



# Things My Instructor Never Taught Me

Some rules of thumb I've picked up over the decades  
BY STEVE KROG

**PURSuing A PRIVATE PILOT** certificate today requires a lot of reading, listening, studying, and practice, whether preparing for the FAA written or the practical test demonstrating the ability to safely handle the airplane. To some students, it may seem overwhelming in the beginning, but by breaking it down and taking it one step or phase at a time, it becomes more realistically achievable.

I had a great instructor when I was learning to fly. But from an instructor's point of view, it always feels like there's more to be done to prepare the student. Sure, requirements are met, and all the boxes checked for both ground school and flight, but there seems to be so much more information outside the normal curriculum you would like to share and teach. At Cub Air, we try to go beyond the norm and teach some of these things.

I've enjoyed flight instructing for five decades and have realized there are many things I've learned through experience and the advice of others. These items are sometimes referred to as rules of thumb.

These things are often overlooked or never shared. The first item that comes to mind is the 50/70 rule. I've asked many of the tailwheel students to explain this rule to me, and I'm usually met with a blank stare. What it



means is this: If you haven't reached 70 percent of your desired takeoff speed when approaching the midpoint (50 percent) of the runway length, abort the takeoff.

Add another tip: When taxiing into position onto the runway in preparation for takeoff, do you take a second or two and pick a reference point far down the runway and use it as your go or no-go point? If not safely airborne at this point, you have plenty of runway to abort. This small tip will help you make an instant decision when determining whether to continue or pull the power and abort.

It takes a few seconds to recognize this situation, then a few more seconds to decide what to do, followed by another second or two used to act. In total, you have used up six valuable seconds. At approximately 70 mph indicated airspeed (IAS), more than 600 valuable feet of runway has been wasted. This might be the difference between stopping on the runway or stopping several hundred feet beyond the runway's end.

Density altitude is often forgotten once one has earned a pilot certificate. The weather for today's weekend flight calls for beautiful VFR conditions with light and variable winds. But a big heat wave has moved in. The temperature at 9 a.m. is already 90 degrees Fahrenheit. No big deal you think. The air will be cooler at a couple of thousand feet. But don't overlook how the temperature will affect the takeoff length. A simple rule of thumb is to add 12 percent to the length for each 15 degrees above standard temperature. In this situation, the temperature is 30 degrees above standard. Add approximately 25 percent to the runway length for today's takeoff. Now do you have enough runway to take off safely?

How do you determine the runway length if the airport data is not readily available to you? Or you are landing at a private country unimproved strip? Guessing might work, but it doesn't explain to

**If you haven't reached 70 percent of your desired takeoff speed when approaching the midpoint (50 percent) of the runway length, abort the takeoff.**

the FAA why you ended up in the woods. There is a simple way of estimating runway length.

Using the average approach speed of 70 mph IAS, fly a low parallel approach to the runway. Track the time it takes to fly from end to end. At 70 mph, you are traveling at roughly 100 feet per second. If it took 17 seconds from end to end, the runway length is approximately 1,700 feet. Knowing this, can you and your aircraft safely get into and out of this strip? Don't forget there are other items to take into consideration such as the temperature, wind direction, runway surface, and any obstructions.

NOTE: If flying the approach at 80 mph IAS, you'll travel nearly 120 feet per second.

A number of years ago, I had the pleasure of doing some flying with Jim Miles,



An advertisement for Van's Aircraft featuring the RV-9A kit aircraft. The top section has a dark background with the Van's Aircraft logo (an orange stylized 'VA' inside a circle) on the left, the text "VAN'S AIRCRAFT" in large white letters and "TOTAL PERFORMANCE" in smaller white letters below it in the center, and the website "WWW.VANSAIRCRAFT.COM" on the right. Below this is a large image of the RV-9A aircraft in flight, painted in white with orange and blue accents. The aircraft has "TF-RVC" written on its side and "RV-9A" in the bottom right corner of the image. The bottom section has a dark background with the text "THE WORLD LEADER IN KIT AIRCRAFT" in white capital letters.



## STEVE KROG

COMMENTARY / THE CLASSIC INSTRUCTOR



founder of the Hartford airport. He was a Civilian Pilot Training Program instructor and then a U.S. Army Air Corps pilot. After World War II, he flew as a crop duster until retiring at 75. Jim taught me a lot about thinking and flying outside the box. One lesson he taught me was figuring out how to smoothly descend when approaching the traffic pattern. He would say, "Steve, pretend that your 95-year-old grandmother is flying with you. She loves to fly but is very frail and has a serious case of hemorrhoids. How are you going to descend without causing her discomfort?"

**Don't overlook how the temperature will affect the takeoff length. A simple rule of thumb is to add 12 percent to the length for each 15 degrees above standard temperature.**

Along with reinforcing the need for smooth and coordinated control inputs (so as not to irritate grandma's hemorrhoids), the descent must be equally smooth. To do this, use the following rough formula. For every 100 feet of desired descent attitude, reduce the power by 100 rpm but maintain your airspeed. If flying at 90 mph IAS, reduce the power by 100 rpm for every 100 feet of descent attitude desired. Should you want to descend at 500 fpm, reduce the power setting by 500 rpm and maintain 90 mph. Descending somewhere between 100-500 fpm will not cause grandma's ears to plug, and she'll thoroughly enjoy the flight with her grandchild. I sure wish there were more mentors like Jim to work with the many young, inexperienced flight instructors today.

All general aviation pilots need to pay attention to FAA landing statistics. Some landing incidents are weather caused, others mechanical, but most are attributed to the pilot. There are several general rules of thumb that a pilot should remember when landing.

The first general rule is that for every 1 mph faster than the recommended approach speed, you'll use an extra 100 feet of runway. If your approach speed is a recommended 70 mph but you add an extra 10 mph (for safety, right?), you've just wasted the first 1,000 feet of the runway. Add to that an approach that was 50 feet above the



desired glide path, and now you could be in deep trouble. This can be quite critical if operating on a shorter runway.

I once had a pilot call and ask me to ride with him. He owned a Cessna 182 and always had trouble landing on shorter runways. He was based at an airport with a 3,000-foot hard surface lighted runway and regularly used about 2,900 feet every time he landed. I asked him to demonstrate a normal takeoff followed by a normal approach and landing. Two things were immediately apparent. He was not flying the airplane by feel on takeoff but rather by staring at the airspeed indicator and pulling the airplane off. The no-flap approach to land was normal but at least 10-12 mph faster than the recommended no-flap approach speed. We used nearly every foot of the runway.

When asked why he chose to approach so fast, his reply was one I've heard many times over the years of instructing. He always added 10 mph "for safety." Why? To prevent a stall. He admitted he was petrified of doing stalls and didn't ever want to experience one on landing. At this point, I suggested we get back in the air and do some stall practice.

With some regularity I encounter pilots who don't know their aircraft. Wouldn't it be a good safety practice to get some training and learn what your airplane is safely capable of doing?

I have another rule of thumb that can be employed for both takeoff and landing when dealing with a stiff crosswind. Say you have a fairly stiff crosswind from right to left. Rather than aligning your aircraft with the runway centerline, move the airplane to the far-left edge of the runway. Plan your ground track to be a slight diagonal from left to right across the runway for the takeoff roll. By doing so, you will have eliminated between 10-20 percent of the crosswind component. This action can also be done for the landing.

The items covered in this article are just a few of the aviation rules of thumb a good pilot should know. I'm sure other safety-oriented pilots out there know and use many more. If so, I'd love to hear from you so I can make them available to all safety-conscious pilots.

Stay proficient and keep flying safely. *EAA*

---

**Steve Krog**, EAA 173799, has been flying for more than four decades and giving tailwheel instruction for nearly as long. In 2006, he launched Cub Air Flight, a flight training school using tailwheel aircraft for all primary training.

## Fly It With Shine

Sure, Superflite is durable, stain resistant, flexible, easy to apply, and easy to repair. But have you seen that shine?

With Superflite you'll get a finish that's so smooth and shiny, you'll wonder if you're looking in a mirror.

For a high-gloss finish that soars above the rest, try Superflite.

All of Superflite's fabric and tapes are FAA-Approved for use with any STC'd coating system.

PHONE: 800-323-0611 • FAX: 618-931-0613  
SALES@SUPERFLITE.COM • WWW.SUPERFLITE.COM

The Superflite line of products is proudly made in the USA



**Superflite™** 

The Original Aircraft Urethane Covering System