

Commercial Maneuvers

Cherokee 140 Speeds—MPH

V_X 74 |

V_Y 85

V_A 129 Heavy

V_A 108 Very Light

V_{NE} 171

V_{SO} 55

V_{S1} 64

V_{FE} 115

Best Glide 83

V_X and V_Y are at gross weight
less if light

50° Bank 79 MPH

Steep Turns

Starting Altitude: > 1,500'

Starting Airspeed: 95-100 MPH

Clear the area.

Select an outside reference point.

Roll into a coordinated 360° steep turn.

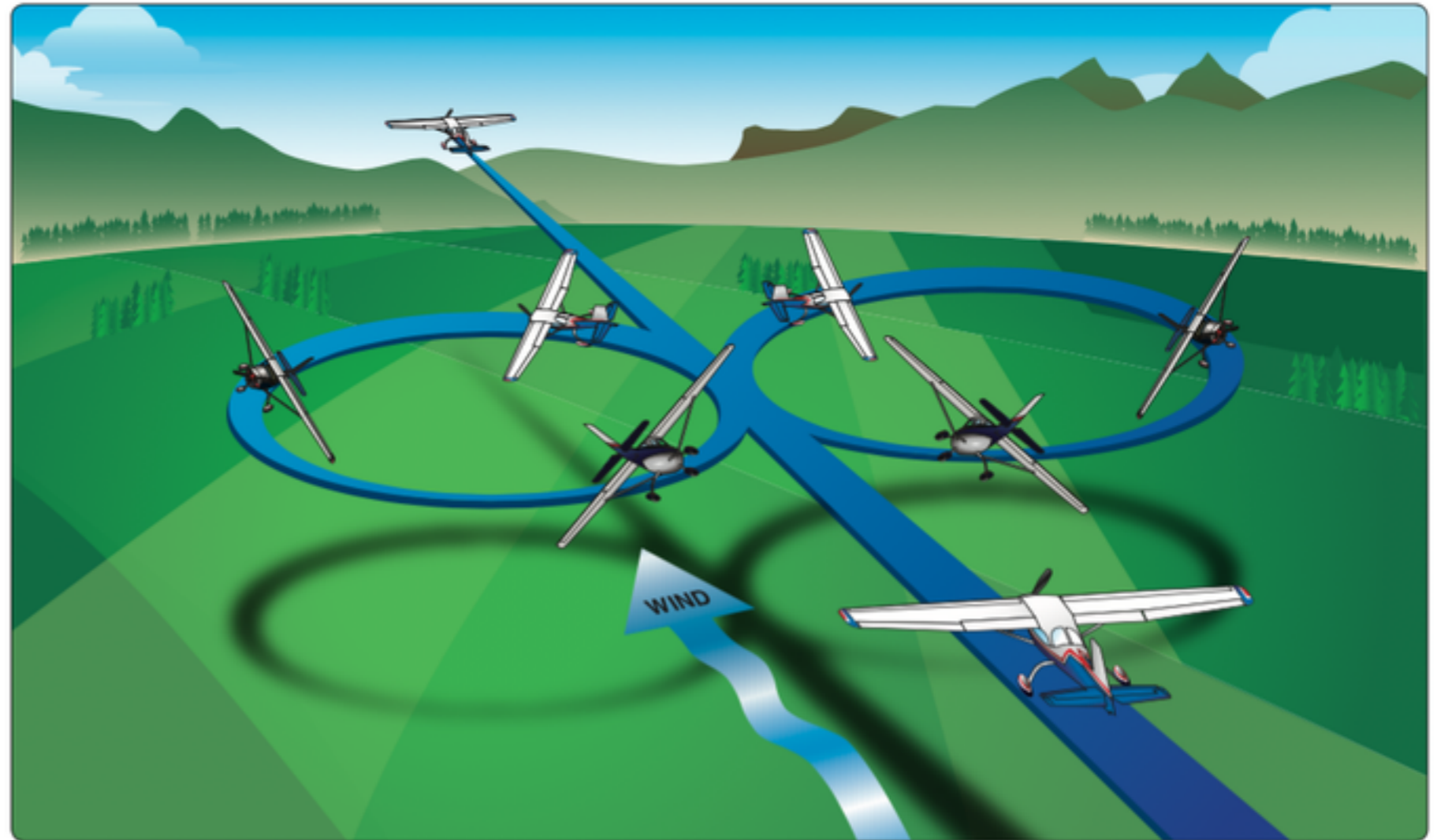
Apply back pressure at 20° point.
Apply power at 30° point.

Trim

Approximately a 50° bank.
Start rollout 25° before reference.

Then do it in the opposite direction.

Stall speed is 72 KIAS.



ACS Standards

Maintain the entry altitude ± 100 feet

Airspeed ± 10 knots

Bank $\pm 5^\circ$ from 50°

Roll out on the entry heading $\pm 10^\circ$

Steep Spiral

Starting Altitude: > 5,000'

Starting Airspeed: 83 MPH

Clear the area.

Select circle point.

Sufficient altitude must be gained prior to practicing the maneuver so that at least three 360° turns are completed.

Throttle to idle. Carb Heat.

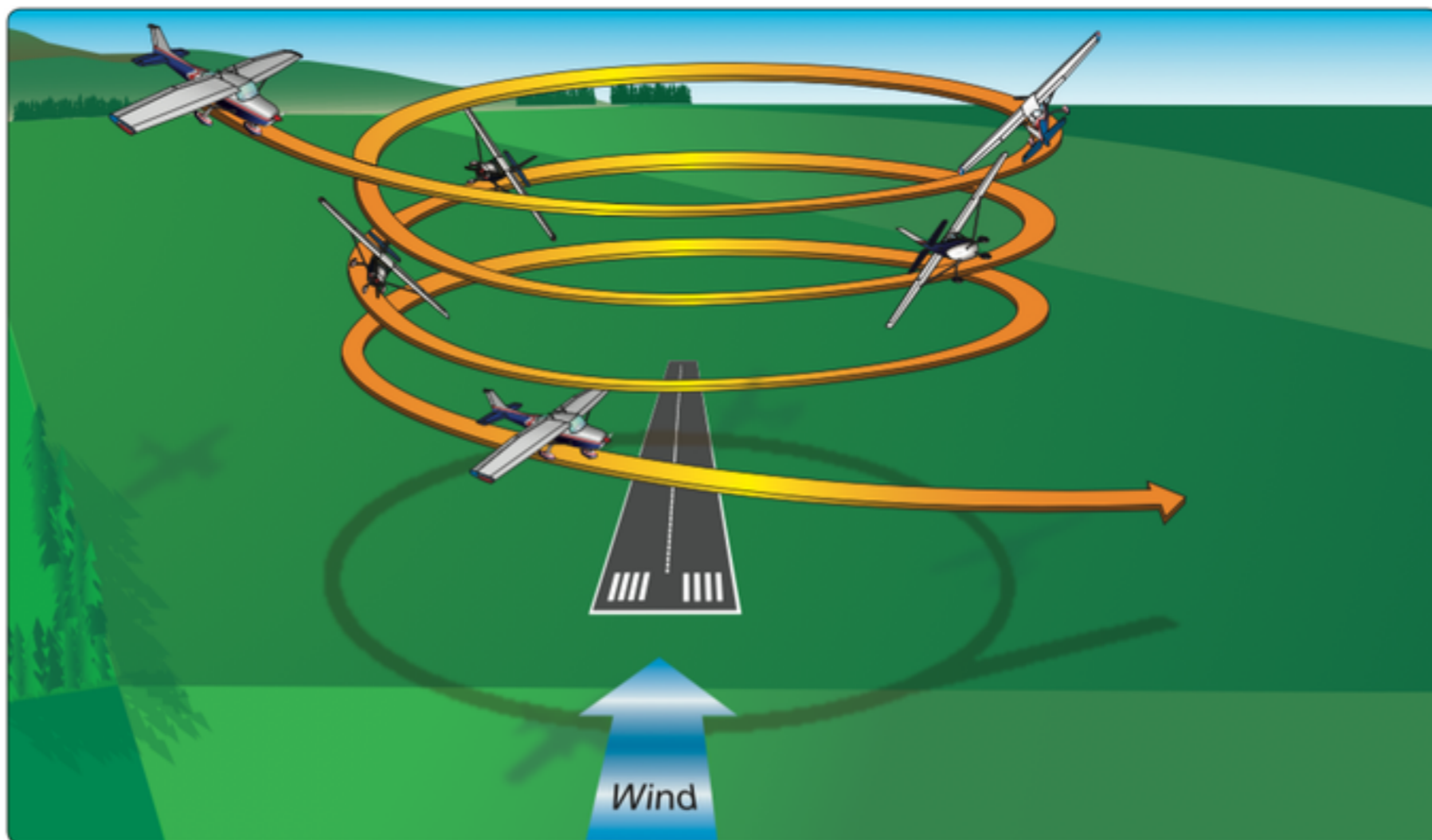
Best glide ~83 MPH

Roll into a coordinated 360° steep turn.

Approximately a 50° bank.

Trim

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.



ACS Standards

Maintain the specified airspeed, ± 10 knots

Roll out toward an object or specified heading, $\pm 10^\circ$

Complete the maneuver no lower than 1,500' AGL.

Chandelles

Starting Altitude: > 1,500'

Starting Airspeed: Cruise

Clear the area.

Roll into 30° Bank

Neutralize Ailerons

Pitch Up ~ 7 Seconds

Full Power

Increasing Rudder

Opposite Aileron

Hold pitch by pulling

Rudder input increases

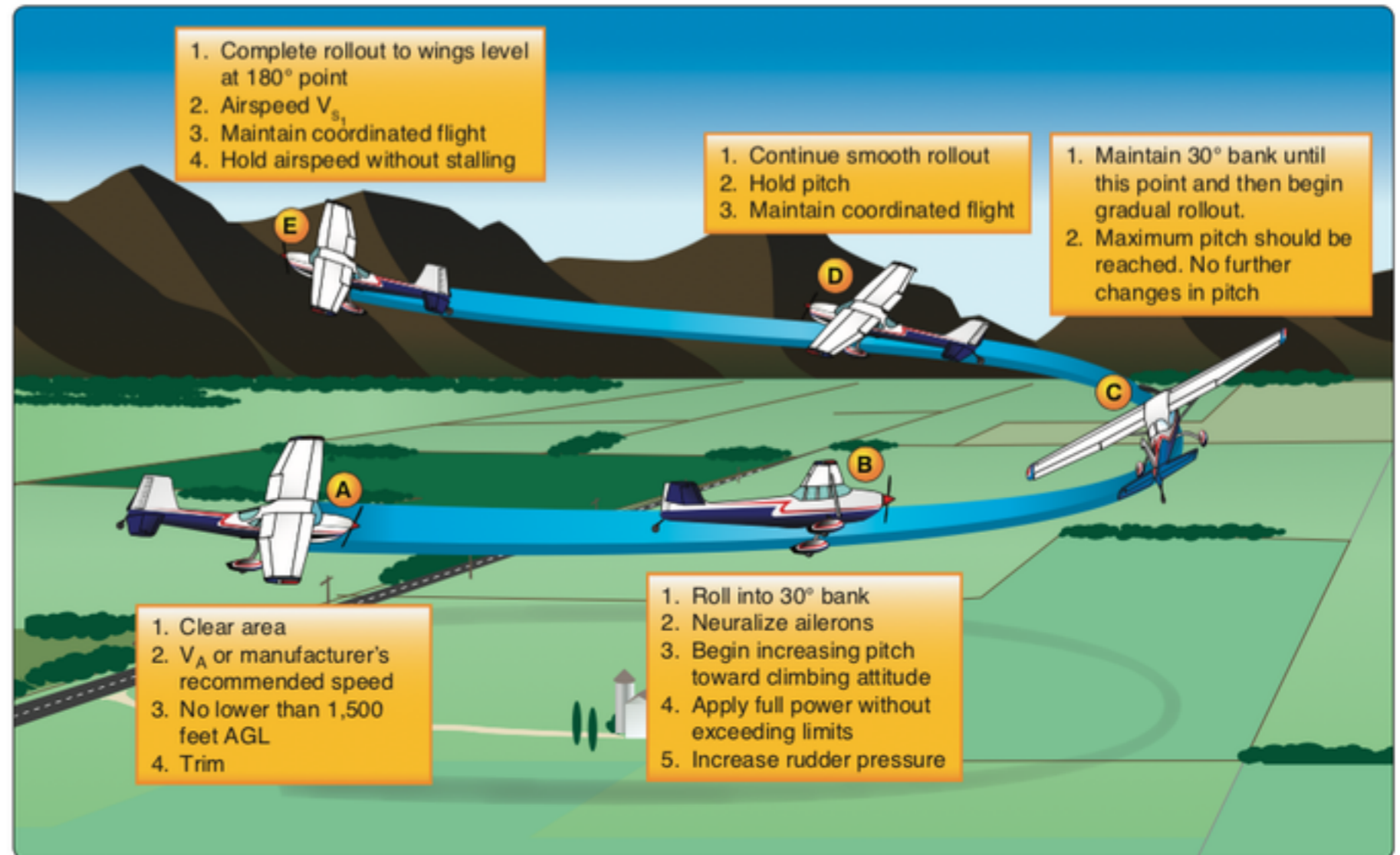
90° Point—Maximum Pitch

Hold Pitch

More Right Rudder

Gradual Rollout

Hold Airspeed Just above stall



ACS Standards

Complete rollout at the 180° point, $\pm 10^\circ$

Rollout just above stall airspeed—55 MPH

Maintaining that airspeed momentarily avoiding a stall.

Resume a straight-and-level flight with minimum loss of altitude.

Lazy Eights

Starting Altitude: > 1,500'
Starting Airspeed: Full Power
Clear the area.

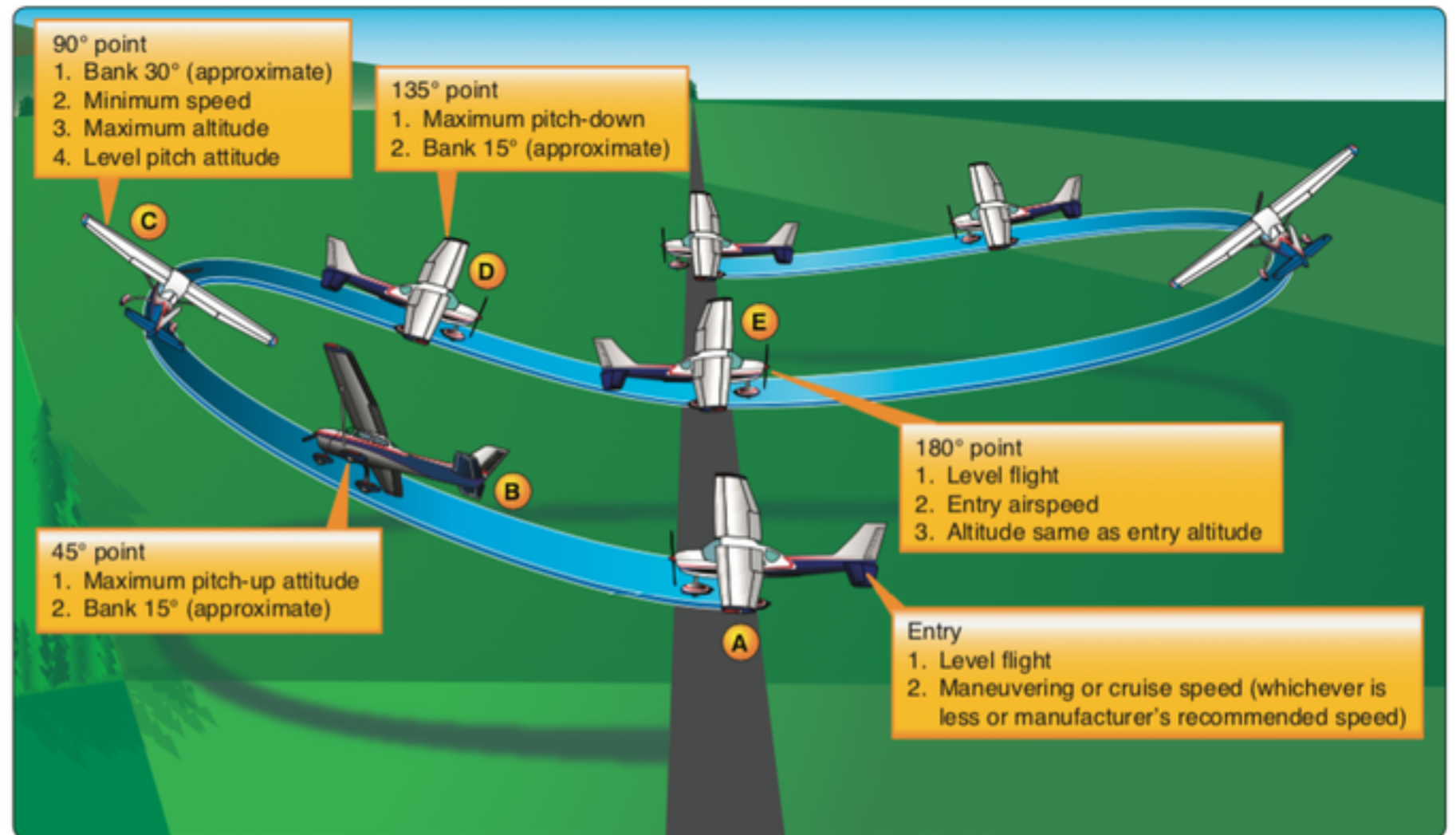
Begin with a slow rate of roll-5°

45° Point
15° Bank
max pitch up

90° Point
30° Bank
Minimum speed
Level pitch
Maximum altitude

135° Point
Max pitch down
15° Bank

180° Point
Level
Entry Airspeed



ACS Standards

Altitude at 180° point, ± 100 feet from entry altitude.

Airspeed at the 180° point, ± 10 knots from entry airspeed.

Heading at the 180° point, $\pm 10^\circ$.

Eights on Pylons

Starting Altitude: See Chart

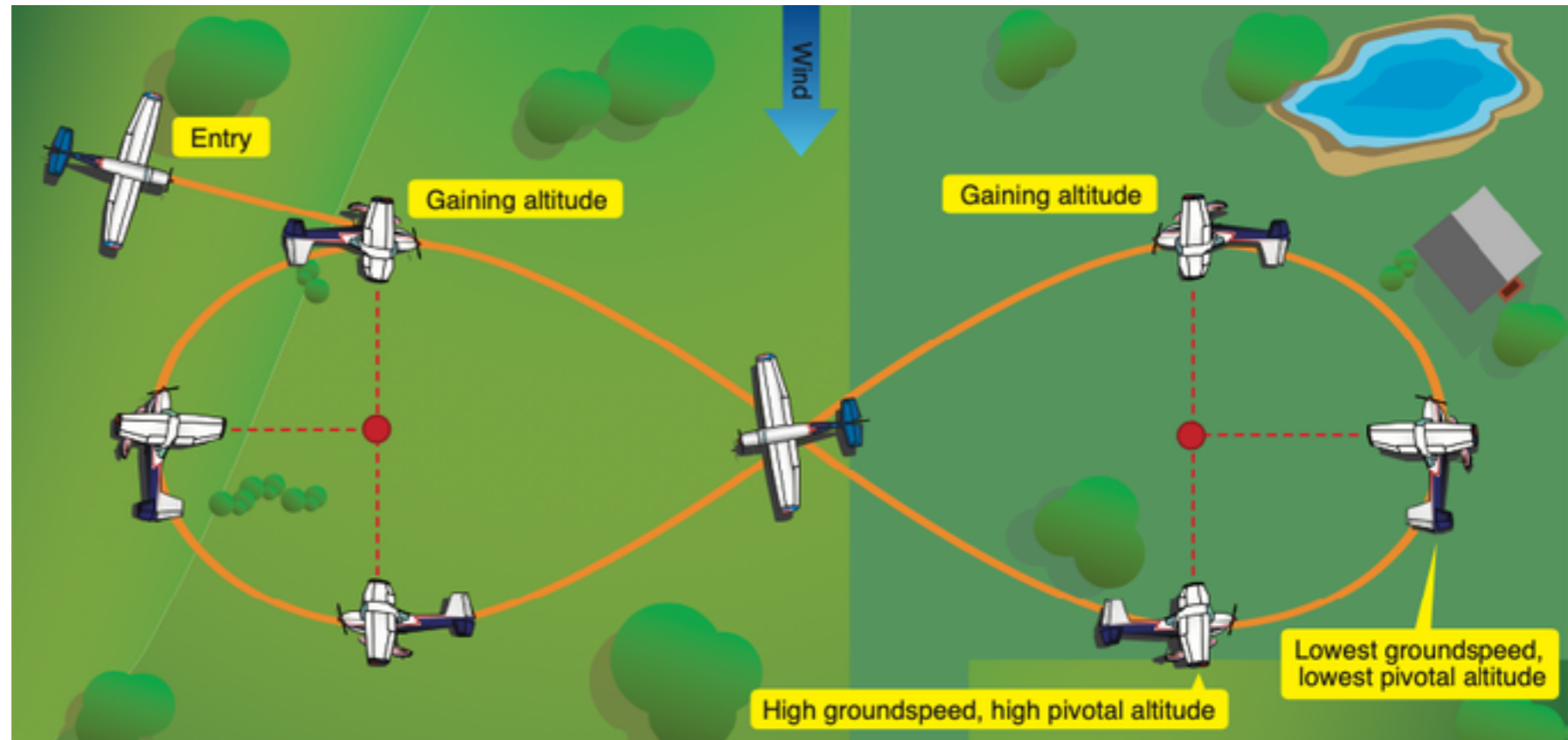
Starting Airspeed: Cruise

Clear the area.

The goal of the eights-on-pylons is to have an imaginary line that extends from the pilot's eyes to the pylon. This line must be imagined to always be parallel to the airplane's lateral axis

Pylons should be on a line perpendicular to the wind about 1/2 mile apart.

Climb away from a pylon behind you and dive into a pylon in front of you.



Groundspeed		Approximate Pivotal Altitude
Knots	MPH	
87	100	670
91	105	735
96	110	810
100	115	885
104	120	960
109	125	1050
113	130	1130

ACS Standards

Maintain pylon position using appropriate pivotal altitude

Avoid slips and skids.

Short Field and Soft Field Takeoff

Starting Altitude: Field Elev

Starting Airspeed: 0 Kts

Soft field: Maintain continuous motion to avoid bogging down.

Short field: Use all available runway.

Configure the airplane after a positive rate of climb has been verified or in accordance with airplane manufacturer's instructions.

Maintain directional control and proper wind-drift correction throughout takeoff and climb.

$V_x = 74$ MPH for obstacle.

$V_y = 85$ MPH for climb.

Short Field, Obstacle Clearance:

Lower the flaps to 25° (second notch), accelerate to 55-60 miles per hour and ease back on the control wheel to rotate. After breaking ground, accelerate to the best angle of climb speed, 74 miles per hour. Slowly retract the flaps when the obstacle has been cleared and continue climb at 85 miles per hour.

Short Field, No Obstacles:

Lower the flaps to 25° (second notch) accelerate to 55-60 miles per hour. Ease back on the control wheel to rotate and accelerate to best rate of climb speed, 85 miles per hour. Slowly retract the flaps while climbing out.

Soft Field, No Obstacle:

Lower the flaps to 25° (second notch), accelerate aircraft and pull nose gear from the ground as soon as possible, lift off at lowest possible airspeed. Accelerate just above the ground to best rate of climb speed, 85 miles per hour. Climb out while slowly retracting the flaps.

Soft Field, Obstacle Clearance:

Lower flaps to 25° (second notch), accelerate aircraft, pull nose gear off as soon as possible and lift off at lowest possible airspeed. Accelerate just above the ground to best angle of climb speed, 74 miles per hour to climb past obstacle clearance height, continue climb while accelerating to best rate of climb speed, 85 miles per hour and slowly retract the flaps.

ACS Standards

V_x or V_y as appropriate ± 5 kts.

Short Field and Obstacle Landing

Starting Altitude: Pattern
Starting Airspeed: Approach

To land within a short-field or a confined area, the pilot must have precise, positive control of the rate of descent and airspeed to produce an approach that clears any obstacles, result in little or no floating during the round out, and permit the airplane to be stopped in the shortest possible distance.

Upon touchdown, the airplane is held in this positive pitch attitude as long as the elevators remain effective.

Use the procedures in the POH/AFM if available.

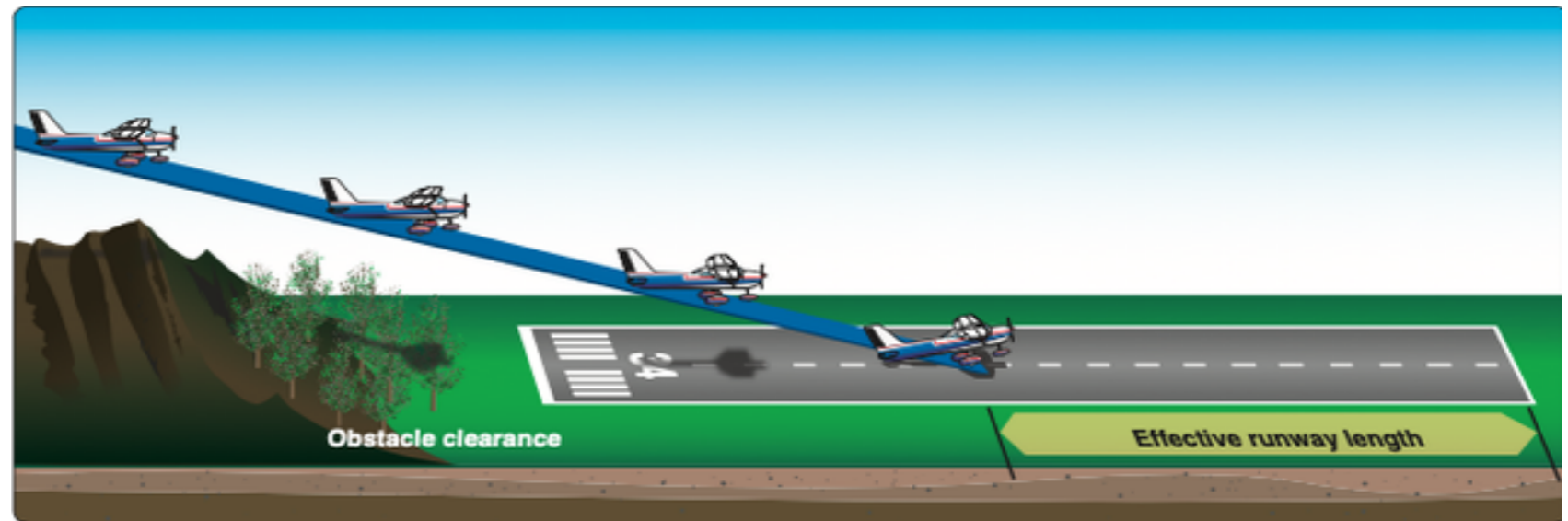


Figure 8-20. Landing over an obstacle.

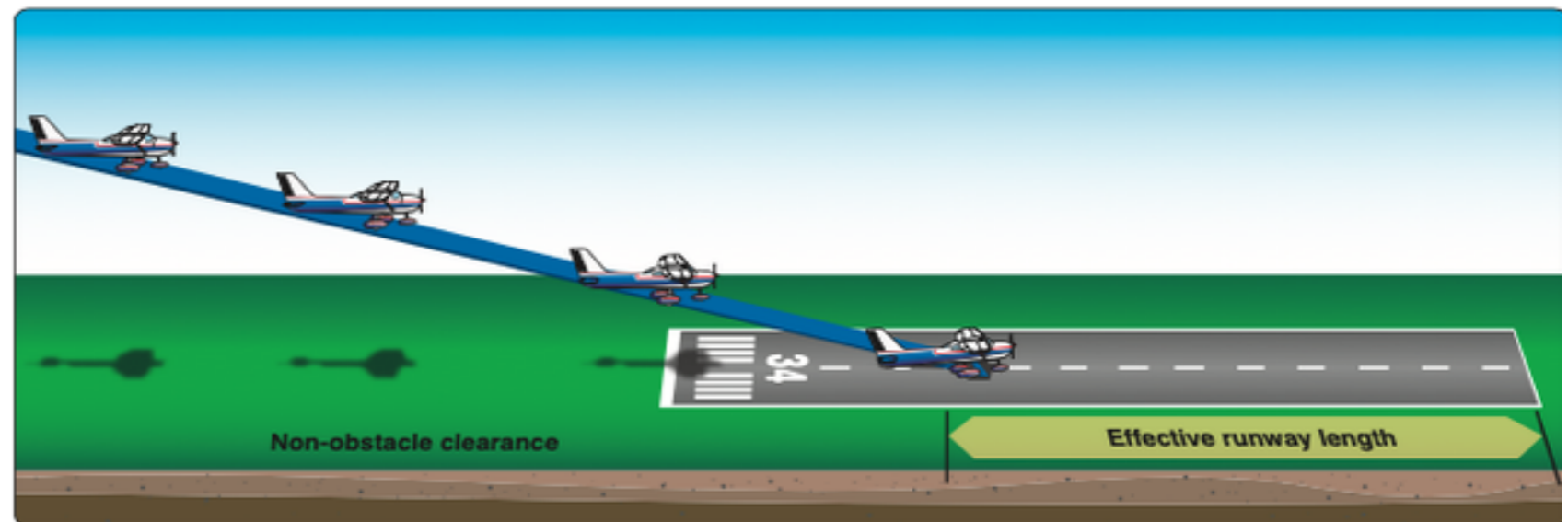


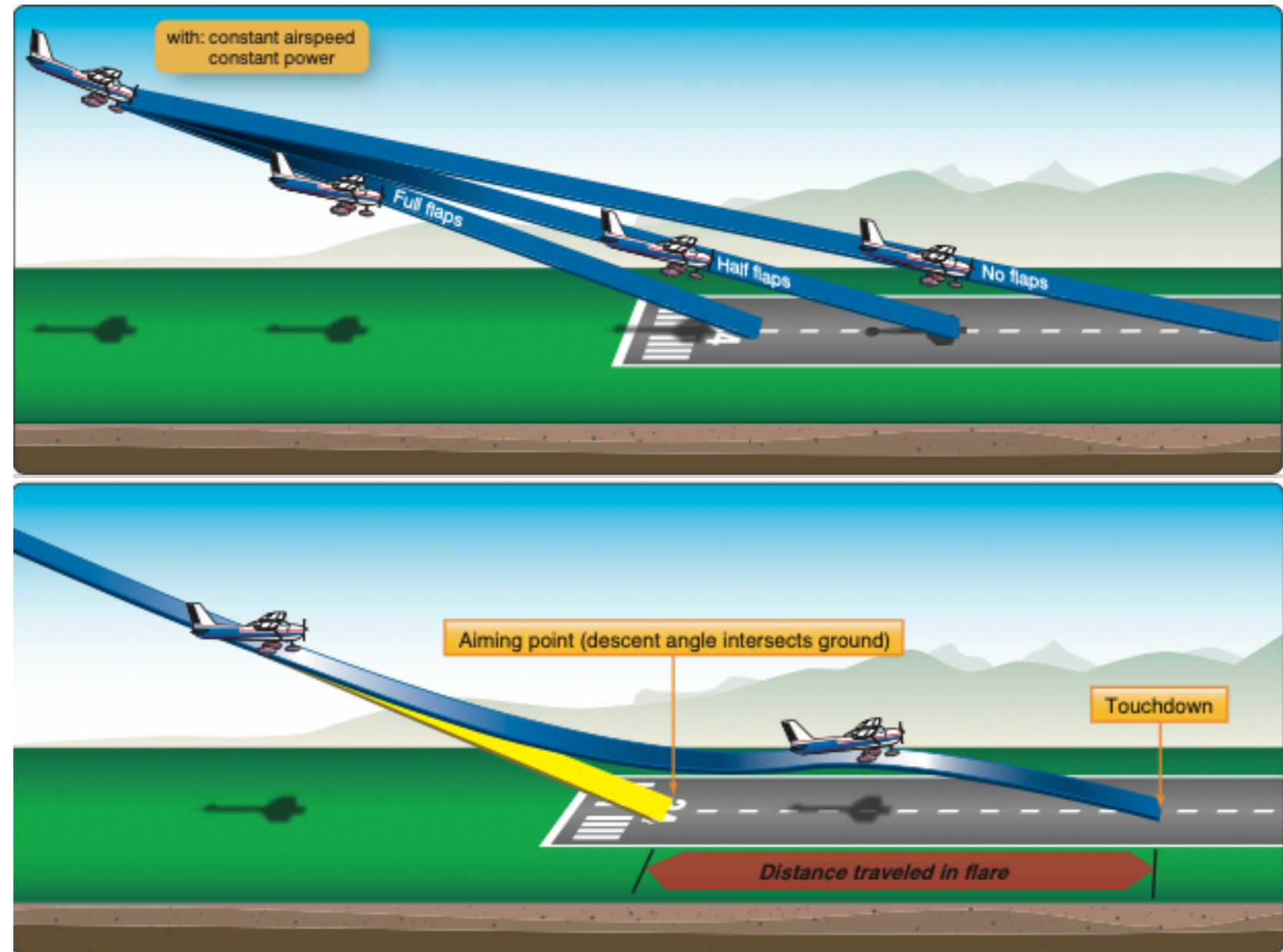
Figure 8-21. Landing on a **short-field**.

ACS Standards

Touch down at a proper pitch attitude within 100 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.

Normal Approach and Landing

Starting Altitude: Pattern
Starting Airspeed: 100 MPH
Slow to 85 MPH
1.3 V_{so} is 72 MPH
Touchdown at 55-65 MPH
Hold nosewheel off

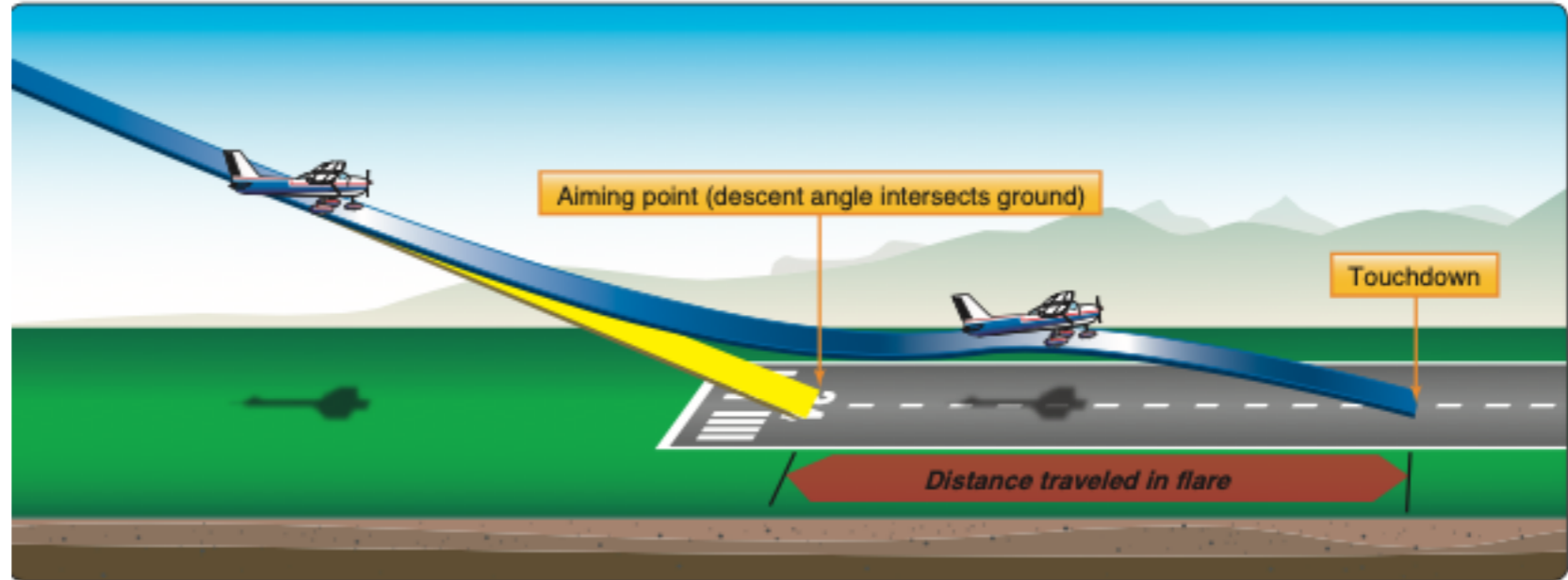
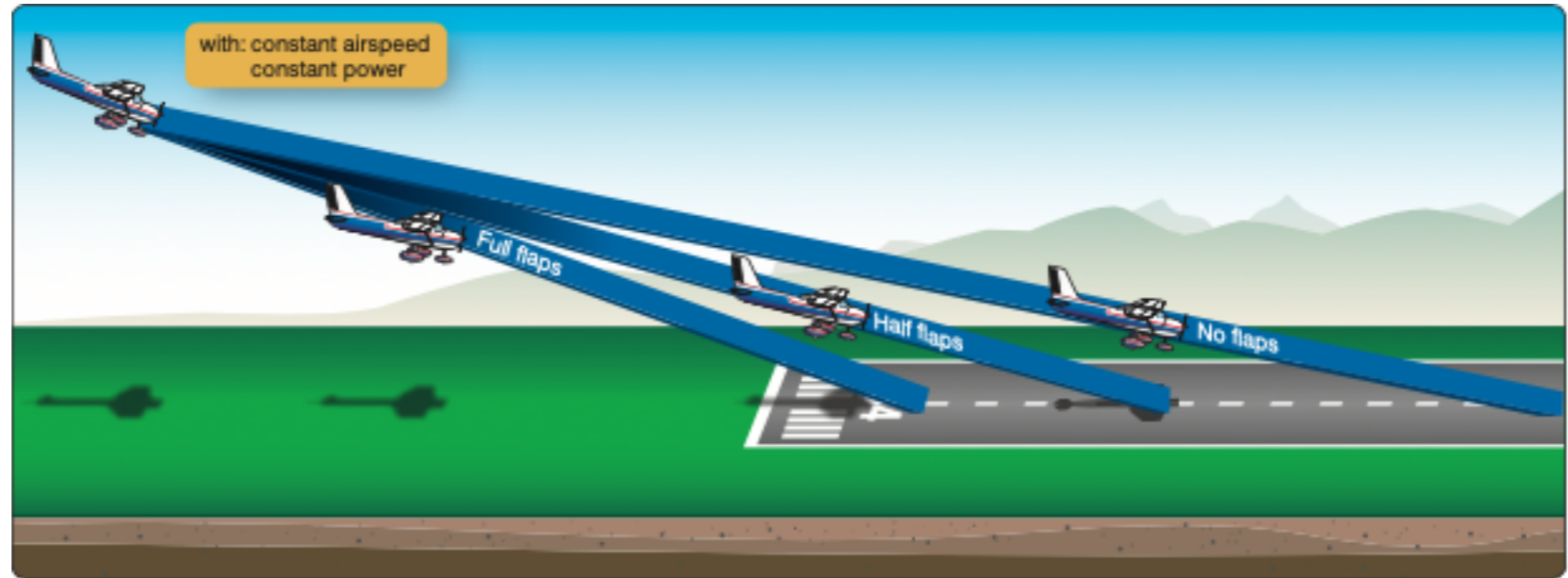


ACS Standards

Touch down at a proper pitch attitude, within 200 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.

Maintain manufacturer's published approach airspeed or in its absence not more than 1.3 V_{so}, ± 5 knots with wind gust factor applied.

Short Field Landing



Starting Altitude: Pattern
Starting Airspeed: 100 MPH

Slow to 85 MPH

1.3 V_{so} is 72 MPH

Touchdown at 55-65 MPH
Hold nosewheel off

A soft or short-field landing requires **minimal speed at touchdown** while a short field obstacle approach requires minimum speed and a steep approach angle.

Full Flaps

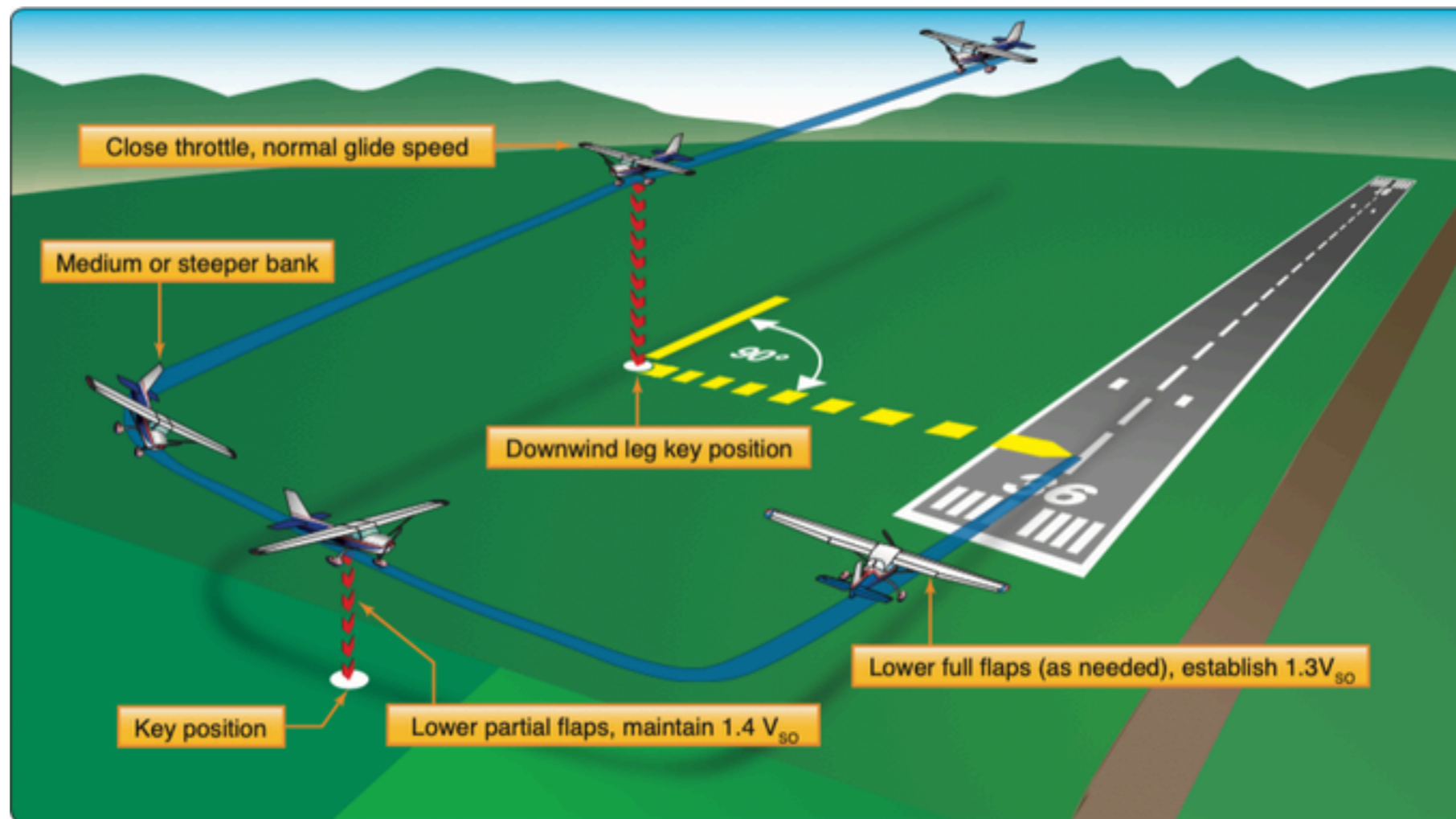
ACS Standards

Touch down at a proper pitch attitude, within **100** 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.

Maintain manufacturer's published approach airspeed or in its absence not more than 1.3 V_{so}, ± 5 knots with wind gust factor applied.

Power Off 180°

Starting Altitude: Pattern
Starting Airspeed: 100 MPH
Pitch to Best Glide
74 Single Pilot
78 Two Pilots
83 Gross Weight



ACS Standards

Touch down at a proper pitch attitude, within 200 feet beyond or on the specified point with no side drift and with the airplane's longitudinal axis aligned with and over the runway centerline or landing path, as applicable.

Emergency Descent

Starting Altitude: Cruise

Starting Airspeed: Cruise

Clear the area.

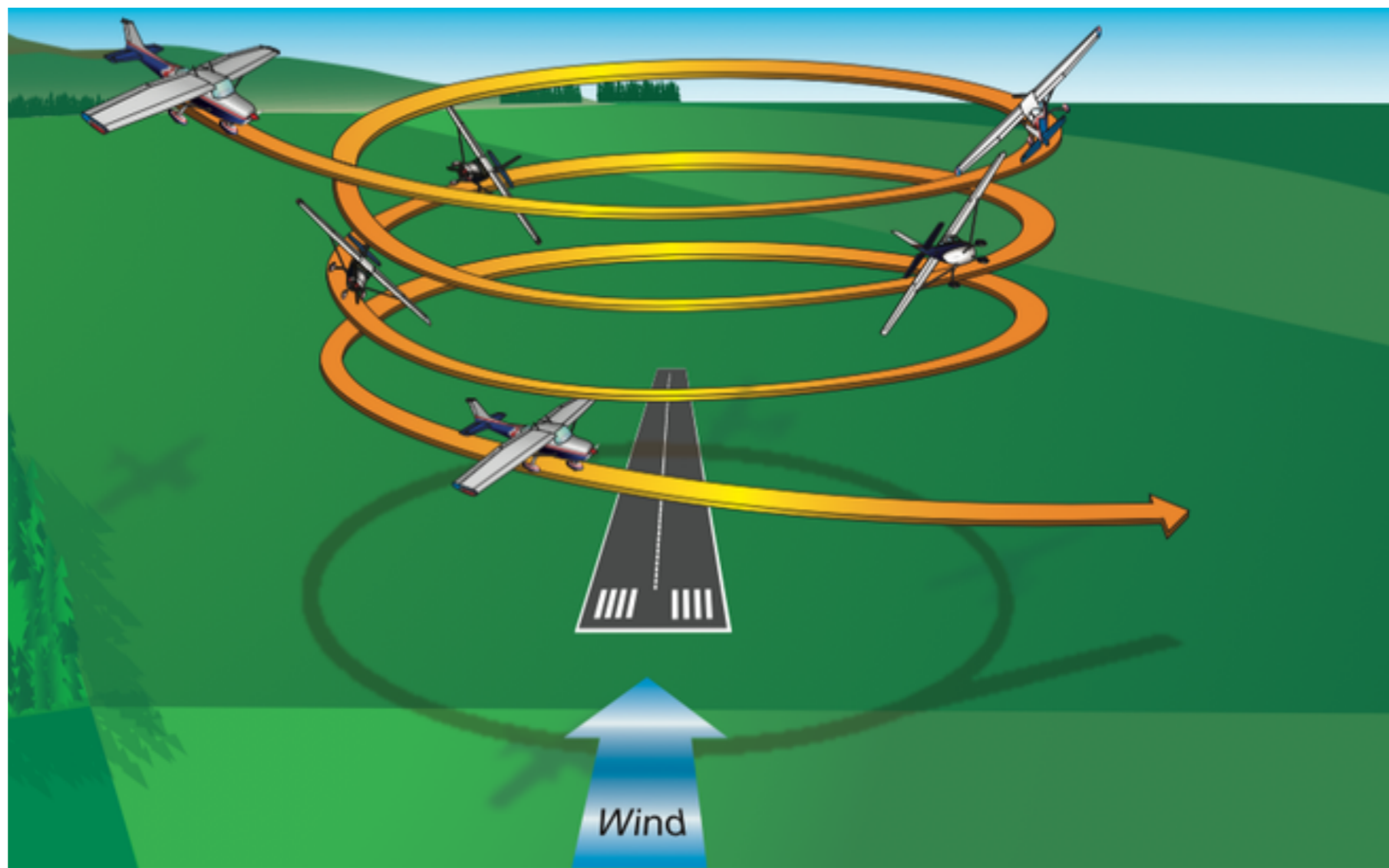
Use bank angle between 30° and 45° to maintain positive load factors during the descent.

Maintain appropriate airspeed, $\pm 0/-10$ knots, and level off at specified altitude, ± 100 feet.

The throttle should be periodically advanced to normal cruise power and sustained for a few seconds, preferably heading into the wind.

Three turns and roll out toward a definite object or on a specific heading.

Complete the appropriate checklist.



ACS Standards

Maintain the appropriate airspeed, $\pm 0/-10$ knots.

Roll out toward an object or specified heading, $\pm 10^\circ$.

Complete the maneuver no lower than 1,500' AGL.

Emergency Approach and Landing

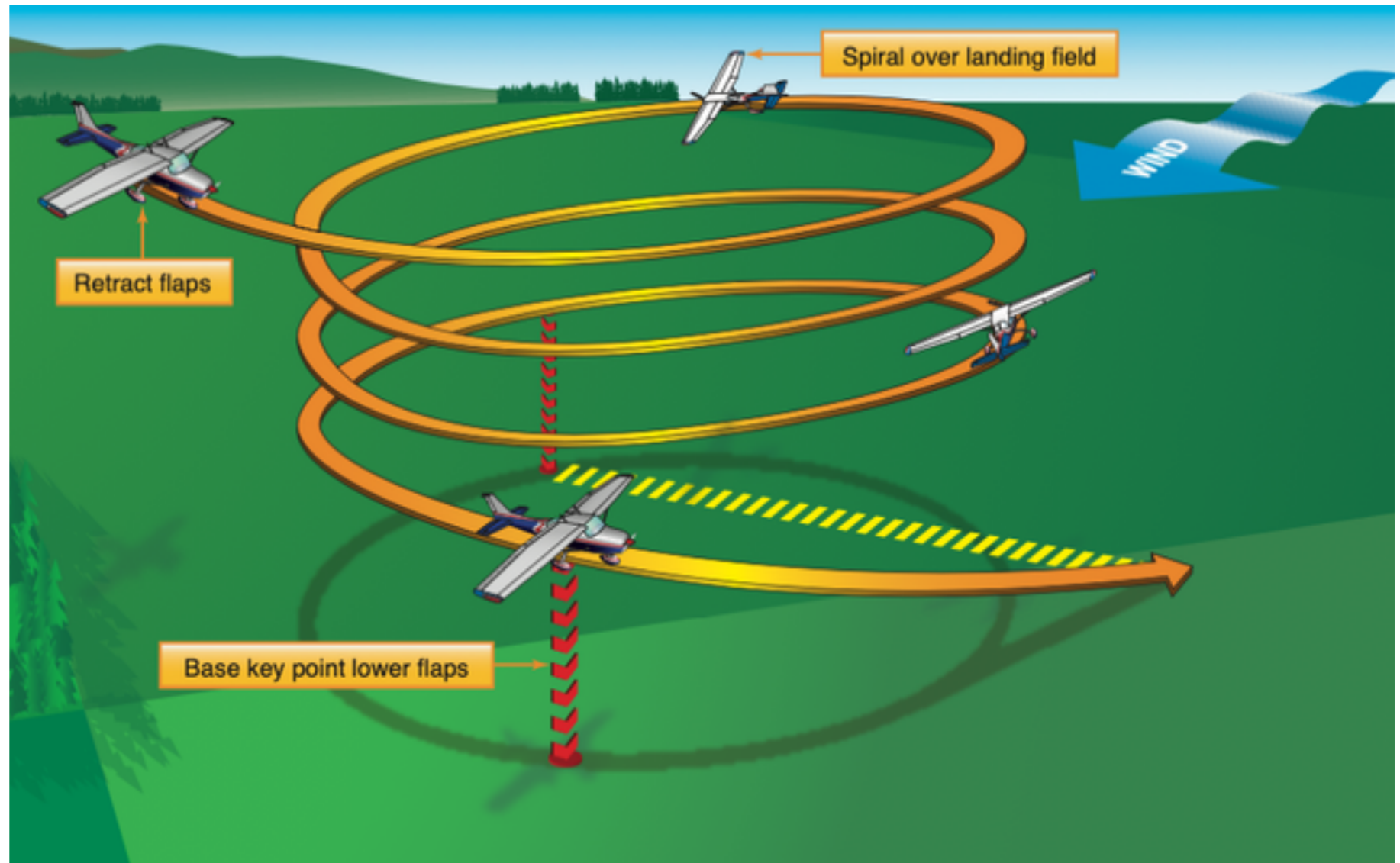
Starting Altitude: Cruise

Starting Airspeed: Cruise

Clear the area.

Select a suitable landing area considering altitude, wind, terrain, obstructions, and available glide distance.

Plan and follow a flightpath to the selected landing area considering altitude, wind, terrain, and obstructions.



ACS Standards

Prepare for landing as specified by the evaluator.

Maintain appropriate airspeed, $\pm 0/-10$ knots.

Level off at specified altitude, ± 100 feet.

Complete the appropriate checklist.

Accelerated Stalls

Starting Altitude: > 3,500'

Starting Airspeed: < V_A , 80 MPH

Clear the area.

Full power, maximum airspeed.

Flaps Up

Bank of approximately 45°

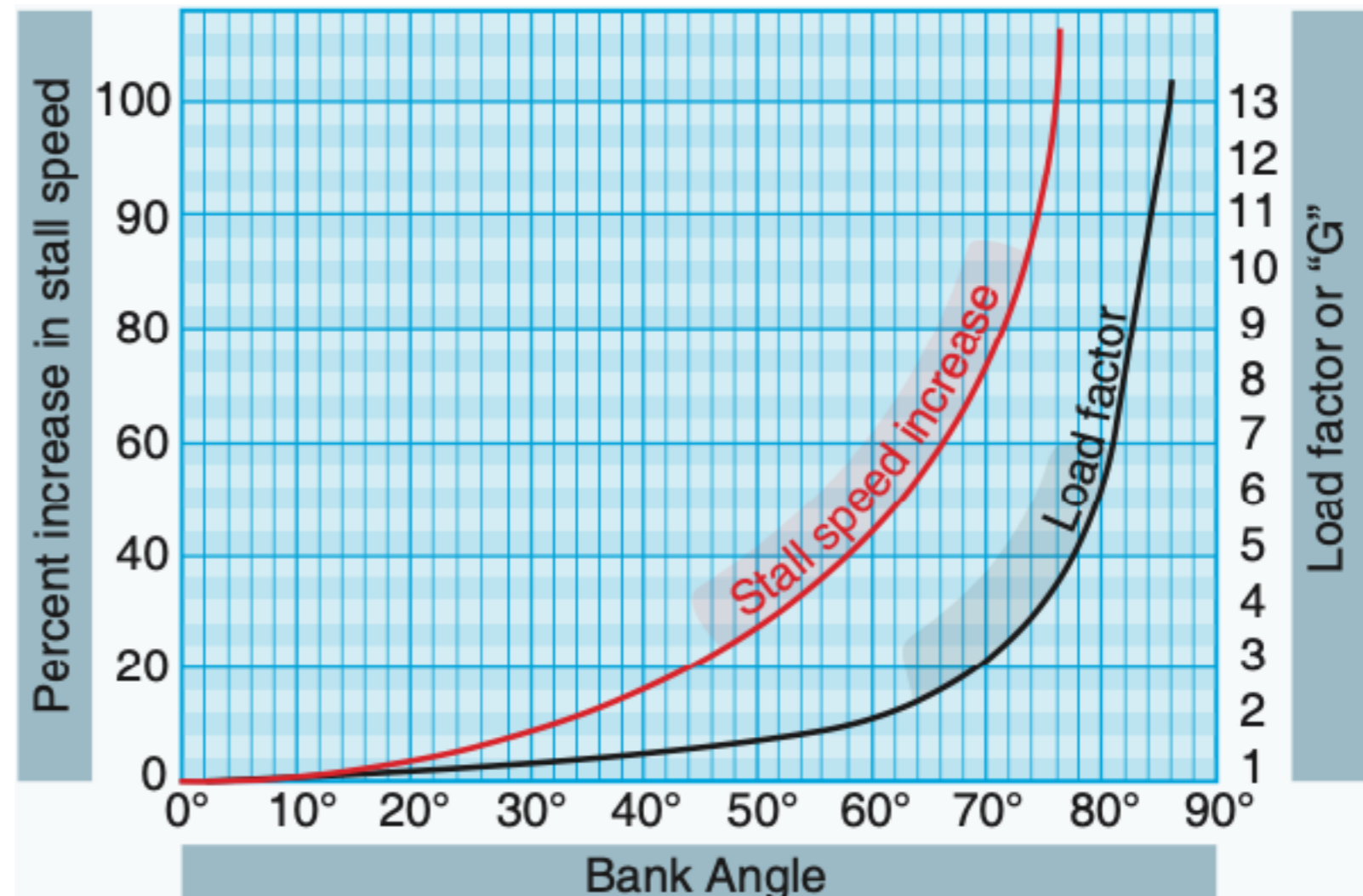
Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.

Acknowledge the cue(s) and recover promptly at the first indication of an impending stall (e.g., aircraft buffet, stall horn, etc.).

Forward elevator (reduce AOA)

Wings Level

Full Power



ACS Standards

Complete no lower than 3,500' AGL

Acknowledge the cue(s) and **recover promptly at the first indication** of an impending stall (e.g., aircraft buffet, **stall horn**, etc.).

Accelerate to V_x or V_Y .

Return to the altitude, heading, and airspeed specified by the evaluator.

Power Off Stall

Starting Altitude: > 2,000'
Starting Airspeed: Approach

Clear the area.

Establish a stabilized descent.
Flaps as specified by DPE.

Transition smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.

Recover at the first indication of a stall or after a full stall has occurred, as specified by the evaluator.

Maintain a specified heading or specified angle of bank not to exceed 20°.

Return to the altitude, heading, and airspeed specified by the evaluator.

Stall speed with full flaps at 1950 lbs is 52 MPH.



ACS Standards

Recover at the **first indication of a stall** or after a full stall has occurred, as specified by the evaluator. Complete no lower than 1,500' AGL.

Accelerate to V_x or V_y .

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.

Power On Stall

Starting Altitude: > 2,000'
Starting Airspeed: 55-60 MPH

Clear the area.

Slow the airplane to normal lift-off speed.

Set takeoff power.

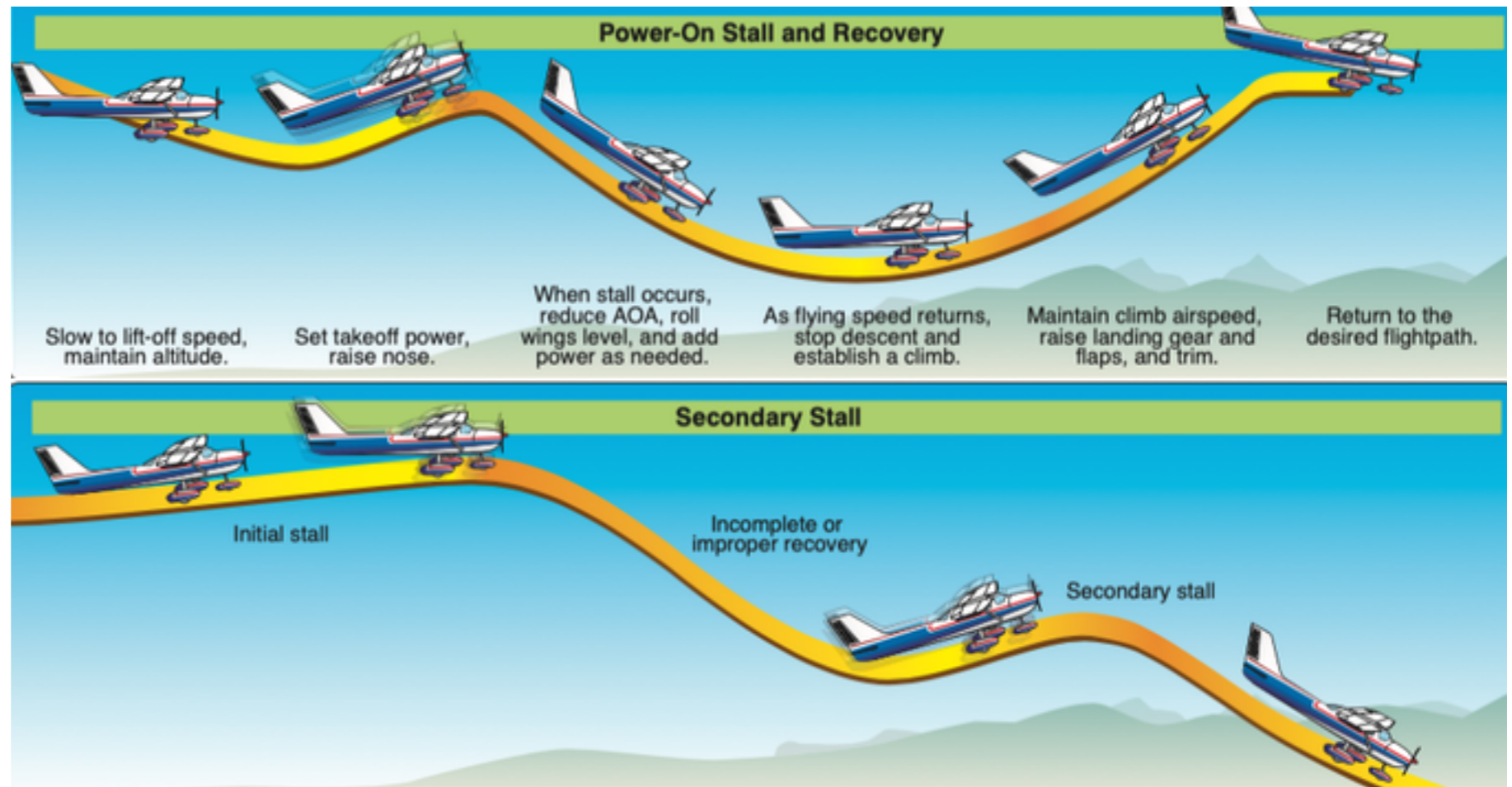
Establish a climb attitude.

Transition smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.

Maintain a specified heading or specified angle of bank not to exceed 20°.

Recovery: Pitch nose to horizon.

At $V_Y - 85$ MPH pitch up to normal climb.



ACS Standards

Recover at the **first indication of a stall** or after a full stall has occurred, as specified by the evaluator. Complete no lower than 1,500' AGL

Accelerate to V_X or V_Y .

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.

Slow Flight

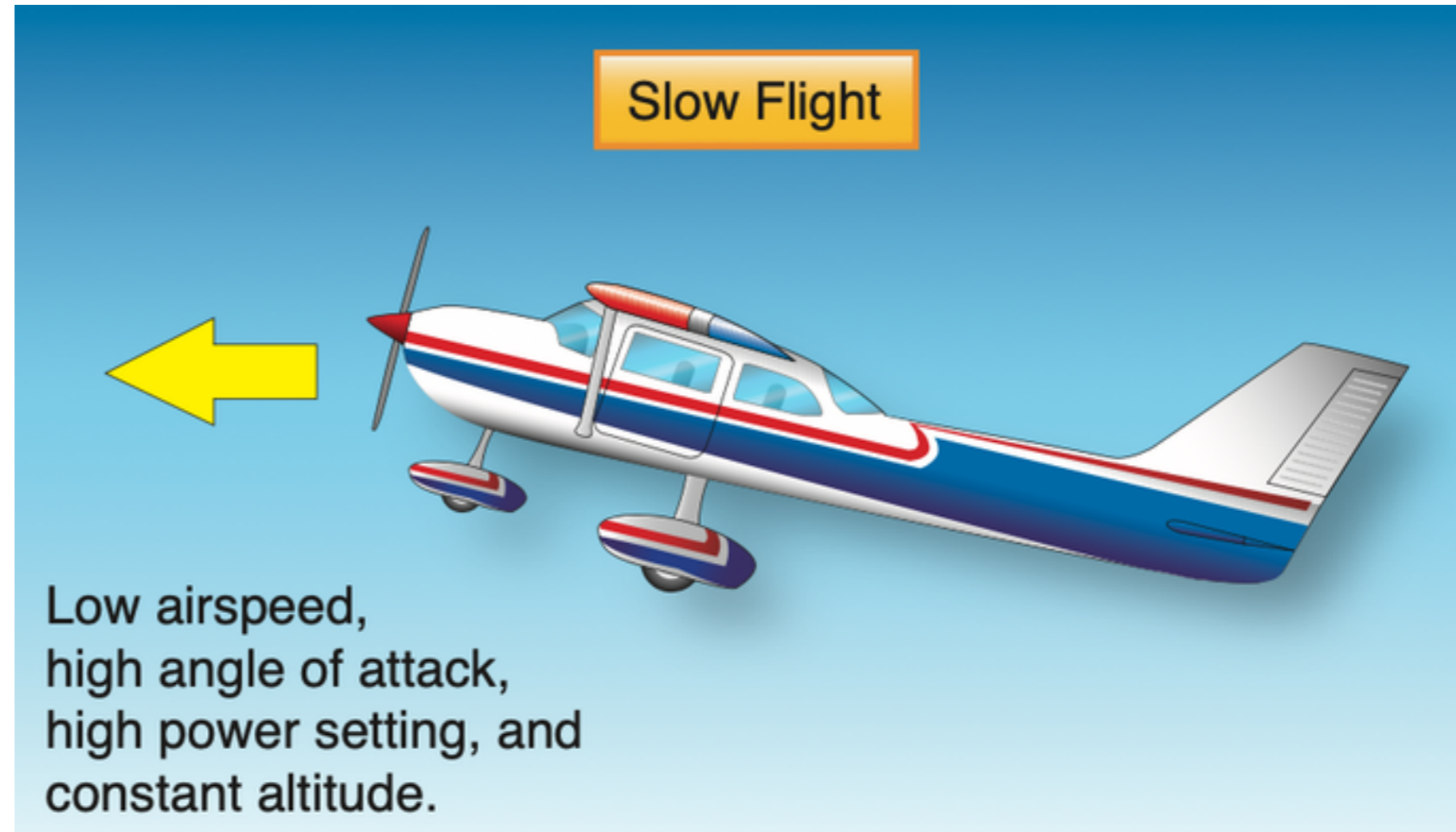
Starting Altitude: > 1,500'
Starting Airspeed: Approach

Clear the area.
Power to 1500 RPM
Full Flaps—40°
Maintain Altitude
Airspeed 55 MPH
Power 2300

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., airplane buffet, stall horn, etc.).

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., airplane buffet, stall horn, etc.).

Power for altitude. Pitch for airspeed.
Right Rudder for yaw.



ACS Standards

Maintain the specified altitude ± 50 feet.

Specified heading, $\pm 10^\circ$.

Airspeed, +5/-0 knots.

Specified angle of bank, $\pm 5^\circ$.

Power-Off Stall from Slow Flight

Starting Altitude: > 1,500'

Starting Airspeed: 55 MPH

Reduce Power to Idle
Carb Heat On

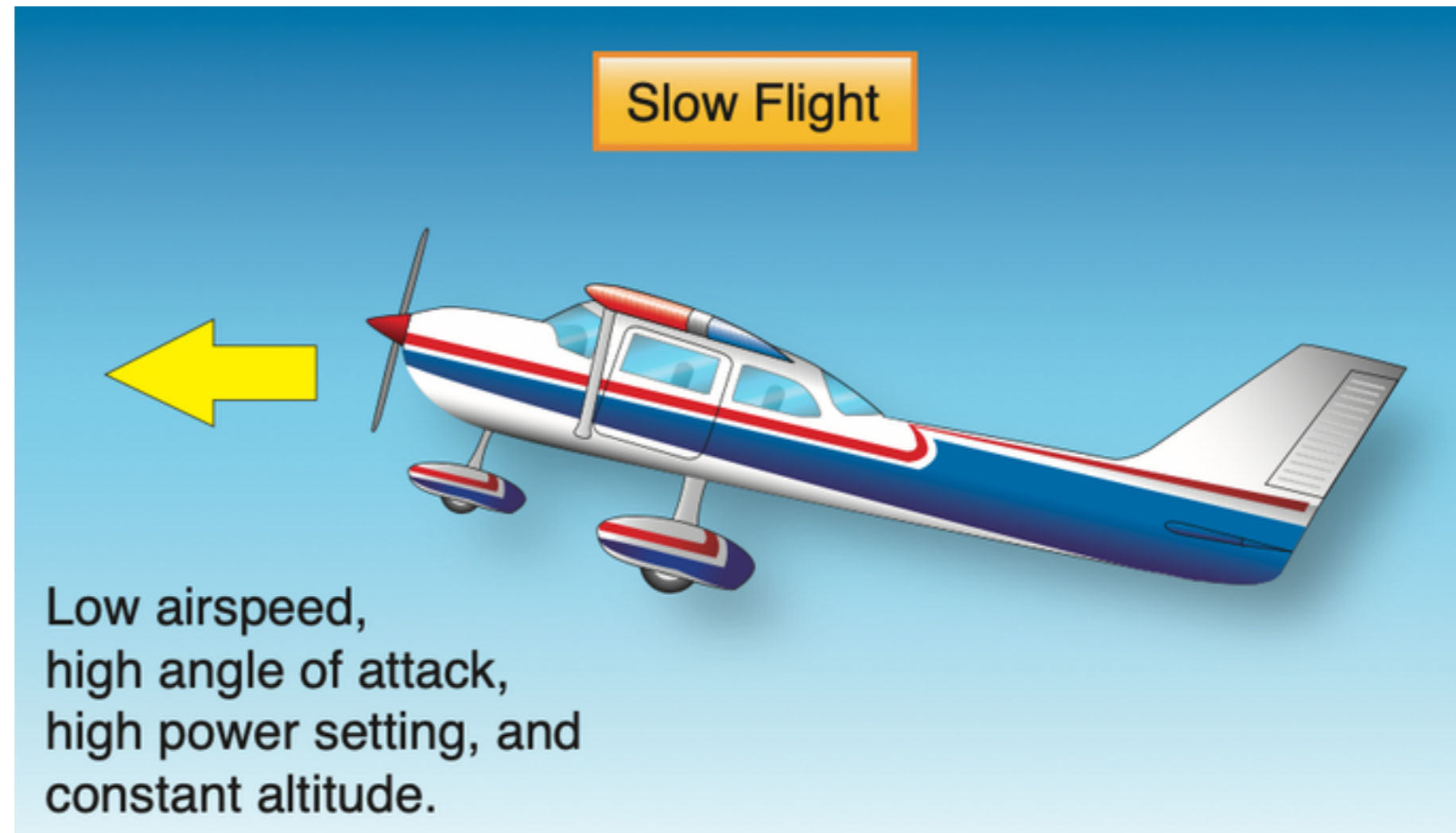
Lower nose to increase airspeed.

Rapidly increase pitch to stall.

Recovery: Simultaneously
Full Power and Carb Heat Off
Nose to Horizon
Flaps to 25°

At V_Y -85 MPH pitch up to normal
climb.

Positive rate of climb: remove
flaps.



ACS Standards

Return to the altitude, heading, and airspeed specified by the evaluator.

Spins

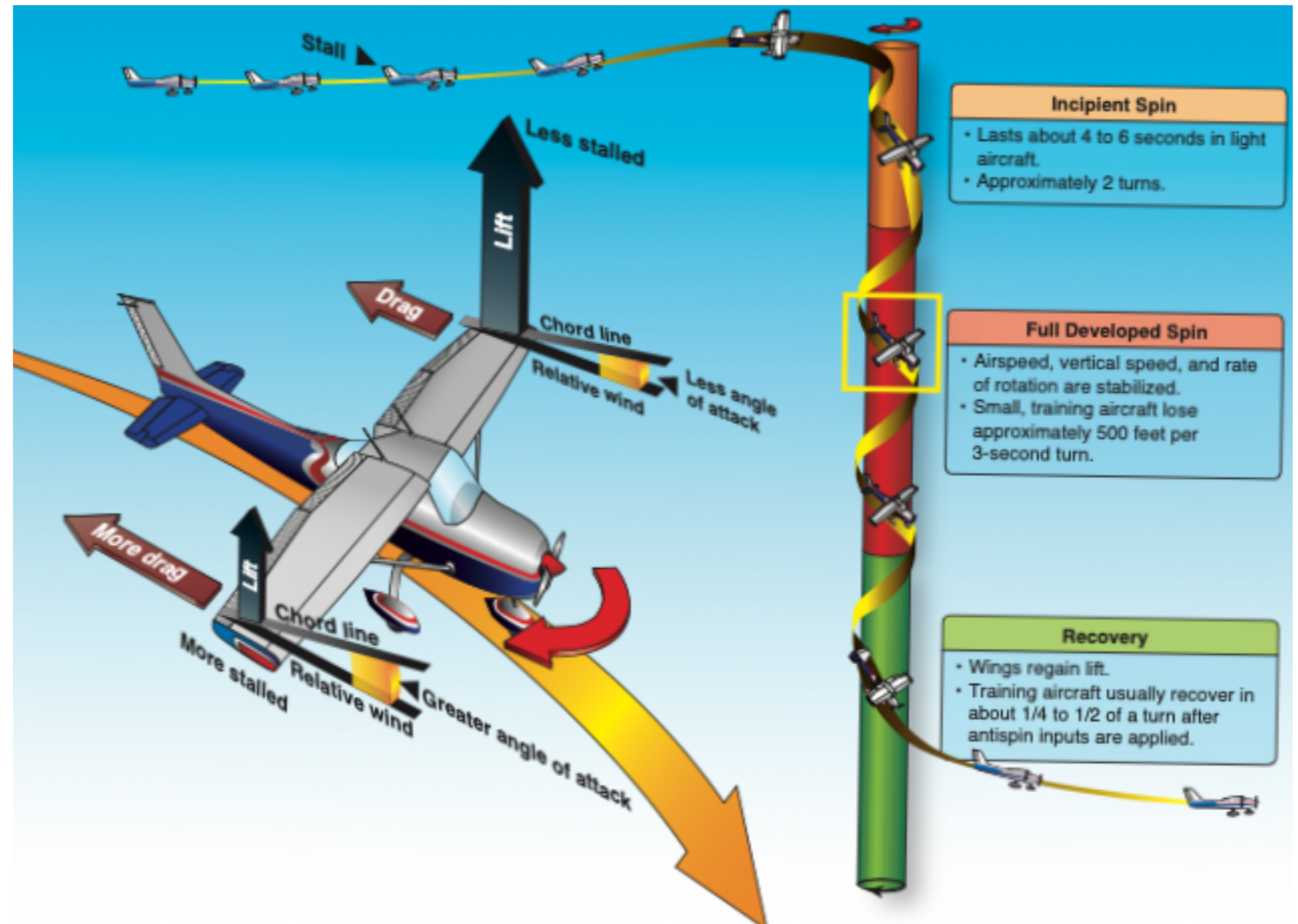
Starting Altitude: Starting Airspeed:

The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing: Factors and situations that could lead to inadvertent spin and loss of control.

Range and limitations of stall warning indicators (e.g., aircraft buffet, stall horn, etc.).

Improper spin recovery procedure. Effect of environmental elements on airplane performance related to spins (e.g., turbulence, microbursts, and high-density altitude).

Collision hazards, to include aircraft, terrain, obstacles, and wires. Distractions, loss of situational awareness, and/or improper task management.



ACS Standards

None