

## Introduction to Flight – In-Flight Exercises

1. Visualize stall with yarns taped on the right wing. How does the stall pattern progress over the wing surface: from tip or root? How does it compare to book description for the wing shapes (rectangular, tapered and elliptical)?
2. Determine of stall speeds with flaps at:
  - a.  $0^\circ$ : \_\_\_\_\_ knots
  - b.  $10^\circ$ : \_\_\_\_\_ knots
  - c.  $25^\circ$ : \_\_\_\_\_ knots
  - d.  $40^\circ$ : \_\_\_\_\_ knots
3. Determine stall speed in coordinated turns:
  - a. How does stall speed change with bank angle at  $30^\circ$  bank? \_\_\_\_\_ knots
  - b. Do the observations agree with the theory?
4. Measure G forces in turns at different bank angles (and compare results with theory) at:
  - a.  $10^\circ$  bank: \_\_\_\_\_ g
  - b.  $20^\circ$  bank: \_\_\_\_\_ g
  - c.  $30^\circ$  bank: \_\_\_\_\_ g
  - d.  $45^\circ$  bank: \_\_\_\_\_ g
5. Does G force change with increasing airspeed at a constant bank angle (e.g.  $30^\circ$ )? Do the observations agree with the theory?
6. Stability after a perturbation: How many oscillations does it take for the airplane to stabilize after a perturbation to:
  - a. Roll axis (ailerons)
  - b. Pitch axis (elevator)
  - c. Yaw axis (rudder)
7. Observe the angles of attack during landing approaches without flaps and with flaps. Are they the same or different? Explain your observations.