxiing too fast, simply reduce power first and then use brakes as required.
- Perform a flight instrument check during taxi. This must be performed **only in a taxiway turn, never in the ramp area or near other aircraft.**

Instrument Checks – Call out:

- 1) Aircraft Turning (L/R).
 - 2) Compass & DG turning L/R passing ____.
 - 3) A/H pitch & Bank normal.
 - 4) Turn Coordinator L/R Slip & L/R skid.
 - 5) ASI & VSI zero.
- This is also a good time to start painting a picture of who is in the traffic pattern by looking around and listening to the radio.
 - Slow down near runway crossings & Hot Spots. Call out "Crossing runway ____." Visually check that the runway and approach are clear. Ask your co-pilot to check his/her side. **Remember to flash landing light upon crossing active runways and Hot Spots.**

Before Takeoff

Note: HOLD CHECKLIST UP WITH FINGER ON EACH CHECK. YOU NEED TO HAVE A GOOD VIEW OUTSIDE SO YOU CAN TAKE ACTION IF AIRPLANE MOVES FORWARD.

- **Taxi within 10' of the edge of the run-up area**, near the end of the active runway so you do not block other traffic from entering the runway. Do not cross the hold short line.
- **Make sure your nose wheel is straight when stopping for run-up.**
- **Check wingtips are CLEAR**, position the aircraft into the wind (for engine cooling during engine run-up), set parking brakes and perform the following:
 1. Run-Up Checks
 2. Pre-Takeoff Checklist
 3. Take off Checklist
- **Visually look at flight control response during check. Call out the movement.**
- For the departure briefing mention the runway you are taking off from and its length, the required takeoff roll you calculated, V_r , V_x , V_y , your initial turn, the altitude to level off, and direction of flight.
- Then, perform the emergency briefing, **including emergency takeover of controls by captain.** The entire briefing should usually take no longer than 1 minute.
- **Visually look at the position of the flaps and for possible split flap condition.**
- Check the traffic patterns around the airport before takeoff. Make your radio call before entering the runway.
- Set Clock & note time prior to entering runway.
- Check **all approaches and runways** before entering runway.



Normal Takeoff

- Set flaps 0°.
- Set heading bug to departure runway heading.
- After clearance, call out “confirming runway _____ and runway heading for takeoff.”
- Check **all final approaches and runways** on taxi out to runway.
- Align the airplane with the runway centerline.
- If a crosswind exists, turn the control wheel turned into the wind.
- Set Mixture to RICH (above 3,000', LEAN for max RPM).
- Smoothly apply full power and confirm RPM is normal by calling out the RPM.
- Quickly check engine gauges as per checklist.
- Make sure your feet heels are on the floor **and toes are not pressing the brakes**.
- Anticipate the need for adding right rudder to counter engine torque and left-turning tendency of the airplane.
- If a crosswind exists, reduce control wheel input into the wind as you accelerate.
- Call out “airspeed alive” as the ASI starts registering.
- Call out speed & rotate at 55 KIAS.
- Call out and confirm “positive rate of climb, wings level.”
- Call out V_x and pitch for V_y .
- Check and call out “no drift.” If you are drifting, use correct drift adjustment control, especially if you are taking off from a parallel runway.
- Quickly trim for V_y . Your hand should be placed immediately onto the throttle control.
- Climb at V_y (79 KIAS) until reaching 1000' AGL. Perform after takeoff checks.
- Cruise climb at 85–90 KIAS above 1000' AGL. LEAN above 3,000' MSL for smoothest operation or to obtain max RPM.
- Check area ahead and around clear during climbs and before turning.
- If you are departing the pattern, and at pattern altitude, depart “straight out” or 45° from the direction of the pattern.
- If you are remaining in the pattern, turn crosswind no sooner than 300' MSL below TPA and the departure end of the runway.
- When leveling off in the pattern, simply reduce power to 1900–2000 RPM, hold level attitude, build speed to 90 KIAS, and then reduce RPM to maintain downwind speed of 90 KIAS.
- If you are heading out to the practice area, level off at an altitude above 3000' AGL. Set cruise RPM to 2200–2300, until you reach the practice area.



Short Field Takeoff

Objective: *To perform a takeoff using the minimum take off roll required for the conditions. To clear a 50-foot obstacle immediately after takeoff, with sufficient clearance.*

- Set Flaps to 10°.
- Taxi onto the runway using ALL available runway length.
- Align airplane with the runway centerline. Stop and hold the brakes.
- If a crosswind exists, turn the control wheel into the wind.
- Set Mixture to RICH (above 3,000', LEAN to obtain maximum RPM).
- Apply full power. Call out "RPM ____ normal."
- Check that the engine gauges are normal IN THE GREEN. Release brakes.
- Anticipate the need for adding right rudder to counter engine torque and left-turning tendency of the airplane.
- If a crosswind exists, reduce control wheel inputs into the wind as you accelerate.
- Rotate at normal V_r (55 KIAS) and pitch at a slightly higher-than-normal takeoff attitude to achieve a climb at 57 KIAS until clear of obstacles at above 75' AGL.
- Slightly lower the nose to accelerate to 65 KIAS. Confirm over 100' and call speed and PROC (positive rate of climb). Retract flaps in increments, check speed and PROC.
- Accelerate and continue climb at V_y (79 KIAS).

Soft Field Takeoff

Objective: *To perform a takeoff from a soft surface runway.*

- Set flaps to 10° and hold full aft elevator while taxiing onto runway. DO NOT use abrupt braking. Be aware that the wheels can get bogged down.
- Do not stop the aircraft when entering onto the runway (due to "simulated" soft ground).
- Align the airplane to the runway centerline, while adding full power with aft elevator controls, and managing constant-pitch attitude for rotation.
- Quickly check engine gauges and call out RPM.
- If a crosswind exists, turn the control wheel into the wind.
- Anticipate the need for adding right rudder to counter engine torque and left turning tendency.
- If a crosswind exists, reduce control wheel inputs into the wind as you accelerate.
- As the nose wheel begins to lift off the runway, be prepared to reduce elevator backpressure. Hold takeoff attitude until the airplane flies into ground effect.
- Lift off at minimum flying speed while gently lowering the nose to a nearly level attitude. Accelerate in ground effect to V_x (65 KIAS).
- Begin climb-out at V_y (79 KIAS). When you are above 100' AGL, retract flaps after calling out speed and PROC.
- Perform a normal climb-out at V_y (79 KIAS).



Cruise Flight

- Maintain 100 – 110 KIAS (approx. 2200 – 2300 RPM).
- Perform Cruise Checklist.
- Look for traffic and birds. Navigate to the practice area using ground references.
- Periodically check engine instruments, fuel balance, and update heading gyro.

Training Area Arrival

Note: Know your school's allotted practice areas. Learn how to identify the boundaries by physical features.

- Monitor the appropriate radio frequency. Switch to the Approach frequency for TRAFFIC ADVISORY, if needed. Remember there are a few airports near us (including SAC International – Class C). Stay away from the approach and landing paths of these airports. Stay away from Nav-aids, such as VORs, where traffic is converging to.
- Perform the **E.F.F.C.L.** checklist.
(Check **E**ngine gauges, **F**uel level and Fuel Selector position, **F**laps position, **C**learing Turns, **L**anding **L**ight on).
- Pick a heading and **set heading bug**.
- Level clearing turns (90° heading change through both directions).
- Set power to **1900 – 2000 RPM**, **90 KIAS**, and **TRIM**.
- Generally plan on the following sequence; however, your flight instructor may vary the profile as required.

Steep Turns

*Objective: To perform a 45 –55° bank turn, maintain attitude, maintain altitude, **maintain speed**, roll out on the correct heading). Remember that your stall speed increases with bank/load factor - Refer to the airplane's POH.) This maneuver is practiced to improve aircraft control skill and also to use as an emergency turn maneuver.*

- Perform the **E.F.F.C.L.** checklist.
(Check **E**ngine gauges, **F**uel level and Fuel Selector position, **F**laps position, **C**learing Turns, **L**anding **L**ight on).
- Pick a heading and **set heading bug**.
- Set power to approx. **1900 – 2000 RPM**.
- **TRIM** for **90 KIAS**, note RPM.
- Note the outside attitude. Roll into a constant roll rate turn, reaching 20 – 30° bank. Add 100 – 200 RPM and backpressure to maintain airspeed/altitude. Apply a touch of rudder to balance the turn. Remember to check that the ball is centered. Hold off the roll/stop roll at 45 – 55° bank.
- **LOOK OUTSIDE FOR THE CORRECT ATTITUDE & BANK** to maintain level and **90 KIAS**.
- Once established in the turn, quickly glance inside to check the speed, altitude, VSI, and heading. The primary reference to control the aircraft must be the **outside reference of attitude**. **DO NOT** chase



or fixate on the instruments.

- Lead your roll out by about 20° off your set heading.
- As you roll out passing 30° bank, reduce backpressure (apply forward pressure), using rudder for coordination, and reduce power back to 1900 RPM. Return back to level attitude and stay on altitude and airspeed.

Note: Do not practice doing steep turns using any trim control. This defeats the purpose of the training.

Slow Flight

Objective: To maintain slow speed flight in the region of the reverse power curve, maintain heading and attitude. Coordination and control at low airspeeds, maintaining heading, attitude, and altitude.

- Perform the **E.F.F.C.L.** checklist.
(Check **E**ngine gauges, **F**uel level and Fuel Selector position, **F**laps position, **C**learing Turns, Landing **L**ight on).
- Pick heading and altitude to maintain during the maneuver.
- Set the heading bug and get an outside visual point of reference.
- Reduce power to 1500 RPM. Maintain attitude, heading, and altitude, keeping the ball centered (don't let the nose pitch down and roll when reducing power).
- Set flaps to 10° below 100 KIAS, then to full flaps (30°) below 85 KIAS.
- Maintain altitude and heading, keep the ball centered.
- Slow down to 55 – 60 KIAS and TRIM.
- Increased pitch & power will be required to maintain altitude and airspeed when flying at 55 – 60 KIAS (2200 – 2300 RPM).
- Note attitude. Quickly glance only to check speed and altitude.
- **FLY BY ATTITUDE, DON'T CHASE THE SPEED.**
- Add enough rudder to center the ball on the turn coordinator.
- You will likely feel a slight buffeting and very ineffective flight controls at slow flight speeds.
- **Stabilize SPEED** at 55 KIAS before making any turns. **Do not lose altitude.**
- Make very shallow-banked turns (10° or less), as required.
- Recover by adding full power and keeping the ball centered. When above V_x (65 KIAS), raise flaps in increments.
- Maintain heading and altitude as you accelerate to cruise speed.
- Do not over-speed flaps (i.e. V_{FE} 85 KIAS).
- When reaching 90 KIAS, reduce power to approx. 1900 – 2000 RPM.



Power Off Stall

Objective: Practice recognition and recovery from a stall in landing configuration, simulating a final approach condition, prior to entering stall.

- Perform the **E.F.F.C.L.** checklist.
- (Check **E**ngine gauges, **F**uel level and Fuel Selector position, **F**laps position, **C**learing Turns, Landing **L**ight on).
- Pick heading and altitude to maintain during the maneuver.
- Set the heading bug.
- Set power to **1900 – 2000 RPM**, and **TRIM** for **90 KIAS**.
- With light control pressure, check for roll tendency of the plane in level flight. If excessive roll tendency exists, **DO NOT perform the stall**.
- Set power to **1500 RPM**, and maintain altitude as you slow down.
- Set flaps to 10° below 100 KIAS, then to full flaps (30°) below 85 KIAS
- **Pitch** for **65 KIAS**.
- Set power to **idle (1000 RPM)**.
- Pitch for a gentle descent of 300-400 FPM, **TRIM** for **65 KIAS**.
- Initiate the stall by smoothly raising nose slightly above horizon (10 – 15°) and hold that attitude with backpressure. **Slow the aircraft gradually, without abrupt pitch up.**
- **Maintain direction, keep wings level and the ball centered.**
- Recover: When aircraft stalls, (first sign) simultaneously release backpressure to pitch slightly below the horizon, use opposite rudder for any roll correction, and add full power. Use right rudder to counter left yaw when increasing RPM.
- Do not lower nose excessively below horizon, keep ball centered.
- Call out speed above 60 KIAS before changing to a pitch-up attitude above the horizon to initiate a climb.
- Check VSI and call out PROC.
- When above V_x (65 KIAS), retract flaps to 20°.
- After accelerating past 65 KIAS and PROC, retract flaps to 10°.
- Retract final flaps when above 65 KIAS, confirm PROC.
- Climb at V_y (79 KIAS).



Turning Power Off Stall

Objective: Practice recognition and recovery from a stall in a landing configuration, simulating a final approach turn condition, prior to entering stall.

- Perform the **E.F.F.C.L.** checklist.
- (Check **E**ngine gauges, **F**uel level and Fuel Selector position, **F**laps position, **C**learing Turns, Landing **L**ight on).
- Pick heading and altitude to maintain during the maneuver.
- Set the heading bug.
- Set power to **1900 – 2000 RPM**, and **TRIM** for **90 KIAS**.

- Perform Clearing turns. 1900 RPM, 90 KIAS
- **E.F.F.C.L.** (Check **E**ngine, **F**uel level & Fuel Selector, **F**laps, **C**learing Turn, Carb Heat, **L**ights on)
- **With light control pressure check for roll tendency of the plane. If excessive roll tendency, do not perform Stall.**
- Throttle 1500 RPM (maintain altitude for level flight as you slow down).
- Flaps full below 85 KIAS.
- Throttle idle - 1000RPM.
- Establish a normal glide with 300-400 ft ROD with 10' to 15' degrees of bank.
- Gently pitch up slightly above horizon and hold it there with backpressure, **slowing the aircraft gradually, no abrupt pitch up.**
- Maintain constant bank angle 10/15 degrees, **ball centered and pitch attitude until the stall (first sign) occurs.**
- As aircraft stalls, simultaneously release backpressure, get attitude slightly below horizon, use opposite rudder to counter roll, Open full Throttle & level wings.
- Do not lower nose excessively, keep the ball centered, apply right rudder to counter yaw while opening throttle to full power.
- **Call out Speed above 60 KIAS** and pitch up to slightly above horizon for climb. Call out positive rate of climb, then retract Flaps to 20'
- Return to a climb attitude as soon you have 65 KIAS.
- Retract flaps to 10' after accelerating past 65 KIAS -PROC.
- Retract final flaps above 65 KIAS, confirm positive rate of climb (PROC)
- Climb at V_Y (79 KIAS)



Power On Stall

Objective: Practice recognition and recovery from a stall in Takeoff configuration, simulating a takeoff condition, prior to entering stall.

- Perform Clearing turns.
- RPM 1900, 90KIAS, Trim.
- With light control pressure check for roll tendency of the plane. If excessive roll tendency, do not perform Stall.
- E.F.F.C.L. (Check **E**ngine, **F**uel level & Fuel Selector, **F**laps, **C**learing Turn, **C**arb Heat, **L**ights on)
- Set heading bug. Pick outside reference point.
- Throttle 1500 RPM and maintain attitude, heading, ball centered and altitude.
- Slow to 65 KIAS and trim.
- Start pitching up attitude and Set power to 2100-2200RPM (FULL POWER not required for practice), apply slight right rudder to counter left Yaw/roll and slowly increase pitch. Keep the ball centered.
- Increase pitch to induce stall/buffet/warning (first sign) (approx. 15' -20'nose up)
- Check wingtips level from horizon (peripheral vision)
- Maintain this pitch-high attitude until indication of stall.
- Recover when stalled; simultaneously apply opposite rudder to correct for rolling tendency, release backpressure to pitch slightly below horizon, **open full throttle/power**. Center ball with rudder.
- Call out speed above 60 KIAS, initiate pitch slightly above horizon, Call out positive rate of climb. Climb at 65k, pitch for V_Y (79 KIAS).

Turning Power On Stall

Objective: Practice recognition and recovery from a stall in Takeoff configuration, while simulating a turn during takeoff.

- Clearing turns.
- E.F.F.C.L. (Check **E**ngine, **F**uel level & Fuel Selector, **F**laps, **C**learing Turn, **C**arb Heat, **L**ights on)
- Set heading bug. Pick outside reference point.
- Throttle 1500 RPM and maintain altitude.
- Slow to 65 KIAS (V_Y)
- Set power to 2100-2200 RPM and slowly increase pitch, establish bank angle up to 10' to 15'
- Increase pitch to induce stall/buffet (approx. 15' nose up)
- Apply right rudder for P-factor and torque effect (keep the ball centered).
- Maintain pitch-high attitude and bank angle until a full stall.
- When stalled, opposite rudder to counter any rolling, release backpressure to pitch slightly below horizon, roll wings level, center ball & apply full power.
- Initiate a climb at 65Kts, pitch for V_Y (79 KIAS) as soon as possible.



Engine Failure in Flight

- Pitch for Best Glide (65 KIAS) and **TRIM -TRIM -TRIM**
- Look around & Locate landing area (open area, no cables or wires across, no obstructions, suitable surface) considering the winds for landing direction, turn towards it selected landing spot.
- **Check altitude and glide distance. Use GPS/VOR if you have sufficient time and altitude, to find nearest airport.**
- **Decide if you want to perform restart and have the altitude for it. If not possible, continue with force landing procedures.**
- **Set up for the “Key” position and “Key” altitude.**
- **Keep landing spot in your sight always.**
- Perform engine failure checklist items from memory (flow).
- Reference checklist time and altitude permitting.
- Perform (simulate for practice) “Mayday” call on 121.5 time permitting (set up on standby side of Comm radio).
- **Transponder 7700.**
- Circle “key” over selected field using shallow bank angles. Aim to set up slightly high on approach.
- Use flaps if you are high and positively making the landing spot glide.
- Forward-Slip if you need to lose altitude. For practice, **do not use slip maneuver below 300ft AGL.**
- Setup for approach to final, don’t square your legs and curve it with shallow bank.
- Secure the fuel, electrics, door opening and tighten seatbelts.(simulate during practice)
- Flaps full down when field can be made, positively. **WATCH SPEED and ROD**
- Call out- 65 KIAS on final approach, short final.
- **DISCONTINUE OFF AIRPORT SIMULATIONS ABOVE 500’ AGL! Add full power, slight forward pressure on yoke to counter pitch up, Call out speed above 65 KIAS, start climbing and retract flaps in increments, calling out speed and PROC (perform go around procedures)**

Ground Reference Maneuvers

- Perform maneuvers in accordance with the FAA Airplane Flying Handbook. The ASA Visualized maneuvers book is a good guide for reference.
- Set power to approx. 1900-2000 RPM; maintain 1000’ AGL & 90 KIAS, TRIM before all ground reference maneuvers.
- **E.F.F.C.L. (Check Engine, Fuel level & Fuel Selector, Flaps, Clearing Turn, Lights on)**
- **Set heading bug. Pick outside reference point.**
- Before starting the maneuver select suitable emergency landing areas.
- Maintain correct speeds, altitudes, heading and RPM’s.
- Fly by attitude and cross check gauges to maintain the required parameters flight and engine.



Returning to the KSAC Airport

- Cruise at 100 -110 KIAS @ cruise RPM
- Tune KSAC ATIS to 125.5 and copy down ATIS.
- Tune KSAC Tower 119.5
- Make initial arrival call on Tower Frequency within 8-10 miles of the airport.
- Descend to pattern altitude no later than 4 miles of the airport.
- **Target 500 FPM descents**, @1500-1600 RPM, 100 KIAS approx.
- Look and avoid traffic and birds.
- Enter the mid field 45 degree leg at 1000 MSL, level flight, 1900-2000 RPM and 90 KIAS.
- Be on the alert for aircraft turning from X-wind to downwind. Make sure you know where other aircraft are in the pattern.
- Should be ½-1 mile from runway on downwind.
- A good technique for when to turn downwind from the 45-degree entry is to turn when the runway appears to be disappearing under the nose. This should put you on a downwind with proper spacing from the runway.
- Make standard radio calls while in the pattern (your instructor will demo).
- Apply corrections for any known winds.



Normal Approach and Landing

- Perform Pre landing Checks, GUMPS checks.
- Abeam intended point of landing, throttle 1500 RPM, flaps 10'. Hold the attitude.
- Maintain 75 KIAS, TRIM, start a descent 100-200 ft per minute ROD
- When runway approach end is 45 degrees aft (behind the wing) visually clear base leg & final, turn to base leg (should be approx. 100-150' below when starting turn TPA).
- Call out speed in turn, Roll out 90 degrees from runway after base turn, look at runway and see if you are high or low and select flaps when needed to 20'
- Maintain 70 KIAS on Base leg, TRIM.
- Approx. 700' to 800' AGL on base leg, check rate of descent. 200-300 ft per min after 20° flaps.
- Look at runway (full length for alignment) Turn final with max 20 to 30 degrees bank.
- On final, Check if you are in glide slope / perspective/sight picture. Then select Flaps 30' appropriately, add 100-200 RPM. Pitch and maintain 65 KIAS, TRIM
- **Maintain target sight picture, runway alignment & glide slope in windshield**
- **Look outside and Call out - Runway alignment & Perspective, Glance inside alternatively for Airspeed 65 KIAS & ROD (VSI=400-600), consistently on approach.**
- **Adjust Power, pitch & bank to maintain the above. Use crab technique for cross wind.**
- Add half of gust factor speed, if necessary.
- If there is a crosswind, use a crab until short final, then transition to side slip maintaining centerline.
- Callout "on centerline and airspeed" crossing airport boundary.
- Maintain 65 KIAS to approx 25-30' above runway, bring power to idle smoothly, and then begin raising nose into landing flare attitude. Fly parallel/level over the runway at 5 -10 feet.
- As airplane sinks to the runway, keep bringing the stick back slowly & gently without abrupt movements to soften the sink, until touchdown; avoid ballooning and Pilot Induced Oscillations (PIO). Your instructor will demonstrate/teach you how to recognize this. .
- Land on centerline on the main wheels, nose pointed in direction of travel (straight)
- Guard against landing flat, hitting the nose wheel or landing with a side drift.
- Touchdown within 400' of desired touchdown zone at idle power.
- Keep control of airplane with rudder and stay on centerline.
- Keep nose light & Brake as required, slow to taxi speed and exit at nearest taxiway and announce clear of runway on radio.
- Taxi beyond hold short line, stop & perform the after landing checklist.

Note: Your instructor will teach you specific techniques for the landing phase.



Short Field Landing

- Same as normal landing with following exceptions:
- Full flaps on final approach and maintain 62 KIAS (+gust correction). TRIM
- Keep calling out - Speed and ROD / Alignment and Perspective
- After crossing obstacle, reduce power slightly and aim for the point 200-300 ft short of the touch down point, where you want to start flare.
- Pitch for slightly steeper approach after simulating flying over 50' obstacle.
- Start you flare slightly higher (40ft -45ft) than normal since your ROD will be higher.
- It is critical to be on correct airspeed. If you are too fast you will float down the runway and have chance of ballooning. If you are too slow you will drop fast and hard to the runway.
- Close throttle slowly during flare, fly parallel/level over runway at 5-10 ft.
- Allow airplane to sink gently and increase back elevator pressure to soften the sink and touch down. Touch down on main wheels only.
- Maintain centerline. Correct for any drift or nose yaw.
- Touchdown within 200' past desired touchdown zone at idle power.
- Retract flaps after immediately after firmly on ground. Lower nose wheel down, then increase Elevator back pressure, for aerodynamic braking.
- "Simulate" firm wheel braking.

Soft Field Landing

- Same as normal landing with following exceptions:
- After the flare, hold the aircraft 3-5 feet above the runway with a little power. 1000-1200 RPM to cushion the landing.
- Bring main wheel to touch down. Maintain runway centerline.
- Touchdown smoothly and softly.
- Hold nose wheel off the runway with aft elevator pressure, as long as possible, without skidding, since the main wheels are also light on runway.
- Use back elevator to decelerate, don't use brakes if able and runway ahead is available for gradual slowing down and taxi.
- Keep control wheel full aft during taxi on a soft field.

Touch & Go

NO TOUCH & GO's FOR STUDENT PILOT SOLO. DUAL ONLY!

- After landing, retract flaps fully, trim for takeoff.
- Smoothly apply full power, Call out RPM, maintain centerline.
- Call out speed above 55 KIAS, rotate for takeoff attitude.
- Perform normal take off.



Go-Around

- Smoothly apply full power, slight right rudder to counter left turning tendency. Slight pressure on yoke to prevent excessive pitch up.
- Call out Speed above 60KIAS, pitch for takeoff attitude
- Call out Positive ROC, above 50 ft retract flaps to 20° and simultaneously pitch for climb.
- Retract flaps to 10' degrees after PROC established and airspeed greater than 65 KIAS.
- Retract final flaps at V_Y (79 KIAS) and PROC.
- Normal climb-out.
- If avoiding a departing aircraft, offset to the pattern side to avoid the aircraft and keep traffic in sight. Maneuver as necessary to maintain separation. Do not use more than 20° bank for any correction on Takeoff leg.

Night Flying

- Conducted in accordance with the FAA Airplane Flying Handbook and flight instructor guidance.
- Make sure you have all the equipment needed additionally for night flight.
- **Do not practice simulation of engine failure at off airport locations.**

Cross Country

- Plan in accordance with governing procedures/regulations.
- Your flight instructor will guide you on your first planning/flight.
- Plan to fly each leg at 110 KIAS at appropriate VFR altitudes.
- Fuel should be planned to land back with more than 1 hour of reserve fuel.
- Be familiar with mountain flying procedures (review with your instructor)
- Plan one dual cross-country through or near mountainous terrain.
- Be aware of the Lost Procedures & Lost Comm procedures.
- Make sure you have appropriate endorsements for your solo cross country flight.
- **A copy of the endorsed Nav log, Weight/balance & Flt Plan should be provided to the front desk prior to departure.**
- All cross-country flights must depart Sacramento Executive (KSAC) with full fuel tanks.

After Parking Aircraft

- Ensure securing aircraft checklist is complete.
- Perform a post-flight walk around to ensure no maintenance issues occurred during the flight. This is required by the FAA on the practical.

(Please note that if an aircraft needs to be placed in the hangar, you must have an AIA ACADEMY staff person assist with aircraft handling)



RPM/Speed Table:

2100 RPM = 100 KIAS

1900 RPM = 90 KIAS

1600 RPM = 80 KIAS

1500 RPM = 70 KIAS

1400 RPM = 60 KIAS

Speeds above are with aircraft in CLEAN (no flap) condition. Power settings may vary slightly depending on outside temperature, weight and density altitude.



EMPHASIS ITEMS

Collision Avoidance

You are learning to fly under Visual Flight Rules (VFR). As the pilot you are 100% responsible for ensuring that your airplane doesn't collide with anything on the ground or in the air. That means you must have your head on a "swivel" scanning **OUTSIDE** the aircraft and only occasionally and quickly scanning inside the aircraft for parameters and engine/flight instrument readings. This is precisely why your instructor will ensure that you are **looking outside and using the natural horizon while flying all maneuvers**. Primary use of the artificial horizon instrument will come later with your instrument training.

As a rule of thumb for VFR flying, you should spend about 90% of your time scanning outside and using horizon for attitude with only 10% scanning inside for instruments. With a high wing airplane you can raise the wing slightly before turning to check for birds or traffic. During descents it is a common practice to bank the aircraft left and right occasionally to clear directly below your flight path. Your instructor will emphasize collision avoidance methods throughout your training.

Checklist Usage

Use the checklist! Your instructor will expect you to reference the checklist for all applicable phases of flight. If you try any other techniques you will likely forget a required item. We recommend that you memorize the Before Landing checklist items, engine failure in flight, Engine fire check list items since these require quick response & timeliness.

This technique will also reduce your "heads down" time in the pattern, for check list reading. In all cases you **MUST** complete all required checklist items. The FAA will be expecting you to use the checklist on your practical test.

Traffic Pattern

The traffic pattern is dynamic and at times very busy with multiple aircraft, many of which will perform non-standard maneuvers. Your instructor will cover all of the issues associated with the pattern to include radio calls, proper spacing, conflict resolution, etc.

Priorities While Flying

Aviate, navigate, then communicate and do it in that order. Your first priority at all times is to fly the airplane **NOT** talk on the radio. Don't be intimidated by the radio but use it only after you have the aircraft under control. For example, if after turning final you decide to make the radio call before lowering the flaps to full and subsequently forget the flaps and land no flap what have you gained? Always fly the airplane first.



The Use of Trim

Trim is your friend! Use it often. Fighting heavy control inputs is fatiguing. You will find that by trimming after each major change of flight attitude, it will be easier to maintain airspeed and altitude.

Emergencies

Your instructor will give you an emergency scenario on every lesson. The scenario could be during the flight brief or in flight. For all emergencies you should prioritize as follows: **AVIATE- NAVIGATE- COMMUNICATE**

1. **Maintain aircraft control.**

Fly the airplane first! For example, if your engine fails in flight, immediately pitch for best glide (65 KIAS).

2. **Analyze the situation.**

Is the smoke in my cockpit from an electrical fire or engine fire? What can I look at to figure it out?

3. **Take the proper action.**

Once you know exactly what the problem is execute the appropriate checklist if one applies.

4. **Land as soon as conditions permit.**

Generally land at the nearest suitable airport but this decision will be situation dependent.

Be fluent in SRM (Single Pilot Resource Management) and ADM (Aeronautical Decision Making) techniques.

Cockpit Organization

It is essential that you are organized while flying. The last things you need are unnecessary distractions. For example, during your cross country flight where will you keep your Navigation log and chart? Also, many students like to have a memory card to reference in flight for the various maneuvers. One way to keep such items organized and secure where you can easily see them is on a kneeboard. It will not only help you to be more organized but will provide a place to copy AWOS/ATIS information or other data when receiving ATC Radar Services. Though certainly not required, we recommend that you obtain a kneeboard that works well for you.

FAA Special Emphasis Areas

You need to become very familiar with the FAA emphasis items listed near the front of the ACS (Airman Certification Standards) booklet. You WILL be asked about them on your practical test. Your flight instructor will cover these items in great detail throughout your training.