Visual Quick Reference V1

Based on FAA Regulations and Flight Training Material

October 17, 2025

Contents

1 Documents and Preflight

1.1 Required Documents (P.I.L.S. for Pilot/Passenger)

- **P**ilot Certificate
- **I**D (e.g., Government Photo ID)
- **L**ogbook (with required endorsements, checkrides, recency)
- **S**pecial (e.g., Medical Certificate, Student Pilot Certificate)

1.2 Aircraft Documents (A.R.R.O.W.)

- **A**irworthiness Certificate
- **R**egistration Certificate
- **R**adio License (only required for international flight)
- **O**perating Handbook (**POH**) / Approved Flight Manual
- **W**eight and Balance Data

1.3 Required Preflight Information (R.A.W. F.A.T.)

- **R**unway lengths at airports of intended use
- **A**lternate airports available
- **W**eather reports and forecasts
- **F**uel requirements
- **A**TC delays and Notams
- **T**akeoff and landing distance information

1.4 Fuel Requirements (§91.151)

- **Day VFR:** Enough fuel to fly to the first point of intended landing plus 30 minutes reserve.
- **Night VFR:** Enough fuel to fly to the first point of intended landing plus 45 minutes reserve.

1.5 Pre-Takeoff Mnemonics

1.5.1 CIGAR: Pre-Takeoff Flow

- **C**: ontrols: Check that they are free and moving.
- **I**: nstruments: Ensure they are indicating correctly.
- **G**: as: Check fuel quantity and that the correct tank is selected.
- **A**: irplane secure: Ensure everything is properly secured and aligned.
- **R**: un-up: Perform the engine run-up check.

1.5.2 Lights, Camera, Action: Final Pre-Takeoff Check

- **L**: ights: Turn on landing and strobe lights.
- **C**: amera: Set the transponder to "alt" mode.
- **A**: ction: Check mixture, flaps, trim, and fuel pump.

2 Required Aircraft Equipment and Inspections

2.1 Day VFR Equipment (T.O.M.A.T.O. F.L.A.M.E.S. - §91.205)

- **T**achometer
- **O**il Pressure Gauge
- **M**agnetic Compass
- **A**ltimeter
- **T**emperature Gauge (for liquid-cooled engine)
- **O**il Temperature Gauge (for air-cooled engine)
- **F**uel Gauge
- **L**anding Gear Position Indicator (retractable gear)
- **A**irspeed Indicator
- **M**anifold Pressure Gauge (constant-speed prop)
- **E**LT (Emergency Locator Transmitter)
- **S**eat belts/Shoulder harnesses

2.2 Night VFR Equipment (F.L.A.P.S.)

In addition to Day VFR equipment:

- **F**uses (spare set or circuit breakers)
- **L**anding light (*if operated for hire*)
- **A**nticollision lights (Strobe/Beacon)
- **P**osition lights (Nav lights)
- **S**ource of electrical power (Battery/Alternator)

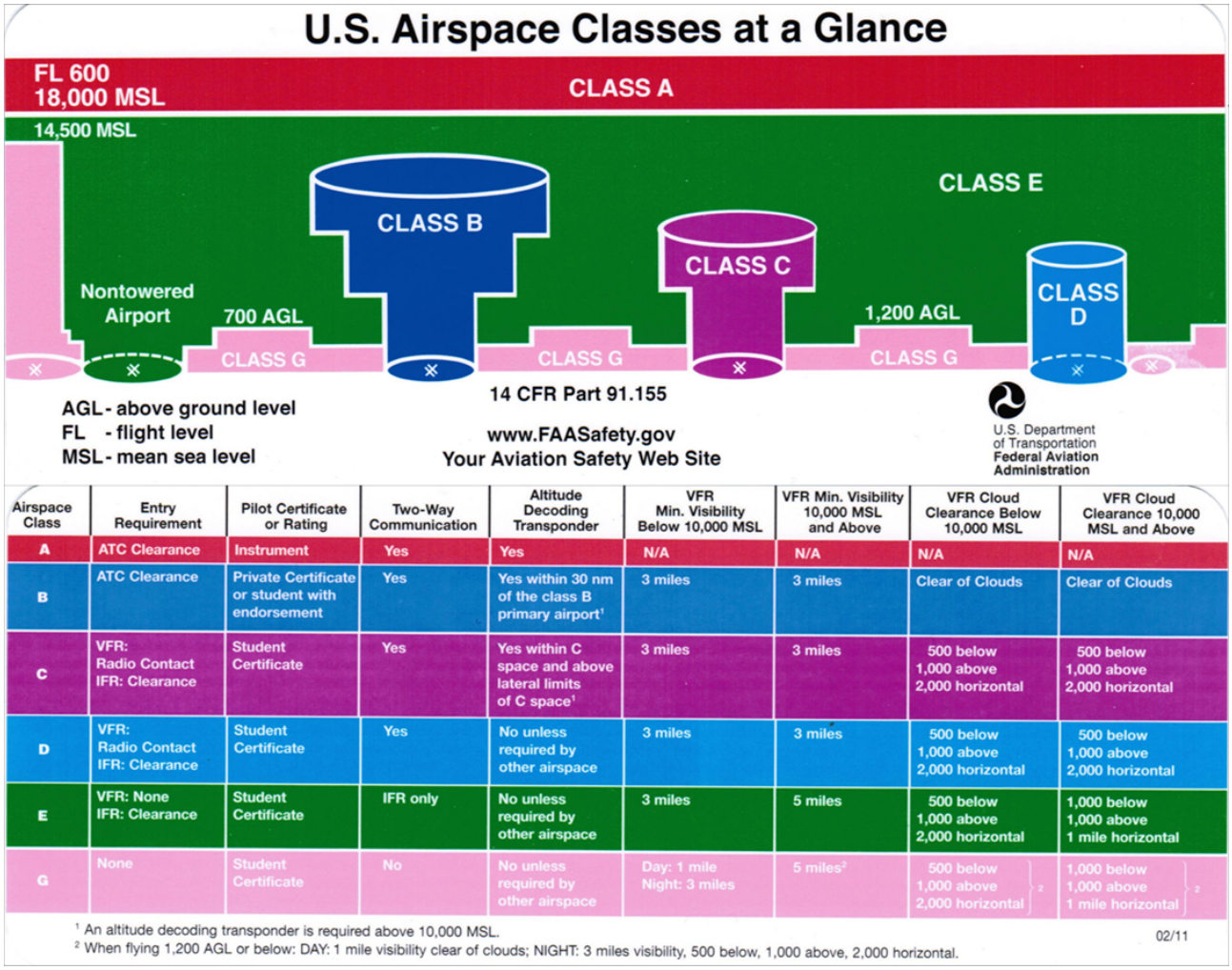
2.3 Required Inspections (A.V.I.A.T.E.S. - §91.409)

- **A**irworthiness Directives (**ADs**) (Must be complied with)
- **V**OR check (30 days for IFR)
- **I**nspections (Annual)
- **A**ltimeter/Pitot-Static system (24 cal months for IFR)
- **T**ransponder (24 cal months)
- **E**LT (12 cal months, half of battery life, or 1 hour cumulative use)
- **S**afety Equipment/Seat Belts (often implied by Annual/ELT)
- **+ 100 Hour** (if flown for hire)

3 Airspace Classification

Airspace is classified into six classes: A, B, C, D, E, and G, which are either controlled or uncontrolled. Controlled airspace (A, B, C, D, E) is managed by air traffic control (ATC), while Class G is uncontrolled.

3.1 Airspace Classification Diagram



Airspace Class	Entry Requirement	Pilot Certificate or Rating	Two-Way Communication	Altitude Decoding Transponder	VFR Min. Visibility Below 10,000 MSL	VFR Min. Visibility 10,000 MSL and Above	VFR Cloud Clearance Below 10,000 MSL	VFR Cloud Clearance 10,000 MSL and Above
A	ATC Clearance	Instrument	Yes	Yes	N/A	N/A	N/A	N/A
B	ATC Clearance	Private Certificate or student with endorsement	Yes	Yes within 30 nm of the class B primary airport[1]	3 miles	3 miles	Clear of Clouds	Clear of Clouds
C	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	Yes within C space and above lateral limits of C space[1]	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
D	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	No unless required by other airspace	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
E	VFR: None IFR: Clearance	Student Certificate	IFR only	No unless required by other airspace	3 miles	5 miles	500 below 1,000 above 2,000 horizontal	1,000 below 1,000 above 1 mile horizontal
G	None	Student Certificate	No	No unless required by other airspace	Day: 1 mile Night: 3 miles	5 miles[2]	500 below 1,000 above 2,000 horizontal [2]	1,000 below 1,000 above 1 mile horizontal [2]

[1] An altitude decoding transponder is required above 10,000 MSL.
[2] When flying 1,200 AGL or below: DAY: 1 mile visibility clear of clouds; NIGHT: 3 miles visibility, 500 below, 1,000 above, 2,000 horizontal.

02/11

Figure 1: FAA Airspace Classification

4 Performance Formulas and Navigation

4.1 True Airspeed (TAS) Estimation

TAS is CAS corrected for altitude and nonstandard temperature.

$$\text{TAS} \approx \text{CAS} \times (1 + \frac{\text{True Altitude (ft)}}{1000} \times 0.015)$$

- **Key Point:** For a given CAS, TAS increases as altitude increases.

4.2 Pressure Altitude (PA)

PA is the altitude when the altimeter is set to $29.92\,\text{inHg}$.

$$\text{PA (ft)} = (29.92\,\text{inHg} - \text{Current Altimeter Setting (in Hg)}) \times 1000 + \text{Field Elevation (ft)}$$

4.3 Density Altitude (DA)

DA is PA corrected for nonstandard temperature.

$$\text{DA (ft)} = \text{PA (ft)} + [120 \times (\text{OAT}(^\circ\text{C}) - \text{ISA Temp}(^\circ\text{C}))]$$

- ISA Temp$(^\circ\text{C}) \approx 15 - (\text{PA}/1000 \times 2)$.
- High DA (Hot, High, Humid) means reduced aircraft performance.

4.4 Time Conversions (UTC to US Time Zones)

UTC (Coordinated Universal Time) is often referred to as 'Zulu' (Z) time in aviation.

- **Eastern Standard Time (EST)**: UTC - $5\,\text{hours}$
- **Eastern Daylight Time (EDT)**: UTC - $4\,\text{hours}$
- **Central Standard Time (CST)**: UTC - $6\,\text{hours}$
- **Central Daylight Time (CDT)**: UTC - $5\,\text{hours}$
- **Mountain Standard Time (MST)**: UTC - $7\,\text{hours}$
- **Mountain Daylight Time (MDT)**: UTC - $6\,\text{hours}$
- **Pacific Standard Time (PST)**: UTC - $8\,\text{hours}$
- **Pacific Daylight Time (PDT)**: UTC - $7\,\text{hours}$

4.5 Speed Conversions

- **Knots (kt) to Miles Per Hour (mph):**

$$\text{MPH} \approx \text{Knots} \times 1.15$$

- **Knots (kt) to Feet Per Minute (ft/min) (for descent):**

$$\text{ft/min} = \text{Knots} \times 101.268$$

4.6 Descent Planning (3:1 Rule)

A general rule for planning a standard 3-degree ($300\,\text{ft/NM}$) descent.

- **Descent Distance (in NM):**

$$\text{Distance (NM)} = \frac{\text{Altitude to Lose (ft)}}{100 \times 3}$$

- **Rate of Descent (VSI in ft/min):**

$$\text{VSI} \approx \text{Ground Speed (kt)} \times 5$$

4.7 VFR Cruising Altitudes (§91.159)

Required above 3000 ft AGL outside of designated airspace.

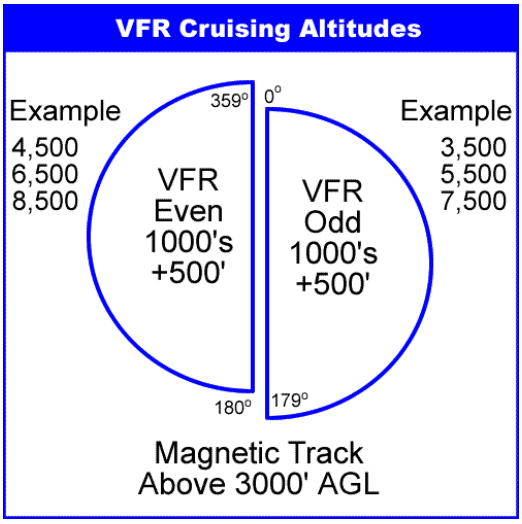


Figure 2: VFR Cruising Altitudes (Above 3000 ft AGL)

5 Weather and Cloud Clearance

5.1 Cloud Base Estimation Formula

$$\text{Cloud Base (AGL in ft)} = \frac{\text{Temperature}(^\circ\text{F}) - \text{Dew Point}(^\circ\text{F})}{4} \times 1000 \tag{1}$$

Based on the standard convergence rate of $4\,^\circ\text{F}$ *per* $1000\,\text{ft}$.

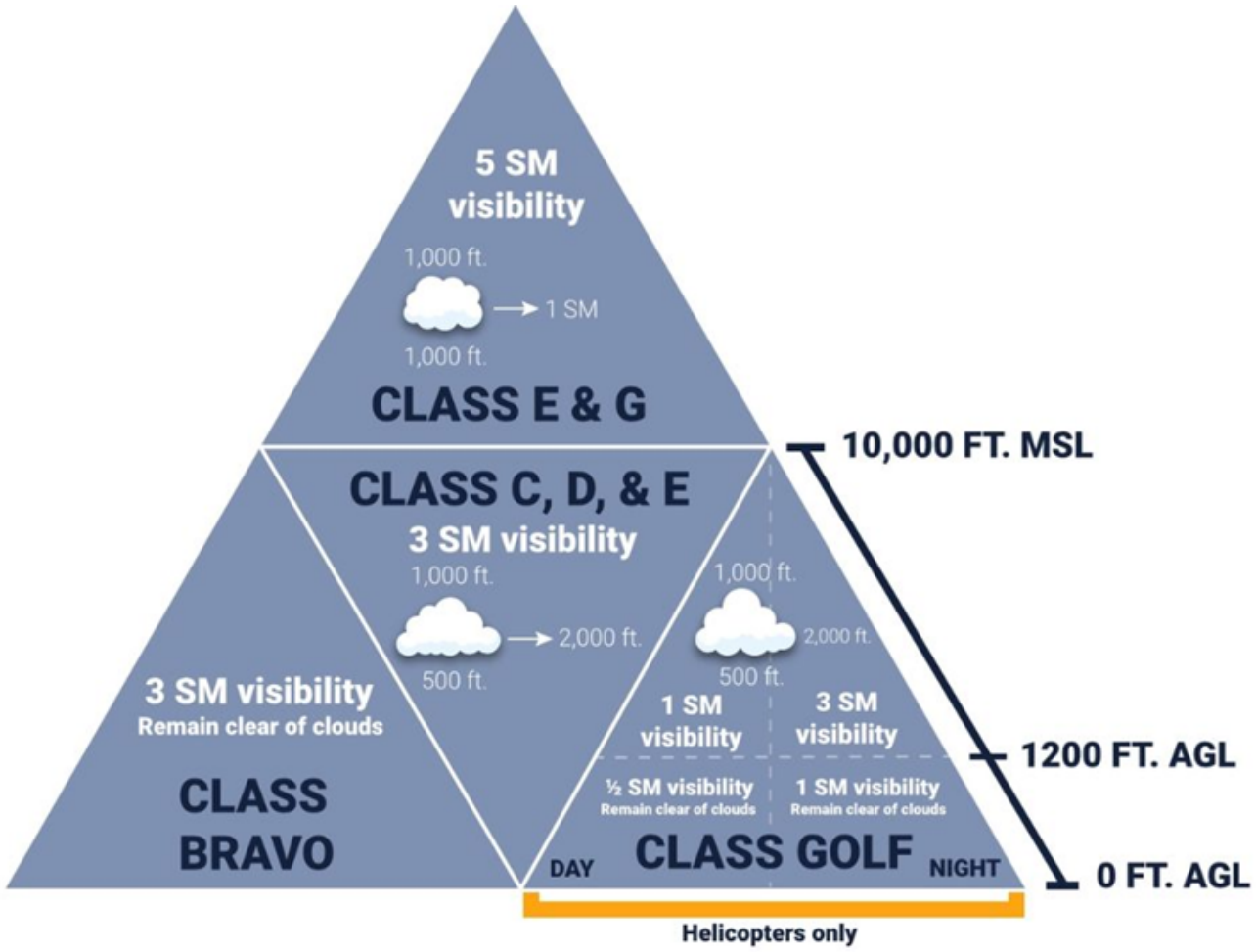


Figure 3: VFR Visibility and Cloud Clearance Diagram

6 METAR and TAF Weather Abbreviations (Common)

Table 1: Common METAR/TAF Weather Identifiers

Weather ID	Meaning
BC	Patches (Fog/Mist)
BR	Mist (Visibility $\geq 5\,8$ SM)
DZ	Drizzle
FG	Fog (Visibility $< 5\,8$ SM)
FU	Smoke
FZ	Freezing (e.g., FZRA)
GR	Hail ($> 5\,$mm)
GS	Small Hail / Snow Pellets ($< 5\,$mm)
HZ	Haze
IC	Ice Crystals
PL	Ice Pellets
RA	Rain
SN	Snow
SQ	Squalls (Sudden increase in wind)
SS	Sandstorm
VA	Volcanic Ash

6.1 METAR Report Example and Decoding

The routine weather observation (METAR) provides critical information on airport conditions in a standardized, sequential format.

6.2 Comprehensive METAR/TAF Abbreviations

For a comprehensive list of all METAR/TAF abbreviations and descriptors, refer to the following image.

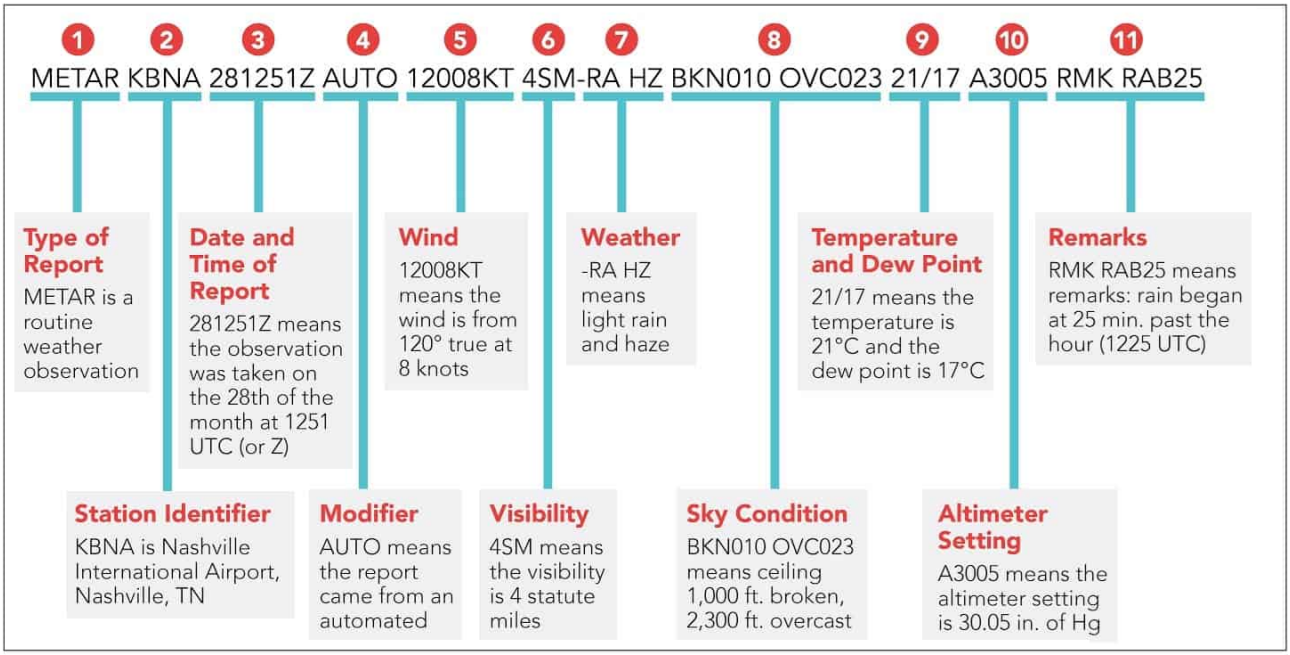


Figure 4: Example of a METAR Report Decoding

Type	Abbreviation	Meaning	Abbreviation	Meaning
Intensity	-	Light intensity	blank	Moderate intensity
Intensity	+	Heavy intensity	VC	In the vicinity
Descriptor	MI	Shallow (French: *Mince*)	PR	Partial
Descriptor	BC	Patches (French: *Bancs*)	DR	Low drifting
Descriptor	BL	Blowing	SH	Showers
Descriptor	TS	Thunderstorm	FZ	Freezing
Precipitation	RA	Rain	DZ	Drizzle
Precipitation	SN	Snow	SG	Snow Grains
Precipitation	IC	Ice Crystals	PL	Ice Pellets
Precipitation	GR	Hail (French: *Grêle*)	GS	Small Hail and/or Snow Pellets (French: *Grésil*)
Precipitation	UP	Unknown Precipitation		
Obscuration	FG	Fog	VA	Volcanic Ash
Obscuration	BR	Mist (French: *Brume*)	HZ	Haze
Obscuration	DU	Widespread Dust	FU	Smoke (French: *Fumée*)
Obscuration	SA	Sand	PY	Spray
Other	SQ	Squall	PO	Dust or Sand Whirls
Other	DS	Duststorm	SS	Sandstorm
Other	FC	Funnel Cloud		
Time	B	Began At Time	E	Ended At Time
Time	2 digits	Minutes of current hour	4 digits	Hour/Minutes Zulu Time

Figure 5: Comprehensive METAR/TAF Weather Identifiers and Descriptors

7 ATC Radio Communications

The fundamental purpose of radio communication is to relay critical information regarding safety, traffic, and flight intentions clearly and concisely. Adherence to standard phraseology and monitoring the correct frequency are paramount.

7.1 Standard Communications Structure

- **Who** you are calling (e.g., "Tower")
- **Who** you are (e.g., "Cessna 12345")
- **Where** you are (e.g., "holding short runway 27")
- **What** you want (e.g., "requesting VFR departure to the West")

7.2 Phonetic Alphabet (ITU Standard)

Use the phonetic alphabet for clarity when stating aircraft registration, runways, or other codes.

Letter	Phonetic	Letter	Phonetic
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliett	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

8 Airport & Aircraft Lighting

8.1 ATC Light Gun Signals (Ground and Air)

Table 2: ATC Light Gun Signals

Light Signal	On Ground	In Air
Steady Green	Cleared for Takeoff	Cleared to Land
Flashing Green	Cleared to Taxi	Return for Landing (or to circle)
Steady Red	STOP	Give Way to Other Aircraft (and continue circling)
Flashing Red	Taxi Clear of Runway	Airport Unsafe (Do not land)
Flashing White	Return to starting point on airport	N/A
Alternating Red/Green	Exercise extreme caution	Exercise extreme caution

8.2 Aircraft Lighting Requirements (§91.209)

8.2.1 Day

- **Anti-collision lights** (if installed)

8.2.2 Night

- **Position lights** (Nav lights)
- **Anti-collision lights** (Strobe/Beacon)

9 Stall/Spin Myths Summary

- **Myth #1:** Flying too slowly causes stalls.
- **Myth #2:** Stalls cause spins.
- **Myth #3:** All cross-controlled flight increases your stall / spin potential.
- **Myth #4:** If you inadvertently stall or spin, just let go of the controls.
- **Myth #5:** During recovery from upright spins, the elevator control should not be moved forward until rotation ceases.
- **Myth #6:** During spins, the slip / skid indicator shows spin direction.
- **Myth #7:** The longer an airplane stays in a spin, the more airspeed it gains and the faster it rotates.
- **Myth #8:** The longer an airplane stays in a spin, the greater the chance of structural damage.
- **Myth #9:** Since most accidental spins occur too low for recovery, spin training is a useless exercise.
- **Myth #10:** Pilots with more experience are better at avoiding fatal stall / spins than pilots with less experience.
- **Myth #11:** As a whole, flight instructors are well qualified to teach stalls and spins.