

# LEARN TO FLY



You can know the freedom that pilots experience as they travel the limitless sky, near the stars, clouds, and winds that encircle the earth!

## ***FLYING IS FUN!***

When a plane passes over, do you wish you could be flying high above the ground, soaring like a bird? You can be.

If you think that piloting a plane is only for those who joined the military or became commercial airline pilots, think again. You can be a part of general aviation.

The term general aviation refers to all aviation activity that is not military or commercial airline. Each year nearly 100,000 people in the United States take flying lessons to learn how to fly general aviation aircraft. When asked why they want to learn to fly, most say, "because flying is fun" and "it provides a reliable and faster way to get to a destination."

Some of the people who learn to fly are salespeople who want to expand their business territories or doctors who need to reach patients in remote areas. Others fly for recreation, like going on vacation. Some people who learn to fly are teenagers getting a head start on a piloting career.

Flying is also efficient. Many trips that normally take a whole day by car can be made in half the time, or less, in an airplane.

Piloting your own plane also increases the number of destinations you can reach directly by air. In the United States, about 600 airports serve commercial airlines, but more than 5,300 airports are open to general aviation pilots.

If you think you'd enjoy flying and wonder if it's more than an impossible dream, then read on. This "Learn to Fly" brochure will tell you all the general aviation flying basics. It answers the questions most frequently asked of flight school instructors the world over. You'll learn about the physical and written examination requirements the training costs, and the time it takes for flying lessons.

## QUESTIONS AND ANSWERS ABOUT FLYING

### How do I know that I can learn to fly?

Somewhere there is someone just like you who recently became a pilot. Although the average student pilot is 32 years old, anyone 16 years old or older can learn to fly an airplane (14 if you fly gliders). People from every occupation and every geographic location in the nation are pilots.



### What are the requirements?

There are three basic requirements for learning to fly powered airplanes in the United States. First, you have to be at least 16 years old. Second, you have to be in good health. And third, you have to be able to read, speak, and understand English.

You can apply for a student pilot certificate if you are at least 16 years old. When you're 17, you can apply for a private pilot certificate. There is no maximum age limit because it's health and not age that determines a person's ability to fly well.

The Federal Aviation Administration (FAA) requires everyone who wants to become a pilot or continue to be a pilot to pass a routine medical exam every three years. This requirement ensures that pilots do not have medical problems that could interfere with their ability to fly safely. Allowances are made for many physical limitations. For example, glasses and contact lenses are perfectly acceptable. The physical exam can be obtained anytime from one of many FAA-designated physicians. If you're planning to learn to fly, it's advisable to complete the physical exam early in your flight training to assure that you qualify.

### How difficult is it?

As with any other skill you master, flying is learned step by step by step. It's a fascinating experience. But it's not particularly difficult. It can be learned by practically anyone who is willing to invest some time and effort.

Pilot training has two aspects: ground training and flight training. Ground training takes place on the ground. It covers flight rules and regulations, flight planning, navigation, radio procedures, and weather. In the next phase, flight training, you learn to fly by actually controlling the airplane yourself. Under the supervision of a certificated flight instructor (CFI), you learn how to take off, land, and fly cross-country (from your home airport to another airport and then back again).

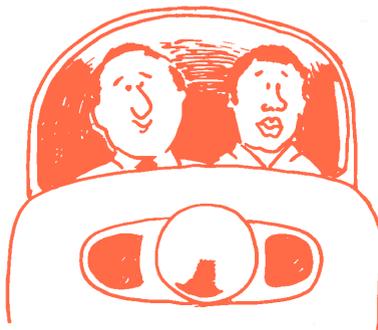
Millions of people have learned to fly. By the time you're ready for your private pilot certificate, you'll be secure in the knowledge that you're a safe and competent pilot.

### Do I need special skills to fly?

No. Perhaps the most important element in successfully learning to fly is desire. Once you're ready to invest your time and effort in learning to fly, then it's time to take the first steps.

### Where is the best place to learn to fly?

There are several types of flight-training schools across the country. Choosing the right one for you depends on your specific needs and reasons for learning to fly. Most flight training programs use a mixture of computer programs, audiovisuals, textbooks, and workbooks designed for ground training. You may receive your ground school instruction from your certificated flight instructor individually or as part of a ground training class. Certificated flight instructors have been specially trained and examined by the federal government to ensure that all of your training is the safest and most effective possible.



The flight training itself is conducted with your personal certificated flight instructor. You'll probably learn to fly in an airplane that was developed for student pilots. Such planes are designed to provide the best possible flight training environment.



Many people learn to fly through a local Fixed-Base Operator (FBO) and/or flight school or through a local flying club that offers flight training. FBOs are general aviation air terminals—they work like gas stations for small aircraft. A flying club is a group of individuals who own aircraft and rent them to members. They usually offer flight instruction and other flying-related activities to their members. FBOs, flight schools, and flying clubs offering flight training are listed in the yellow pages of the telephone directory under aircraft schools.

Vocational and technical schools, colleges and universities also offer aviation programs that include flight training. If you're seeking a career in aviation, you may want to consider learning to fly at one of these schools while earning a degree in aviation.

### What is the first step?

Deciding to learn to fly is obviously the first step and often the most difficult one. Before you make the big decision to take flying lessons, you may want to experience flying in a small plane. Once you've viewed your community from the perspective of a general aviation aircraft and felt the sensation of flight, you'll know whether piloting is for you.

To arrange for a flight in a small plane, contact the FBO at your local airport. FBOs service local and transient aircraft. They often provide flight training, sell and rent aircraft, and provide charter services and aircraft maintenance. Many of them offer introductory flights or sightseeing flights at reasonable rates.

### How long will it take?

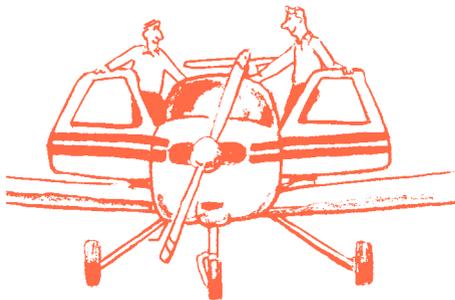
Most people receive their private pilot certificate after about 55-65 hours of flight time, including time spent with an instructor aboard (dual time) and time spent flying alone (solo time). Training will include some night flying, some instrument flying (flying solely by reference to the airplane's instruments), and some cross-country flying. The minimum time required by federal regulation is 35 or 40 hours of flight time, depending on the type of school you attend.

You can fly in the early morning, during the day, or on weekends. Scheduling your flying is up to you and your instructor.

How long it takes to accumulate flight time is largely up to you and your instructor. Usually two to three hours flying time per week is a good learning rate, with more hours during weeks when cross-country flights are made. Statistics indicate that the average student pilot completes the requirements for a private pilot certificate in four to six months. Depending on the schedule and number of hours spent flying, some people will complete it sooner and others will take longer.

### What will my first flight be like?

Your instructor will introduce you to the general aviation airplane you'll learn to fly. You'll be briefed on the instruments, controls, and equipment in the plane and on what to watch for when you're flying.



After this preflight briefing, the two of you will take off. When aloft, and under the close supervision of your instructor, you'll take control of the airplane. It will be unlike anything you've experienced before. Soon you'll feel the exhilaration—impatient for the next flight.

### What kind of tests will I take?

No test is required for a student pilot certificate. But before a private license is issued, you must pass two tests. One is a written FAA examination—largely a practical exam on flying rules and regulations. You'll also have to work out the details of a hypothetical flight for this exam. But don't worry; you'll have done it all before in planning the cross-country flights you made as part of your training program.

Following this exam is a practical examination of your flying ability. Here you take a designated FAA examiner for a checkride to demonstrate your ability to maneuver the airplane safely and confidently. You'll have practiced the maneuvers many times before, and your flight instructor will have prepared you thoroughly.

### How much does it cost?

Flight training costs vary. Fuel prices, maintenance, and insurance costs are but a few of the variables. You can expect to pay between \$3,500 and \$5,500 for a good private-pilot flight-training program. Many schools offer finance packages that allow low monthly payments spread over several years.

Compared to the costs of training in other business skills, becoming a licensed private pilot is a good value. Prorated over a lifetime, it's probably one of the best bargains you'll ever find. The cost of becoming a pilot is a solid investment in your future and once you've earned your license, it's good for life.

### Is flying safe?

General aviation airplanes are built to rigid federal specifications, and they are constantly checked and rechecked to make sure they are mechanically and structurally safe. People who fly are safety conscious. As the pilot-in-command of an airplane, you're also in command of most variables that affect flying safety. Safety is the most important word in the general aviation vocabulary.

Your flight instructor will emphasize training you to operate the airplane safely. Flying as pilot-in-command of the airplane puts you in charge. A well-built and well-maintained airplane in the hands of a competent, prudent, and well-trained pilot makes flying safer than many other forms of transportation.

### What happens if the engine quits?

An aircraft engine is a piece of finely built machinery that is designed to keep running. If the improbable should happen, however, you won't fall out of the sky. Your airplane descends slowly in a glide. You'll simply do what your instructor will have had you practice during your lessons: select the nearest safe landing site and land there without power.

### What about insurance?

Life insurance—The insurance companies have come to learn how extremely safe flying really is. Most new policies don't even mention general aviation flying. If you have an older policy, restrictive clauses for private flying can often be removed at little or no cost.

Liability insurance—Some flight training schools include this insurance in your rental fee. If not, many people purchase special low-cost pilot insurance that covers private flying. At any rate, you should check with your own insurance agent to find out where you stand and whether there are any additional requirements.

### Do I have to own an airplane?

Not at all! Of course, owning your own general aviation airplane will give you complete freedom to set your own schedule. You'll have pride of ownership like nothing you've known before. But many pilots don't own their own planes. Often pilots belong to flying clubs—groups who pool their money to buy and share a plane.

Other pilots rent airplanes. Rental fees are normally based on an hourly rate for actual flying time.

### What happens after I get my pilot's license?

You'll never be quite the same person you were before. You'll have access to a whole new world of personal freedom. You'll think of travel in terms of hours, not miles. You'll know what it means to make your own schedules, go your own way . . . far above the crowds, the congestion, the hassle, and the annoyances of ordinary transportation.

You'll find a new sense of personal fulfillment in your ever growing flying skills. You'll push the old boundaries of your life forward and you'll have the opportunity to plan, seek, and find new experiences that will enrich your life in countless ways. You'll gain greater self-reliance and confidence.

Through your own initiative and effort, you'll be a master of our 21st century's most distinctive and rewarding art—flying.



## FAA FLYING REGULATIONS

As a pilot, you'll be governed by the regulations set by the FAA. The more responsibility you take on as a pilot, the more stringent the FAA requirements become. For instance, pilots who want to fly as commercial pilots for hire must pass stricter requirements than pilots who fly only for personal pleasure or business. Some of the basic FAA regulations for the different levels of piloting are shown below.

### Student pilot regulations

You must be 16 years old and pass a Class III medical exam given by an FAA-designated physician to obtain a student pilot certificate. The medical certificate doubles as a student pilots' certificate. You may fly only with an instructor or, with your instructor's written approval, solo (by yourself).

### Recreational pilot regulations

To become a recreational pilot, you must be at least 17 years old and have a total of at least 30 flight hours. You must also pass an FAA examination and a flight checkride with an FAA examiner. As a recreational pilot you may fly yourself and one passenger. There are some restrictions that limit the recreational pilot compared to the private pilot. This license is to allow people to fly in their local area without as many training requirements as a private pilot's license.

### Private pilot regulations

To obtain a private pilot certificate, you must be 17 years old and have a minimum



of 35 or 40 flight hours, depending on the type of school you attend. You must also pass the FAA private pilot's written examination (a 60-question, multiple-choice test) and a checkride with an FAA examiner. As a private pilot, you can fly solo or with passengers. Special weather requirements pertaining to visibility and cloud conditions must be met, and you must continue to pass your Class III medical exam every three years. You may not be paid for your services as a pilot.

### Instrument rating regulations

An instrument rating allows you to fly when visibility is poor and clouds are low in the sky. To obtain this rating, you must have 40 hours of instrument time and 50 hours of cross country time. Then you must pass a written examination and an FAA checkride.

### Commercial pilot regulations

Commercial pilots can "fly for hire." To exercise the full rights of a commercial pilot, you must have an instrument rating, be at least 18 years old, hold a Class II

medical certificate, and have a minimum of 200 hours of flying time. You must also pass a 60-question written FAA examination and a FAA checkride.

### Certificated flight instructor regulations

To become a certificated flight instructor, you must be 18 years old and hold a commercial or airline transport certificate with an instrument rating. Then you must pass a written examination and a FAA checkride. As a certificated flight instructor, you may instruct private or commercial students. You may also obtain additional instructor ratings to teach instrument instructor or multi-engine instructor.

### Multi-engine rating regulations

To earn a multi-engine rating, you must take instructions from an appropriately certificated instructor. There is no hourly requirement or a written examination, but there is an FAA checkride, after which you'll be licensed to fly airplanes with two or more engines. You may hold either a private or commercial certificate.

### Airline transport pilot certificate regulations

You must have a commercial certificate with instrument rating, have passed a Class I medical exam within the last six months, have 1,500 flight hours, and pass a FAA written examination and checkride. This certificate allows you to perform pilot-in-command duties for commercial airlines and other transport operations.

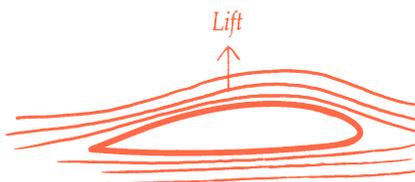
## WHY DOES AN AIRPLANE FLY?

Although nothing is mind-boggling or mysterious about flying, there is much to learn—just as there is in learning to drive a car. As you learn to fly step by step, you'll find your training enjoyable and challenging.

Although airplanes have been a part of our society for about 100 years, most people have only a vague idea of the basic principles of flight. Flight may seem complicated, but in fact it's based on some simple laws of nature.

### The principle of lift

When you examine a cross-section of an airplane's wing, or airfoil, you'll notice that the top part is curved and the bottom part is relatively flat. This special shape creates lift, which makes the airplane fly.



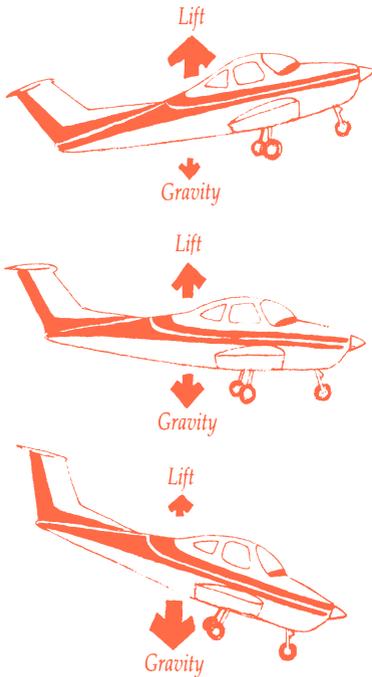
As the wing moves forward, the air flowing over the top travels faster than the air flowing beneath, resulting in a lower pressure area above the wing. The relative pressure differential provides the upward force called lift. Lift is basic to flying.

## WHAT ARE THE BASICS OF FLIGHT?

### Lift and gravity

In order for an airplane to climb, lift must be greater than gravity, the force that holds objects on the earth.

For an airplane to maintain level flight at a particular altitude, lift and gravity must be the same, or in equilibrium. When gravity is greater than lift, the airplane will descend.



### The parts of an airplane

An airplane, of course, is more than a wing, a propeller, and an engine.

The body of the airplane, which holds the pilot, passengers, and baggage, is called the fuselage.

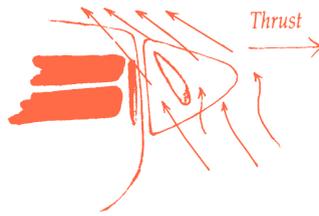
The tail of the airplane is called the empennage, and it consists of the horizontal and vertical surfaces called stabilizers. They create the stability necessary to use the lift and thrust created by the wing and the engine-driven propeller.

Parts of the wing, horizontal stabilizer, and vertical stabilizer are moveable to provide the pilot with the means to control the airplane. These control surfaces are called ailerons on the wings, elevators on the horizontal stabilizer, and rudder on the vertical stabilizer.

You'll become familiar with the workings of these different parts as you work towards building your flight time.

### Thrust and drag

As an airplane moves forward, the wing produces lift. The force of forward movement is called thrust, and it's created by the engine-driven propeller or a jet engine.



Like the wing, the propeller is also an airfoil. As it rotates, it creates "lift" in a forward direction that is called thrust. Thrust overcomes drag (resistance of an object toward movement).



When thrust is greater than drag, during takeoff, for instance, the airplane's speed increases. When thrust and drag are equal, the airplane maintains the same speed. Whenever drag is greater than thrust, the plane slows down.

Lift, gravity, thrust, and drag are the four forces acting upon the airplane. You'll learn to understand them thoroughly as you advance in your study of flight.

### Control

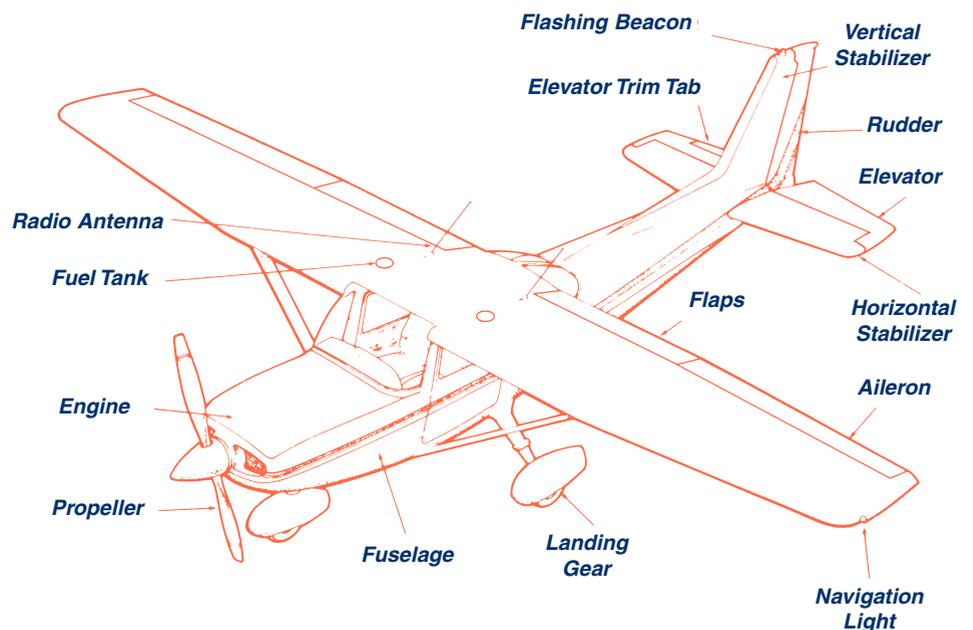
As the pilot, you control the airplane, and you determine how it flies. The different movements of your controls will cause corresponding movements in the airplane. Here are some basic airplane movements.

Pulling the control wheel toward you raises the elevator, which in turn forces the tail down and the nose up. This serves to create more lift than gravity and the airplane will climb. To help produce the extra lift needed in the climb, you usually need additional power from the engine, which you achieve by using the throttle control. Pushing the control wheel away from you lowers the elevator, forcing the tail up and the nose down. This reduces the lift, and gravity makes you descend.

The rudder pedals control the movement of the plane from right to left in much the same way as the rudder of a boat. Pushing the right rudder pedal forces the nose of the airplane to the right, and the left rudder pedal produces the same movement to the left.

Turning the control wheel moves the ailerons in opposite directions, enabling you to raise or lower either the right or left wing, which enables the airplane to turn faster than using only the rudder.

To change the attitude of the airplane, its relationship to the horizon, you simply use the control surfaces and the power of the airplane. It's an exercise in coordination, much like riding a bicycle. Your flight instructor will discuss with you how these simple movements can be combined to maneuver the airplane.



## The basic flight instruments

Although the instrument panel of an airplane may confuse you at first, you'll soon be familiar with the dials and switches and the valuable information they provide. A number of instrument panels today are flat computer screens which contain the same basic information for use in piloting the airplane. The basic flight instruments are as follows:

**A Airspeed indicator**—It shows the speed of the airplane through the air.

**B Attitude indicator**—This instrument is like the horizon you see looking out from the pilot's seat. It tells you whether the nose of the airplane is pointed above or below the horizon and whether the airplane is turning (banking) to the left or right (left wing down or right wing down).

**C Altimeter**—This instrument shows the airplane's altitude in feet above sea level.

**D Turn coordinator**—When you're turning the airplane, this instrument shows the rate and the direction of the turn. In this way you can adjust to a slower or faster rate of turn.

**E Heading indicator (directional gyro)**—This instrument is another compass. It shows the direction that the airplane is flying. It's usually bigger and easier to read than the magnetic compass, but it requires some source of power to work.

**F Vertical speed indicator**—This instrument tells you how quickly you're climbing or descending in feet per minute. When you're in level flight, it reads "0".

**Magnetic compass**—Like the compass you have seen in a car or boat, it tells you the airplane's heading—the direction it's flying. It requires no power source.

After your first few flights, you'll be thoroughly familiar with these instruments and how they work together with the airplane's control surfaces.

## WHAT LEARNING TO FLY CAN DO FOR ME

Learning to fly a general aviation airplane opens the door to a wide variety of career opportunities. Most obvious is becoming a professional pilot for one of the many commercial flying services—major airline, regional airline, air charter, corporate, overnight mail, small package, and cargo. But, pilots are also needed for the many special missions of general aviation emergency medical evacuation, agricultural work, law enforcement, news gathering, aerial surveying, photography, and a multitude of

industrial purposes. Flying may also complement your career path in business or sales or a profession that you haven't even chosen yet.

There are many careers in the aviation industry in which the skill and knowledge you gain as a pilot are a special asset, even though daily flying is not a part of your job. These careers include air traffic control, computer science, electronics, and aviation safety; air carrier, airport, and general aviation operations management; flight navigation, communications, and maintenance; and engineering, law, medicine, finance, and insurance. The possibilities are as limitless as your imagination because general aviation touches many facets of our lives. As a pilot, you speak the language of aviation.

General aviation is a unique industry, combining the romance and enthusiasm of our heritage with the high-tech equipment and modern proficiency skills of today. It is a superb tool of business and a personal time machine. It is a partner in our nation's productivity. Learning to fly can lead to your discovery of rewarding career opportunities.



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