Commercial Pilot Maneuvers | Cessna 172-M/N

Numbers/instructions in **bold** are for Cessna 172-N model. Always reference POH, Airplane Flying Handbook and ACS for accuracy.

	LAZY EIGHTS		**EIGHTS ON PYLONS**
OBJECTIVE	To develop the pilot's feel for varying control forces, and the ability to plan and remain oriented while maneuvering the plane with positive accurate control.	OBJECTIVE	This training maneuver involves flying the airplane in circular paths, alternately left and right, in the form of a figure 8 around two selected pylons. In this case no attempt is made to maintain a constant turn radius. Instead, the plane is flown at such an altitude and airspeed that the line parallel to the aircraft's lateral axis and extending from the pilot's eye appears to pivot on each of the pylons.
INSTRUCTIONS	1. Clearing turns 2. Choose entry heading and altitude 3. Establish 2200 - 2300 RPM 4. Begin slowly pitching up and banking to obtain maximum pitch up and approximately 15° bank at the 45° point 5. Passing the 45° point, bank slowly increasing to approximately 30°, pitch decreasing, passing through level flight attitude at the 90° point 6. Passing 90° point, both bank and pitch decreasing to maximum pitch down and approximately 15° bank at the 135° point 7. Passing 135° point, bank still decreasing while adjusting pitch to arrive at 180° point with 0° pitch and 0° bank at the entry altitude and entry airspeed 8. Without stopping, perform maneuver in opposite direction *Note: keep the airplane coordinated with the rudder at all times for this maneuver to work out smoothly*	INSTRUCTIONS How to calculate pivotal altitude: In knots: Groundspeed, squared, divided by 11.3 In MPH: Groundspeed squared, divided by 15 Example: 100 kts GS x 100 ÷ 885 AGL	1. Clearing turns 2. Establish 2200 - 2300 RPM 3. Select suitable pylons perpendicular to wind line in unpopulated areas with an emergency landing site within glide distance. (Cross roads work well) 4. Enter at 45° to downwind at pivotal altitude 5. Abeam first pylon bank toward the pylon 6. Maintain correct lateral axis position (as if a string was tied from the pylon to your shoulder) *Pylon ahead – push controls forward- reduce bank angle* *Pylon rearward – pull back on controls – increase bank angle* 7. After completing first pylon allow 3-5 seconds of straight and level. Once abeam second pylon, repeat at second pylon 8. After completing turn around second pylon, depart on entry heading
	STEEP SPIRAL		**CHANDELLE**
OBJECTIVE	Perform a continuous gliding turn, during which a constant radius around a point on the ground is maintained similar to turns around a point. The radius should be such that the steepest bank will not exceed 60°. This maneuver will improve pilot techniques for power-off turns, wind drift control, planning, orientation and division of attention.	OBJECTIVE	This maneuver is a climbing turn beginning from approximately straight-and-level flight, and ending at the completion of 180° turn in a wings-level, nose-high attitude at the minimum controllable airspeed. The maneuver demands that the maximum flight performance of the aircraft be obtained; that is the plane should gain the most altitude possible for the given degree of bank and power setting without stalling.
INSTRUCTIONS	1. Clearing turns 2. Select ground reference point and altitude sufficient to continue through a series of at least 3 - 360° turns 3. Carburetor heat on 4. Abeam reference point, establish power off gliding turn at best glide speed 80 mph/ **65 kts** 5. Maintain best glid and constant turn radius about reference point not to exceed 60° angle of bank 6. Clear engine after each turn 7. Recover at or above 1,500' AGL on entry heading	INSTRUCTIONS	1. Clearing turns 2. Power to 2300 RPM 3. Simultaneously roll into an immediate 30° bank in either direction while smoothly beginning to pitch up and also applying full power 4. Continue to maximum pitch up (nose approximately 2-3 inches above the horizon) until reaching 90° of turn 5. After 90° point of turn, smoothly begin reducing bank while maintaining pitch 6. At 180°, wings level at approximately 5 mph/kts above stall speed 7. Recover to cruise while maintaining final altitude

			Note: rudder must remain coordinated at all times

	POWER OFF 180^{o} ACCURACY LANDING		**STEEP TURNS**
OBJECTIVE	This type of approach and landing involves the use of techniques to further develop judgment in estimating distances and glide ratios without power available in order to touchdown on a preselected landing spot.	OBJECTIVE	Steep turns is a performance maneuver that teaches the pilot smoothness, coordination, orientation, division of attention, and control techniques necessary for maximum performance turns. Bank angles of 50° are considered "steep" for the commercial pilot standards.
INSTRUCTIONS *How to calculate gust factor:* *If winds are reporting "20 knots, gusting 30", take the difference between the two and divide in half.* *30-20= 10÷2=5* *Add gust factor to final approach speed.*	1. Approach checklist completed before entering pattern 2. Reduce power on downwind to 2300 RPM 3. Midfield, perform landing checklist 4. Specify touchdown point on downwind 5. Abeam threshold, carb heat on, power idle, establish best glide speed 80 mph/**65 kts** 6. Trim as needed (two big nose up swipes on the trim wheel roughly hold best glide) 7. Turn base at pilot's discretion based on altitude and wind conditions, flaps as necessary 8. Adjust pitch, flaps, and airspeed as necessary to reach the desired landing spot 9. Flare airplane so that main gear contacts the runway first 10. Maintain directional control and lower nose wheel before braking	INSTRUCTIONS *Tip: do not stare at your instruments. This maneuver requires your eyes to stay outside and dart back inside for quick peeks at the instruments. After rolling into the bank, find a bug or spot on the windshield that meets the horizon and cause that bug to "scrape" the horizon all the way around. If they bug stays on the horizon, you don't lose altitude!*	1. Clearing turns 2. Choose an altitude (preferably 3,000' MSL or higher) 3. Choose a heading and a prominent point outside of the plane (i.e. a North/South road) 4. Enter at airspeed 100 mph **(90 kts)**. Approximately 2200 rpm. 5. Smoothly turn into a 50^{o} bank while increasing back pressure to compensate for loss of vertical lift. 6. Fly a 360^{o} turn 7. Approximately 5-10^{o} before your specified heading or shortly before your specified outside reference, smoothly lead the turn 8. Roll out and decrease back pressure simultaneously so that you roll out precisely on your heading, altitude, and airspeed as when you started. 9. Immediately perform a steep turn in the opposite direction *Note: you can add approximately 100 rpm of power as you bank into the turn to help compensate for loss of lift. Another technique is to use trim to your advantage.*

	ACCELERATED STALL
OBJECTIVE	Demonstrate and determine stall characteristics of the airplane and experience stalls at speeds greater than the +1G stall speed, and develop the ability to instinctively recover at the onset of such stalls.
INSTRUCTIONS	1. Clearing turns 2. Perform the maneuver no lower than 1500' AGL (Preferably 3000' MSL or higher in the RCR area) 3. Set power to 1500 RPM to slow to 60-70 on the airspeed to simulate rotation speed 4. Flaps 10^{o} (if specified) 5. Full power and pitch up to approximately 20^{o} smoothly and simultaneously while turning (approximately 45^{o} bank) 6. Coordinate with rudder pressure 7. Recognize and announce symptoms of approaching stall 8. Stall the airplane to first indication **Recover** 1. Release backpressure and slowly lower nose to build airspeed, apply rudder pressure opposite to wing drop (if required), and level wings 2. As airspeed increases in the green arc, smoothly pitch up for Vx or Vy and establish positive rate of climb 3. Level off and recover to cruise

Study Resources:

C172-M POH: https://mentoneflyingclub.org/aircraft/N12874POH.pdf

C172-N POH: https://mentoneflyingclub.org/wp-content/uploads/2019/06/N6091D_POH.pdf

Commercial Pilot ACS: https://www.faa.gov/training_testing/testing/acs/media/commercial_airplane_acs_change_1.pdf

Airplane Flying Handbook: https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/airplane_handbook/

Check ACS for additional maneuvers repeated from the Private Pilot checkride