MANUEVER MANUAL
CESSNA 172 N N738EH

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GLASS COCKPIT AVIATION

Please refer to ACS for all Standards listed for each maneuver

POWER-ON STALL

Objective: Recognize and recover from a stall in the Takeoff/Departure configuration

Setup:

1. Pick an appropriate outside visual reference point to fly to.
2. Perform the **Pre-Maneuver Checklist**
3. Set appropriate heading and altitude (use heading bug)

Entry:

1. Reduce power to 1700 RPM
2. Turn on Carburetor Heat
3. Increase back pressure as necessary to maintain altitude as airspeed decreases.
4. Adjust trim to relieve control pressures
5. Maintain wings level or as otherwise specified by Instructor or Evaluator
6. Increase back pressure until airspeed reaches 60 KIAS
7. Apply maximum power (or as appropriate - no less than 65% BHP and gradually increase back pressure
8. Turn off Carburetor Heat
9. Continue to increase back pressure to reduce airspeed
10. Maintain coordination with rudder pedals
11. Recognize the indications of a full stall

Recovery:

1. Immediately pitch down until the nose is slightly below the horizon and all stall indications cease
2. Verify max power
3. Verify increasing airspeed
4. Accelerate to 60 KIAS
5. Pitch up to maintain VX: 59 KIAS
6. Verify positive rate of climb
7. Accelerate to VY: 71 KIAS
8. Verify positive rate
9. **Cruise Checklist**

Standards:

1. Maintain a specified heading, ±10° if in straight flight; maintain a specified angle of bank not to exceed 20°, ±10°, if in turning flight, while inducing the stall.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

POWER-OFF STALL

Objective: Recognize and recover from a stall in the Landing/Approach configuration

Setup:

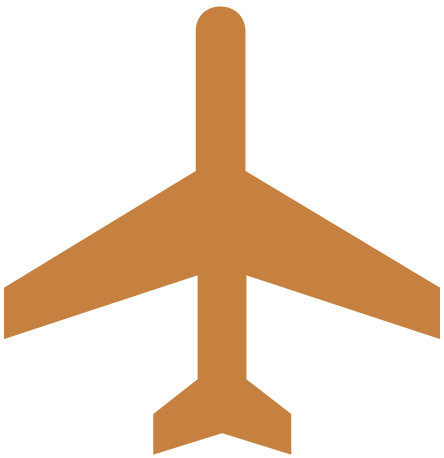
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **Pre-Maneuver Checklist**
3. Set appropriate heading and altitude (use heading bug)

Entry:

1. Reduce power to 1700 RPM
2. Turn on Carburetor heat
3. Increase back pressure as necessary to maintain altitude as airspeed decreases.
4. Below 85 KIAS, apply first notch of flap (10 degrees)
5. Adjust trim to relieve control pressures
6. Below 85 KIAS, progressively move flaps to full (30 degrees)
7. Maintain wings level or as otherwise specified by Instructor or Evaluator
8. Increase back pressure until airspeed reaches 70 KIAS
9. Lower the nose to simulate the approach (approximately 65 KIAS and 500 ft/min descent)
10. After established, pull power to idle and gradually increase back pressure to the horizon
11. Then continue to increase back pressure to reduce airspeed
12. Maintain coordination with rudder pedals
13. Recognize the indications of a full stall

Recovery:

1. Guide a pitch down to reduce angle of attack until all stall indications cease
2. Apply max power (Simultaneous with step 1 of recovery)
3. Move the flap to 20 degrees
4. Turn off Carburetor Heat
5. Verify increasing airspeed
6. Accelerate to 60 KIAS
7. Pitch up to maintain VX: 59 KIAS
8. Verify positive rate of climb
9. Move the flap to 10 degrees
10. Accelerate to VY: 71 KIAS
11. Verify positive rate
12. Flaps up
13. **Cruise Checklist**



Standards:

1. Maintain a specified heading, ±10° if in straight flight; maintain a specified angle of bank not to exceed 20°, ±10°, if in turning flight, while inducing the stall.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

SLOW FLIGHT

Objective: Maintain positive aircraft control at the speed at which any increase in angle of attack, increase in load factor or reduction in power would result in a stall warning or aerodynamic buffet.

Setup:

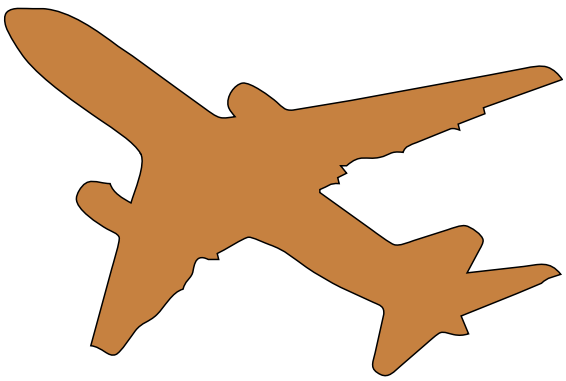
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **PRE-MANEUVER CHECKLIST**
3. Set appropriate heading and altitude (use heading bug)

Entry:

1. Reduce power to 1700 RPM
2. Turn on Carburetor Heat
3. Increase back pressure as necessary to maintain altitude as airspeed decreases.
4. Below 110 KIAS, apply first notch of flap (10 degrees)
5. Adjust trim to relieve control pressures
6. Below 85 KIAS, progressively move flaps to full (30 degrees)
7. Increase back pressure until airspeed reaches 60 KIAS
8. Gradually increase power to approximately 2100 RPM
9. Turn off Carburetor Heat
10. Gradually increase back pressure until airspeed is 55 KIAS
11. Adjust trim to relieve control pressures
12. Adjust pitch, power, and bank to maintain desired airspeed, altitude, and heading
13. Continue to fly at 55 KIAS, or the minimum speed to avoid a stall

Recovery:

1. Apply max power
2. Bring the flap to 2nd notch (20 degrees)
3. Apply forward pressure and adjust the trim
4. Maintain altitude
5. Verify increasing airspeed to 59 KIAS
6. Bring the flap to 1st notch (10 degrees)
7. Verify increasing airspeed to 71 KIAS
8. Bring the flaps up
9. **Cruise Checklist**



Standards:

1. Maintain the specified altitude, ±100 feet; specified heading, ±10°; airspeed +10/-0 knots; and specified angle of bank, ±10°.
2. Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL

STEEP TURNS

Objective: Steep turns develop smoothness, coordination, orientation, division of attention, and control techniques necessary for the execution of maximum performance turns.

Setup:

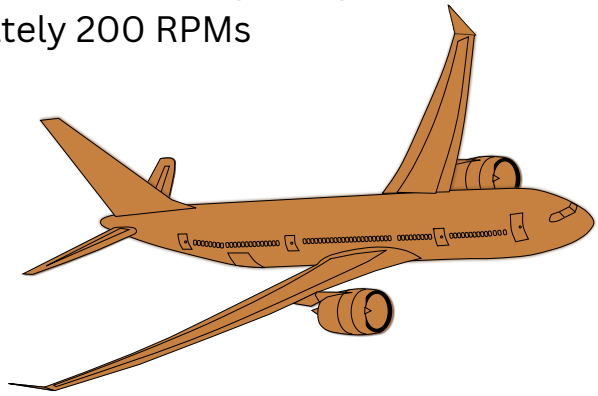
1. Pick an appropriate outside visual reference point to fly to
2. Perform the **PRE-MANEUVER CHECKLIST**
3. Set appropriate heading and altitude (use heading bug)

Entry:

1. Maintain an airspeed below VA/VO for flight (2300 - 97 KIAS; 1950 - 89 KIAS; 1600 - 80 KIAS)
2. Establish recommended airspeed below VA
3. Begin a gradual left or right turn to 45 degrees bank
4. When passing 30 degrees of bank, gradually increase back pressure to maintain altitude
5. Increase power by approximately 200 RPMs from where it was set to maintain airspeed
6. Adjust pitch, power, and bank to maintain altitude and airspeed

Recovery:

1. Begin rolling out 20 degrees before entry heading
2. Gradually decrease your pitch to prevent gaining altitude
3. Reduce power by approximately 200 RPMs
4. Perform **Cruise Checklist**



Standards:

1. Clear the area.
2. Establish the manufacturer's recommended airspeed or, if one is not available, a safe airspeed not to exceed VA.
3. Roll into a coordinated 360° steep turn with approximately a 45° bank.
4. Perform the Task in the opposite direction, as specified by the evaluator.
5. Maintain the entry altitude ±100 feet, airspeed ±10 knots, bank ±5°, and roll out on the entry heading ±10°.

EMERGENCY DESCENT

Objective: The objective is to descend the airplane as soon and as rapidly as possible while not exceeding any structural limitations of the airplane.

Setup:

1. Pick a target altitude above 2,500 feet AGL
2. Perform the **PRE-MANEUVER CHECKLIST**

Entry:

1. Reduce power to idle
2. Begin a bank of 30-45 degrees in the direction of choice
3. Pitch to increase airspeed (not to exceed Vne)
4. Clear the engine every 1000 feet with a short application of power

Recovery:

1. When approaching target altitude, return to level attitude
2. Increase power setting
3. Verify engine instruments are in the green
4. **Cruise Checklist**

Standards:

1. Clear the area.
2. Establish and maintain the appropriate airspeed and configuration appropriate to the scenario specified by the evaluator and as covered in POH/AFM for the emergency descent.
3. Demonstrate orientation, division of attention and proper planning.
4. Use bank angle between 30° and 45° to maintain positive load factors during the descent.
5. Complete the appropriate checklist.

NORMAL APPROACH AND LANDING

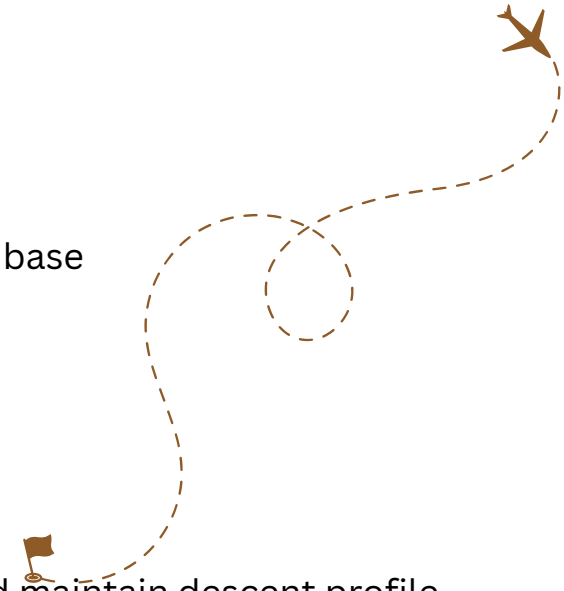
Objective: Set up a stabilized approach and landing.

Setup:

1. Figure out how to enter the traffic pattern
2. Go over the **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Landing Checklist is complete

Approach:

1. Have power set to 2300 RPM and maintain approximately 90 KIAS
2. Once abeam the numbers, pull power to 1500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to 1st notch of flap
5. Let the pitch come down to maintain 85 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to 2nd notch of flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to 3rd notch of flap and maintain 55-56 KIAS
12. Trim to relieve pressure



Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 55 KIAS
3. Apply appropriate wind correction with aileron and rudder
4. Roundout, flare, and touchdown
5. Safely exit the runway
6. Perform **After Landing Checklist**

Standards:

1. Touch down at a proper pitch attitude, within 400 feet beyond or on the specified point, with no side drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.

SHORT FIELD LANDING

Objective: Set up a stabilized approach and landing, land with obstacles on the approach end of the runway, and land in a short distance while maximizing the landing surface.

Setup:

1. Figure out how to enter the traffic pattern
2. Go over the **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Landing Checklist is complete

Approach:

1. Have power set to 2300 RPM and maintain approximately 90 KIAS
2. Once abeam the numbers, pull power to 1500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to 1st notch of flap
5. Let the pitch come down to maintain 85 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to 2nd notch of flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to 3rd notch of flap and maintain 55-56 KIAS
12. Trim to relieve pressure

Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 55 KIAS
3. Roundout, flare and touchdown
4. Apply appropriate wind correction with aileron and rudder
5. Minimize the float
6. After touchdown, bring flaps up
7. Apply maximum braking
8. Pull the yoke all the way back for aerodynamic braking
9. Safely exit the runway
10. Perform **After Landing Checklist**

Standards:

1. Touch down at a proper pitch attitude within 200 feet beyond or on the specified point, threshold markings, or runway numbers, with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over runway centerline.

SOFT FIELD LANDING

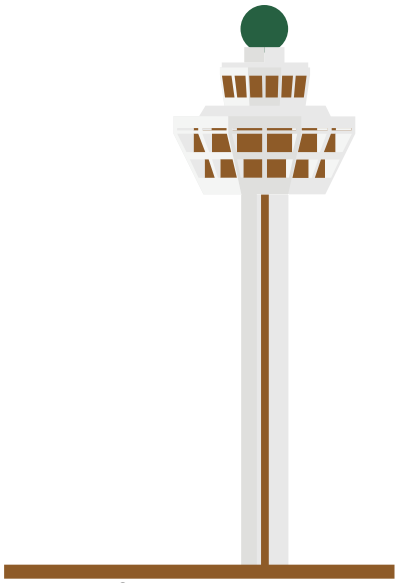
Objective: Set up a stabilized approach and landing while landing on a soft runway surface proficiently with correct inputs

Setup:

1. Figure out how to enter the traffic pattern
2. Go over **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Landing Checklist is complete

Approach:

1. Have power set to 2300 RPM and maintain approximately 90 KIAS
2. Once abeam the numbers, pull power to 1500 RPM
3. Apply back pressure to maintain altitude
4. Below 85 KIAS, lower to 1st notch of flap
5. Let the pitch come down to maintain 85 KIAS
6. Trim to relieve pressure
7. Once the numbers are 45 degrees off your tail, turn base
8. Go to 2nd notch of flap and maintain 75 KIAS
9. Trim to relieve pressure
10. Search for traffic on final and turn final
11. Go to 3rd notch of flap and maintain 55-56 KIAS
12. Trim to relieve pressure



Landing:

1. When landing is assured, bring the power to idle and maintain descent profile
2. Airspeed will naturally fall to below 55 KIAS
3. Roundout and begin to flare
4. Apply appropriate wind correction with aileron and rudder
5. Maximize the float
6. Just before touchdown, increase your RPM by approximately 100 to make touchdown as soft as possible
7. After touchdown, keep your nose off the runway until it falls onto the surface with the yoke all the way back
8. Reduce power when told to do so by the Instructor or Examiner
9. Exit the first, safest taxiway without using brakes
10. Safely exit the runway
11. Perform **After Landing Checklist**

Standards:

1. Make smooth, timely, and correct control inputs during the round out and touchdown, and, for tricycle gear airplanes, keep the nose wheel off the surface until loss of elevator effectiveness.

NORMAL TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from the runway into the air.

Before Takeoff:

1. Perform **Before Takeoff Checklist**
2. Visually confirm that the runway and final Approach areas are clear (both directions)
3. Taxi onto the runway
4. Apply appropriate wind corrections using the ailerons and elevator
5. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power
2. Check engine gauges and listen for any abnormalities
3. Verify airspeed is alive and climbing
4. When airspeed is at VR (55 KIAS), begin rotation
5. Begin pulling the yoke back smoothly until the nose wheel is off the ground and the aircraft starts to climb.
6. Maintain back pressure on the yoke.

Climb:

1. Establish and verify a positive rate of climb
2. Maintain VY: 71 KIAS
3. Relieve control pressures with trim
4. Continue to climb at VY
5. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
6. Perform **Climb Checklist**

SHORT FIELD TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from the runway into the air while using the least amount of runway and clearing any obstacles in the departure path.

Before Takeoff:

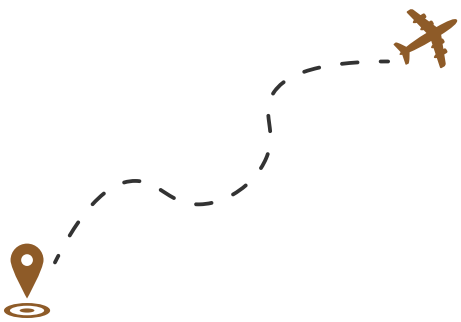
1. Perform **Before Takeoff Checklist**
2. Put flap into 1st position
3. Visually confirm that the runway and final Approach areas are clear (both directions)
4. Taxi onto the runway
5. Position the aircraft to use as much of the available runway as possible
6. Apply appropriate wind corrections using the ailerons and elevator
7. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power and hold full brakes
2. Check engine gauges and listen for any abnormalities
3. Release brakes
4. Verify airspeed is alive and climbing
5. When airspeed is at VR (55 KIAS), begin rotation
6. Begin pulling the yoke back smoothly until the nose wheel is off the ground and the aircraft starts to climb.
7. Maintain back pressure on the yoke.

Climb:

1. Establish and verify a positive rate of climb
2. Maintain VX with pitch: 59 KIAS
3. Confirm aircraft has cleared any real or simulated obstacles
4. Accelerate to VY: 71 KIAS
5. Once established at VY, bring flaps up to position 0
6. Continue to climb at VY
7. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
8. Perform **Climb Checklist**



SOFT FIELD TAKEOFF AND CLIMB

Objective: Smoothly transition the aircraft from a soft field runway into the air while keeping pressure off the nose wheel.

Before Takeoff:

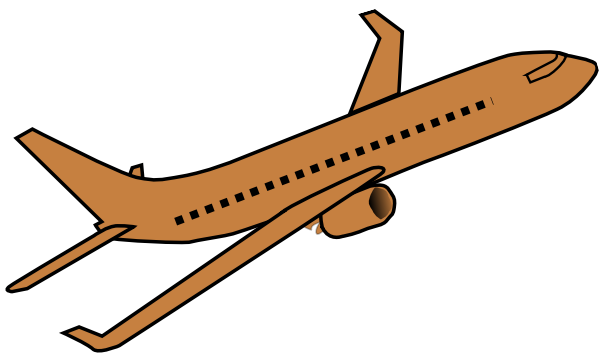
1. Perform **Before Takeoff Checklist**
2. Set flaps to 1st position before taxiing to the runway
3. Visually confirm that the runway and final Approach areas are clear (both directions)
4. Verify the yoke is held all the way back
5. Taxi onto the runway
6. Do not use any brakes, make a shallow turn onto the runway
7. Apply appropriate wind corrections using the ailerons and elevator
8. Line up on and aligned with the assigned runway centerline

Takeoff:

1. Smoothly apply full power
2. Check engine gauges and listen for any abnormalities
3. Verify airspeed is alive and climbing
4. When the nose comes off the ground, hold the nose just below the end of the runway
5. Allow the airplane to come off the ground at the minimum liftoff speed
6. Once liftoff is obtained, lower the pitch to stay in ground effect
7. Once airspeed reaches 71 KIAS, begin normal VY climb

Climb:

1. Establish and verify a positive rate of climb
2. Once established at VY, and clear of obstacles, bring flaps
3. Continue to climb at VY
4. At 700 ft AGL, turn crosswind or as otherwise directed as ATC
5. Perform Climb Checklist



TURNS AROUND A POINT

Objective: Understand and compensate for the effects of wind by flying a 360-degree constant-radius turn around a single ground-based reference point.

Setup:

1. Determine the wind direction
2. Select an appropriate feature on the ground as a reference point to fly a circular pattern
3. Select an altitude between 600 - 1000 feet AGL
4. Select a starting point 1/2 to 1 mile away from the reference point and visualize a symmetric circle around the chosen point
5. Perform the **Pre-Maneuver Checklist** (Clearing Turns, Lights On, and Mixture Rich)

Entry:

1. Configure for cruise at 2300 RPM
2. Enter the maneuver with wings level while flying downwind directly toward the Starting Point
3. When the aircraft is abeam the point, begin the turn in the chosen direction (note entry heading)
4. Fly the visualized circle around the reference point
    a. Maintain constant distance from the reference point
    b. Maintain altitude and airspeed
    c. Adjust the bank to maintain distance
5. After completing the 360-degree turn, return to wings level (on entry heading)

Recovery:

1. Turn 45 degrees away from the reference point to depart and complete the maneuver
2. Perform **Cruise Checklist**

Standards:

1. Enter at an appropriate distance from the reference point, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area.
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots.

S-TURNS

Objective: Adjust the aircraft in turns to allow the airplane's ground track to resemble two opposite but equal half-circles on each side of a selected ground-based straight-line reference.

Setup:

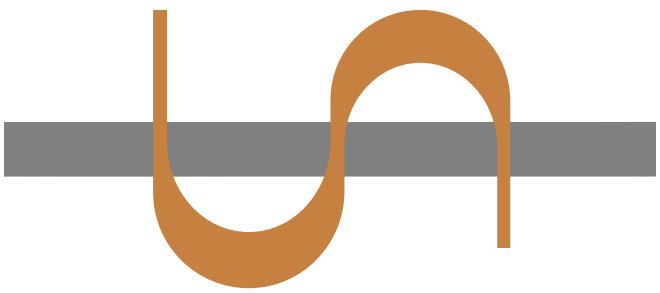
1. Determine the wind direction
2. Select an appropriate feature on the ground as a reference line to fly a S pattern (usually a long discernable road)
3. Visualize a ground track with two opposite but equal half-circles
4. Select an altitude between 600 - 1000 feet AGL
5. Perform the **Pre-Maneuver Checklist** (Clearing Turns, Lights On, and Mixture Rich)

Entry:

1. Configure for cruise at 2300 RPM
2. Enter the maneuver with wings level while flying downwind directly toward your reference line
3. When the aircraft is over the line with wings level, begin the turn in the chosen direction (note entry heading)
4. Fly the visualized first half of the circle around the reference line
    a. Maintain an equal radius with the bank based on your ground track
    b. Maintain altitude and airspeed
    c. Adjust the bank to go wings level when over the reference line
5. After completing the 180-degree turn, return to wings level (on entry heading)
6. Begin the same procedure in the other direction

Recovery:

1. Once you complete the S, go wings level and exit the maneuver
2. Perform **Crusie Checklist**



Standards:

1. Enter perpendicular to the selected reference line, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots.

RECTANGLE COURSE

Objective: This training maneuver is a maneuver in which the airplane maintains an equal distance from all sides of the selected rectangular references. The maneuver is accomplished to replicate the airport traffic pattern that an airplane typically maneuvers while landing.

Setup:

1. Determine the wind direction
2. First locate a square field, a rectangular field, or an area with suitable ground references on all four sides
3. Visualize a ground track either over or just to the side of the rectangle
4. Select an altitude between 600 - 1000 feet AGL
5. Position the aircraft at a 45-degree angle to the downwind leg to begin
6. Perform the **Pre-Maneuver Checklist** (Clearing Turns, Lights On, and Mixture Rich)

Entry:

1. Configure for cruise at 2300 RPM
2. Enter the maneuver from the 45 with wings level while flying on towards the downwind side
3. When the aircraft is close to the downwind side of the rectangle, turn and track the visualized ground track around the chosen rectangle
   a. Maintain the rectangle with the bank based on your ground track
   b. Maintain altitude and airspeed
   c. Adjust the bank and turn to go wings level when at the chosen distance from the reference line on each side of the rectangle
4. When approaching the next segment, begin the turn when the chosen reference line is abeam the aircraft
5. Repeat for each segment

Recovery:

1. Once the rectangle is completed, turn 45 degrees away from the rectangle on the downwind leg
2. Perform **Crusie Checklist**

Standards:

1. Enter at an appropriate distance from the reference point, 600 to 1,000 feet AGL at an appropriate distance from the selected reference area
2. Maintain altitude ±100 feet; maintain airspeed ±10 knots.

COMMERCIAL MANEUVERS

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Please refer to Commercial ACS and Airplane Flying Handbook for full descriptions

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STEEP SPIRAL

Objective: This is a gliding turn wherein the pilot maintains a constant radius around a surface-based reference point—similar to the turns around a point maneuver, but in this case the airplane is rapidly descending.

Setup:

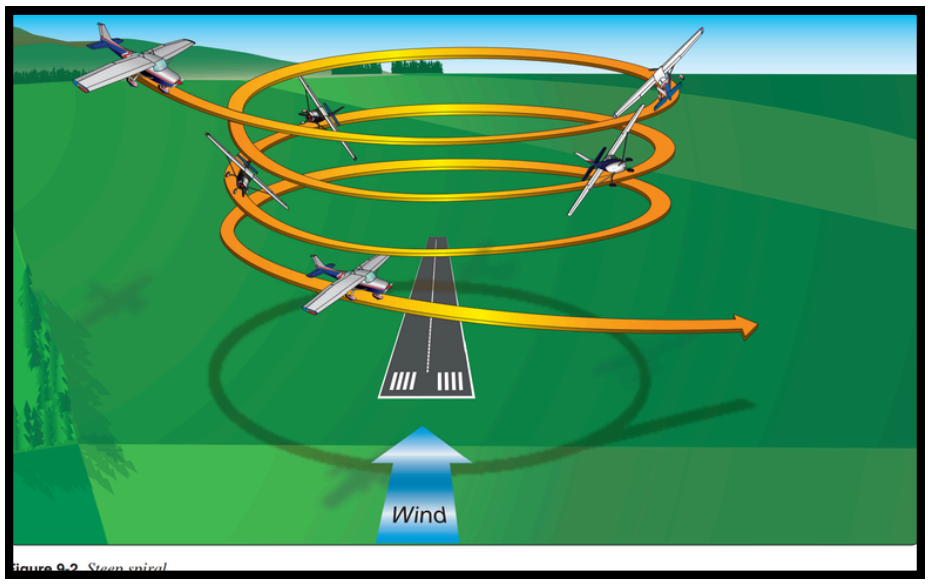
1. Determine the wind direction
2. First locate a ground reference (Tree, home. etc)
3. Select an altitude around 4000 feet AGL
4. Position the aircraft to fly downwind right next to ground reference
5. The radius should be around 1/4 of a mile
6. Perform the **Pre-Maneuver Checklist**

Entry:

1. Just before the ground reference, go power idle
2. Pitch for Vg: 65 KIAS
3. Complete 3 turns around the point
    a. Maintain constant radius around the reference point with bank
4. Bring power briefly to max and back to idle while completing each turn

Recovery:

1. Once the third rotation is complete, exit the steep spiral
2. The maneuver should be completed above 1500 ft AGL
3. Perform **Crusie Checklist**



Standards:

1. Establish and maintain a steep spiral, not to exceed 60° angle of bank, to maintain a constant radius about a suitable ground reference point.
2. Apply wind drift correction to track a constant radius circle around selected reference point with bank not to exceed 60° at steepest point in turn.
3. Divide attention between airplane control and ground track, while maintaining coordinated flight.
4. Maintain the specified airspeed, ±10 knots, rolls out toward object or specified heading, ±10°.

CHANDELLE

Objective: The purpose of the chandelle maneuver is to execute a 180 degree climbing turn with minimum turn radius. The chandelle demonstrates the relationship between speed and rate of turn, and the left-turning tendencies.

Setup:

1. Choose a visual reference 90 degrees off the wing in which the turn will be made
2. Note the airplanes heading
3. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 2300 RPM at 105 KIAS
2. Enter a 30-degree turn
3. Apply max power
4. Begin to pitch up and hold max pitch when arriving at 45-degree point
    a. Maintain coordination throughout the maneuver
5. On the last 90 degrees of the turn, maintain the pitch-up attitude
6. Relieve the bank to go wings level at 180 degrees with max pitch up attitude
7. Airspeed should be at minimum controllable airspeed (55 KIAS)
8. Hold airspeed without stalling

Recovery:

1. Slowly lower the angle of attack and don't lose altitude
2. Perform **Crusie Checklist**

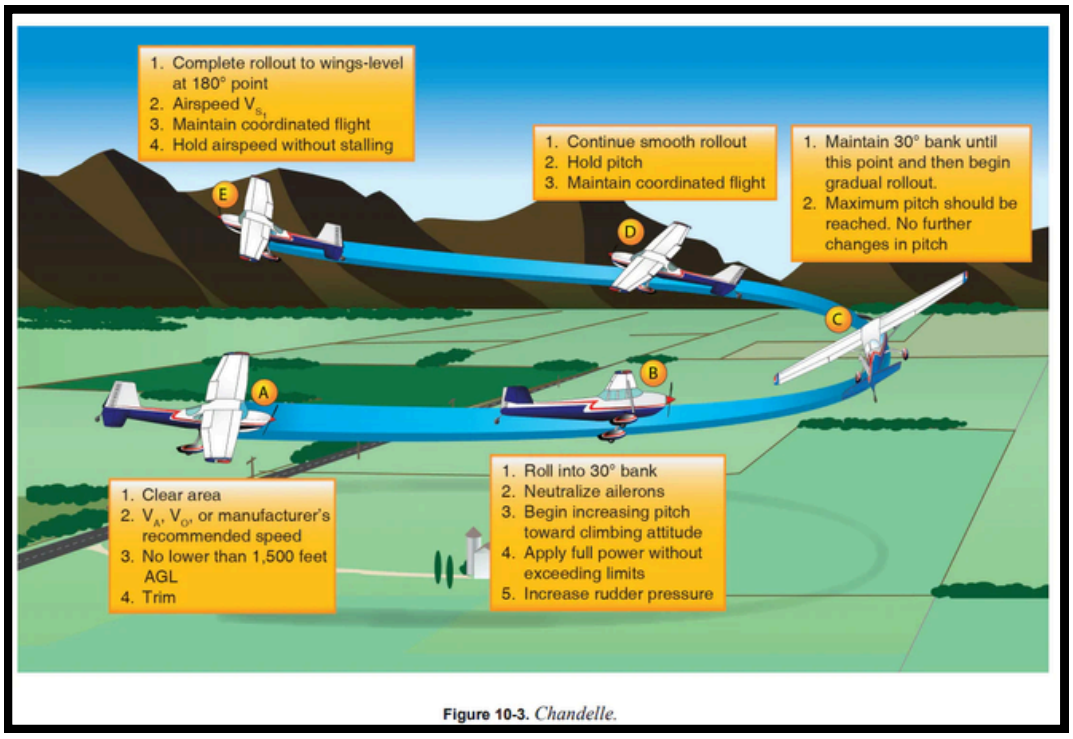


Figure 10-3. *Chandelle.*

Standards:

1. Establish the angle of bank at approximately 30°.
2. Simultaneously apply power and pitch to maintain a smooth, coordinated climbing turn, in either direction, to the 90° point, with a constant bank and continually decreasing airspeed.
3. Begin a coordinated constant rate rollout from the 90° point to the 180° point maintaining power and a constant pitch attitude.
4. Complete rollout at the 180° point, ±10° just above a stall airspeed, and maintaining that airspeed momentarily avoiding a stall.

ACCELERATED STALLS

Objective: The purpose of the accelerated stall maneuver is to understand the aerodynamics associated with accelerated stalls in various airplane configurations, including the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.

Setup:

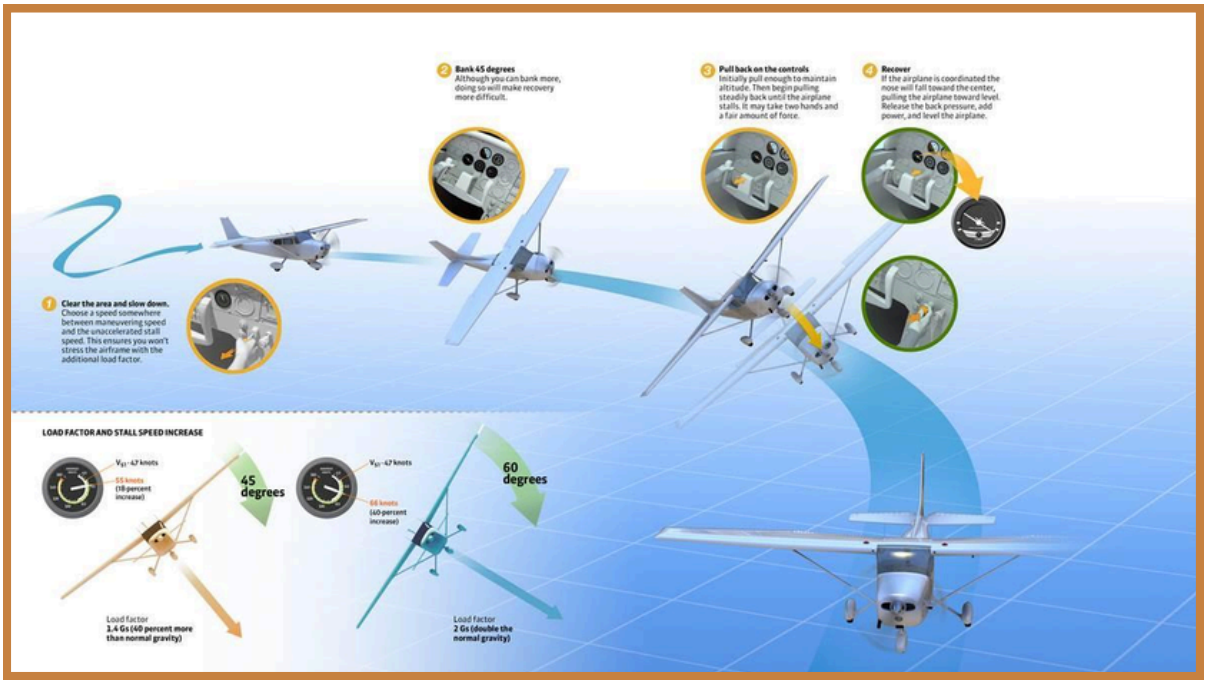
1. Verify proper altitude (above 3,000 feet AGL)
2. Verify airspeed is below maneuvering speed
3. Perform the **Pre-Maneuver Checklist**

Entry:

1. Enter a 45-degree turn
2. Apply back pressure to increase the load factor
3. Airspeed will begin to decrease
    a. Verify coordination with the rudder
4. Continue until stall indications occur or full stall (as indicated by instructor or examiner)

Recovery:

1. Lower the angle of attack by relaxing back pressure and returning wings to level flight
2. Add power as necessary
3. Perform **Crusie Checklist**



Standards:

1. Clear the area.
2. Select an entry altitude that will allow the Task to be completed no lower than 3,000 feet AGL.
3. Set power appropriate for the configuration, such that the airspeed does not exceed the maneuvering speed (VA) or any other applicable POH/AFM limitation.
4. Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
5. Acknowledge the cue(s) and recover promptly at the first indication of an impending stall (e.g., aircraft buffet, stall horn, etc.).

LAZY EIGHTS

Objective: The lazy eight is a maneuver that is designed to develop the proper coordination of the flight controls across a wide range of airspeeds and attitudes

Setup:

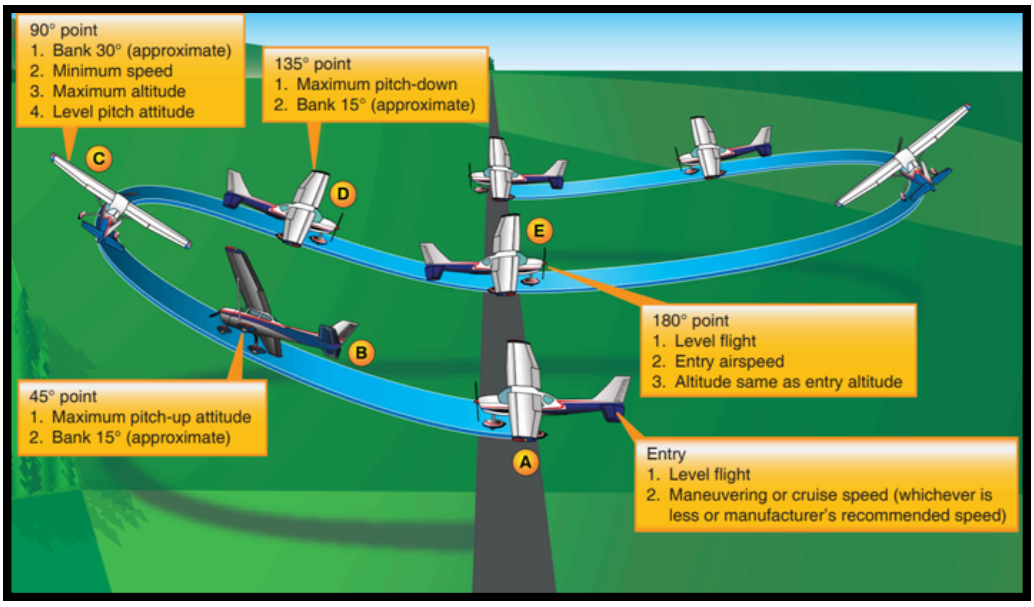
1. Choose a visual reference 90 degrees off the wing in which the turn will be made
2. Pick a 45-degree and 135-degree point
3. Note the airplane heading and altitude
4. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 2300 RPM at 105 KIAS
2. Add a slight bank to the direction of the lazy eight
3. Begin to pitch up with bank
   a. 45-degree point - max pitch-up attitude (approximately 13 degrees) and approximately 15 degrees of bank
   b. 90-degree point - approximately 30 degrees of bank, minimum speed (55 MPH), maximum altitude and level pitch attitude
   c. 135-degree point - max pitch down and bank approximately 15 degrees
   d. 180-degree point - level flight, entry airspeed and entry altitude
4. The maneuver should include a constant change in bank and attitude through the first 180 degrees
5. Repeat step 2 and 3 in the other direction

Recovery:

1. Exit at entry altitude, heading and airspeed
2. Perform **Crusie Checklist**



Standards:

1. Complete the maneuver in accordance with the following:
   a. Approximately 30° bank at the steepest point
   b. Constant change of pitch and roll rate and airspeed
   c. Altitude at 180° point, ±100 feet from entry altitude
   d. Airspeed at the 180° point, ±10 knots from entry airspeed
   e. Heading at the 180° point, ±10 degrees
2. Continue the maneuver through the number of symmetrical loops specified, then resume straight-and-level flight.

EIGHTS ON PYLONS

Objective: Eights on pylons is a maneuver is designed to help in dividing attention to outside references to keep a sight picture. It involves mastering flight controls.

Setup:

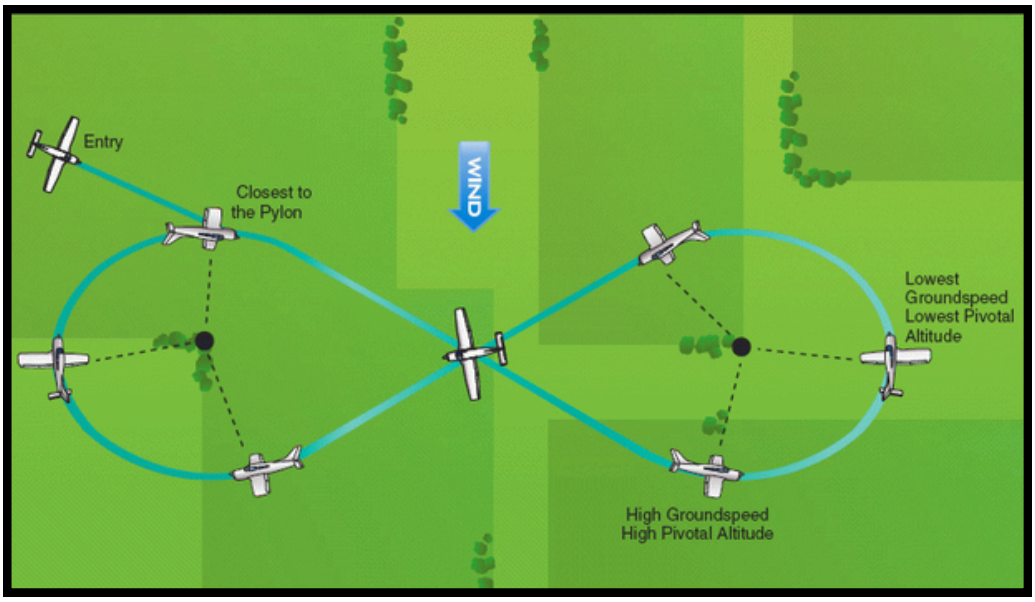
1. Choose two visual references that will act as the pylons
    a. The distance should be approximately 1/2 to 1 mile from each other
    b. Should be in a line perpendicular to the wind direction
2. Determine pivotal altitude from the ground speed on the downwind (Do this before entering maneuver)
3. Note the airplane heading and pivotal altitude
4. Perform the **Pre-Maneuver Checklist**

Entry:

1. Configure for cruise at 2300 RPM
2. Enter at a 45-degree angle in between the two pylons on the downwind at pivotal altitude
3. Begin your first half of the figure eight when abeam the pylon
    a. Adjust pitch to maintain pivotal altitude to keep pylon at the same spot in relation to wing tip
4. When flying to the next pylon, momentarily bring the wings level
5. Enter the next turn
6. Go through step 3 for the second pylon

Recovery:

1. Exit at entry altitude, heading and airspeed
2. Perform **Crusie Checklist**



Standards:

1. Correctly enter the maneuver at the appropriate altitude and airspeed.
2. Establish the correct bank angle for the conditions, not to exceed 40°.
3. Apply corrections so that the line-of-sight reference line remains on the pylon.
4. Divide attention between accurate, coordinated airplane control and outside visual references.

POWER OFF 180

Objective: The purpose of the maneuver is to develop a feel for a gliding descent to landing.

Setup:

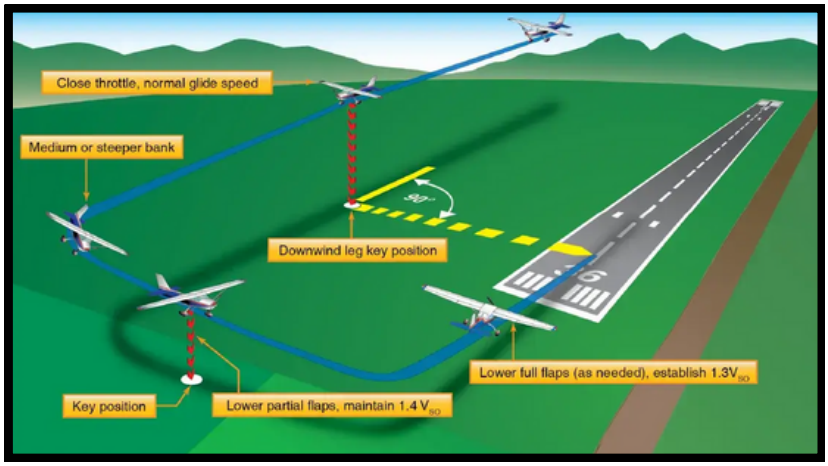
1. Figure out how to enter the traffic pattern
2. Go over the **Before Landing Checklist**
3. Scan for traffic on the downwind and other areas of the traffic pattern
4. Verify 1000 ft AGL
5. Verify Checklist with BCGUMPS (Boost, Carburetor, Gas, Undercarriage, Mixture, Prop and Seatbelts)

Approach:

1. Have power set to 2300 RPM and maintain 90 KIAS
2. Once abeam the numbers, pull power to idle
3. Apply back pressure to Vg: 65 KIAS
4. Judge descent rate to land on chosen point
5. Turn base and final, looking for traffic
    a. Note the wind direction to adjust the length of the legs of the traffic pattern to ensure landing on the spot
6. Use flaps, forward slips, and other techniques to adjust the descent rate

Landing:

1. Apply appropriate wind correction with aileron and rudder
2. Roundout, flare, and touchdown
3. Safely exit the runway
4. Perform **Clear of Runway Checklist**



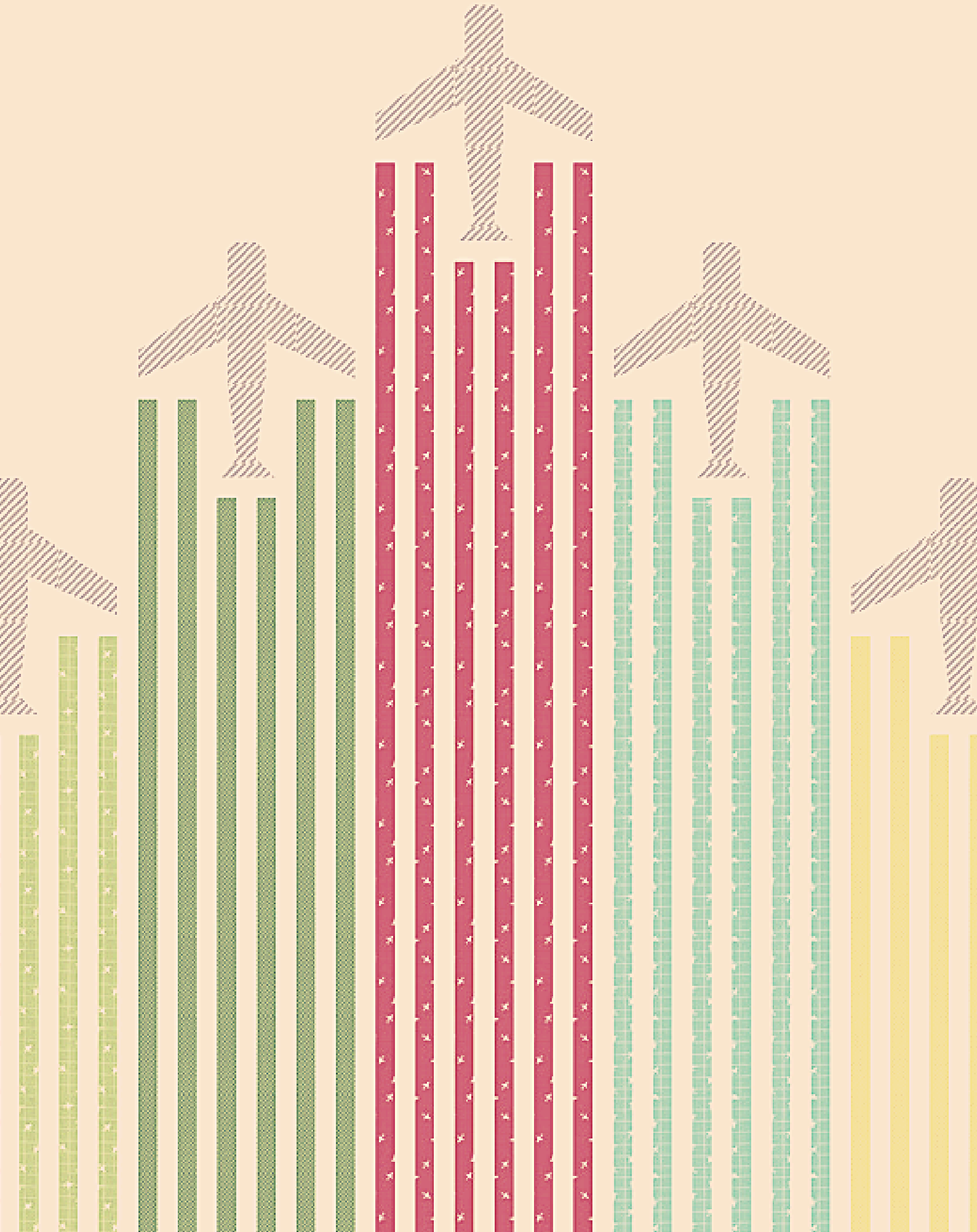
Standards:

1. Position airplane on downwind leg, parallel to landing runway
2. Correctly configure the airplane
3. As necessary, correlate crosswind with direction of forward slip and transition to side slip for landing
4. Touch down within -0/+200 feet from the specified touchdown point with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over the runway centerline.

PRE-MANEUVER CHECKLIST

Chaps Acronym

This will be done before each maneuver to ensure proper set up and safety

C - Clearing Turns
H - Heading
A - Altitude
P - Position
S - Set Up (Lights on and Mixture rich)

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