FLY
AVIATION

Training aid only, not flight instruction. Review it with your CFI and get their approval before you use it in training or in the airplane. Check every number against the POH and current FAA sources. Last reviewed Nov 7, 2026.

PRIVATE PILOT MANEUVERS

Private pilot · Checkride maneuvers · Cherokee 140

HOW TO USE THIS GUIDE

One page per family of maneuvers, in the order the ACS lists them. Learn the flow on the ground, fly it with your CFI, then check yourself against the standard.

- **Standards come from the FAA Private Pilot – Airplane ACS (FAA-S-ACS-6C).** They are written in knots. We give mph beside them because our airspeed indicator and our numbers are in mph (1 kt = 1.15 mph, so ±10 kt is about ±12 mph).
- **Speeds are from the 1975 Cherokee Cruiser POM**, in mph: rotate about 60, Vx 78, Vy 89, best glide 80, Vfe 115, Va 129 at gross, Vno 140. Approach is 85 minus 3 per notch of flap, about 76 with flaps 40.
- **Our pattern numbers:** 100 on downwind, 90 abeam with flaps 10, 80 on base with flaps 25, 75 on final with flaps 40, 70 over the fence.
- **The ACS and your CFI win.** Standards change between ACS editions and your examiner may brief a task differently. Check the current ACS before the checkride.
- The memory items for emergencies and the pattern are on the Cherokee Flow Cards. Pattern legs at our field are on the Runway 22 and Runway 4 sheets.

Cherokee habits that apply to every maneuver

- **Throttle in over at least 3 seconds** (panel placard), for takeoff, go-around and stall recovery alike.
- **Electric fuel pump ON** for takeoff, landing, low-altitude work and tank switches. Fullest tank selected.
- **Clearing turns before every airwork maneuver.** The low wing hides traffic below you; lift a wing and look.
- **Stabilator:** light and sensitive in pitch. Small inputs, then trim. The trim wheel is on the floor between the seats.
- **Manual flaps:** fast. Each notch changes pitch, so retrim after each one. Ease the lever down; it springs to UP.

TAKEOFFS AND LANDINGS

Most of the checkride, and most of your flying, is here. Fly every one of these as a stabilized maneuver with a clear go-around point.

Normal takeoff and climb

Purpose: a safe, repeatable departure at Vy.

1. Before takeoff check done, fuel pump ON, fullest tank, flaps up, trim slightly aft of neutral.
2. Line up on the centerline. Check the heading indicator against the runway.
3. Throttle to full over 3 seconds. Check RPM (2,275–2,425 static) and oil pressure early in the roll.
4. Right rudder to hold the centerline.
5. About 60 mph: ease back pressure and let it fly off.
6. Accelerate to **89 mph (Vy)** and climb. At 1,000 ft AGL: pump OFF, check fuel pressure.
7. **Common errors:** over-rotating and dragging it off early; letting the nose wander left; forgetting the pump.
8. **ACS standard:** maintain Vy **+10/–5 kt** (about +12/–6 mph) during the climb. Stay on the centerline and the extended centerline.

Normal approach and landing

Purpose: a stabilized approach to a touchdown at a chosen point.

1. Downwind at 100 mph, landing check done (fuel, pump, mixture, belts, light).
2. Abeam the touchdown point: carb heat as briefed, power about 1,500–2,000, flaps 10, 90 mph.
3. Base: flaps 25, 80 mph. Final: flaps 40, 75 mph. Stable by 300 ft AGL or go around.
4. Over the fence at 70. Aim point steady in the windshield.
5. Flare, hold the nose off, touch down on the mains at 55–65, then lower the nose.
6. **Common errors:** too fast on final and floating; flaring high because you sit lower than in a 172; no correction for wind drift.
7. **ACS standard:** approach speed **+10/–5 kt** (with gust factor if any); touch down at a proper pitch attitude **within 400 ft beyond or on a specified point**, on the centerline.
8. **Our airplane notes:** low wing ground effect means extra speed turns into a long float. Fly the numbers.

Crosswind takeoff and landing

Purpose: keep the airplane on the centerline with no side load on the gear.

1. Takeoff: full aileron into the wind at the start of the roll. Ease it out as speed builds. Rudder for the centerline.
2. Lift off a little firmer so it doesn't settle back and skip sideways. Crab to track the extended centerline.
3. Landing: crab on final, then switch to wing low into the wind and opposite rudder before the flare.

4. Touch down on the upwind main first, then the other main, then the nose. Keep adding aileron into the wind as you slow.
5. **Common errors:** landing in a crab; relaxing the aileron on the rollout.
6. **ACS standard:** the same as the normal takeoff and landing, with no drift and the longitudinal axis aligned with the runway at touchdown.
7. **Our airplane notes:** the low wing has less tip clearance than a 172. Use only the bank you need. In gusty or strong crosswinds, consider flaps 25 and a little more speed. We have no crosswind runway at KONZ.

Short-field takeoff and maximum performance climb

Purpose: the shortest ground roll and the steepest climb over a 50 ft obstacle.

1. Flaps **25° (second notch)**. Line up at the very start of the runway.
2. Hold the brakes, full power, check the gauges, release.
3. Rotate at **55–60 mph**. Climb at **78 mph (Vx)** until clear of the obstacle.
4. Then lower the nose to **89 (Vy)** and raise the flaps one notch at a time.
5. **Common errors:** rolling forward before full power; pulling up before rotate speed; dumping all the flaps at once.
6. **ACS standard:** Vx **+10/–5 kt** until the obstacle is cleared or 50 ft AGL, then Vy **+10/–5 kt**.

Short-field approach and landing

Purpose: land over an obstacle and stop in the shortest distance.

1. Full flaps, stable early, at the POM approach speed (about 76 mph with flaps 40). Exact, not "about."
2. Power controls the glidepath; pitch controls the speed.
3. Touch down at the point, at minimum speed, with little or no float.
4. Flaps UP, back pressure, maximum braking without skidding.
5. **Common errors:** too fast and floating past the point; chopping power too high and dropping it in.
6. **ACS standard:** approach speed **+10/–5 kt**; touch down **within 200 ft beyond or on a specified point**, with no side drift and on the centerline.

Soft-field takeoff and climb

Purpose: get the weight off the wheels as early as possible on grass, mud or snow.

1. Flaps 25°. Keep moving from the taxi onto the runway; don't stop.
2. Yoke full back to lift the nosewheel. Full power smoothly.
3. Lift off at the lowest possible speed. **Level off in ground effect** and accelerate.
4. Climb at Vx (obstacle) or Vy. Raise the flaps slowly.
5. **Common errors:** climbing out of ground effect too slow; letting the nose drop and the nosewheel dig in.
6. **ACS standard:** Vx or Vy **+10/–5 kt** during the climb.

Soft-field approach and landing

Purpose: touch down as softly and slowly as possible and keep rolling.

1. Flaps 25–40, normal approach speed.
2. Carry a little power into the flare. Touch down on the mains at minimum speed.
3. Hold the nosewheel off with full back pressure. Keep moving; no hard braking.
4. **Common errors:** chopping power and dropping it on; letting the nose down early.
5. **ACS standard:** approach speed **+10/–5 kt**; touch down softly at minimum speed, with no drift, on the centerline.

Forward slip to a landing

Purpose: lose altitude fast without gaining speed, for example with no flaps or when high on final.

1. Aileron into the wind (or either side if calm), opposite rudder to keep the track straight.
2. Lower the nose to hold the approach speed.
3. Take the slip out smoothly before the flare and land normally.
4. **Common errors:** letting the speed build; not aligning before touchdown.
5. **ACS standard:** keep the ground track on the centerline at a speed that gives minimum float; touch down **within 400 ft beyond or on a specified point**.
6. **Our airplane notes:** avoid long slips on a low tank: the outlet can unport. Check the POM for any flap limits in a slip.

Go-around / rejected landing

Purpose: abandon an approach early and safely.

1. Full power over 3 seconds, carb heat OFF, right rudder.
2. Pitch to stop the descent, about 75–80 mph.
3. Flaps from 40 to 25 right away, then 10, then up as speed builds, retrimming each time.
4. Climb at **89 (Vy)**, move to the side of the runway to see traffic, and announce it.
5. **Common errors:** deciding late; raising all the flaps at once; forgetting the carb heat.
6. **ACS standard:** Vx or Vy **+10/–5 kt** in the climb; retract flaps after a positive rate; stay clear of obstacles and traffic.

PERFORMANCE AND GROUND REFERENCE MANEUVERS

These build coordination and wind correction. Do them where a forced landing is possible and away from people and buildings.

Steep turns

Purpose: smooth, coordinated control at high bank and load factor.

1. Two clearing turns. Pick a landmark on the entry heading. We use at least **1,500 ft AGL**.
2. Speed at or below Va (129 mph at gross, lower when light). Cruise around 100–110 mph works well.

3. Roll into **45°**. Add back pressure as you pass 30°, and about 100 RPM.
4. Hold the bank, altitude and ball. Eyes outside, glance at the altimeter.
5. Roll out on the entry heading, leading by about half the bank (20°). Reverse into the other direction if asked.
6. **Common errors:** ballooning on roll-in; losing altitude as the bank creeps past 45°; rolling out late.
7. **ACS standard:** bank **45° ±5°**; altitude **±100 ft**; airspeed **±10 kt** (±12 mph); roll out on the entry heading **±10°**.
8. **Our airplane notes:** the stabilator gets heavy quickly; trim a little during the turn if needed.

Rectangular course

Purpose: wind correction around a field, the same as a traffic pattern.

1. Pick a field with clear edges. Enter at 45° to the downwind side at **600–1,000 ft AGL**.
2. Fly parallel to each side, a constant distance out, correcting for drift on every leg.
3. Steepest bank where groundspeed is highest (turning from downwind), shallowest from upwind.
4. **Common errors:** drifting toward or away from the field; uncoordinated turns; chasing altitude.
5. **ACS standard:** altitude **±100 ft**; airspeed **±10 kt**; even distance from the field; coordinated turns.

S-turns across a road

Purpose: a series of equal half-circles across a straight line, correcting for wind.

1. Road perpendicular to the wind. Enter downwind at **600–1,000 ft AGL**.
2. Steepest bank as you cross the road downwind, shallowest crossing upwind.
3. Wings level exactly as you cross the road. Equal semicircles both sides.
4. **Common errors:** unequal halves; crossing the road in a bank.
5. **ACS standard:** altitude **±100 ft**; airspeed **±10 kt**; even radius and wind correction.

Turns around a point

Purpose: a constant-radius circle around a ground point in wind.

1. Pick a clear point. Enter downwind at **600–1,000 ft AGL**.
2. Steepest bank when going downwind (highest groundspeed), shallowest upwind.
3. Complete at least two turns, exit on the entry heading.
4. **Common errors:** letting the radius shrink downwind; looking only at the point and not for traffic.
5. **ACS standard:** altitude **±100 ft**; airspeed **±10 kt**; constant radius around the point.
6. **Our airplane notes:** the low wing blocks your view of the point in turns to the left side. Pick a point you can see past the wing, and lift it to clear.

SLOW FLIGHT AND STALLS

Recognize the airplane at the edge of the envelope and recover with the least altitude loss. Pick an entry altitude so you finish **no lower than 1,500 ft AGL**.

Slow flight

Purpose: control at speeds where more pitch or less power would set off the stall warning.

1. Clearing turns. Carb heat ON, power back to about 1,500, hold altitude as speed decays.
2. Flaps as briefed, each notch below 115 mph.
3. Pitch to just above the stall warning. Power to hold altitude.
4. Fly straight, turns, climbs and descents as assigned. Right rudder as needed.
5. Recover: full power, carb heat OFF, pitch to level, flaps up in stages.
6. **Common errors:** setting off the stall horn; chasing altitude with pitch; losing the ball.
7. **ACS standard:** altitude **±100 ft**; heading **±10°**; airspeed **+10/–0 kt** (+12/–0 mph); bank **±10°** in turns; no stall warning.

Power-off stall

Purpose: the stall you might meet on approach.

1. Clearing turns. Landing configuration: carb heat ON, flaps as briefed, stable descent at 75.
2. Power idle. Pitch up smoothly to the stall: buffet, nose drop or full aft yoke.
3. Recover: reduce the angle of attack first, then full power, carb heat OFF, wings level.
4. Flaps to 25, then up in stages as you climb at Vx, then Vy.
5. **Common errors:** adding power before unloading the wing; secondary stall from pulling too hard.
6. **ACS standard:** heading **±10°** straight, or bank up to **20° ±10°** in a turn; recover at the stall; retract flaps and return to the assigned altitude, heading and airspeed.

Power-on stall

Purpose: the departure stall.

1. Clearing turns. Slow to about liftoff speed (60–65), then set takeoff or departure power (at least 65%).
2. Pitch up smoothly to the stall. Lots of right rudder.
3. Recover: reduce angle of attack, wings level, ball centered, full power. Climb at Vx, then Vy.
4. **Common errors:** uncoordinated at the break, which leads to a spin entry; too timid a pitch-up.
5. **ACS standard:** heading **±10°** straight, or bank up to **20° ±10°** in a turn; recover with minimum altitude loss.
6. **Our airplane notes:** the stall warning (light and horn) comes on 5–10 mph above the stall.

Spin awareness

Purpose: knowledge, not a flown task in the private ACS.

- A spin needs a stall plus yaw. Coordinated stalls rarely spin; uncoordinated ones can.

- Recovery (PARE): Power idle, Ailerons neutral, Rudder full opposite the rotation, Elevator forward briskly. Neutral rudder when it stops, then pull out smoothly.
- Spins are prohibited in the normal category. Check the POM for what is approved in the utility category.

EMERGENCY OPERATIONS

Fly the airplane first. Most Cherokee engine stoppages are fuel: the wrong tank, an empty tank or carb ice.

Emergency descent

Purpose: get down fast, for example for fire or smoke.

1. Throttle idle, carb heat ON.
2. Bank 30–45° into a descending spiral to keep the load low and see below.
3. Hold airspeed below 140 (Vno), lower in turbulence. Flaps up unless the POM says otherwise.
4. Recover early: wings level, power, level off at the assigned altitude.
5. **ACS standard:** airspeed **+0/–10 kt** of the speed you chose (+0/–12 mph); level off at the specified altitude **±100 ft**; positive load factor throughout.

Emergency approach and landing (simulated)

Purpose: a power-off landing to a chosen field.

1. **80 mph (best glide)**, trim. Pick a field into the wind within gliding distance.
2. Restart flow: fuel selector other tank, pump ON, mixture RICH, carb heat ON, primer locked, mags L/R/BOTH.
3. Plan the approach: about 1,000 ft AGL on downwind for your field. Widen, slip or add flaps to lose extra height.
4. Simulated securing: mixture, fuel, mags, master as briefed. Door unlatched before touchdown. Declare on 121.5 or ATC, squawk 7700 (say it, don't set it in training unless told).
5. **Common errors:** turning toward a field that's out of reach; slow to set best glide; overshooting.
6. **ACS standard:** best glide **±10 kt** (±12 mph); a field within gliding distance; checklist from memory; the approach planned to land safely.

Systems and equipment malfunctions

Purpose: know what to do for each failure the Cherokee can have.

- Engine roughness or carb ice, loss of oil pressure, loss of fuel pressure, alternator failure, vacuum failure, door open in flight, electrical fire, engine fire.
- The memory items for each are on the Cherokee Flow Cards and in the Cherokee 140 Transition Guide.
- **ACS standard:** describe or simulate the right action for the malfunctions the examiner chooses, using the checklist.

BASIC INSTRUMENT MANEUVERS

Flown with a view-limiting device. The goal is to keep the airplane under control and get out of cloud you shouldn't be in.

Maneuver	What you do	ACS standard
Straight and level	Attitude on the horizon, crosscheck altimeter, heading and airspeed	Altitude **±200 ft**, heading **±20°**, airspeed **±20 kt**
Constant-airspeed climbs	Set climb power, pitch for the speed, level off on time	Heading **±20°**, airspeed **±20 kt**, level off **±200 ft**
Constant-airspeed descents	Reduce power, pitch for the speed, level off on time	Heading **±20°**, airspeed **±20 kt**, level off **±200 ft**
Turns to headings	Standard-rate turns, lead the rollout by half the bank	Altitude **±200 ft**, airspeed **±20 kt**, bank **±10°**, rollout **±20°**
Unusual attitude recovery	Nose high: power up, nose down, wings level. Nose low: power idle, wings level, then ease back	Prompt recovery to level flight without exceeding limits
Radio and navigation aids	Follow ATC headings and use the GPS or VOR to get to clear air	Follow instructions with the standards above

- **Our airplane notes:** if the vacuum fails, the attitude and heading indicators fail with it. Use the turn coordinator, the compass and any backup attitude source. The VAC light warns you.

NAVIGATION

On the checkride you start your planned cross-country, then the examiner gives you a diversion. The planning is in the Cross-Country Planning Aid.

Pilotage and dead reckoning

1. Fly the planned headings. Note the time over each checkpoint.
2. Compare actual groundspeed with the plan and revise ETA and fuel.
3. Correct for drift by comparing your ground track with the course line.
4. **ACS standard:** altitude **±200 ft**; heading **±15°**; arrive at checkpoints close to your ETA and correct for errors.

Diversion

1. Pick the alternate. **Turn toward it right away** (estimate the heading by eye or with a plotter).
2. Note the time. Then work out distance, time and fuel. Tell ATC or FSS.
3. **ACS standard:** a prompt decision; heading, groundspeed, ETA and fuel worked out; altitude **±200 ft** and heading **±15°** on the way.

Lost procedures

1. **Climb, Communicate, Confess, Comply, Conserve.**

2. Hold a heading; don't wander. Look for a big landmark: Lake Erie, the Detroit River, a major highway.
3. Use the GPS or a VOR radial. Ask ATC for help, or 121.5.
4. **ACS standard:** select a course of action that gets you oriented, using all available help.

NIGHT OPERATIONS

The ACS tests night operations as knowledge, though your training includes night flights.

- **Night vision:** eyes take about 30 minutes to adapt. Use dim red or white light; look off-center at faint objects.
- **Illusions:** black-hole approaches over water or dark ground (Lake Erie side) make you feel high when you're low. Fly the PAPI where it works, or a steady descent rate.
- **Equipment:** position lights, anticollision lights, landing light, a flashlight with spare batteries.
- **Our airplane notes:** an inoperative strobe or anticollision light means day VFR only. Check the squawk list.
- **Currency to carry passengers at night:** 3 takeoffs and landings to a full stop in the last 90 days, at night, in the same category and class (14 CFR 61.57).

SOURCES

- FAA Private Pilot for Airplane Category Airman Certification Standards, FAA-S-ACS-6C: tasks and standards.
- FAA Airplane Flying Handbook, FAA-H-8083-3C: technique for each maneuver.
- Piper PA-28-140 Cherokee Cruiser Pilot's Operating Manual 761 555: speeds, flap settings and procedures.
- Confirm every standard and number with your CFI and the current ACS before the checkride.

Training aid only, not flight instruction. The POH in the airplane and its placards win: check every number against them, and fly with your CFI.