



North Star

AVIATION

North Star Flight Maneuvers

Piper Seminole: Commercial, & MEI

Slow Flight (Landing Configuration)

1. Altitude – 3,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
3. Pitch to Maintain Altitude Below 140 KIAS –
Gear Down Below 111 KIAS – Flaps 10°
Below 100 KIAS – Prop Forward Below 90 KIAS –
Flap 25°
Below 90 KIAS – Flap 40°
5. Power – Increase to Maintain Altitude
6. Pitch – Maintain Stall Speed +5/-0
(Target 60 KIAS)*
7. Trim – Adjust as Necessary

Recovery:

1. Smoothly Reduce Pitch
2. Power – Increase to Max
3. Flaps - 25°
4. Pitch for V_x(82 KIAS)
5. Positive Rate – Flaps 10°
6. Pitch for V_y(88 KIAS)
7. Positive Rate – Gear Up
8. Positive Rate – Flap 0°



Testing standards:

Skills:	The applicant exhibits the skill to:
CA.VII.A.S1	Clear the area.
CA.VII.A.S2	Select an entry altitude that allows the Task to be completed no lower than 1,500 feet above ground level (AGL) (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.A.S3	Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., aircraft buffet, stall horn, etc.).
CA.VII.A.S4	Accomplish coordinated straight-and-level flight, turns, climbs, and descents with the aircraft configured as specified by the evaluator without a stall warning (e.g., aircraft buffet, stall horn, etc.).
CA.VII.A.S5	Maintain the specified altitude, ±50 feet; specified heading, ±10°; airspeed, +5/-0 knots; and specified angle of bank, ±5°.

*Target Airspeed will change based on current conditions R25S

Slow Flight (Takeoff Configuration)

1. Altitude – 3,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
3. Pitch to Maintain Altitude
4. Below 100 KIAS – Prop Forward
5. Power – Increase to Maintain Altitude
6. Pitch – Maintain Stall Speed +5/-0
(Target 62 KIAS)*
8. Trim – Adjust as Necessary



Recovery:

1. Smoothly Reduce Pitch
2. Power – Increase to Max
3. Pitch for Vy (88 KIAS)
4. Positive Rate – Verify Gear Up/Flap 0°
5. Accelerate to Cruise Flight – 110 KIAS

Testing standards:

Skills:	The applicant exhibits the skill to:
CA.VII.A.S1	Clear the area.
CA.VII.A.S2	Select an entry altitude that allows the Task to be completed no lower than 1,500 feet above ground level (AGL) (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.A.S3	Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., aircraft buffet, stall horn, etc.).
CA.VII.A.S4	Accomplish coordinated straight-and-level flight, turns, climbs, and descents with the aircraft configured as specified by the evaluator without a stall warning (e.g., aircraft buffet, stall horn, etc.).
CA.VII.A.S5	Maintain the specified altitude, ± 50 feet; specified heading, $\pm 10^\circ$; airspeed, $+5/-0$ knots; and specified angle of bank, $\pm 5^\circ$.

*Target Airspeed will change based on current conditions

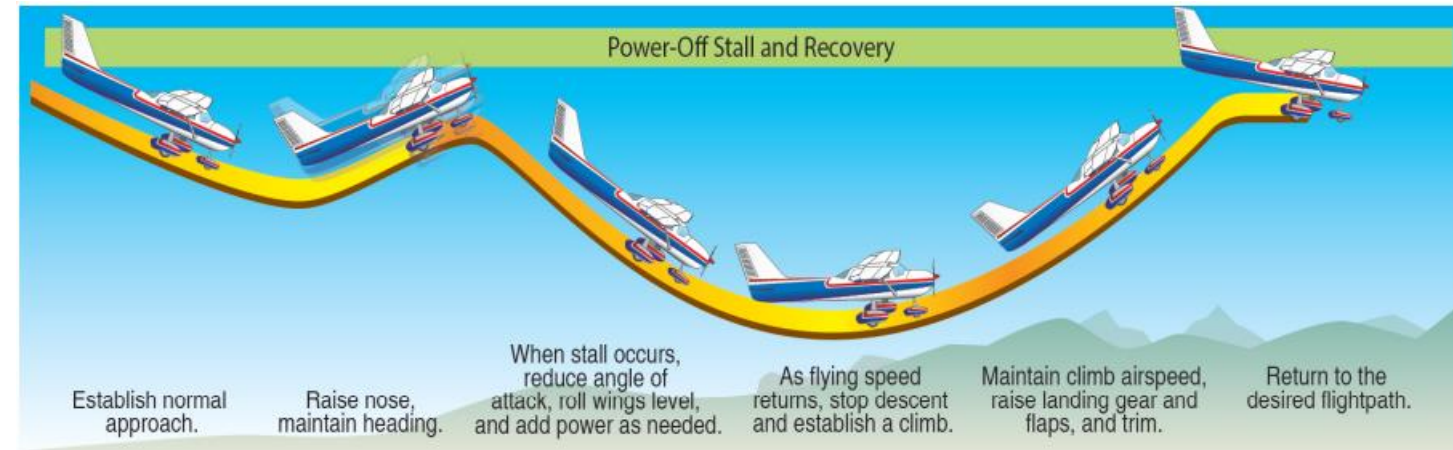
Power Off Stalls (Landing Configuration)



1. Altitude– 3,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
3. Pitch to Maintain Altitude
4. Below 140 KIAS – Gear Down
At 100 KIAS – Flaps 10
Below 100 KIAS – Prop Forward
Below 90 KIAS – Flaps 25
Below 80 KIAS – Flaps 40
6. Enter Normal Descent to Land – Throttle to Idle
7. Simulate Round out to flare
(8°- 10°, or nose to the horizon)

Recovery:

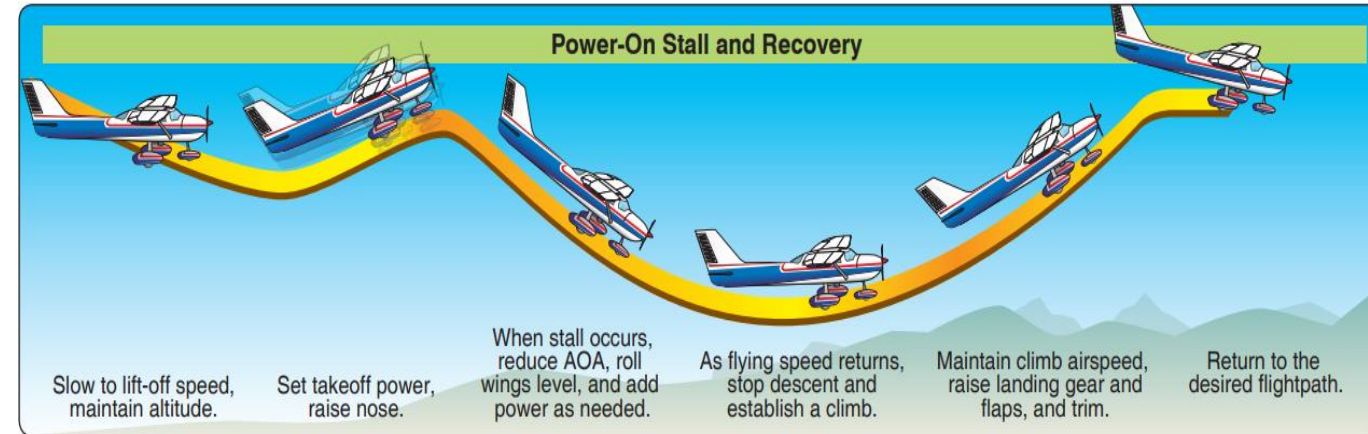
1. Smoothly Reduce Pitch
2. Power Increase to Max
3. Flaps 25°
4. Pitch for V_x (82 KIAS)
5. Positive Rate – Flaps 10°
6. Pitch for V_y (88 KIAS)
7. Positive Rate – Gear Up
8. Positive Rate – Flaps 0°
9. Return to Altitude, Heading, and Airspeed as specified



Skills:	The applicant exhibits the skill to:
CA.VII.B.S1	Clear the area.
CA.VII.B.S2	Select an entry altitude that allows the Task to be completed no lower than 1,500 feet above ground level (AGL) (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.B.S3	Configure the airplane in the approach or landing configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
CA.VII.B.S4	Establish a stabilized descent.
CA.VII.B.S5	Transition smoothly from the approach or landing attitude to a pitch attitude that induces a stall.
CA.VII.B.S6	Maintain a specified heading, $\pm 10^\circ$ if in straight flight; maintain a specified angle of bank not to exceed 20° , $\pm 5^\circ$ if in turning flight, until an impending or full stall occurs, as specified by the evaluator.
CA.VII.B.S7	Acknowledge the cues at the first indication of a stall (e.g., aircraft buffet, stall horn, etc.).
CA.VII.B.S8	Recover at the first indication of a stall or after a full stall has occurred, as specified by the evaluator.
CA.VII.B.S9	Configure the airplane as recommended by the manufacturer, and accelerate to best angle of climb speed (V_x) or best rate of climb speed (V_y).
CA.VII.B.S10	Return to the altitude, heading, and airspeed specified by the evaluator.

Power On Stalls (Takeoff Configuration)

1. Altitude – 3,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete Power – Below 15" MP
1. Pitch to Maintain Altitude
2. Below 100 KIAS – Prop Forward
3. 82 KIAS – Power to 20" MP
4. Smoothly Increase Pitch to Induce a stall (No more than 20° Pitch)



Recovery:

1. Reduce Angle of Attack
2. Roll Wings Level
3. Power – Increase to Max
5. Pitch for V_y (88 KIAS)
6. Positive rate – Verify Flaps 0°
Gear Up
7. Return to Altitude, Heading, and Airspeed as specified

Testing standards:

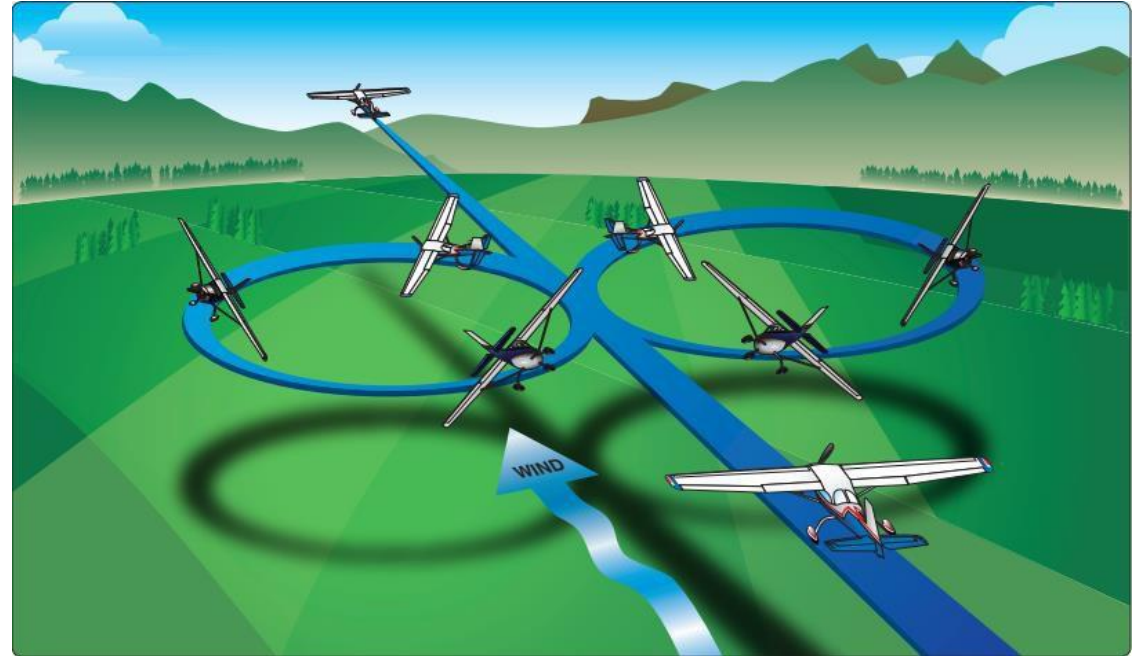
Skills:	The applicant exhibits the skill to:
CA.VII.C.S1	Clear the area.
CA.VII.C.S2	Select an entry altitude that allows the Task to be completed no lower than 1,500 feet above ground level (AGL) (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.C.S3	Establish the takeoff, departure, or cruise configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
CA.VII.C.S4	Set power to no less than 65 percent power.
CA.VII.C.S5	Transition smoothly from the takeoff or departure attitude to the pitch attitude that induces a stall.
CA.VII.C.S6	Maintain a specified heading $\pm 10^\circ$ if in straight flight; maintain a specified angle of bank not to exceed 20° , $\pm 10^\circ$ if in turning flight, until an impending or full stall is reached, as specified by the evaluator.
CA.VII.C.S7	Acknowledge the cues at the first indication of a stall (e.g., aircraft buffet, stall horn, etc.).
CA.VII.C.S8	Recover at the first indication of a stall or after a full stall has occurred, as specified by the evaluator.
CA.VII.C.S9	Configure the airplane as recommended by the manufacturer, and accelerate to best angle of climb speed (V_x) or best rate of climb speed (V_y).
CA.VII.C.S10	Return to the altitude, heading, and airspeed specified by the evaluator.

Steep Turn

1. Altitude – 3,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – 18" MP and 2300-2500 RPM
3. Airspeed – 110 KIAS
4. Bank – 50°
5. Trim – Roll Aft to Relieve Bank Pressure
6. Power – Increase to Maintain Altitude
7. Roll Out – Initial Heading +/- 10°
8. Repeat Procedures in the opposite direction as necessary
9. Return to Cruise Flight 110 KIAS

Testing standards:

Skills:	The applicant exhibits the skill to:
CA.V.A.S1	Clear the area.
CA.V.A.S2	Establish the manufacturer's recommended airspeed; or if one is not available, an airspeed not to exceed maneuvering speed (V_A).
CA.V.A.S3	Roll into a coordinated 360° steep turn with approximately a 50° bank.
CA.V.A.S4	Perform the Task in the opposite direction.
CA.V.A.S5	Maintain the entry altitude ± 100 feet, airspeed ± 10 knots, bank $\pm 5^\circ$, and roll out on the entry heading $\pm 10^\circ$.



Accelerated Stall

- 1. Altitude – 3,000' AGL Minimum
- 2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
(Evaluator may specify different configurations)
- 4. Pitch to Maintain Altitude
Below 100 KIAS – Prop Forward Bank - 45°
Power Idle
- 5. Maintain altitude to induce Stall

Recovery:

Initiated at the first indication of stall

- 1. Smoothly reduce pitch
- 2. Bank – Wings Level with opposite aileron and rudder to maintain coordination
- 3. Power Increase to Max
- 4. Pitch for Vy (88 KIAS)
Verify Gear Up Verify
Flaps 0°
- 7. Return to Altitude, Heading, and Airspeed as specified



Testing standards:

Skills:	The applicant exhibits the skill to:
CA.VII.D.S1	Clear the area.
CA.VII.D.S2	Select an entry altitude that allows the Task to be completed no lower than 3,000 feet above ground level (AGL).
CA.VII.D.S3	Establish the configuration as specified by the evaluator.
CA.VII.D.S4	Set power appropriate for the configuration, such that the airspeed does not exceed the maneuvering speed (V_A) or any other applicable Pilot's Operating Handbook (POH)/Airplane Flight Manual (AFM) limitation.
CA.VII.D.S5	Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
CA.VII.D.S6	Acknowledge the cues at the first indication of a stall (e.g., aircraft buffet, stall horn, etc.).
CA.VII.D.S7	Execute a stall recovery in accordance with procedures set forth in the Pilot's Operating Handbook (POH)/Flight Manual (FM).
CA.VII.D.S8	Configure the airplane as recommended by the manufacturer, and accelerate to best angle of climb speed (V_X) or best rate of climb speed (V_Y).
CA.VII.D.S9	Return to the altitude, heading, and airspeed specified by the evaluator.

V_{mc} Demonstration



1. Altitude – 4,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
1. Below 100 KIAS – Prop Forward
2. Airspeed 92 KIAS Left Engine – Throttle to Idle Right
Engine – Throttle to Full
3. Pitch – Increase to Lose 1 kt Per Second

When to Recover?

Recover at the first indication of Stall

Or

Red Radial Line 56 kts (V_{mc})

Or

Loss of Directional Control

Recovery:

1. Right Engine – Idle to regain directional control
2. Reduce Pitch
3. Directional Control Regained
4. Right Engine – Increase power to full
5. Pitch for V_{sse}(82) / V_{yse}(88) as appropriated
6. Inoperative Engine – 15" MP (warm-up CHT)
7. Accelerated to Cruise Flight 110 KIAS

Testing standards:

Skills:

The applicant demonstrates and simultaneously explains how to:

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|----------------------|--|
| <i>AI.XIII.B.S1</i> | Configure the airplane in accordance with the manufacturer's recommendations, in the absence of the manufacturer's recommendations, then at safe single-engine speed (V _{sse} /V _{yse}), as appropriate, and: |
| <i>AI.XIII.B.S1a</i> | a. Landing gear retracted |
| <i>AI.XIII.B.S1b</i> | b. Flaps set for takeoff |
| <i>AI.XIII.B.S1c</i> | c. Cowl flaps set for takeoff |
| <i>AI.XIII.B.S1d</i> | d. Trim set for takeoff |
| <i>AI.XIII.B.S1e</i> | e. Propellers set for high revolutions per minute (rpm) |
| <i>AI.XIII.B.S1f</i> | f. Power on critical engine reduced to idle and propeller windmilling |
| <i>AI.XIII.B.S1g</i> | g. Power on operating engine set to takeoff or maximum available power |
| <i>AI.XIII.B.S2</i> | Establish a single-engine climb attitude with the airspeed at approximately 10 knots above V _{sse} . |
| <i>AI.XIII.B.S3</i> | Establish a bank angle not to exceed 5° toward the operating engine, as required for best performance and controllability. |

Drag Demonstration



1. Altitude – 4,000' AGL Minimum
2. Pre-maneuver Check / Clear the area – Complete
Power – Below 15" MP
3. Cowl Flaps – As Required
4. Pitch to Maintain Altitude
5. Below 100 KIAS – Prop Forward
6. Airspeed 88 KIAS
Operating Engine – Max Power
Inoperative Engine – Sim Feather
(10.5" MP, 2,000 RPM)
7. Airspeed 88 KIAS (Vyse) - Note Performance
8. Airspeed 78 KIAS – Note Performance
9. Airspeed 98 KIAS – Note Performance
10. Airspeed 88 KIAS (Vyse)
11. Gear Down – Note Performance
12. Flaps 10° - Note Performance
13. Flaps 25° - Note Performance
14. Flaps 40° - Note Performance
16. Inoperative Engine (Windmilling)
Prop – Forward
Power – Idle
Note Performance
17. Flaps 25° - Note Performance
18. Flaps 10° - Note Performance
19. Flaps 0° - Note Performance
20. Gear Up – Note Performance
21. Inoperative Engine – 15" MP (warm-up)
22. Accelerate to Cruise Flight – 110 KIAS

Testing standards:

Skills:	The applicant demonstrates and simultaneously explains how to:
<i>AI.XIII.C.S1</i>	Demonstrate, describe, and explain effects of various airspeeds and configurations during engine inoperative performance.
<i>AI.XIII.C.S2</i>	Demonstrate smooth control inputs when transitioning between various airspeeds and configurations, which include:
<i>AI.XIII.C.S2a</i>	a. Landing gear extended
<i>AI.XIII.C.S2b</i>	b. Wing flaps extended
<i>AI.XIII.C.S2c</i>	c. Landing gear and wing flaps extended
<i>AI.XIII.C.S2d</i>	d. Windmilling propeller on the inoperative engine
<i>AI.XIII.C.S3</i>	Maintain appropriate airspeed, attitude, and altitude combinations for the various configurations.
<i>AI.XIII.C.S4</i>	Return to normal cruise flight at the altitude and heading specified by the evaluator.
<i>AI.XIII.C.S5</i>	Analyze and correct common errors related to this Task.

Ground Reference Maneuver

1. Altitude – 600-1,000' AGL
 2. Pre-Maneuver Check – Complete
 3. Area – Clear of Obstructions
 4. Airspeed – 110 KIAS
- Enter Maneuver on Downwind Heading
Perform to Applicable Test Standards