

## Area of Operation **IX** - Task **D**

# Lazy Eights

### Content

1. Introduction
2. The Maneuver
3. Execution
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#### Key References:

- Airplane Flying Handbook
- Commercial Pilot ACS

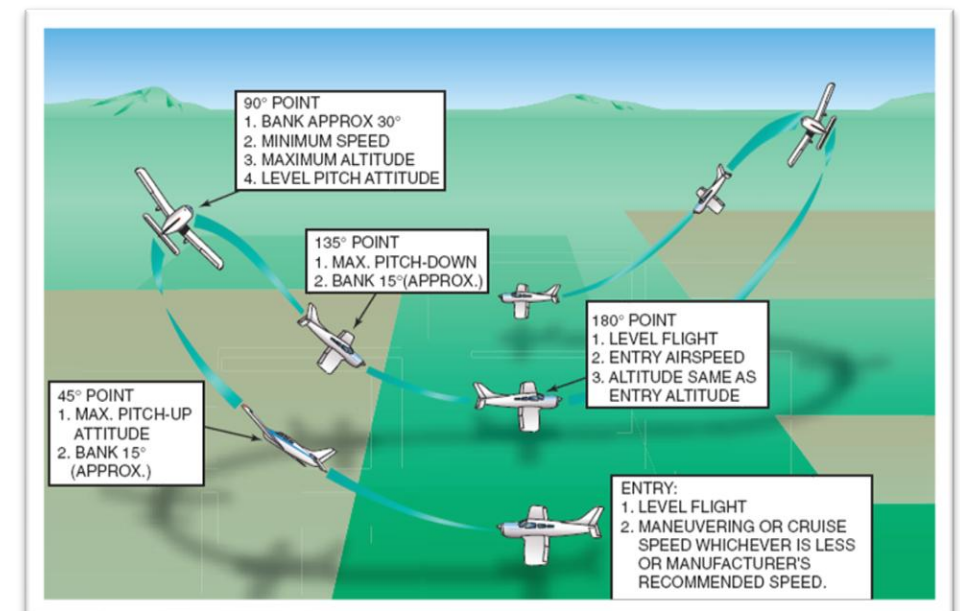
# 1. Introduction

- **What:** Maneuver consisting of two 180° turns in opposite directions, while making a climb and descent in a symmetrical pattern during each of the turns. At no time do the forces on the controls remain constant
- **Why:** Develops proper coordination of the controls. Help develops feel, planning orientation and coordination
- **What we are looking for:**
  - Two symmetrical 180° turns, each containing a climb and descent
  - Selection of a good outside reference point
  - **Constantly changing flight controls**
  - Divide attention between visual references, instruments, selected reference points and traffic
  - Coordination and planning
  - Maneuver should be performed with grace, **“lazy” controls**



## Standard (ACS):

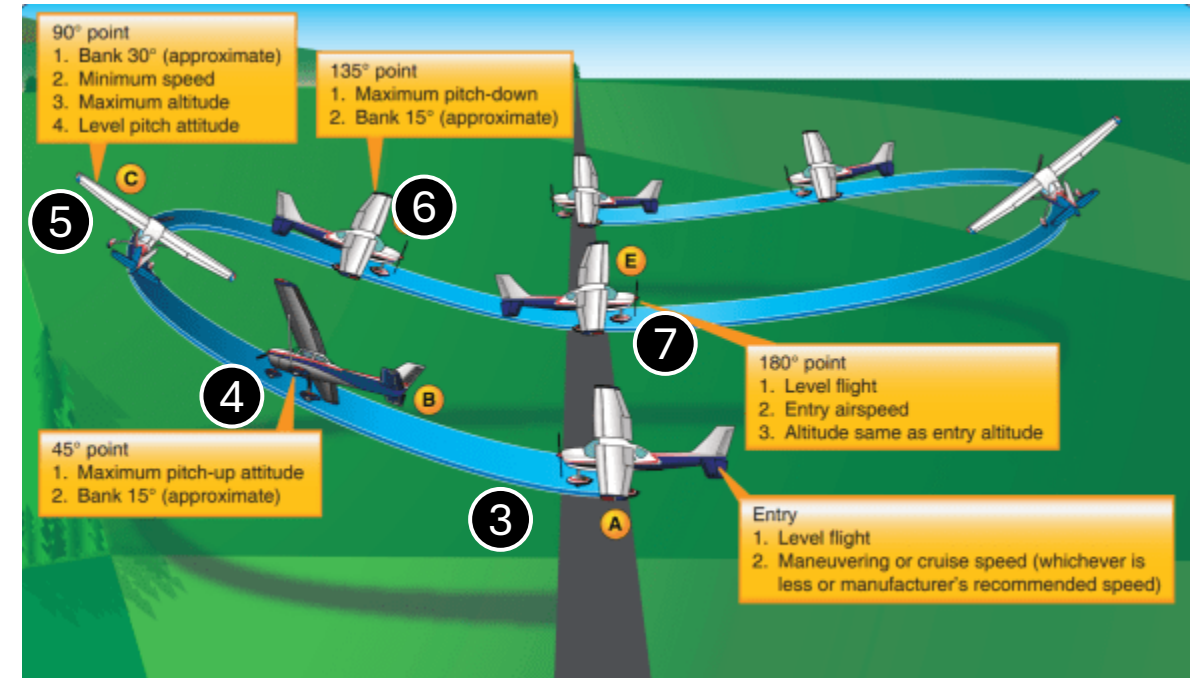
- Steepest point approx. **30° bank**, Min Alt  $\geq$  1500ft AGL
- Constant change of pitch/roll/airspeed
- At the 180° points: Airspeed  $\pm 10$  kts, Alt  $\pm 100$ ft, Hdg  $\pm 10^\circ$



## 2. The Maneuver

### Rule of the thumb: “Lazy” input controls

1. Choose proper reference points (45°, 90°, 135°)
2. Enter the maneuver at the proper airspeed
3. **Start pitching up and banking**
4. **45° point:** MAX Pitch Up, ~15° bank
5. **90° point:** Level w/ horizon, MAX bank (30°)
6. **135° point:** MAX Pitch Down, ~15° bank
7. **180° point:** Level w/ horizon, no bank, same entry airspeed, same entry altitude
8. Then same to the other side



### Rudder Control

- **As airspeed decreases** → **right rudder is applied** to counter left turning tendencies
  - *Pressure is the greatest at the lowest airspeed (90° point)*
- **More right rudder is needed in the right turn**
  - *Compensates for adverse yaw + left turning tendencies*
- **Climbing right turn:** **Controls are slightly crossed** due to overbanking (aileron to the left) / left turning tendencies (rudder to the right). Remain coordinated.

# 3. Execution

## Performing the maneuver in a C172S

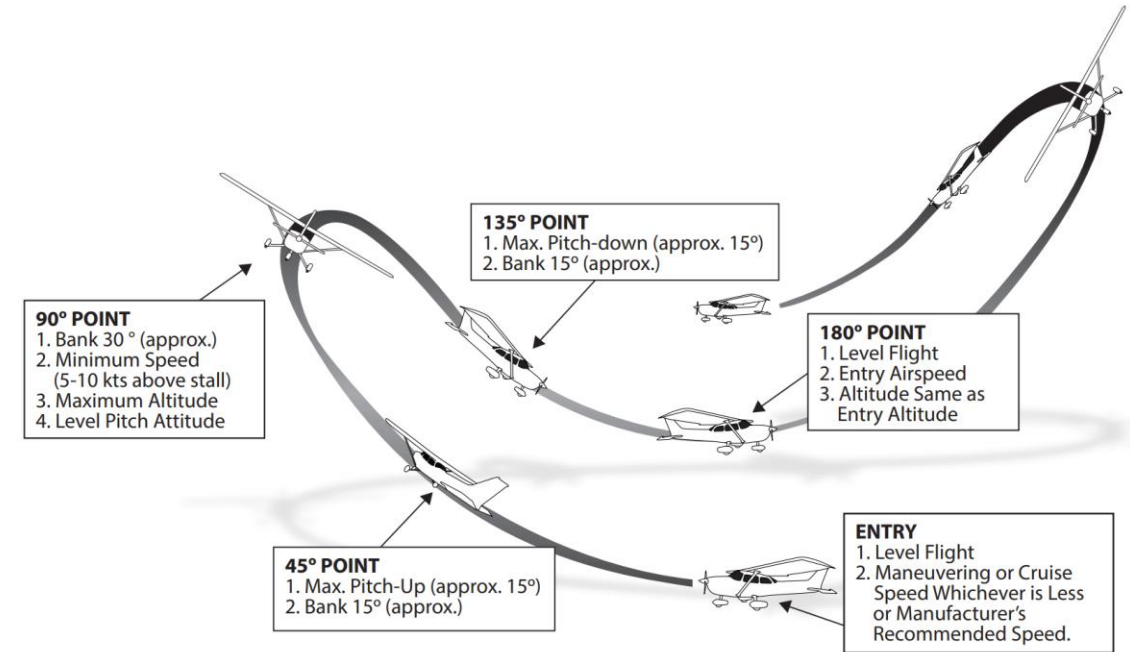
1. Perform two 90° clearing turns
2. 105kts (2350 RPM), maintain/bug altitude
3. Clean configuration
4. Reference point off wingtip (and bug heading)

### Climbing (~300ft)

1. Bank 5° (slowly increase) and increasing Pitch (slowly)
2. **45° Point:** MAX PITCH UP (~15-18°)
3. Reduce Pitch (release yoke) and continue increasing bank
4. **90° Point** – LEVEL PITCH, MAX BANK (30°) - 60 kts airspeed
5. Let the nose drop (catch it at approx. 10° nose down)

### Descent (~300ft)

1. **135° Point** – MAX PITCH DOWN (-10°)
2. Reduce bank slowly – Approaching alt, start bringing pitch up
3. **180° Point** – level flight, entry altitude and airspeed
4. Repeat opposite direction



\*Pitch and bank reference numbers approximate.

## 4. Common Errors

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1. Poor selection of reference points
2. Uncoordinated use of flight controls
3. Unsymmetrical loops resulting from poorly planned pitch and bank attitude changes
4. Inconsistent airspeed and altitude at key points
5. Loss of orientation
6. Excessive deviation from reference points

# Questions?

