

GLEIM®

Fly

Learn to



Pass this along to recruit a new pilot!

*Anyone who can ride a bicycle and
drive a car can pilot an airplane.*

**Sport Pilot
Requirements
Included**

Become a Pilot

Irvin N. Gleim, Ph.D., CFII
Garrett W. Gleim, CFII, MEI

Authors of pilot training books, audios,
Test Prep Software, and online courses

800.874.5346
gleim.com





GLEIM®

Online Ground School

GLEIM Guarantees!

You will **PASS** your
FAA Knowledge Test
or your money back.

Sport • Private • Instrument
Commercial • Flight/Ground Instructor
FOI • ATP • Flight Engineer

Only \$99⁹⁵
per course

Order today & pass

gleim.com/ogs

GLEIM
KNOWLEDGE
TRANSFER
SYSTEMS®

800.874.5346

Watching Airplanes Course

Put yourself in the picture!



Learn pilot and
control tower
communications

gleim.com/WAC



TABLE OF CONTENTS

	<u>Page</u>
Part 1 – Learning to Fly: It's EASY!	2
Six Basic Steps to Your Pilot Certificate	2
What Is a Student Pilot Certificate?	3
What Is a Pilot Certificate?	3
What Is a Sport Pilot Certificate?	3
FAA Requirements to Obtain a Sport or Private Pilot Certificate	4
Flight Training	5
Gleim Online Ground School	6
Helpful Organizations	8
Getting Started with Gleim	9
Part 2 – Introductory Flight	10
Cost to Obtain Your Pilot Certificates	12
Time Required to Obtain Your Pilot Certificates	12
Part 3 – Airplanes: How They Fly	13
The Airplane	13
Categories of Aircraft	15
Inside the Airplane	15
Axes of Rotation	16
Flight Controls and Control Surfaces	17
How Airplanes Turn	18
Part 4 – Basic Flight Maneuvers	19
Flight Instruments	19
Airplane Control	20
Straight-and-Level Flight	20
Turns	21
Climbs	22
Descents	24
Part 5 – Advanced Pilot Training	25
The Instrument Rating	25
The Commercial Pilot Certificate	28
The Flight Instructor Certificate	30
Order Form	32

Can you drive a car or ride a bicycle?
If so, you can probably pilot an airplane!
Why not? It's an exhilarating experience to be up in the air.
What a view!!

Find us on Facebook for product information, training tips, and aviation news.
www.facebook.com/gleimaviation

LEARNING TO FLY: IT'S EASY!

You probably have a driver's license issued by your state government. The federal government governs pilot privileges and requires specific flight experience, a knowledge test (formerly known as a written test), and a practical (flight) test to earn a pilot's license (called a certificate). The Federal Aviation Administration (FAA) regulates civil aviation and is an agency within the U.S. Department of Transportation.

Most people believe airplanes are to be ridden in as a passenger rather than flown as a pilot. In contrast, when you see a nice automobile, you usually project yourself into the driver's seat and imagine yourself driving the automobile. We want you and others to do the same with airplanes. Imagine yourself in the left seat as the pilot. Try it; it's fun: Imagine yourself flying the airplane as the pilot when you see airplanes.

Flying an airplane is more complex than driving a car because you are controlling altitude (up and down) in addition to left-right movement. It is also more exhilarating than driving because you have the freedom of three-dimensional movement, greater speed, and spectacular panoramas. Flying provides lifelong satisfaction and pride.

It's fun to learn to fly and earn a pilot certificate. Many people might consider learning to fly beyond their capability or budget, but it is not as difficult, time consuming, or expensive as generally believed.

Make use of Gleim to learn more about pilot training. This "Learn to Fly - Become a Pilot" booklet provides IDEAL advance preparation for introductory flights and traditional pilot training.

1.1 SIX BASIC STEPS TO YOUR PILOT CERTIFICATE

1. Purchase the Gleim **Deluxe Sport Pilot (or Private Pilot) Kit with Online Ground School**.
2. Prepare for and pass the FAA Pilot Knowledge Test (40 multiple-choice questions for sport, 60 multiple-choice questions for private).
3. Obtain a student pilot certificate in conjunction with a routine medical exam given by an FAA-approved doctor for a private certificate. Your driver's license substitutes for a medical certificate for a sport pilot certificate.
4. Select a flight instructor and/or flight school.
5. Complete your flight training by utilizing Gleim **Pilot Syllabus** and **Flight Maneuvers** books (included in Gleim pilot kits).
6. Pass an FAA flight test consisting of 40 pre-specified tasks for sport and 47 pre-specified tasks for private.

TO: **Pilots and Potential Pilots**

FROM: **Irvin N. Gleim, Ph.D., CFII**

We prepare valuable, user-friendly self-study materials that are highly effective. Just as a carefully prepared teacher can present a class that helps you learn, our carefully designed books, FAA Test Prep Software Download, Audio Review, and online courses will make it easy for you to learn and understand.

We convert the FAA test process from a memorization marathon into a learning opportunity and rewarding experience. You get higher test scores in less study time. Our products are **NOT** additional work; they are designed to save you time, effort, frustration, and money.

1.2 WHAT IS A STUDENT PILOT CERTIFICATE?

UNITED STATES OF AMERICA Department of Transportation Federal Aviation Administration						BB-5342031
MEDICAL CERTIFICATE <u>3rd</u> CLASS AND STUDENT PILOT CERTIFICATE						
This certifies that (Full name and address): Richmond, Kane Everett 7771 Coral Way N. Ft. Myers, Fl. 33903						
Date of Birth	Ht.	Wt.	Hair	Eyes	Sex	
1/30/85	5'9"	140	Brn.	Brn.	M	
has met the medical standards prescribed in Part 67 Federal Aviation Regulations for this class of Medical Certificate, and the standards prescribed on Part 61 for a Student Pilot Certificate.						
Limitations	None					
Date of Examination 4/15/11			Examiner's Serial No. 11967-1			
Examiner	Signature <i>E.W. Williams, II, D.O.</i>					
	Typed Name E.W. Williams II, D.O.					
AIRMAN'S SIGNATURE <i>Kane Everett Richmond</i>						

FAA Form 8420-2 (7-92) Supersedes Previous Edition

Getting a student pilot certificate is one of the first steps toward earning a sport pilot or private pilot certificate.

You must be at least 16 years of age to receive a student pilot certificate. Individuals desiring a private pilot certificate must undergo a routine medical examination that may only be administered by FAA-designated doctors called aviation medical examiners (AMEs). An AME will issue you a student pilot certificate after your medical exam (private pilot certificate only).

Note: A student pilot certificate must be obtained before you are allowed to fly solo. Sport pilot candidates must obtain their student pilot certificate at an FAA Flight Standards District Office (FSDO) or from an FAA Designated Pilot Examiner.

A third-class medical certificate is valid for 5 years if the date of the examination was before your 40th birthday, or 2 years if the date of the examination was on or after your 40th birthday.

Visit www.gleim.com/aviation/amesearch.php for a listing of AMEs by state and city. Call (800) 874-5346 if you have questions.

Even if you have a physical handicap, medical certificates can be issued in many cases. Operating limitations may be imposed depending upon the nature of the disability.

1.3 WHAT IS A PILOT CERTIFICATE?

Obtaining a pilot certificate allows you to fly an airplane and carry passengers (limited to one passenger for sport pilot) and baggage. Although operating expenses may be equally shared with your passengers, you may not fly for "compensation or hire." The certificate is sent to you by the FAA upon satisfactory completion of your training program, a knowledge test, and a practical test. A sample pilot certificate is reproduced to the right.



1.4 WHAT IS A SPORT PILOT CERTIFICATE?

The sport pilot certificate is available specifically for pilots of light-sport aircraft (LSA). Basically, an LSA is a small, simple-to-operate, low-performance airplane, glider, powered parachute, etc. The light-sport airplane is usually smaller and slower than other light airplanes. A sport pilot certificate and LSAs are a good way for sport pilots to fly at less cost.

1.5 FAA REQUIREMENTS TO OBTAIN A SPORT OR PRIVATE PILOT CERTIFICATE

1. Be at least 17 years of age [when you finish your training and take your FAA practical (flight) test].
2. Be able to read, speak, write, and converse fluently in English.
3. Obtain at least a third-class FAA medical certificate (or a driver's license for sport pilot) and student pilot certificate.
4. Pass the pilot knowledge test with a score of 70% or better. All FAA tests are administered at FAA-designated computer testing centers.
 - a. The sport pilot knowledge test consists of 40 multiple-choice questions selected from the FAA's sport pilot test bank. Sample questions, answers, and complete answer explanations are provided in the Gleim **FAA Knowledge Test** book, **FAA Test Prep Software Download**, and **Online Ground School**.
 - b. The private pilot knowledge test consists of 60 multiple-choice questions selected from the 700+ airplane-related questions in the FAA's test bank. Sample questions, answers, and complete answer explanations are provided in the Gleim **FAA Knowledge Test** book, **FAA Test Prep Software Download**, and **Online Ground School**.

Use Gleim and pass with confidence. We make it easy and fun.

5. Undertake flight training as described in Lessons 1 through 21 in the Gleim **Sport Pilot Syllabus** or Lessons 1 through 25 in the Gleim **Private Pilot Syllabus** for the sport or private certificate, respectively. Many of the lessons will require more than one flight to make you comfortable and proficient.
 - a. For a sport pilot certificate, you must receive a minimum of 20 hours of flight training, including a minimum of 5 hours of solo (i.e., by yourself) flight time.
 - b. For a private pilot certificate issued under Part 61 of the Federal Aviation Regulations, you must receive a minimum of 40 hours of flight time, including a minimum of 10 hours of solo flight time in an airplane.
 - c. As an alternative to Part 61 training, you may enroll in an FAA-certificated pilot school that has an approved private pilot certification course (airplane).
 - 1) These schools are known as Part 141 schools because they are authorized by Part 141 of the Federal Aviation Regulations.
 - 2) The Part 141 course must consist of at least 35 hours of ground training and 35 hours of flight training.
 - 3) There is little difference between Part 61 training and Part 141 training, except that a Part 61 course has more flexibility to adjust to your individual needs.
6. Successfully complete a practical (flight) test, which will be given as a final exam by an FAA-designated pilot examiner. Each of the required tasks/maneuvers for the sport and private flight tests is both explained and illustrated in the Gleim **Flight Maneuvers and Practical Test Prep** books for sport and private pilots.
 - a. FAA-designated pilot examiners are proficient, experienced flight instructors/pilots who are authorized by the FAA to conduct practical tests. They typically charge a fee for their services.
 - b. If you use the Gleim **Private Pilot Flight Maneuvers and Practical Test Prep** or **Sport Pilot Flight Maneuvers and Practical Test Prep** book, you will pass your FAA practical test with CONFIDENCE!
7. If you have any questions now or throughout your flight training, call 800-874-5346 or email avmarketing@gleim.com. We're here to help.
 - a. Get started on your flight training by ordering your Gleim **Pilot Kit** today.

1.6 FLIGHT TRAINING

1. Obtain the Gleim **Sport Pilot Kit** or **Private Pilot Kit** (see back cover). Additionally, once you begin your pilot training, purchase a local sectional chart, an *Airport/Facility Directory*, and a copy of your airplane's Pilot Operating Handbook (POH).
2. Visit several flight schools, if more than one is available, to talk to flight instructors about flight lessons. Visit www.gleim.com/aviation/cfi/ (our CFI Directory) to locate a CFI near you. Alternatively, look under aircraft schools, airplane instruction, aircraft sales, airports, etc., in the Yellow Pages or search online. Indicate that you are interested in taking flying lessons and want to choose a flight instructor with whom you will feel comfortable.


Make sure the CFI is familiar with the Gleim pilot training materials (the books with the red covers) and is enthusiastic about using them. If you encounter hesitation, call Gleim at 800-874-5346.

Plan to speak to several instructors. While there are no perfect answers, the following questions should be asked. The objective of these questions is to gain insight into the flight instructor's personality.

- a. Do you instruct full- or part-time? This information concerns availability only. Part-time does **not** imply less proficiency.
 - b. Ask to see the instructor's syllabus. Compare it to your Gleim **Pilot Syllabus**.
 - c. How long does your average student take to solo? Note that the flight instructor who solos his/her students in the least or most amount of time may not necessarily be the best instructor.
 - d. How many total hours of solo and dual flight do your typical students require?
 - e. For the Private Pilot certificate, what percent of your students require more than 40 total hours? (Probably 100%.) How much more? A national average of 55+ flight hours is often quoted.
 - f. What are the solo and dual rental costs for your training aircraft?
 - g. Where do you recommend that I take my pilot knowledge and practical tests, and what are the estimated costs?
 - h. Where do you recommend that I take my medical examination (if pursuing a Private Pilot certificate)? (See www.gleim.com/aviation/amesearch.php.)
 - i. What are the flight instructors' schedules and the schedule of available aircraft?
 - j. Do you have an introductory flight for a nominal fee? May I take it with no further obligation?
3. Once you have made a preliminary choice of flight instructor, you need to sit down with your flight instructor and map out a plan.
 - a. When and how often you will fly
 - b. When you will take the FAA pilot knowledge test
 - c. When you should plan to take your FAA practical test
 - d. When and how payments will be made for your instruction
 4. Consider purchasing an airplane (by yourself or through joint ownership) or joining a flying club. Sharing expenses through joint ownership can reduce the cost of flying. Insuring a plane, especially for a student, should not pose too much of an additional expense – especially if the airplane you insure is of the typical training variety (i.e., a simple, low-horsepower, single-engine airplane). However, it is always a good idea to contact an aviation insurance company/broker to discuss your insurance needs prior to the purchase of an airplane.

1.7 GLEIM ONLINE GROUND SCHOOL

1. The Gleim **Online Ground School (OGS)** course content is based on the Gleim **FAA Knowledge Test** books, **FAA Test Prep Software Download**, FAA publications, and Gleim reference books. The delivery system is modeled on the very successful Gleim FAA-approved online **Flight Instructor Refresher Course**.
 - a. Online Ground School courses are available for
 - 1) Sport Pilot
 - 2) Private Pilot
 - 3) Instrument Pilot
 - 4) Commercial Pilot
 - 5) FOI
 - 6) CFI/CGI
 - 7) ATP
 - 8) Flight Engineer
 - 9) Canadian Certificate Conversion
 - b. These courses are airplane-only and have the same study unit order as the Gleim **FAA Knowledge Test** books.
 - c. Each course contains study outlines that automatically reference current FAA publications, the appropriate knowledge test questions, FAA figures, and Gleim answer explanations.
 - d. OGS is always up to date.
 - e. Users achieve very high knowledge test scores, and a near-100% pass rate.
 - f. The **Gleim Online Ground School is the most flexible course available!** Access your OGS personal classroom from any computer with Internet access 24 hours a day, 7 days a week. Your virtual classroom is never closed!

<div>  ONLINE GROUND SCHOOL PRIVATE PILOT (PAR) </div>								
NUMBER	STUDY UNIT	STATUS	SCORE	TIME STARTED	TIME COMPLETED	A/V	OUTLINE	ACTION
1	Airplanes and Aerodynamics	Not Started	N/A	N/A	N/A			Start
2	Airplane Instruments, Engines, and Systems	Not Started	N/A	N/A	N/A			Start
3	Airports, Air Traffic Control, and Airspace	Not Started	N/A	N/A	N/A			Start
4	Federal Aviation Regulations	Not Started	N/A	N/A	N/A			Start
5	Airplane Performance and Weight and Balance	Not Started	N/A	N/A	N/A			Start
	Stage Test #1	Not Started	N/A	N/A	N/A	N/A	N/A	
6	Aeromedical Factors and Aeronautical Decision Making (ADM)	Not Started	N/A	N/A	N/A			
7	Aviation Weather	Not Started	N/A	N/A	N/A			
8	Aviation Weather Services	Not Started	N/A	N/A	N/A			
9	Navigation: Charts and Publications	Not Started	N/A	N/A	N/A			
10	Navigation Systems	Not Started	N/A	N/A	N/A			
11	Cross-Country Flight Planning	Not Started	N/A	N/A	N/A			
	Stage Test #2	Not Started	N/A	N/A	N/A	N/A	N/A	
	End-Of-Course Test	Not Started	N/A	N/A	N/A	N/A	N/A	
	Practice Test #1	Not Started	N/A	N/A	N/A	N/A	N/A	
	Practice Test #2	Not Started	N/A	N/A	N/A	N/A	N/A	
	Practice Test #3	Not Started	N/A	N/A	N/A	N/A	N/A	
	Practice Test #4	Not Started	N/A	N/A	N/A	N/A	N/A	
	Practice Test #5	Not Started	N/A	N/A	N/A	N/A	N/A	

GIVE FEEDBACK | TECHNICAL SUPPORT | INSTRUCTIONS

- g. **Save time and study only the material you need to know!** The Gleim **Online Ground School** Certificate Selection will provide you with a customized study plan. You save time because unnecessary questions will be automatically excluded.

ONLINE GROUND SCHOOL

PRIVATE PILOT (PAR)

To help us provide a customized study plan for you, please choose the Private Pilot Knowledge Test you will be taking.

CERTIFICATE
PAR: Private Pilot-Airplane
PAT: Private Pilot-Airplane/Recreational Pilot-Transition
RPA: Recreation Pilot Airplane

GIVE FEEDBACK
TECHNICAL SUPPORT
INSTRUCTIONS

- h. **We are truly interactive. We help you focus on any weak areas.** Explanations of incorrect answer choices help you learn from your mistakes.

ONLINE GROUND SCHOOL

PRIVATE PILOT (PAR)

Study Unit 1: Airplanes and Aerodynamics
Study Session

Figure 1. - Lift Vector.

10) The acute angle A is the angle of

☐ **A** incidence.

☐ **B** attack.

☐ **C** dihedral.

Previous
1
Go To
Next
End Study Session

Register for Gleim Online Ground School today: www.gleim.com/OGS

1.8 HELPFUL ORGANIZATIONS

Gleim cooperates with and supports all aspects of the flight training industry. Organizations that help recruit people to aviation in general and flight training in particular receive emphasis. These include EAA, AOPA, and the CAP.

1.8.1 EXPERIMENTAL AIRCRAFT ASSOCIATION: YOUNG EAGLES PROGRAM

The Experimental Aircraft Association's (EAA) Young Eagles Program set a goal of providing a free introductory flight to 1 million young people ages 8 through 17 years old. They have already exceeded that goal and are still going strong.

The Young Eagles Program is intended to help young people understand the important role aviation plays in our daily lives and, at the same time, provide insight into how an airplane flies, what it takes to become a pilot, and the high standards flying demands in terms of safety and quality. Note: This "Learn to Fly" booklet is used as "ground school" training for Young Eagles programs. For more information about the Young Eagles Program, visit their website at www.young eagles.org or call 1-877-806-8902.

1.8.2 EAA FLYING START PROGRAM

The Flying Start Program, sponsored by EAA and its affiliate, the National Association of Flight Instructors (NAFI), could be your first step in learning to fly. Offered by local EAA members at sites across the United States, Flying Start is a 60-minute program that walks interested individuals through the process of learning to fly: what it costs, how long it might take, safety, instruction, and subsequent flying and social activities associated with flight. Visit www.eaa.org/chapters/locator to find an EAA chapter near you. Contact your local chapter directly and ask about "Flying Start."

1.8.3 LET'S GO FLYING!

The Aircraft Owner's and Pilot's Association (AOPA) hosts an informational web page on getting started in aviation. "Let's Go Flying!" contains information for those still dreaming about flying, those who are ready to begin, and those who are already making the journey.

The goal of this program is to encourage people to experience their dreams of flying through an introductory flight. Interested individuals can order a FREE DVD that explains how amazing it is to be a pilot. Other resources are available, such as a flight school finder, a guide on what to expect throughout training, an explanation of pilot certification options, a FREE monthly flight training newsletter, and much more. To learn more about "Let's Go Flying!," visit www.beapilot.com.

1.8.4 AOPA'S PROJECT PILOT

AOPA Project Pilot asks AOPA members to take an active role in finding potential new pilots and offering them advice, help, and encouragement as training progresses. Student pilots who have an active, concerned mentor are much more likely to complete their training than those who do not. Prospective students can use this tool to learn more about becoming a pilot and to find a pilot mentor in their area. Call 1-800-872-2672 or visit projectpilot.aopa.org/projectpilot/.

1.8.5 CIVIL AIR PATROL: CADET ORIENTATION FLIGHT PROGRAM

The Civil Air Patrol (CAP) Cadet Orientation Flight Program is designed to introduce CAP cadets to flying. The program is voluntary and primarily motivational, and it is designed to stimulate the cadet's interest in and knowledge of aviation.

Each orientation flight is approximately 1 hour, follows a prescribed syllabus, and is usually in the local area of the airport. Except for takeoff, landing, and a few other portions of the flight, cadets are encouraged to handle the controls.

For more information about the CAP cadet program nearest you, visit the CAP website at www.gocivilairpatrol.com.

1.9 GETTING STARTED WITH GLEIM

To help you get an inside look at aviation, Gleim has developed an introduction to aviation online learning program – the **Watching Airplanes Course** (see inside front cover). This program uses the proven Gleim Knowledge Transfer System, which does everything but take you to the airport. With topics from identifying and locating the airports near you to actually visiting them and touring various aviation operations, the **Watching Airplanes Course** allows you to see how aviation works, greatly enhancing your flight training experience once you begin the journey yourself.

The **Watching Airplanes Course** works with the Gleim Aviation Radio Receiver to help you not only watch aviation in action, but also to listen in as pilots and air traffic controllers communicate with one another to accomplish all sorts of operations safely and efficiently. While the **Watching Airplanes Course** by itself is an outstanding tool, the Gleim Aviation Radio Receiver multiplies its usefulness to you a hundredfold. By learning what pilots and controllers are saying, you will be light-years ahead when you begin your own pilot training.



The topics (called study units) covered in the **Watching Airplanes Course** are

1. Your Local Airport
2. Using the Gleim Aviation Radio Receiver
3. Pilot Radio Jargon
4. Airport Traffic Patterns
5. Recognizing Aircraft
6. Visiting General Aviation
7. Learn to Fly, Become a Pilot!

As with all Gleim learning programs, we want you to try this course out and see if it's for you. We know when you try the first study unit for FREE, you'll be hooked on flying and you'll want to know more about our amazing U.S. aviation system. Visit www.gleim.com/aviation/wac/products.php to learn more about this exciting course. Get started with Gleim and the **Watching Airplanes Course** today!



INTRODUCTORY FLIGHT

An introductory flight is an amazing opportunity for you to experience flying. Most flight schools and instructors charge a reduced rate for an introductory flight. Just call a local flight school and give it a shot. You will find that flying is not as difficult as you previously thought. But, it is a lot more fun!

We suggest that you request an early morning or late afternoon flight with the objective of flying in smooth air, which will be more enjoyable to you. Windy conditions will make your flight bumpy. Reschedule if appropriate to ensure a very positive experience and maximum enjoyment.

Congratulations! You have taken the first big step toward learning to fly by scheduling --

1. Your introductory flight with a local flight school,
2. Your Young Eagle airplane ride with the Experimental Aircraft Association,
3. Your first Cadet Orientation Flight with the Civil Air Patrol, or
4. Your first lesson or other flight.

Now that your flight is scheduled, what should you expect? Fun, excitement, and the thrill of flying, of course!

You will meet your instructor (or pilot), and if this is an introductory flight, your instructor will probably take you directly to the airplane you will be flying after a short briefing of what to expect. When you arrive at your airplane on an introductory flight, your instructor will perform the preflight inspection and answer any of your questions. On your first flight lesson, you will do the preflight inspection along with your instructor. During your first few flight lessons, your instructor will go into great detail about what to inspect – with the goal of forming the same habit in you.

When the airplane passes the preflight check, you will get into the airplane with your instructor, who will help you adjust your seat properly and explain the flight controls and the instruments. Fasten your safety belt and shoulder harness before beginning the procedure to start the engine and taxi out to the runway. Notice your instructor is using a checklist to ensure that all of the steps are done in a logical order and that the airplane is safe to fly.

Your instructor may let you taxi the airplane, which you steer with your feet by pressing the rudder pedals.

As all of this is happening, you may say to yourself, “This is great, but how will I ever learn to do all of this?” Remember that, at one time, your flight instructor, airline pilots, and even astronauts were sitting where you are now. This is a new experience and it is natural to feel overwhelmed. You will not be expected to know everything at the beginning.

After all of the checks have been done, your instructor will assure you that the airplane is ready for takeoff. This is why you are here! Your instructor will taxi the airplane out onto the runway, line it up with the centerline, and move the throttle to full power. Most instructors will have you keep a hand on the control yoke and both feet on the pedals. Follow your instructor’s movements on the controls, but the instructor is flying the airplane.

LIFTOFF! Now you are flying! That seemed pretty easy, and as the airplane climbs higher, the view is breathtaking. Your instructor will inform you that you have the controls. This means that you are now flying the airplane. Your instructor will demonstrate how to fly straight-and-level, make turns, and climb and descend. These maneuvers are briefly described here and explained in more detail on pages 19 through 24.

- A. **Level flight** means flying at a constant altitude by keeping a reference point, like the airplane's nose, in a fixed position relative to the horizon.
 - 1. The altimeter is an instrument that measures altitude and is used to determine whether level flight is being maintained.
 - a. If altitude is being lost or gained, the nose of the airplane should be moved up or down in relation to the horizon, and then the altimeter should be checked to determine if altitude is being maintained.
 - 2. Pulling back or pushing forward on the control yoke moves the nose up or down.
 - a. The control yoke is also called a control wheel or control stick. In some airplanes, it is a stick that can be moved right or left and forward or back.
- B. **Straight flight** means flying on a constant heading, or direction. You should form an imaginary line by selecting two or more reference points, like roads, towns, or lakes, that are directly ahead of the airplane. Then keep the airplane headed along that line.
 - 1. The wings should be kept level by using the ailerons. The ailerons are controlled by turning the control yoke left or right.
- C. To **turn** the airplane, you must turn the control yoke, or wheel, while pressing the appropriate rudder pedal with your foot. In other words, to turn left, you must turn the control wheel to the left and press the left rudder.
 - 1. To come out of a turn, you must turn the control wheel in the opposite direction and press the opposite rudder. In other words, to roll the wings level while turning to the left, you must turn the control wheel to the right and press the right rudder.
 - 2. These control pressures should be gradually and smoothly released as the wings become level and the airplane again enters straight-and-level flight.
- D. **Climbs.** To cause the airplane to climb, you must pull back on the control yoke and adjust the throttle to increase the power.
 - 1. To level off from a climb, lower the nose of the airplane by gradually pushing forward on the control yoke.
 - 2. When the airspeed reaches the desired speed, reduce the throttle setting to the appropriate power setting.
- E. **Descents.** The airplane loses altitude in a controlled manner. Reduce power with the throttle and lower the nose by pushing the control yoke forward to maintain the desired airspeed.
 - 1. To end the descent, you should raise the nose to a level attitude and, at the same time, increase power to the desired throttle setting.

After 15 to 20 minutes, your instructor will inform you that it is time to return to the airport. Your instructor will perform the landing and explain what is happening. As you exit from the runway, your instructor may let you have another try at taxiing the airplane.

Once the airplane is parked and secured and you have all your belongings, your instructor will answer your questions regarding your flight and how to begin flying lessons. You may also be able to schedule your first flight lesson. See pages 2 through 5 for a complete discussion of how to proceed.

2.1 COST TO OBTAIN YOUR PILOT CERTIFICATES

The price of instruction varies nationwide and also from flight school to flight school. Fuel, maintenance, and airplane expenses play a major role in determining airplane rental rates. Shop around to make sure you are buying what you want at a fair price. Your total cost will depend on the FBO, equipment, local cost factors, competition, etc., and the amount of training you require in excess of the minimum flight hour requirement (20 for sport and 40 for private). Many flight schools allow payments as time progresses, lesson by lesson, instead of all at once. Some flight schools offer discounts for purchasing a block of flight time.

SPORT PILOT CERTIFICATE		PRIVATE PILOT CERTIFICATE	
Medical Exam	\$ N/A	Medical Exam	\$ 90
Books and Supplies	250	Books and Supplies	300
Gleim kit		Gleim kit	
Aeronautical sectional chart		Aeronautical sectional chart	
Airport/Facility Directory		Airport/Facility Directory	
Airplane information manual		Airplane information manual	
Knowledge Test Fee	90	Knowledge Test Fee	90
15 hr. of Dual	2,025	30 hr. of Dual	4,800
(\$95/hr. aircraft + \$40/hr. instructor)		(\$120/hr. aircraft + \$40/hr. instructor)	
5 hr. of Solo	475	10 hr. of Solo	1,200
(\$95/hr. for aircraft)		(\$120/hr. for aircraft)	
Rental of Aircraft for Flight Test	190	Rental of Aircraft for Flight Test	300
Practical Test Fee	250	Practical Test Fee	250
TOTAL	<u>\$3,280</u>	TOTAL	<u>\$7,030</u>

Note this is the **low end** of the cost range. For private certificates, most pilots require about 55 hours or more. Also, aircraft rental can range from \$55 to \$180 per hr. or more, depending on the airplane, age, type, and equipment installed. Note: Age of the aircraft does not imply less reliability.

The private certificate costs between \$8,000 and \$12,000 on average.

The Gleim **Private Pilot Syllabus** will assist you and your CFI in completing your training in less than 55 hours!

2.2 TIME REQUIRED TO OBTAIN YOUR PILOT CERTIFICATES

While only 20 hours of *flight* time is required for the sport pilot certificate and 40 hours of *flight* time is required for the private pilot certificate, the *total* process usually takes several months and hundreds of hours due to commuting, ground training, aircraft preflight, canceled lessons due to bad weather, airplane maintenance, etc. Expect the sport pilot certificate to take half the amount of time as the private pilot certificate would take.

A typical chronological order of flying time follows. The numbers on the left are the minimum using our **Private Pilot Syllabus** under Part 61.

14.5 to 16 hr. - Presolo (dual)
2.0 to 5 hr. - Solo
5.0 to 7 hr. - Precross-country (dual)
5.5 to 9 hr. - Cross-country and night flying (dual)
7.0 to 8 hr. - Cross-country (solo)
7.0 to 10 hr. - Preparation for practical (flight) test (dual and solo)
<u>41.0 to 55</u>

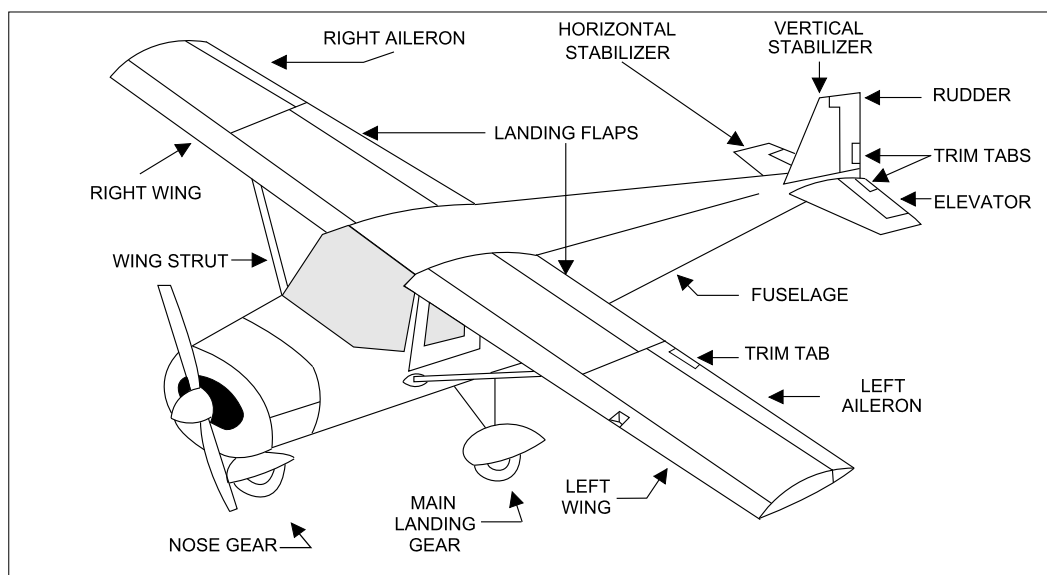
Your sport pilot certificate can be obtained in as little as 2 weeks (1 month for private) with near full-time effort. A more realistic timetable is 1 to 2 months for sport and 3 to 4 months for private. The ideal situation is to fly **at least** once or twice per week to maintain a higher level of proficiency.

AIRPLANES: HOW THEY FLY

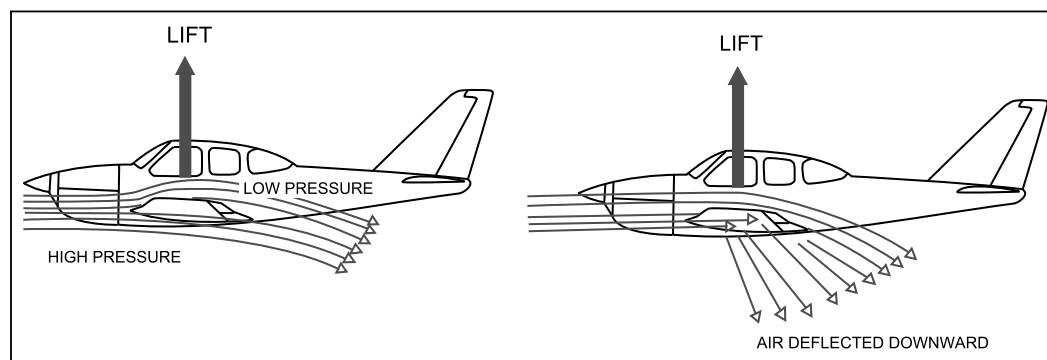
The purpose of the next six pages is to introduce you to the parts of the airplane and to aerodynamics, i.e., the forces acting on the airplane in flight. Remember, this is technical material that will make more sense as you begin your flight lessons.

3.1 THE AIRPLANE

The first figure below is a high-wing aircraft, such as a Cessna 152. On low-wing airplanes, such as the Beech Skipper and the Piper Tomahawk, the wings are affixed to the bottom rather than the top of the fuselage, as indicated in the second figure below.

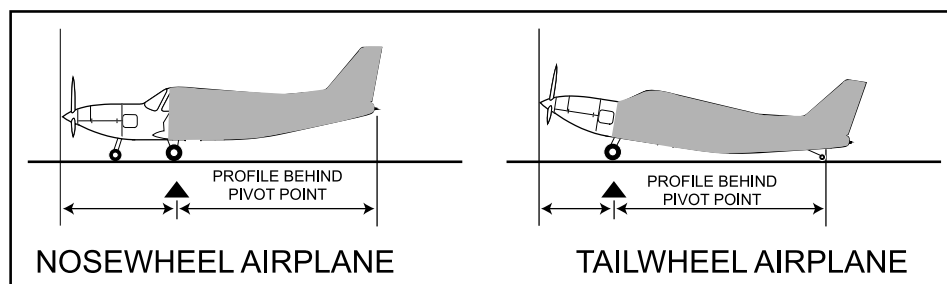


1. **Wing** -- Provides lift by creating a low pressure area on the top of the wing and a high pressure area on the bottom. The top of the wing is curved, which provides a longer distance for air to flow over the wing than under the wing. As the air on top of the wing travels a greater distance in the same amount of time, it moves faster than the air flowing under the wing, which results in less pressure on top than on the bottom of the wing. At the same time, the bottom of the wing deflects air downward, which also produces lift.



2. **Fuselage** -- The main component of the airplane. Its function is to act as a carrier for the wings and tail section. It also is designed to produce a limited amount of lift.
3. **Horizontal stabilizer** -- This structure, located in the rear of the airplane, is designed to provide continuous longitudinal (from front to rear) stability. It prevents uncontrolled up and down movements of the nose (pitching).

4. **Elevator** -- A movable part on the rear of the horizontal stabilizer. It is used to move the airplane about the lateral axis. It provides the input of pitch and helps control altitude. Note the axes of rotation are discussed and illustrated on page 16.
5. **Vertical stabilizer** -- This surface provides directional (right or left) stability. It acts like a weathervane. It prevents uncontrolled left or right movements of the nose (yawing).
6. **Rudder** -- This surface, which is connected to the vertical stabilizer, moves the airplane around its vertical axis and is used to yaw (move the tail to the left or right) the airplane.
7. **Rudder and elevator trim tabs** -- These small, movable surfaces decrease control pressures and help to establish hands-off flight (i.e., when the airplane will almost fly by itself). All airplanes have elevator trim tabs controlled from the cockpit.
8. **Right and left ailerons** -- These surfaces, located on the outside trailing edges of the wings, control the airplane around its longitudinal axis, i.e., the degree of bank, or whether one wing is higher or lower than the other wing (rolling).
9. **Aileron trim tab** -- This small movable section of one or both ailerons permits adjustment so the wings remain level; i.e., you can compensate for more weight on either side of the airplane. Not all airplanes have aileron trim tabs.
10. **Landing flaps** -- These surfaces are located on the inside trailing edges of the wings. They can be extended to provide greater wing area at slower speeds. This provides more lift and drag and allows an airplane to land, take off, or fly at slower speeds.
11. **Main landing gear** -- The component of the airplane that touches the runway first during a normal landing. It is designed to take large loads and impacts.
12. **Nose gear** -- This component is designed to steer the airplane on the ground. It is not designed for excessive impacts or loads. However, it is designed to carry the weight of the forward portion of the airplane.
13. **Nosewheel (tricycle) vs. tailwheel (conventional)** -- Nosewheel airplanes have the “third” wheel in front of the main landing gear (i.e., under the nose), as pictured below. Nosewheel airplanes have much better handling (because there is less airplane behind the pivot point) and visibility characteristics while taxiing. Almost all new airplanes are nosewheel design.
 - a. Tailwheel airplanes have the “third” wheel under the tail. Tailwheel airplanes can land on much rougher terrain and, consequently, are used by bush pilots. In a tailwheel airplane, this gear supports the weight of the rear portion of the airplane.



14. **Retractable landing gear** -- Retracting the gear reduces drag and increases airspeed without the need for additional power. The landing gear normally retracts into the wing or fuselage through an opening, which may be covered by doors after the gear is retracted. The smooth door will provide for the unrestricted flow of air across the opening that houses the gear. The retraction or extension of the landing gear is accomplished either electrically or hydraulically by landing gear controls from within the cockpit. Warning indicators are usually provided in the cockpit to indicate whether the wheels are extended and locked or retracted. In nearly all airplanes equipped with retractable landing gear, a system is provided for emergency gear extension in the event landing gear mechanisms fail to lower the gear.

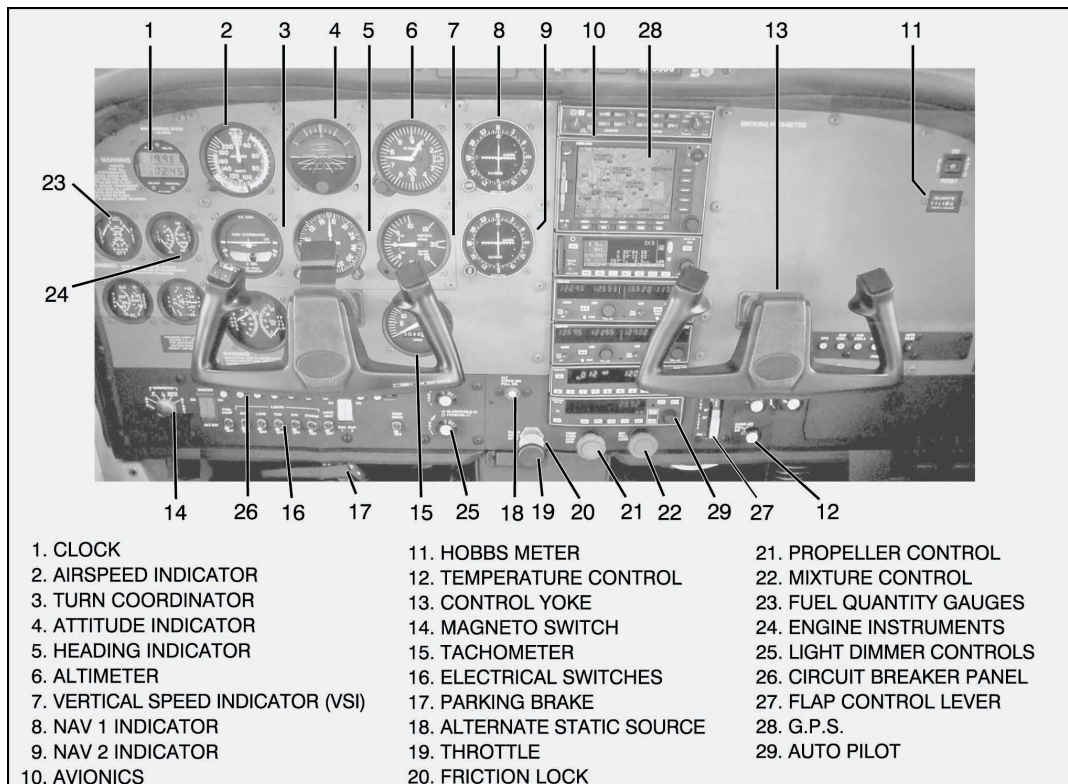
3.2 CATEGORIES OF AIRCRAFT

A. The seven categories of aircraft and their subdivision into classes are listed below.

1. **Airplanes**
 - a. Single-engine land
 - b. Multi-engine land
 - c. Single-engine sea
 - d. Multi-engine sea
2. **Gliders**
3. **Rotorcraft**
 - a. Gyroplanes -- Thrust provided by pusher propeller and lift by unpowered rotorblade.
 - b. Helicopter -- Rotorblade is powered to obtain lift and thrust.
4. **Lighter-than-air**
 - a. Airship
 - b. Gas balloon
 - c. Hot air balloon
5. **Powered lift**
6. **Powered parachute**
 - a. Land
 - b. Sea
7. **Weight-shift-control**
 - a. Land
 - b. Sea

3.3 INSIDE THE AIRPLANE

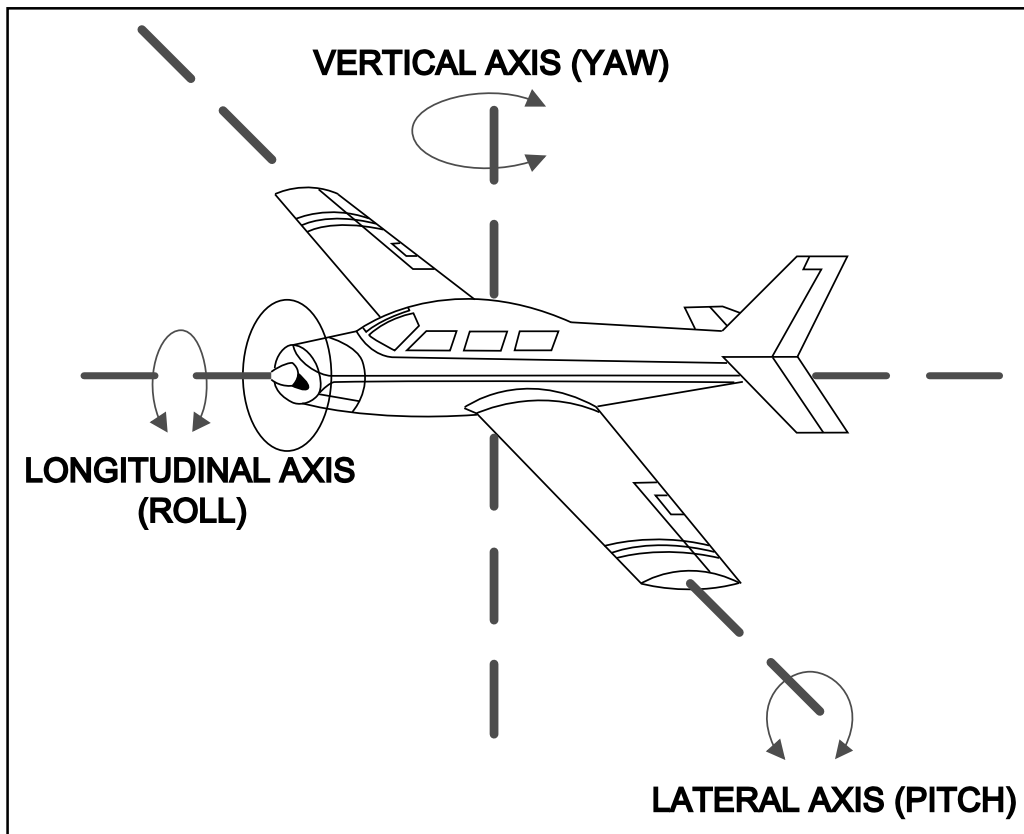
The following is a diagram of a Cessna instrument panel. It may contain more equipment than is found in some trainer-type airplanes used by student pilots.



3.4 AXES OF ROTATION

A. The airplane has three axes of rotation around which it moves. See the illustration below.

1. **Lateral (pitch) axis** -- an imaginary line from wingtip to wingtip
 - a. Rotation about the lateral axis is called **pitch** and is controlled by the elevator.
 - b. The rotation is similar to a seesaw. The bar holding the seesaw is the lateral axis.
 - c. The angle between the airplane's nose and the horizon is known as the airplane's **pitch attitude**.
2. **Longitudinal (roll) axis** -- an imaginary line from the nose to the tail
 - a. Rotation about the longitudinal axis is called **roll** and is controlled by the ailerons.
 - b. The rotation is similar to a barbecue rotisserie, in which the spit is the longitudinal axis.
 - c. The angle between the airplane's wings and the horizon is known as the airplane's bank.
3. **Vertical (yaw) axis** -- an imaginary line extending vertically through the intersection of the lateral and longitudinal axes
 - a. Rotation about the vertical axis is called **yaw** and is controlled by the rudder. This rotation is referred to as directional control or directional stability.
 - b. The rotation is similar to a weather vane, in which the post holding the vane is the vertical axis.

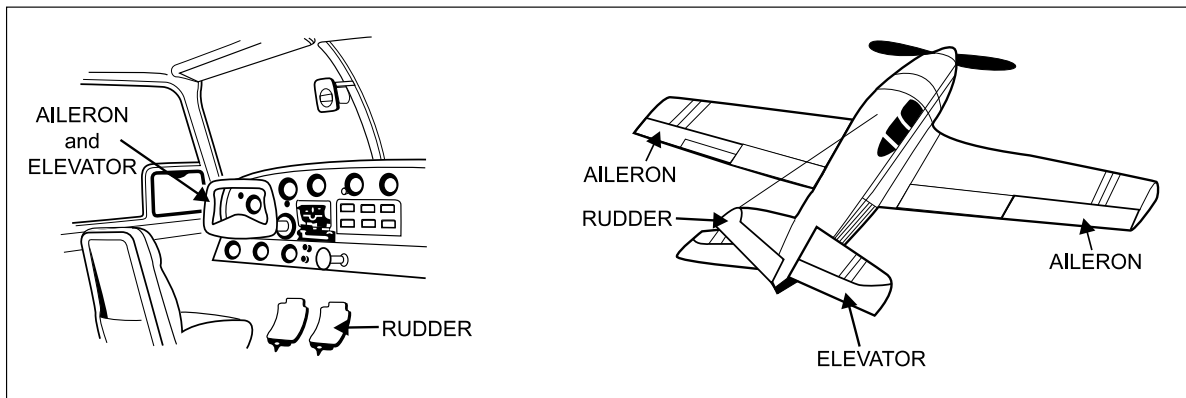


B. The airplane can rotate around one, two, or all three axes simultaneously. Think of these axes as imaginary axes around which the airplane turns, much as a wheel would turn around axes positioned in these same three directions.

3.5 FLIGHT CONTROLS AND CONTROL SURFACES (ILLUSTRATED BELOW)

A. **Primary Flight Controls.** The airplane is controlled by deflection of flight control surfaces. These are hinged or movable surfaces with which the pilot adjusts the airplane's attitude during takeoff, flight maneuvering, and landing (airplane attitude refers to whether the airplane is pointing up, down, etc.). The flight control surfaces are operated by the pilot through connecting linkage to the rudder pedals and a control yoke.

1. The **control yoke** is similar to the steering wheel of a car. However, you can push and pull it in addition to turning it. The push/pull movement controls the third dimension in which airplanes move (up and down). Remember, a car can only go straight or turn (move in two dimensions), but an airplane can go straight, turn, or move up and down.



2. The **rudder** is attached to the vertical stabilizer. Controlled by the rudder pedals, the rudder is used by the pilot to control the direction (left or right) of yaw about the airplane's vertical axis for minor adjustments. It is NOT used to make the airplane turn, as is often erroneously believed. Banking the airplane makes it turn. See "How Airplanes Turn" on the following page.
3. The **elevators** are attached to the horizontal stabilizer. The elevators provide the pilot with control of the pitch attitude about the airplane's lateral axis. The elevators are controlled by pushing or pulling the control yoke.
4. The outboard movable portions of each wing are the **ailerons**. The term "aileron" means "little wing" in French. Ailerons are located on the trailing (rear) edge of each wing near the outer tips. When deflected up or down, they in effect change the wing's camber (curvature) and its angle of attack. This changes the wing's lift and drag characteristics.
 - a. Their primary use is to bank (roll) the airplane around its longitudinal axis. The banking of the wings results in the airplane turning in the direction of the bank, i.e., toward the direction of the low wing.
 - b. The ailerons are interconnected in the control system to operate simultaneously in opposite directions of each other. As the aileron on one wing is deflected downward, the aileron on the opposite wing is deflected upward.
 - c. The ailerons are controlled by turning the control yoke.

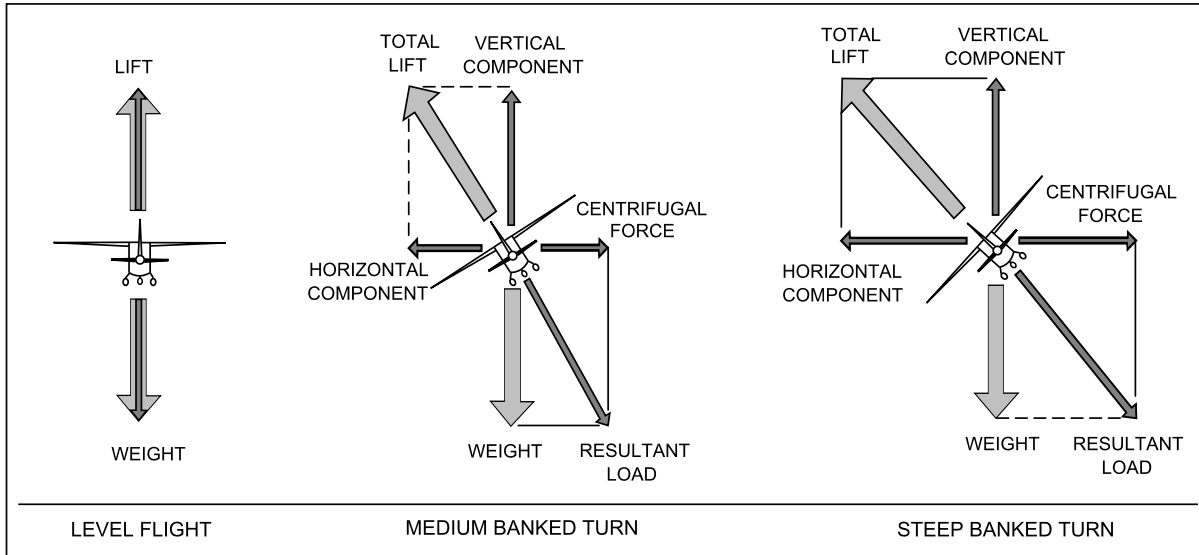
B. **Secondary Flight Controls.** In addition to primary flight controls, most airplanes have another group called secondary controls. These include trim devices of various types and wing flaps.

1. **Trim tabs** are commonly used to relieve the pilot from maintaining continuous pressure on the primary controls when correcting for an unbalanced flight condition caused by changes in aerodynamic forces or weight.
2. **Wing flaps** are installed on the wings of most airplanes. Flaps increase both lift and drag and have three important functions:
 - a. First, they permit a slower landing speed, which decreases the required landing distance.

- b. Second, they permit a comparatively steep angle of descent without an increase in speed. This makes it possible to safely clear obstacles when making a landing approach to a small field.
- c. Third, they may also be used to shorten the takeoff distance and provide a steeper climb path.

3.6 HOW AIRPLANES TURN

- A. The lift produced by an airplane's wings is used to turn the airplane. When banked, the horizontal component of lift turns the airplane.



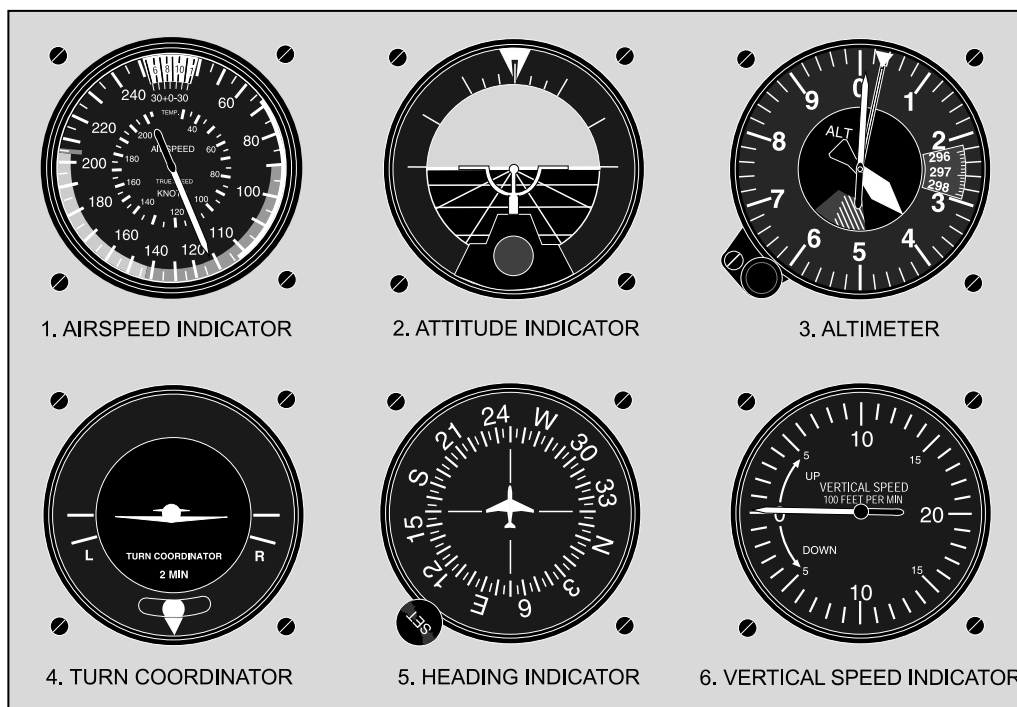
1. Until a force acts on the airplane, it tends to fly straight ahead due to inertia.
 - a. Inertia is the phenomenon observed when moving objects continue to move in the same direction; i.e., they tend not to turn unless acted upon by an outside force.
 2. When the airplane begins to turn, centrifugal force pulls the airplane away from the turn, i.e., tends to make it fly straight ahead.
 3. The horizontal component of lift (in a bank) counteracts the centrifugal force.
 - a. Therefore, the greater the bank, the sharper the turn or the greater the rate of turn because more of the total lift goes into the horizontal component.
 4. The rudder does not turn the airplane. It controls the yaw about the vertical axis.
 - a. This permits the "coordination" of the rudder and ailerons.
 - b. **Coordinated flight** is when the airplane goes "straight ahead" through the relative wind.
- B. In a bank, the total lift consists of both horizontal lift (counteracting centrifugal force) and vertical lift (counteracting weight and gravity).
1. Therefore, given the same amount of total lift, there is less vertical lift in a bank than in straight-and-level flight.
 2. Thus, to maintain altitude in a turn, you must
 - a. Increase back pressure on the control yoke (for a higher angle of attack to produce more lift), and/or
 - b. Increase power.
- C. The turn is stopped by decreasing the bank to zero (i.e., wings level).

BASIC FLIGHT MANEUVERS

In this section, we will provide you with more detailed information on the basic flight maneuvers (straight-and-level, turns, climbs, and descents). Do not feel overwhelmed. Just read and try to understand the basic concepts. Write down questions to ask your instructor. At the beginning of each flight lesson, your instructor will sit down with you to go over what you will do during the lesson. This is called a preflight briefing. It is a discussion between you and your CFI that should answer all of your questions. Your home study before the lesson will reduce the time spent on the preflight briefing and provide you with quality flight training time -- all of which will help keep costs down.

4.1 FLIGHT INSTRUMENTS

- A. When you are sitting in the airplane, you will probably notice six flight instruments in front of you. Your instructor will refer to them. The typical arrangement of these instruments is shown below.



1. The airspeed indicator (ASI) displays the speed at which the airplane is moving through the air. The ASI in the figure is indicating an airspeed of 115 knots.
2. The attitude indicator (AI) displays the attitude of the airplane (nose up, nose down, wings banked) in relation to the horizon. The AI in the figure is indicating level flight (nose and wings are level in relation to the horizon).
3. The altimeter (ALT) displays the altitude of the airplane above mean sea level (MSL) when properly adjusted to the current pressure setting. The ALT in the figure is indicating an altitude of 4,000 ft. MSL.

Sport Pilots: You may not have all six flight instruments. At a minimum, you will have:

1. Airspeed indicator
2. Altimeter
3. Compass to determine direction in lieu of a heading indicator

4. The turn coordinator (TC) displays the rate at which a turn is being made. The miniature airplane banks in the direction of the turn. At the bottom of the instrument is a ball in a glass tube called an inclinometer. The inclinometer indicates whether the airplane is in coordinated flight (ball centered) or uncoordinated flight. The TC in the figure is indicating wings level and coordinated flight.
5. The heading indicator (HI) displays the heading (direction) the airplane is flying. The HI in the figure is indicating a heading of 250°.
6. The vertical speed indicator (VSI) displays whether the airplane is in level flight, climbing, or descending. The rate of climb or descent is indicated in hundreds of feet per minute. The VSI in the figure indicates level flight.

4.2 AIRPLANE CONTROL

- A. Airplane control is composed of three components: pitch control, bank control, and power control.
1. **Pitch control** is the control of the airplane about its lateral axis (i.e., wingtip to wingtip) by applying elevator pressure to raise or lower the nose, usually in relation to the horizon.
 2. **Bank control** is the control of the airplane about its longitudinal axis (i.e., nose to tail) by use of the ailerons to attain the desired angle of bank in relation to the horizon.
 3. **Power control** is the control of power or thrust by use of the throttle to establish or maintain a desired airspeed, climb rate, or descent rate in coordination with the attitude changes.

For additional information on the flight controls and control surfaces, see page 17.

- B. The objectives of the following basic flight maneuvers are
1. To learn the proper use of the flight controls for maneuvering the airplane
 2. To attain the proper attitude in relation to the horizon by use of visual and instrument references
 3. To emphasize the importance of dividing your attention and constantly checking all reference points while looking for other traffic

4.3 STRAIGHT-AND-LEVEL FLIGHT

- A. Straight-and-level flight means that a constant heading and altitude are maintained.
1. It is accomplished by making corrections for deviations in direction and altitude from unintentional turns, descents, and climbs.
- B. The pitch attitude for **level flight** (i.e., constant altitude) is obtained by selecting some portion of the airplane's nose or instrument glare shield as a reference point and then keeping that point in a fixed position relative to the horizon.
1. That position should be cross-checked occasionally against the altimeter to determine whether or not the pitch attitude is correct for the power setting being used.
 - a. If altitude is being lost or gained, the pitch attitude should be readjusted in relation to the horizon, and then the altimeter should be checked to determine if altitude is being maintained.
 2. The application of forward or back elevator pressure is used to control this attitude.
 3. The pitch information obtained from the attitude indicator will also show the position of the nose relative to the horizon.

- C. To achieve **straight flight** (i.e., constant heading), you should select two or more outside visual reference points directly ahead of the airplane (e.g., roads, section lines, towns, lakes, etc.) to form an imaginary line and then keep the airplane headed along that line.
 - 1. While using these references, you should occasionally check the heading indicator (HI) to determine that the airplane is maintaining a constant heading.
 - 2. Both wingtips should be equidistant above or below the horizon (depending on whether your airplane is a high-wing or low-wing type). Any necessary adjustment should be made with the ailerons to return to a wings level flight attitude.
 - 3. The attitude indicator (AI) should be checked for small bank angles, and the heading indicator (HI) should be checked to note deviations from the desired direction.
- D. Straight-and-level flight requires almost no application of control pressure if the airplane is properly trimmed and the air is smooth.
 - 1. Trim the airplane so it will fly straight and level without constant assistance.
 - a. This is called “hands-off flight.”
 - b. Improper trim technique usually results in flying that is physically tiring, particularly in prolonged straight-and-level flight.
 - 2. The airplane should be trimmed by first applying control pressure to establish the desired attitude and then adjusting the trim so that the airplane will maintain that attitude without control pressure in hands-off flight.
- E. The airspeed will remain constant in straight-and-level flight with a constant power setting.
 - 1. Significant changes in airspeed (e.g., power changes) will require considerable changes in pitch attitude to maintain altitude.
 - 2. Pronounced changes in pitch attitude will also be necessary as the flaps and landing gear (if retractable) are operated.

4.4 TURNS

- A. A turn is a basic flight maneuver used to change from, or return to, a desired heading. This maneuver involves the coordinated use of the ailerons, rudder, and elevator.
- B. To enter a turn, you should simultaneously turn the control wheel (i.e., apply aileron control pressure) and apply rudder pressure in the desired direction.
 - 1. The speed (or rate) at which your airplane rolls into a bank depends on the rate and amount of control pressure you apply.
 - a. The amount of bank depends on how long you keep the ailerons deflected.
 - 2. Rudder pressure must be enough to keep the ball of the inclinometer (part of the turn coordinator) centered.
 - a. If the ball is not centered, “step on the ball” to recenter it.
 - b. **EXAMPLE:** If the ball is to the right, apply right rudder pressure (i.e., step on the ball) to recenter it.
 - 3. The best outside reference for establishing the degree of bank is the angle made by the top of the engine cowl or the instrument panel with respect to the horizon.
 - a. Since on most light airplanes the engine cowl is fairly flat, its angle relative to the horizon will give some indication of the approximate degree of bank.
 - 4. Information obtained from the attitude indicator (AI) will show the angle of the wings in relation to the horizon. Referring to this information will help you learn to judge the degree of bank based on outside references.

- C. The lift produced by the wings is used to turn the airplane, as discussed in “How Airplanes Turn” on page 18.
 - 1. To maintain a constant altitude, you will need to apply enough back elevator pressure (i.e., raise the nose of the airplane in order to increase the angle of attack) to prevent a descent.
- D. As the desired angle of bank is established, aileron and rudder pressures should be released. The bank will not continue to increase since the aileron control surfaces will be neutral in their streamlined position.
 - 1. The back elevator pressure should not be released but should be held constant or sometimes increased to maintain a constant altitude.
 - 2. Throughout the turn, you should cross-check the outside references and occasionally include the altimeter to determine whether the pitch attitude is correct.
 - 3. If you are gaining or losing altitude, adjust the pitch attitude in relation to the horizon, and then recheck the altimeter and vertical speed indicator to determine if altitude is now being maintained.
- E. The roll-out from a turn to straight flight is similar to the roll-in to the turn from straight flight except that control pressures are used in the opposite direction. Aileron and rudder pressures are applied in the direction of the roll-out (i.e., toward the high wing).
 - 1. As the angle of bank decreases, the elevator pressure should be released smoothly as necessary to maintain altitude. Remember, when the airplane is no longer banked, the vertical component of lift increases.
 - 2. Since the airplane will continue turning as long as there is any bank, the roll-out must be started before reaching the desired heading.
 - a. The time the roll-out should begin, in order to lead the desired heading, will depend on the rate of turn and the rate at which the roll-out will be made.
 - 3. As the wings become level, the control pressures should be gradually and smoothly released so that the controls are neutralized as the airplane resumes straight-and-level flight.
 - 4. As the roll-out is completed, attention should be given to outside visual references as well as to the attitude indicator and heading indicator to determine that the wings are leveled precisely and that the turn is stopped.

4.5 CLIMBS

- A. Climbs and climbing turns are basic flight maneuvers in which the pitch attitude and power setting result in a gain in altitude. In a straight climb, the airplane gains altitude while traveling straight ahead. In climbing turns, the airplane gains altitude while turning.
- B. To enter the climb, simultaneously advance the throttle and apply back elevator pressure.
 - 1. As the power is increased to the climb setting, the airplane's nose will tend to rise to the climb attitude.
 - a. In most trainer-type airplanes, the climb setting will be full power.
 - 2. While the pitch attitude increases and airspeed decreases, progressively more right-rudder pressure must be used to compensate for torque effects and to maintain direction.
 - a. Because the angle of attack is relatively high, the airspeed is relatively slow, and the power setting is high, the airplane will have a tendency to roll and yaw to the left due to turning tendencies created by the rotating propeller.
 - 1) While right-rudder pressure will correct for the yaw, some aileron pressure may also be required to keep the wings level.

- C. When the climb is established, back elevator pressure must be maintained to keep the pitch attitude constant.
1. As the airspeed decreases, the elevators may try to return to their streamlined or neutral position, which will cause the nose to lower.
 - a. Nose-up trim will therefore be required.
 2. You will need to cross-check the airspeed indicator (ASI) because you want to climb at a specific airspeed and because the ASI will provide an indirect indication of the pitch attitude.
 - a. If the airspeed is higher than desired, you need to raise the nose.
 - b. If the airspeed is lower than desired, you need to lower the nose.
 3. After the climbing attitude, power setting, and airspeed have been established, trim the airplane to relieve all pressures from the controls.
 - a. If further adjustments are made in pitch, power, and/or airspeed, you must retrim the airplane.
 4. If a straight climb is being performed, you need to maintain a constant heading with the wings level.
 - a. If a climbing turn is being performed, maintain a constant angle of bank.
- D. To return to straight-and-level flight from a climbing attitude, you should start the level-off below the desired altitude in order to avoid climbing through it.
1. To level off, the nose should be lowered.
 2. The nose must be lowered gradually, however, because a loss of altitude will result if the pitch attitude is decreased too abruptly before allowing the airspeed to increase adequately.
 - a. As the nose is lowered, retrim the airplane.
 - b. When the airspeed reaches the desired cruise speed, reduce the throttle setting to appropriate cruise power setting and trim the airplane.
- E. **Climbing Turns.** The following factors should be considered:
1. With a constant power setting, the same pitch attitude and airspeed cannot be maintained in a bank as in a straight climb due to the decrease in the vertical lift and airspeed during a turn.
 - a. The loss of vertical lift becomes greater as the angle of bank is increased, so shallow turns may be used to maintain an efficient rate of climb. If a medium- or steep-banked turn is used, the airplane's rate of climb will be reduced.
 - b. The airplane will have a greater tendency towards nose heaviness than in a straight climb, due to the decrease of vertical lift.
 2. As in all maneuvers, attention should be divided among all references equally.
- F. There are two ways to establish a climbing turn: either establish a straight climb and then turn, or establish the pitch and bank attitudes simultaneously from straight-and-level flight.
1. The second method is usually preferred because you can more effectively check the area for other aircraft while the climb is being established.

4.6 DESCENTS

- A. A descent is a basic maneuver in which the airplane loses altitude in a controlled manner. Descents can be made
 - 1. With partial power, as used during an approach to a landing
 - 2. Without power, i.e., as a glide
 - 3. At cruise airspeeds, during en route descents
- B. To enter a descent, you should first apply carburetor heat (if recommended by the manufacturer) and then reduce power to the desired setting or to idle.
 - 1. Maintain a constant altitude by applying back elevator pressure as required until the airspeed decreases to the desired descent airspeed.
 - 2. Once the descent airspeed has been reached, lower the pitch attitude to maintain that airspeed and adjust the trim.
- C. When the descent is established, cross-check the airspeed indicator (ASI) to ensure that you are descending at the desired airspeed.
 - 1. If the airspeed is higher than desired, slightly raise the nose and allow the airspeed to stabilize in order to confirm the adjustment.
 - 2. If the airspeed is lower than desired, slightly lower the nose and allow the airspeed to stabilize.
 - 3. Once you are descending at the desired airspeed, note the position of the airplane's nose relative to the horizon and the indications of the attitude indicator (AI).
 - a. Trim the airplane to relieve all control pressures.
 - 4. Maintain either straight or turning flight, as desired.
- D. The level-off from a descent must be started before reaching the desired altitude in order to avoid descending through it.
 - 1. To level off, you should simultaneously raise the nose to a level attitude and increase power to the desired cruise setting.
 - a. The addition of power and the increase in airspeed will tend to raise the nose. You will need to apply appropriate elevator control pressure and make a trim adjustment to relieve the control pressures.
- E. **Turning Descents**
 - 1. As with climbing turns, you can either enter the turn after the descent has been established or simultaneously adjust the bank and pitch attitudes.
 - 2. At a desired power setting during a descending turn, maintain airspeed with pitch as you would in a straight descent.

ADVANCED PILOT TRAINING

5.1 THE INSTRUMENT RATING

An instrument rating is added to your private or commercial pilot certificate upon satisfactory completion of your training program, a pilot knowledge test, and a practical test. Your private or commercial pilot certificate will look the same, except it will have the words “Instrument Airplane” typed on the certificate under the ratings section.

As the title implies, an instrument rating permits you to fly “by instruments,” i.e., without visual references to the ground, horizon, and other landmarks. You will be able to fly through clouds, rain, fog, etc., all of which restrict visibility. This skill is particularly useful when you fly long distances, e.g., over 300-500 NM. It is frequently difficult to travel such distances without encountering weather systems requiring instrument pilot skills. Similarly, if you must make a flight at a specific time, it may be possible only under instrument flight rules (IFR) due to adverse weather conditions.

5.1.1 REQUIREMENTS TO OBTAIN AN INSTRUMENT RATING (PART 61)

1. Hold at least a private pilot certificate.
2. Be able to read, speak, write, and converse fluently in English.
3. Hold at least a current third-class FAA medical certificate.
4. Flight experience
 - a. 50 hr. as pilot in command on cross-country flight (of which 10 hr. must be in airplanes) to airports more than 50 NM from the original departure point.
 - b. 40 hr. of simulated or actual instrument time (of which up to 20 hr. can be in a flight simulator or flight training device; up to 10 hr. can be in an aviation training device).
 - c. 15 hr. of instrument flight instruction in an airplane. This must be with a CFII (a CFI who has been certificated to instruct instrument flight).
5. Appropriate ground instruction (such as studying the Gleim ***Instrument Pilot FAA Knowledge Test***, ***FAA Test Prep Software Download***, and ***Online Ground School***) to learn
 - a. Federal regulations applicable to instrument pilots
 - b. IFR navigation
 - c. Aviation weather
 - d. Safe and efficient flying skills applicable to IFR
 - e. Aeronautical decision making and judgment
6. A score of 70% or better on the pilot knowledge test. The test consists of 60 multiple-choice questions selected from approximately 900 airplane-related questions in the FAA instrument rating test bank. Sample FAA airplane questions are reproduced (with complete explanations to the right of each question) in ***Instrument Pilot FAA Knowledge Test***. The questions test the following 11 topics:
 - a. Airplane Instruments
 - b. Attitude Instrument Flying and Aerodynamics
 - c. Navigation Systems
 - d. Federal Aviation Regulations
 - e. Airports, Air Traffic Control, and Airspace
 - f. Holding and Instrument Approaches
 - g. Aeromedical Factors
 - h. Aviation Weather
 - i. Aviation Weather Services
 - j. IFR En Route
 - k. IFR Flights

7. Flight instruction and development of the necessary skills to pass the instrument rating practical test. Your instrument instructor must provide a signed recommendation that you are competent as an instrument pilot.
8. Successful completion of the FAA Instrument Rating Practical Test. The FAA requires the following 25 tasks to be tested.
 - a. Preflight Preparation
 - 1) Pilot Qualifications
 - 2) Weather Information
 - 3) Cross-Country Flight Planning
 - b. Preflight Procedures
 - 1) Aircraft Systems Related to IFR Operations
 - 2) Aircraft Flight Instruments and Navigation Equipment
 - 3) Instrument Cockpit Check
 - c. Air Traffic Control Clearances and Procedures
 - 1) Air Traffic Control Clearances
 - 2) Compliance with Departure, En Route, and Arrival Procedures and Clearances
 - 3) Holding Procedures
 - d. Flight by Reference to Instruments
 - 1) Straight-and-Level Flight
 - 2) Change of Airspeed
 - 3) Constant Airspeed Climbs and Descents
 - 4) Rate Climbs and Descents
 - 5) Timed Turns to Magnetic Compass Headings
 - 6) Steep Turns
 - 7) Recovery from Unusual Flight Attitudes
 - e. Navigation Systems
 - 1) Intercepting and Tracking Navigational Systems and DME Arcs
 - f. Instrument Approach Procedures
 - 1) Nonprecision Approach (NPA)
 - 2) Precision Approach (PA)
 - 3) Missed Approach
 - 4) Circling Approach
 - 5) Landing from a Straight-In or Circling Approach
 - g. Emergency Operations
 - 1) Loss of Communications
 - 2) Approach with Loss of Primary Flight Instrument Indicators
 - h. Postflight Procedures
 - 1) Checking Instruments and Equipment

5.1.2 COST OF YOUR INSTRUMENT RATING

Remember that you must have 50 hr. of cross-country time as pilot in command flying to airports more than 50 NM from the departure point. Rental rates for IFR-certified airplanes range from \$50 to \$180 per hour or more. Instrument instruction will cost about \$40 to \$60 per hour for your instructor (you are required to have 40 hr., but plan on at least 50 hr.). If you go to a typical FBO, you will probably spend \$7,000 to \$10,000 (not including your time building). As we recommended to prospective private pilots, you should discuss the cost with potential CFIs. After you select a specific program, develop a budget with your CFI and review your progress periodically.

Once you have your private pilot certificate, it may be in your interest to purchase an IFR-equipped airplane or gain use of one through a flying club. For IFR certification, you need a full panel, which includes an attitude indicator, a heading indicator, a turn coordinator, and IFR-certified navigation equipment. As you are building cross-country hours toward your instrument rating, you should work on your instrument skills. It is more effective to proceed under the supervision of a CFI (flight instructor-instrument) than to try to do it entirely on your own.

1. *Ground trainers and Aviation Training Devices (ATDs).* There are several IFR flight simulators and Flight Training Devices that have been marketed widely to colleges, FBOs, etc., as well as more-affordable ATDs. If you can gain access to one, use it under the supervision of a CFI who will sign off these hours in your logbook. Remember, up to 20 of the 40 hr. of required IFR experience and 10 of the 15 hr. of required instrument instruction may be in a flight simulator or a flight training device (only 10 of the required 40 hr. of instrument time may be obtained in a ATD).
2. *Safety pilots.* Once you have your private pilot certificate you can practice your instrument skills by using a “hood” (a view-limiting device so you can see your instruments but not outside of the airplane). **At all times** when you fly under the hood, you **must** have a safety pilot next to you watching for traffic. A safety pilot is appropriately rated to fly your airplane and is required by the FARs to look primarily for other air traffic (a midair collision would ruin your day). A safety pilot also can take over the controls if you get the airplane into an unusual attitude, i.e., if it begins to get out of control.

5.1.3 STEPS TO TAKE

1. Order the Gleim **Deluxe Instrument Pilot Kit with Online Ground School** (see the order form on page 32).
2. Take and pass the FAA pilot knowledge test (you need to answer 42 of the 60 FAA test questions correctly in order to pass). Use the ***Instrument Pilot FAA Knowledge Test*** book, **FAA Test Prep Software Download**, and **Online Ground School**.
 - a. Read the Introduction carefully.
 - b. For each of the 11 study units,
 - 1) Study the outline at the beginning of the study unit.
 - 2) Read each FAA sample test question carefully and select the best answer.
 - 3) Check your answer with the correct answer next to each question.
 - 4) Read and understand our explanation of the question.
3. Study the Gleim ***Instrument Pilot Flight Maneuvers and Practical Test Prep***. Understand each aspect of IFR flight before you practice it in an airplane.
4. Pursue a flight instruction program with a CFI. When selecting a CFI, consider the suggestions on how to select a CFI (presented on page 5 of this booklet). One additional question to ask is how much actual IFR experience the CFI has. Another question is whether (s)he uses a simulator as a regular training tool.
5. Take and pass your practical test!

5.2 THE COMMERCIAL PILOT CERTIFICATE

A commercial pilot certificate is identical to your private pilot certificate except that it allows you to fly an airplane and carry passengers and/or cargo for compensation or hire. The certificate will be sent to you by the FAA upon satisfactory completion of your training program, a pilot knowledge test, and a practical test. Your commercial pilot certificate will be identical to your private pilot certificate, except it will indicate “commercial pilot” rather than “private pilot.”

If you obtain your commercial pilot certificate before you obtain your multi-engine rating, your multi-engine rating practical test will be based on the commercial practical test standards, giving you a commercial pilot multi-engine rating rather than a private pilot multi-engine rating.

5.2.1 REQUIREMENTS TO OBTAIN A COMMERCIAL PILOT CERTIFICATE

1. Be at least 18 years of age.
2. Be able to read, speak, write, and converse fluently in English.
3. Hold at least a current third-class FAA medical certificate.
4. Hold an instrument rating. A commercial pilot is presumed to have an instrument rating. If not, his/her commercial pilot certificate will be endorsed with a prohibition against carrying passengers for hire on day VFR flights beyond 50 NM **or** at night.
5. Receive and log ground and flight training from an authorized instructor in the following areas of operations for an airplane.
 - a. *Preflight preparation*
 - b. *Preflight procedures*
 - c. *Airport operations*
 - d. *Takeoffs, landings, and go-arounds*
 - e. *Performance maneuvers*
 - f. *Ground reference maneuver*
 - g. *Navigation*
 - h. *Slow flight and stalls*
 - i. *Emergency operations*
 - j. *High-altitude operations*
 - k. *Postflight procedures*
6. A score of 70% or better on the pilot knowledge test. The test consists of 100 multiple-choice questions selected from approximately 600 airplane-related questions in the FAA commercial pilot test bank. Sample FAA airplane questions are reproduced with complete explanations of each question in the Gleim **Commercial Pilot FAA Knowledge Test** book, **FAA Test Prep Software Download**, and **Online Ground School**. The questions test the following 11 topics:
 - a. Airplanes and Aerodynamics
 - b. Airplane Instruments, Engines, and Systems
 - c. Airports, Air Traffic Control, and Airspace
 - d. Federal Aviation Regulations
 - e. Airplane Performance and Weight and Balance
 - f. Aeromedical Factors and Aeronautical Decision Making (ADM)
 - g. Aviation Weather
 - h. Aviation Weather Services
 - i. Navigation: Charts, Publications, Flight Computers
 - j. Navigation Systems
 - k. Flight Operations

7. Flight experience. A total of 250 hr. of pilot flight time is required (with no more than 50 hr. in a flight simulator or flight training device). This must include the following:
 - a. 100 hr. in powered aircraft, of which 50 hr. must be in airplanes
 - b. 100 hr. as pilot in command flight time, which includes at least
 - 1) 50 hr. in airplanes
 - 2) 50 hr. in cross-country flight, of which 10 hr. must be in airplanes
 - c. 20 hr. of flight training that includes at least
 - 1) 10 hr. of instrument training, of which at least 5 hr. must be in an airplane (not needed if you already hold an instrument rating)
 - 2) 10 hr. of training in an airplane that has a retractable landing gear, flaps, and controllable-pitch propeller, or is turbine-powered
 - 3) One cross-country flight of at least 2 hr. in an airplane in daytime conditions, consisting of a total straight-line distance of more than 100 NM from the original point of departure
 - 4) One cross-country flight of at least 2 hr. in an airplane in nighttime conditions, consisting of a straight-line distance of more than 100 NM from the original point of departure
 - 5) 3 hr. in an airplane in preparation for the practical test within the 2 calendar months preceding the test
 - d. 10 hr. of solo flight in an airplane, which includes at least
 - 1) One cross-country flight of not less than 300 NM total distance, with landings at a minimum of three points, one of which is a straight-line distance of at least 250 NM from the original departure point
 - a) In Hawaii, the longest segment need have only a straight-line distance of at least 150 NM.
 - 2) 5 hr. in night-VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower
8. Successful completion of an FAA practical test that will be given as a final exam. The practical test will be conducted as specified in the FAA's Practical Test Standards. The maneuvers tested are the same as the maneuvers tested on the private practical test except five additional proficiency flight maneuvers are required: chandelles, eights on pylons, lazy eights, steep spirals, and a power-off precision landing. Two additional knowledge tasks are required: supplemental oxygen and pressurization. Obtain and study the Gleim **Commercial Pilot Flight Maneuvers and Practical Test Prep**. It contains a reprint of tasks required on the commercial pilot practical test with a complete discussion and illustrations.

5.3 THE FLIGHT INSTRUCTOR CERTIFICATE

A flight instructor certificate allows you to give flight and ground training, i.e., to teach others to fly. An individual who wishes to have a career as a pilot typically earns the private, commercial, and flight instructor certificates (and an instrument rating). As a Certificated Flight Instructor (CFI), you can work as a flight instructor and get paid, rather than pay, for additional flight experience. After obtaining your CFI certificate, the next major step is the airline transport pilot (ATP) certificate, which requires 1,500 hr. of flight time and a minimum age of 23.

5.3.1 REQUIREMENTS TO BECOME A CERTIFICATED FLIGHT INSTRUCTOR (CFI)

1. Be at least 18 years of age.
2. Be able to read, write, and converse fluently in English.
3. Hold a commercial or ATP certificate.
 - a. Hold an instrument rating if applying to be a flight instructor in an airplane
4. Hold at least a current third-class FAA medical certificate.
5. A score of 70% or better on the FAA flight instructor knowledge test. The flight instructor test consists of 100 multiple-choice questions selected from the airplane-related questions in the FAA flight and ground instructor test bank. Sample FAA airplane questions are reproduced with complete explanations of each question in the Gleim ***Flight/Ground Instructor FAA Knowledge Test*** book, **FAA Test Prep Software Download**, and **Online Ground School**. The questions test the following topics:
 - a. Airplanes and Aerodynamics
 - b. Airplane Performance
 - c. Airplane Instruments, Engines, and Systems
 - d. Airports, Airspace, and ATC
 - e. Weight and Balance
 - f. Aviation Weather
 - g. Federal Aviation Regulations
 - h. Navigation
 - i. Flight Maneuvers
 - j. Aeromedical Factors
6. A passing score on the FAA fundamentals of instructing knowledge test. It consists of 50 multiple-choice questions taken from approximately 200 questions. The Gleim ***Fundamentals of Instructing FAA Knowledge Test*** book, **FAA Test Prep Software Download**, and **Online Ground School** consist of a complete study program including questions similar to those that appear on the FAA knowledge test. The questions test the following topics:
 - a. The Learning Process
 - b. Barriers to Learning
 - c. Human Behavior and Effective Communication
 - d. Teaching Methods
 - e. Planning Instructional Activity
 - f. Critique and Evaluation

NAFI (National Association of Flight Instructors)
 Founded in 1967, NAFI is dedicated exclusively to raising and maintaining the professional standing of the flight instructor in the aviation community.
www.nafinet.org

SAFE (Society of Aviation and Flight Educators)
 SAFE is a member-driven professional organization open to all aviation educators and provides members with mentoring, support, and professional accreditation.
www.SafePilots.org

7. Required Flight Instruction

- a. You must receive and log flight and ground training and obtain a logbook endorsement from an authorized instructor on the following areas of operations for an airplane category rating with a single-engine or multi-engine class rating.
 - 1) *Fundamentals of instructing*
 - 2) *Technical support areas*
 - 3) *Preflight preparation*
 - 4) *Preflight lesson on a maneuver to be performed in flight*
 - 5) *Preflight procedures*
 - 6) *Airport operations*
 - 7) *Takeoffs, landings, and go-arounds*
 - 8) *Fundamentals of flight*
 - 9) *Performance maneuvers*
 - 10) *Ground reference maneuvers*
 - 11) *Slow flight, stalls, and spins*
 - 12) *Basic instrument maneuvers*
 - 13) *Emergency operations*
 - 14) *Postflight procedures*
 - b. The flight instruction must be given by a person who has held a flight instructor certificate during the 24 months immediately preceding the date the instruction is given and who has given at least 200 hr. of flight instruction as a CFI.
 - c. You must also obtain a logbook endorsement by an appropriately certificated and rated flight instructor who has provided you with spin entry, spin, and spin recovery training in an airplane that is certificated for spins and has found you instructionally competent and proficient in those training areas, i.e., so you can teach spins.
8. Successful completion of a practical test that will be given as a final exam by an FAA inspector on the topics listed above. All of the tasks for the CFI are thoroughly explained as well as reprinted in the Gleim ***Flight Instructor Flight Maneuvers and Practical Test Prep***, which will provide you with step-by-step instructions for each flight maneuver. The flight portion of the practical test consists largely of those maneuvers tested on the commercial practical test except you must explain each maneuver to the examiner as you are flying the airplane. During the practical test, you will fly the airplane from the right seat because this is where CFIs instruct (with the student in the left seat).

5.3.2 CERTIFICATED FLIGHT INSTRUCTOR - INSTRUMENT (CFII)

In order to instruct pilots working toward their instrument rating, you must be an instrument instructor, which requires more training, another pilot knowledge test, and a practical test.

The FAA pilot knowledge test consists of 50 questions from the same questions used on the FAA pilot knowledge test for the instrument rating; i.e., you (in effect) retake your instrument rating knowledge test. Thus, you need to study and use the Gleim ***Instrument Pilot FAA Knowledge Test*** book, ***FAA Test Prep Software Download***, and ***Online Ground School***.

The practical test consists of the instrument rating practical test maneuvers except you must explain the maneuvers as you perform them and you sit in the right seat. The Gleim ***Instrument Pilot Flight Maneuvers and Practical Test Prep*** is an essential text to help you prepare for your CFII practical test.

CFIs NOTE: This is an excellent IFR refresher and update. Another major advantage is that passage of the flight test extends your CFI privileges for another 24 months; i.e., the additional rating both renews your CFI certificate and satisfies the flight review requirement.

GLEIM® Pilot Kits with Online Ground School

Sport	\$199.95	_____
Private	\$249.95	_____
Instrument	\$249.95	_____
Commercial	\$174.95	_____
Instrument/Commercial	\$341.95	_____
Sport Pilot Flight Instructor	\$174.95	_____
Flight/Ground Instructor	\$174.95	_____
ATP	\$189.95	_____

Also Available:

<i>Flight Engineer Online Ground School</i>	\$99.95	_____
<i>Flight Engineer Test Prep Software</i>	\$64.95	_____

Shipping (nonrefundable): **\$20 per kit** \$ _____

(Alaska and Hawaii please call for shipping price)

Add applicable sales tax for shipments within the state of Florida. \$ _____

For orders outside the United States, please visit our website at

www.gleim.com/aviation/products.php to place your order. TOTAL \$ _____

Reference Materials and Other Accessories Available by Contacting Gleim.

TOLL FREE: 800.874.5346 ext. 471
WEBSITE: gleim.com

LOCAL: 352.375.0772 ext. 471
FAX: 352.375.6940
EMAIL: sales@gleim.com

Gleim Publications, Inc.
P.O. Box 12848
Gainesville, FL 32604

NAME (please print) _____

ADDRESS _____ Apt. _____
(street address required for UPS)

CITY _____ STATE _____ ZIP _____

_____ MC/VISA/DISC _____ Check/M.O. Daytime Telephone (_____) _____ - _____

Credit Card # _____ - _____ - _____ - _____

Exp. ____ / ____ Signature _____
Mo./Yr.

Email Address _____

1. We process and ship orders daily, within one business day over 98.8% of the time. Call by 3:00 pm for same day service.
 2. Gleim Publications, Inc. guarantees the immediate refund of all resalable texts, unopened and un-downloaded Test Prep Software, and unopened and un-downloaded audios returned within 30 days. Online courses may be canceled within 30 days if no more than two study units have been accessed. This policy applies only to products that are purchased directly from Gleim Publications, Inc. No refunds will be provided on opened or downloaded Test Prep Software or audios, partial returns of package sets, or shipping and handling charges. Any freight charges incurred for returned or refused packages will be the purchaser's responsibility.
 3. Please PHOTOCOPY this order form for others.
 4. No CODs. Orders from individuals must be prepaid.
- Prices subject to change without notice. 12/11



Individual audios correspond to study units in Gleim **FAA Knowledge Test** books and **FAA Test Prep** Software. The audios provide thorough overviews explaining key concepts and reinforcing the knowledge necessary to answer the FAA knowledge test questions correctly.

Convert "downtime" into valuable study time by listening to audios while commuting, exercising, walking your dog, etc. When you complete a study unit, answer the questions in the Gleim **FAA Knowledge Test** book and **FAA Test Prep** Software.

Instrument Pilot FAA Audio Review • Private Pilot FAA Audio Review

GLEIM® *Pilot Syllabus Books*

- Designed to help get your rating quickly
- Save money on flight training
- Learn more in less time
- Easy to use



GLEIM® *Reference Books*

UP-TO-DATE REFERENCE BOOKS FOR ALL PILOTS

Enhance your learning experience with Gleim reference books.

Pilot Handbook is a comprehensive ground school text presented in outline format. It is loaded with color images and diagrams to facilitate learning and contains expanded weather coverage and special sections on flight reviews and instrument proficiency checks.

Aviation Weather and Weather Services is a complete re-write of two FAA publications, *Aviation Weather* (AC 00-6A) and *Aviation Weather Services* (AC 00-45G), compiled in a single easy-to-understand book complete with maps, diagrams, charts, and color figures. Explanations of the FAA material are also included.

FAR/AIM is a reprint of the Federal Aviation Regulations (14 CFR) and the Aeronautical Information Manual. An essential reference book for all pilots, Gleim **FAR/AIM** is presented in an easy-to-read format and contains improved indexes.



The #1 name in pilot training ...

GLEIM®

Pilot Kits below include Online Ground School!



Sport

\$199.95



Private

\$249.95



Instrument

\$249.95



Commercial

\$174.95



**Instrument/Commercial
Combo**

\$341.95

(includes Instrument Pilot audios)



**Flight/Ground
Instructor**

\$174.95



**Sport Pilot Flight
Instructor**

\$174.95



ATP

\$189.95

***Everything you need to PASS
the FAA knowledge and practical tests
except a CFI and an airplane.***



gleim.com • 800.874.5346

GLEIM
KNOWLEDGE
TRANSFER
SYSTEMS®