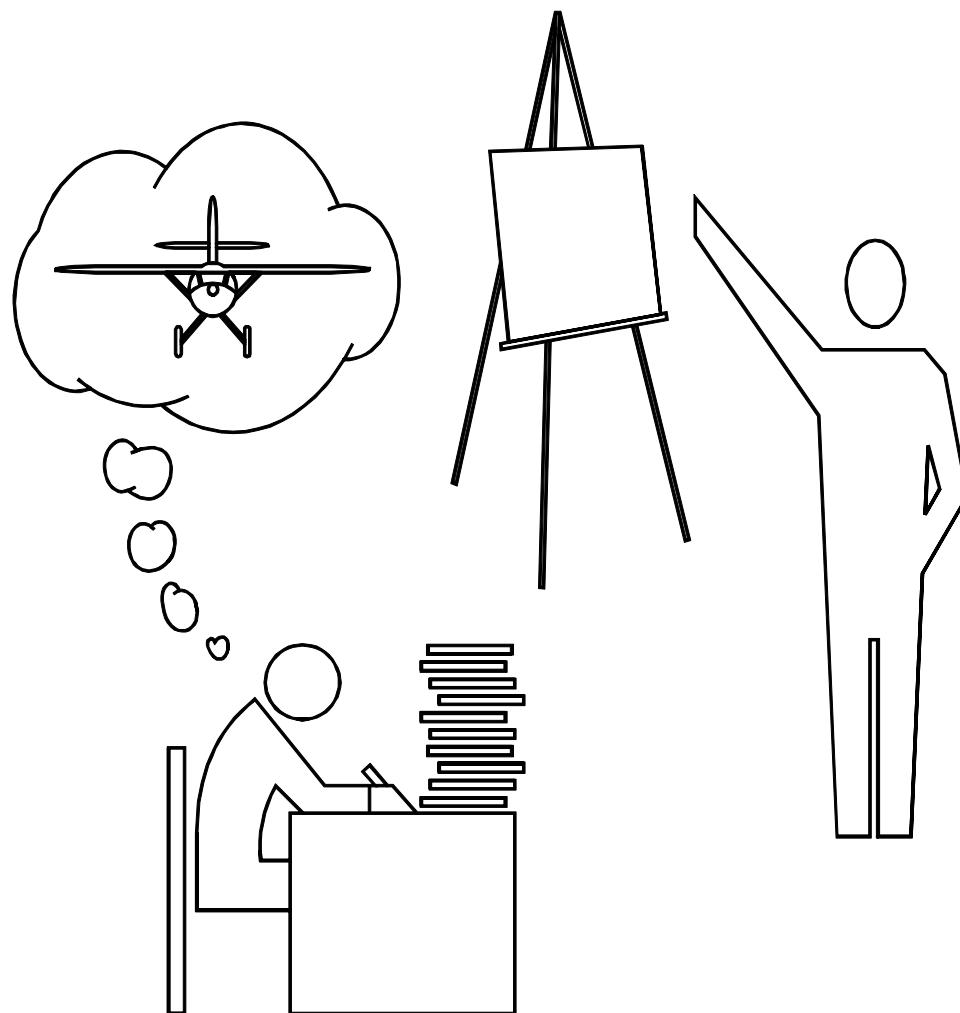


# FLIGHT AND GROUND INSTRUCTOR KNOWLEDGE TEST GUIDE



U.S. Department of Transportation  
**Federal Aviation Administration**

# **FLIGHT AND GROUND INSTRUCTOR KNOWLEDGE TEST GUIDE**

**1999**

**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
Flight Standards Service**

## PREFACE

FAA-G-8082-7, Flight and Ground Instructor Knowledge Test Guide, provides information for obtaining authorization to take the flight and ground instructor knowledge tests. Appendix 1 provides lists of reference materials and subject matter knowledge codes, and a list of computer testing designees (CTD's).

Changes to the subject matter knowledge codes will be published in AC 60-25, Reference Materials and Subject Matter Knowledge Codes for Airman Knowledge Testing.

The current Flight Standards Service airman training and testing material, questions banks, and subject matter knowledge codes for all airman certificates and ratings can be obtained from the Regulatory Support Division, AFS-600, home page on the Internet.

The Regulatory Support Division's Internet address is: <http://www.mmac.jccbi.gov/afs/afs600>

FAA-G-8082-7 supersedes Advisory Circular (AC) 61-112, Flight and Ground Instructor Knowledge Test Guide, dated 1994, and can be purchased from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9325, or from U.S. Government Bookstores located in major cities throughout the United States. For an explanation of why the Flight and Ground Instructor Knowledge Test Guide was taken out of the AC system, refer to AC 60-29, Renumbering of Airman Training and Testing Publications.

Comments regarding this guide should be sent to the Federal Aviation Administration, Airman Testing Standards Branch, AFS-630, Attn: Instructor Certification Area Manager, P.O. Box 25082, Oklahoma City, OK 73125.

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# **FLIGHT AND GROUND INSTRUCTOR KNOWLEDGE TEST GUIDE**

## **INTRODUCTION**

What is required to become a skilled and effective flight or ground instructor? Although some individuals possess more knowledge and skills than others, no one is a natural-born instructor. Competent instructors become so through study and hard work.

This knowledge test guide will answer most of your questions about taking a flight or ground instructor knowledge test by covering the following areas: knowledge test eligibility requirements; role of the instructor; knowledge areas on the tests; descriptions of the tests; process for taking a knowledge test; use of test aids and materials; cheating or other unauthorized conduct; validity of Airman Test Reports; and retesting procedures.

This guide will help in preparing you to take one or all of the following knowledge tests.

- Fundamentals of Instructing (FOI)
- Ground Instructor—Basic (BGI)
- Ground Instructor—Advanced (AGI)
- Flight Instructor—Airplane (FIA)
- Flight Instructor—Helicopter (FRH)
- Flight Instructor—Gyroplane (FRG)
- Flight Instructor—Glider (FIG)
- Flight Instructor—Airplane (Added Rating) (AFA)
- Flight Instructor—Helicopter (Added Rating) (HFA)
- Flight Instructor—Gyroplane (Added Rating) (GFA)
- Flight Instructor—Glider (Added Rating) (AFG)

This guide is not offered as an easy way to obtain the necessary information for passing these knowledge tests. Rather, the intent of this guide is to define and narrow the field of study to the required knowledge areas included in the tests.

## **KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS**

There are certain regulatory training and endorsement requirements that you must satisfy prior to taking a flight instructor practical test. For specific information pertaining to certification, you should carefully review the appropriate sections of Title 14 of the Code of Federal Regulations (14 CFR) part 61.

You must pass the fundamentals of instructing knowledge test and a flight or ground instructor knowledge test specific to the instructor rating sought. You may take these tests on the same day, and you do not have to take them in any particular order.

When applying for any additional instructor rating, you are not required to take the fundamentals of instructing knowledge test again. Once you have acquired a flight instructor certificate, you are eligible to give ground instruction required for a pilot or instructor certificate or rating, based on the ratings on your flight instructor certificate. Because of this, it is not necessary to obtain a separate ground instructor certificate since you would already have these privileges.

## **ROLE OF THE INSTRUCTOR**

All pilot training is directed toward developing safe and competent pilots. The more complete a student's understanding of theory and principles, the easier it will be for that student to become a safe and competent pilot. It has long been recognized that flight and ground instruction go hand in hand. Each complements the other, resulting in a training program that is both meaningful and comprehensive.

Generally, pilots learn by one of two methods. Some learn by memorization while others acquire knowledge and understanding of basic procedures and techniques and apply these to various piloting operations. The latter method of learning is, by far, more effective. Effective pilot training is based on the knowledge and understanding of principles, along with skills that are essential to flight safety.

The keystone of the present-day training concept is the flight instructor—a professional who should assume full responsibility for all phases of a student pilot's flight and ground instruction. A flight instructor must first be fully qualified as a pilot. In addition, a successful instructor must meet qualifications far beyond those required for certification as a pilot. An instructor must have a thorough understanding of how learning occurs, and how to apply teaching methods that best foster learning. The most important factor is the instructor's own attitude toward instruction that determines the effectiveness of the teaching method. By understanding the teaching and learning processes, instructors will be better qualified to produce pilots who are able to operate safely within the National Airspace System (NAS).

## KNOWLEDGE AREAS ON THE TESTS

Flight and ground instructor knowledge tests are comprehensive because they must test your knowledge in many subject areas. These include all aeronautical knowledge areas required for a private and commercial pilot certificate, as well as those required for a flight or ground instructor certificate. When applying for any flight or ground instructor knowledge test, you should review the appropriate sections of 14 CFR part 61 for specific knowledge areas on each test.

Flight instructors should be knowledgeable of not only what to do and how to do it, but also why a maneuver is performed and what common errors result if the maneuver or procedure is not performed properly. Ground instructors should also be knowledgeable of all subjects; however, they would not be expected to understand evaluating pilot performance of maneuvers and analyzing common errors.

It is generally accepted that a pilot with much knowledge, but little skill, is not adequately equipped to fly an aircraft. Neither is the pilot who is skillful in the manipulative techniques of flying, but lacks aviation knowledge.

## DESCRIPTIONS OF THE TESTS

If you are pursuing initial flight or ground instructor certification, you must successfully complete the fundamentals of instructing knowledge test. However, if you hold a current teacher's certificate at the junior or senior high school level, or you are an instructor at

a college or university, you can receive credit for this test. This test contains 50 questions, and you are allowed 1.5 hours to complete the test. The minimum passing score is 70 percent.

In addition, you must successfully complete a knowledge test appropriate to the desired rating. The following tests each contain 100 questions (except for Ground Instructor—Basic, which contains 80 questions), and you are allowed 2.5 hours to complete each test.

- Ground Instructor—Basic
- Ground Instructor—Advanced
- Flight Instructor—Airplane
- Flight Instructor—Helicopter
- Flight Instructor—Gyroplane
- Flight Instructor—Glider

If you desire to add a rating to your flight instructor certificate, you must successfully complete a knowledge test appropriate to the desired rating.

The following tests each contain 25 questions, and you are allowed 1 hour to complete each test.

- Flight Instructor—Airplane (Added Rating)
- Flight Instructor—Helicopter (Added Rating)
- Flight Instructor—Gyroplane (Added Rating)
- Flight Instructor—Glider (Added Rating)

All test results expire at the end of 24 months after the month in which the test was taken.

All test questions are the objective, multiple-choice type. Each question can be answered by the selection of a single response. Each test question is independent of other questions; therefore, a correct response to one does not depend upon, or influence, the correct response to another.

Communication between individuals through the use of words is a complicated process. In addition to being an exercise in the application and use of aeronautical knowledge, a test is also an exercise in communication. Since the tests involve written rather than spoken words, communication between the test writer and the person being tested may become a difficult matter if care is not exercised by both parties. Consequently,

considerable effort is expended to write each question in a clear, precise manner. Make sure you carefully read the instructions given with each test, as well as the statements in each test item.

When taking a test, keep the following points in mind:

- Answer each question in accordance with the latest regulations and guidance publications.
- Read each question carefully before looking at the possible answers. You should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which choice corresponds with that answer. The answer chosen should completely resolve the problem.
- From the answers given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete, erroneous, or represent a common misconception.
- If a certain question is difficult for you, it is best to mark it for review and proceed to the next question. After you answer the less difficult questions, return to those which you marked for review and answer them. The review marking procedure will be explained to you prior to starting the test. Although the computer should alert you to unanswered questions, make sure every question has an answer recorded. This procedure will enable you to use the available time to the maximum advantage.
- When solving a calculation problem, select the answer closest to your solution. The problem has been checked with various types of calculators; therefore, if you have solved it correctly, your answer will be closer to the correct answer than any of the other choices.

## **PROCESS FOR TAKING A KNOWLEDGE TEST**

The Federal Aviation Administration (FAA) has available hundreds of computer testing centers worldwide. These testing centers offer the full range of airman knowledge tests including military competence, instrument foreign pilot, and pilot examiner screening tests. Refer to appendix 1 of this guide for a list of computer testing designees (CTD's).

The first step in taking a knowledge test is the registration process. You may either call the central 1-800 numbers (refer to appendix 1 for 1-800 numbers)

or simply use the walk-in basis. If you choose to use the 1-800 number to register, you will need to select a testing center, schedule a test date, and make financial arrangements for test payment. You may register for tests several weeks in advance, and you may cancel your appointment according to the CTD's cancellation policy. If you do not follow the CTD's cancellation policies, you could be subject to a cancellation fee.

The next step in taking a knowledge test is providing proper identification. Although no prior authorization is necessary, except in the case of failure, to take any flight or ground instructor knowledge test, proper identification is required. Testing center personnel will not begin the test until your identification is verified.

Before you take the actual test, you will have the option to take a sample test. The actual test is time limited; however, you should have sufficient time to complete and review your test.

Upon completion of the knowledge test, you will receive your Airman Test Report, with the testing center's embossed seal, which reflects your score.

The Airman Test Report lists the subject matter knowledge codes for questions answered incorrectly. The total number of subject matter knowledge codes shown on the Airman Test Report is not necessarily an indication of the total number of questions answered incorrectly. Appendix 1 contains a list of subject matter knowledge codes that refer to the knowledge areas. Study these knowledge areas to improve your understanding of the subject matter.

Your instructor must provide instruction on each of the knowledge areas listed on your Airman Test Report and complete an endorsement of this instruction. You must present the Airman Test Report to the examiner prior to taking the practical test. During the oral portion of the practical test, the examiner is required to evaluate the noted areas of deficiency.

Should you require a duplicate Airman Test Report due to loss or destruction of the original, send a signed request accompanied by a check or money order for \$1 payable to the FAA. Your request should be sent to the Federal Aviation Administration, Airmen Certification Branch, AFS-760, P.O. Box 25082, Oklahoma City, OK 73125.

## **USE OF TEST AIDS AND MATERIALS**

Airman knowledge tests require applicants to analyze the relationship between variables needed to solve aviation problems, in addition to testing for accuracy of a mathematical calculation. The intent is that all applicants are tested on concepts rather than rote calculation ability. It is permissible to use certain calculating devices when taking airman knowledge tests, provided they are used within the following guidelines. The term "calculating devices" is interchangeable with such items as calculators, computers, or any similar devices designed for aviation-related activities.

1. Guidelines for use of test aids and materials. The applicant may use test aids and materials within the guidelines listed below, if actual test questions or answers are not revealed.

a. Applicants may use test aids, such as scales, straightedges, protractors, plotters, navigation computers, log sheets, and all models of aviation-oriented calculating devices that are directly related to the test. In addition, applicants may use any test materials provided with the test.

b. Manufacturer's permanently inscribed instructions on the front and back of such aids listed in 1(a), e.g., formulas, conversions, regulations, signals, weather data, holding pattern diagrams, frequencies, weight and balance formulas, and air traffic control procedures are permissible.

c. The test proctor may provide calculating devices to applicants and deny them use of their personal calculating devices if the applicant's device does not have a screen that indicates all memory has been erased. The test proctor must be able to determine the calculating device's erasure capability. The use of calculating devices incorporating permanent or continuous type memory circuits without erasure capability are prohibited.

d. The use of magnetic cards, magnetic tapes, modules, computer chips, or any other device upon which prewritten programs or information related to

the test can be stored and retrieved are prohibited. Printouts of data will be surrendered at the completion of the test if the calculating device used incorporates this design feature.

e. The use of any booklet or manual containing instructions related to the use of the applicant's calculating device is not permitted.

f. Dictionaries are not allowed in the testing area.

g. The test proctor makes the final determination relating to test materials and personal possessions that the applicant may take into the testing area.

2. Guidelines for dyslexic applicant's use of test aids and materials. A dyslexic applicant may request approval from the local Flight Standards District Office (FSDO) to take an airman knowledge test using one of the three options listed in preferential order:

a. Option One. Use current testing facilities and procedures whenever possible.

b. Option Two. Applicants may use Franklin Speaking Wordmaster® to facilitate the testing process. The Wordmaster® is a self-contained electronic thesaurus that audibly pronounces typed in words and presents them on a display screen. It has a built-in headphone jack for private listening. The headphone feature will be used during testing to avoid disturbing others.

c. Option Three. Applicants who do not choose to use the first or second option may request a test proctor to assist in reading specific words or terms from the test questions and supplement material. In the interest of preventing compromise of the testing process, the test proctor should be someone who is non-aviation oriented. The test proctor will provide reading assistance only, with no explanation of words or terms. The Airman Testing Standards Branch, AFS-630, will assist in the selection of a test site and test proctor.

## **CHEATING OR OTHER UNAUTHORIZED CONDUCT**

Computer testing centers must follow strict security procedures to avoid test compromise. These procedures are established by the FAA and are covered in FAA Order 8080.6, Conduct of Airman Knowledge Tests. The FAA has directed testing centers to terminate a test at any time a test proctor suspects a cheating incident has occurred. An FAA investigation will then be conducted. If the investigation determines that cheating or unauthorized conduct has occurred, then any airman certificate or rating that you hold may be revoked, and you will be prohibited for 1 year from applying for or taking any test for a certificate or rating under 14 CFR part 61.

## **VALIDITY OF AIRMAN TEST REPORTS**

Airman Test Reports are valid within the 24-calendar month period preceding the month you complete the practical test. If the Airman Test Report expires before completion of the practical test, you must retake the knowledge test.

## **RETESTING PROCEDURES**

If you receive a grade lower than 70 percent and wish to retest, you must present the following to testing center personnel.

- failed Airman Test Report; and
- a written endorsement from an authorized instructor certifying that additional instruction has been given, and the instructor finds you competent to pass the test.

If you decide to retake the test in anticipation of a better score, you may retake the test after 30 days from the date your last test was taken. The FAA will not allow you to retake a passed test before the 30-day period has lapsed. Prior to retesting, you must give your current Airman Test Report to the test proctor. The last test taken will reflect the official score.

# SAMPLE TEST QUESTIONS AND ANSWERS

## FUNDAMENTALS OF INSTRUCTING

### 1. Can learning take place without perception?

- A—No; perceptions are the basis of all learning.
- B—Yes, but only when motivation is strong enough to overcome the lack of perceptual cues.
- C—Yes; learning takes place when a person gives meaning to insights while perceptions involve the grouping of insights into meaningful wholes.

*Answer A—Subject Matter Knowledge Code: H20 (AC 60-14, P4). All learning comes from perceptions that are directed to the brain by one or more of the five senses.*

### 2. The highest level of learning has been achieved when a student is able to

- A—apply a skill that has been learned.
- B—correlate what has been learned with things previously learned.
- C—understand what has been taught and to apply this knowledge consistently.

*Answer B—Subject Matter Knowledge Code: H20 (AC 60-14, P8). The highest level of learning is that level at which the student becomes able to associate an element that has been learned with other segments or blocks of learning.*

### 3. Test reliability refers to the

- A—accuracy with which a test measures student progress.
- B—exactness with which a test measures what it is supposed to measure.
- C—characteristic of a test that indicates consistent results over a period of time.

*Answer C—Subject Matter Knowledge Code: H26 (AC 60-14, P45). A test, to be reliable, should measure results on a consistent basis.*

### 4. What should a flight instructor do with a student who shows a lack of confidence while practicing landings?

- A—Assign goals that are less difficult.
- B—Use praise to a greater extent during each landing.
- C—Continue instruction but in a more energetic manner so that the student will work harder.

*Answer A—Subject Matter Knowledge Code: H30 (AC 60-14, P62). A student whose slow progress is due to a lack of confidence should be assigned sub-goals that can be attained more easily.*

### 5. Flight instructors can minimize student anxiety by

- A—keeping the student busy during each flight.
- B—terminating the flight immediately upon detecting student fear.
- C—emphasizing the positive rather than negative experiences of flying.

*Answer C—Subject Matter Knowledge Code: H30 (AC 60-14, P65). Student anxieties can be minimized throughout training by emphasizing the benefits and pleasurable experiences which can be derived from flying, rather than continuously citing the unhappy consequences of faulty performance.*

# SAMPLE TEST QUESTIONS AND ANSWERS

## FLIGHT AND GROUND INSTRUCTOR

**1. Areas of forecast icing conditions aloft can be determined by referring to**

- A—area forecasts.
- B—weather depiction charts.
- C—aviation sequence reports.

*Answer A—Subject Matter Knowledge Code: I43 (AC 00-45, Sec 4). A forecast of non-thunderstorm related icing of light or greater intensity for up to 12 hours can be found in an area forecast.*

**2. An altimeter indicates 3,450 feet MSL when set to 29.76. What is the approximate pressure altitude?**

- A—3,290 feet.
- B—3,466 feet.
- C—3,610 feet.

*Answer C—Subject Matter Knowledge Code: I22 (AC 00-6, P18). Pressure altitude is the altitude read from an altimeter when 29.92 Hg is set in the window. Since 1 Hg equals approximately 1,000 feet, the difference here is 160 feet. In this example, 29.76 Hg is lower than 29.92 Hg; therefore, the pressure altitude will be 160 feet higher or 3,610 feet.*

**3. What is the duration of a flight instructor certificate?**

- A—Indefinite unless suspended or revoked.
- B—24 months after the month in which it was issued or renewed.
- C—Indefinite, as long as the holder has a current pilot certificate and medical certificate appropriate to the privileges being exercised.

*Answer B—Subject Matter Knowledge Code: A20 (14 CFR part 61, section 61.19). “...expires 24 calendar months from the month in which it was issued or renewed....” (e.g., a certificate issued on 12-13-97 expires on 12-31-99).*

**4. Normally, the vertical limits of Class D airspace extend up to and including how many feet above the surface of an airport?**

- A—2,500 feet.
- B—3,000 feet.
- C—4,000 feet.

*Answer A—Subject Matter Knowledge Code: J08 (AIM, 3-2-7). Generally, the vertical limits of Class D airspace extend to 2,500 feet above the airport elevation surrounding those airports that have an operational control tower.*

**5. Rotor blade pitch angle is the acute angle between the blade chord line and the**

- A—angle of attack.
- B—rotor plane of rotation.
- C—direction of the relative wind.

*Answer B—Subject Matter Knowledge Code: H70 (AC 61-13, P2). The rotor blade pitch angle is the acute angle between the blade chord line and the reference plane determined by the main rotor hub. Since the rotor plane of rotation is parallel to the plane containing the main rotor hub, the rotor blade pitch angle could also be described as the acute angle between the blade chord line and the rotor plane of rotation.*

**6. Which is a result of ground effect?**

- A—An increase in lift with no increase in angle of attack.
- B—An increase in induced drag with no change in angle of attack.
- C—An increase in the wing’s downwash with no increase in angle of attack.

*Answer A—Subject Matter Knowledge Code: H66 (AC 61-21, P272). When in ground effect, the wing requires a lower angle of attack to produce the same lift or, if a constant angle of attack is maintained, an increase in lift coefficient will result.*

**7. What causes the northerly turning error in a magnetic compass?**

- A—The magnetic dip characteristic.
- B—Coriolis force at the mid-latitudes.
- C—Oversensitivity when closer to one of the magnetic poles.

*Answer A—Subject Matter Knowledge Code: H314 (AC 61-23, P3-10). The vertical component of magnetic lines of force causes a compass to deflect or dip. The closer to the magnetic poles, the larger the deflection or dip.*

**8. Helicopter low frequency vibrations are always associated with the**

- A—engine.
- B—main rotor.
- C—transmission.

*Answer B—Subject Matter Knowledge Code: H78 (AC 61-13, P66). Low frequency vibrations are always associated with the main rotor. The vibration will be some frequency related to the rotor RPM and slow enough that they can be counted.*

**9. (Refer to appendix 2, figure 1.) Determine the approximate crosswind component:**

Landing Rwy ..... 3  
Wind ..... 020° at 21 kts

- A—16 knots.
- B—19 knots.
- C—25 knots.

*Answer A—Subject Matter Knowledge Code: H317 (AC 61-23, P4-16). Determine the number of degrees between the runway heading and the wind direction. Follow the corresponding degree line into the arc determined by the windspeed and then drop down to find the crosswind component.*

**10. (Refer to appendix 2, figure 2.) How should the 250-pound weight be shifted to balance the plank on the fulcrum?**

- A—.5 inches to the left.
- B—5.0 inches to the left.
- C—7.0 inches to the right.

*Answer B—Subject Matter Knowledge Code: H316 (AC 61-23, P4-8). By multiplying the weight times the arm of the weight and board on the right side of the fulcrum, you arrive at a moment of 5,000. Weight times arm of the weight on the left side equals 3,750. The 250-pound weight on the left side of the fulcrum must then be moved 5 inches to the left in order to increase the moment by 1,250.*

**11. After 165 miles are flown from the departure point, the aircraft's position is located 10 miles off course. If 80 miles remain to be flown, what approximate total correction should be made to converge on course?**

- A—9°.
- B—11°.
- C—14°.

*Answer B—Subject Matter Knowledge Code: H342 (AC 61-23, P8-9). Using a navigation computer, place the miles flown on the inner scale opposite the miles off course on the outer scale. Read the degrees to parallel on the outer scale opposite the speed arrow index (in this case, 3.5°). Then place the miles to be flown on the inner scale opposite the miles off course on the outer scale. Read the degrees to converge from parallel on the outer scale opposite the speed arrow index (in this case, 7.5°). By adding these two figures, the total correction to converge would be 11°.*

**12. GIVEN:**

Usable fuel at takeoff ..... 36 gal  
Fuel consumption rate ..... 12.4 gal/hr  
Constant groundspeed ..... 140 kts  
Flight time since takeoff ..... 48 min

According to 14 CFR part 91, how much farther can a rotorcraft be flown under day VFR?

- A—294 NM.  
B—247 NM.  
C—224 NM.

*Answer B—Subject Matter Knowledge Code: H342 (AC 61-23, P8-9). Using a calculator, first determine the amount of flight time available with the fuel on board. Then, deduct the amount of time flown and the correct amount of time needed for reserve. Finally, determine the number of miles that can be flown at the given groundspeed.*

**13. When performing a lazy eight, when should the altitude be the same as the entry altitude?**

- A— $90^\circ$  point.  
B— $135^\circ$  point.  
C— $180^\circ$  point.

*Answer C—Subject Matter Knowledge Code: H60 (AC 61-21, P164). At the completion of each  $180^\circ$  turn during a lazy eight, the airplane should return to the starting altitude.*

**14. (Refer to appendix 2, figure 3.) At which points will the wing (lateral axis) be in alignment with the pylon during turns around a point?**

- A—1 and 3.  
B—2 and 4.  
C—1, 2, 3, and 4.

*Answer A—Subject Matter Knowledge Code: H60 (AC 61-21, P137). A constant radius around a point requires a constantly changing angle of bank and angle of crab. When heading directly upwind or downwind, the wing or lateral axis of the aircraft should be pointing to or aligned with the pylon.*

## **APPENDIX 1**

## **LIST OF REFERENCE MATERIALS AND SUBJECT MATTER KNOWLEDGE CODES**

The publications listed in the following pages contain study material you need to be familiar with when preparing for flight and ground instructor knowledge tests. All of these publications can be purchased through U.S. Government Bookstores, commercial aviation supply houses, or industry organizations. The latest revision of the listed references should be requested. Additional study material is also available through these sources that may be helpful in preparing for instructor knowledge tests. All publications listed would be excellent for an instructor to have in a personal reference library.

The subject matter knowledge codes refer to the specific reference for the knowledge standard. When reviewing results of your knowledge test, you should compare the subject matter knowledge code(s) on your Airman Test Report to the ones found below. This will be helpful for both review and preparation for the practical test.

### **Title 14 of the Code of Federal Regulations (14 CFR) part 1—Definitions and Abbreviations**

- A01 General Definitions
- A02 Abbreviations and Symbols

### **14 CFR part 23—Airworthiness Standards: Normal, Utility, and Acrobatic Category Aircraft**

- A150 General

### **14 CFR part 61—Certification: Pilots and Flight Instructors**

- A20 General
- A21 Aircraft Ratings and Pilot Authorizations
- A22 Student Pilots
- A23 Private Pilots
- A24 Commercial Pilots
- A25 Airline Transport Pilots
- A26 Flight Instructors
- A27 Ground Instructors
- A29 Recreational Pilots

### **14 CFR part 91—General Operating Rules**

- B07 General
- B08 Flight Rules—General
- B09 Visual Flight Rules
- B11 Equipment, Instrument, and Certificate Requirements
- B12 Special Flight Operations
- B13 Maintenance, Preventive Maintenance, and Alterations

### **14 CFR part 121—Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft**

- D07 Manual Requirements
- D12 Maintenance, Preventive Maintenance, and Alterations

### **NTSB 830—Rules Pertaining to the Notification and Reporting of Aircraft Accidents or Incidents and Overdue Aircraft, and Preservation of Aircraft Wreckage, Mail, Cargo, and Records**

- G10 General
- G11 Initial Notification of Aircraft Accidents, Incidents, and Overdue Aircraft
- G13 Reporting of Aircraft Accidents, Incidents, and Overdue Aircraft

### **AC 61-23—Pilot’s Handbook of Aeronautical Knowledge**

- H300 Forces Acting on the Airplane in Flight
- H302 Airplane Stability
- H306 Electrical System
- H307 Engine Operation
- H308 Propeller
- H310 Exhaust Gas Temperature Gauge
- H312 The Pitot-Static System and Associated Instruments
- H313 Gyroscopic Flight Instruments
- H314 Magnetic Compass
- H316 Balance, Stability, and Center of Gravity
- H317 Airplane Performance

## Appendix 1

H340	Latitude and Longitude	H74	Other Helicopter Components and Their Functions
H341	Effect of Wind	H75	Introduction to the Helicopter Flight Manual
H342	Basic Calculations	H76	Weight and Balance
H344	Dead Reckoning	H77	Helicopter Performance
H348	Radio Navigation	H78	Some Hazards of Helicopter Flight
H351	Environmental Factors which Affect Pilot Performance	H79	Precautionary Measures and Critical Conditions

### AC 91-23—Pilot’s Weight and Balance Handbook

H10	Weight and Balance Control
H11	Terms and Definitions
H12	Empty Weight Center of Gravity
H13	Index and Graphic Limits
H14	Change of Weight
H15	Control of Loading—General Aviation

### AC 60-14—Aviation Instructor’s Handbook

H20	The Learning Process
H21	Human Behavior
H22	Effective Communication
H23	The Teaching Process
H24	Teaching Methods
H25	The Instructor as a Critic
H26	Evaluation
H27	Instructional Aids
H30	Flight Instructor Characteristics and Responsibilities
H31	Techniques of Flight Instruction
H32	Planning Instructional Activity

### AC 61-21—Flight Training Handbook

H51	Introduction to Airplanes and Engines
H52	Introduction to the Basics of Flight
H53	The Effect and Use of Controls
H54	Ground Operations
H55	Basic Flight Maneuvers
H56	Airport Traffic Patterns and Operations
H57	Takeoffs and Departure Climbs
H58	Landing Approaches and Landings
H59	Faulty Approaches and Landings
H60	Proficiency Flight Maneuvers
H61	Cross-Country Flying
H62	Emergency Flight by Reference to Instruments
H63	Night Flying
H66	Principles of Flight and Performance Characteristics

### AC 61-13—Basic Helicopter Handbook

H70	General Aerodynamics
H71	Aerodynamics of Flight
H72	Loads and Load Factors
H73	Function of the Controls

H80	Helicopter Flight Maneuvers
H81	Confined Area, Pinnacle, and Ridgeline Operations

### Gyroplane Training Manual—Graves Publishing Co.

H95	General
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### Understanding the Gyroplane—The Abbott Co.

H650	Magic of Rotor Blades
H651	Behind the Power Curve
H652	Beating P.I.O.

### Gyroplane Flight Training Manual—Jean-Pierre Harrison

H701	General Aerodynamics
H702	Aerodynamics of Flight
H711	Gyroplane Flight Maneuvers

### AC 61-27—Instrument Flying Handbook

I05	Attitude Instrument Flying—Airplanes
I07	Electronic Aids to Instrument Flying
I08	Using the Navigation Instruments

### AC 00-6—Aviation Weather

I20	The Earth’s Atmosphere
I21	Temperature
I22	Atmospheric Pressure and Altimetry
I23	Wind
I24	Moisture, Cloud Formation, and Precipitation
I25	Stable and Unstable Air
I26	Clouds
I27	Air Masses and Fronts
I28	Turbulence
I29	Icing
I30	Thunderstorms
I31	Common IFR Producers
I32	High Altitude Weather
I35	Soaring Weather

### AC 00-45—Aviation Weather Services

I41	Surface Aviation Weather Reports
I42	Pilot and Radar Reports and Satellite Pictures

- I43 Aviation Weather Forecasts
- I44 Surface Analysis Chart
- I45 Weather Depiction Chart
- I46 Radar Summary Chart
- I47 Significant Weather Prognostics
- I48 Winds and Temperatures Aloft
- I49 Composite Moisture Stability Chart
- I50 Severe Weather Outlook Chart
- I51 Constant Pressure Charts

### **AIM—Aeronautical Information Manual**

- J01 Air Navigation Radio Aids
- J02 Radar Services and Procedures
- J03 Airport Lighting Aids
- J04 Air Navigation and Obstruction Lighting
- J05 Airport Marking Aids and Signs
- J06 Airspace—General
- J07 Class G Airspace
- J08 Controlled Airspace
- J09 Special Use Airspace
- J10 Other Airspace Areas
- J11 Services Available to Pilots
- J12 Radio Communications Phraseology and Techniques
- J13 Airport Operations
- J14 ATC Clearance/Separations
- J15 Preflight
- J19 Pilot/Controller Roles and Responsibilities
- J21 Emergency Procedures—General
- J22 Emergency Services Available to Pilots
- J23 Distress and Urgency Procedures
- J24 Two-Way Radio Communications Failure
- J25 Meteorology
- J26 Altimeter Setting Procedures
- J27 Wake Turbulence
- J29 Potential Flight Hazards
- J30 Safety, Accident, and Hazard Reports
- J31 Fitness for Flight

### **Other Documents**

- J34 Airport/Facility Directory
- J37 Sectional Chart

### **ADDITIONAL ADVISORY CIRCULARS**

- K13 AC 20-43, Aircraft Fuel Control
- L05 AC 60-22, Aeronautical Decision Making
- L10 AC 61-67, Stall and Spin Awareness Training
- L15 AC 61-107, Operations of Aircraft at Altitudes Above 25,000 Feet MSL and/or MACH numbers (Mmo) Greater Than .75

- L34 AC 90-48, Pilots' Role in Collision Avoidance
- L52 AC 91-13, Cold Weather Operation of Aircraft
- L57 AC 91-43, Unreliable Airspeed Indications

### **Soaring Flight Manual—Jeppesen-Sanderson, Inc.**

- N20 Sailplane Aerodynamics
- N21 Performance Considerations
- N22 Flight Instruments
- N23 Weather for Soaring
- N24 Medical Factors
- N27 Computations for Soaring
- N28 Personal Equipment
- N29 Preflight and Ground Operations
- N30 Aerotow Launch Procedures
- N31 Ground Launch Procedures
- N32 Basic Flight Maneuvers and Traffic
- N33 Soaring Techniques
- N34 Cross-Country Soaring

### **Practical Test Standards**

- Z01 FAA-S-8081-6, Flight Instructor Practical Test Standards for Airplane
- Z02 FAA-S-8081-7, Flight Instructor Practical Test Standards for Rotorcraft
- Z03 FAA-S-8081-8, Flight Instructor Practical Test Standards for Glider

**NOTE:** AC 00-2, Advisory Circular Checklist, transmits the status of all FAA advisory circulars (AC's), as well as FAA internal publications and miscellaneous flight information, such as Aeronautical Information Manual, Airport/Facility Directory, knowledge test guides, practical test standards, and other material directly related to a certificate or rating. AC 00-2 is accessible through the Internet at <http://www.faa.gov/abc/ac-chklst/actoc.htm>, or you may obtain a free copy from:

U.S. Department of Transportation  
Subsequent Distribution Office, SVC-121.23  
Ardmore East Business Center  
3341 Q 75 Ave.  
Landover, MD 20785

## **COMPUTER TESTING DESIGNEES**

The following is a list of the computer testing designees authorized to give FAA airman knowledge tests. This list should be helpful in case you choose to register for a test or simply want more information.

### **Computer Assisted Testing Service (CATS)**

1849 Old Bayshore Highway  
Burlingame, CA 94010

**Applicant inquiry and test registration: 1-800-947-4228**  
From outside the U.S. (650) 259-8550

### **Sylvan Prometric**

1000 Lancaster Street  
Baltimore, MD 21202

**Applicant inquiry and test registration: 1-800-274-1900, 1-800-967-1100, or 1-800-359-3278**  
From outside the U.S. registrants should contact the appropriate Regional Service Center (RSC):

London, England RSC	44-181-607-9090
Paris, France RSC	33-1-4289-3122
Dusseldorf, Germany RSC	49-2159-9233-50
Tokyo, Japan RSC	813-3269-9620
Latin America RSC	(612) 820-5200

### **LaserGrade Computer Testing**

16209 S.E. McGillivray, Suite L  
Vancouver, WA 98683

**Applicant inquiry and test registration: 1-800-211-2753 or 1-800-211-2754**  
From outside the U.S. (360) 896-9111

## **APPENDIX 2**

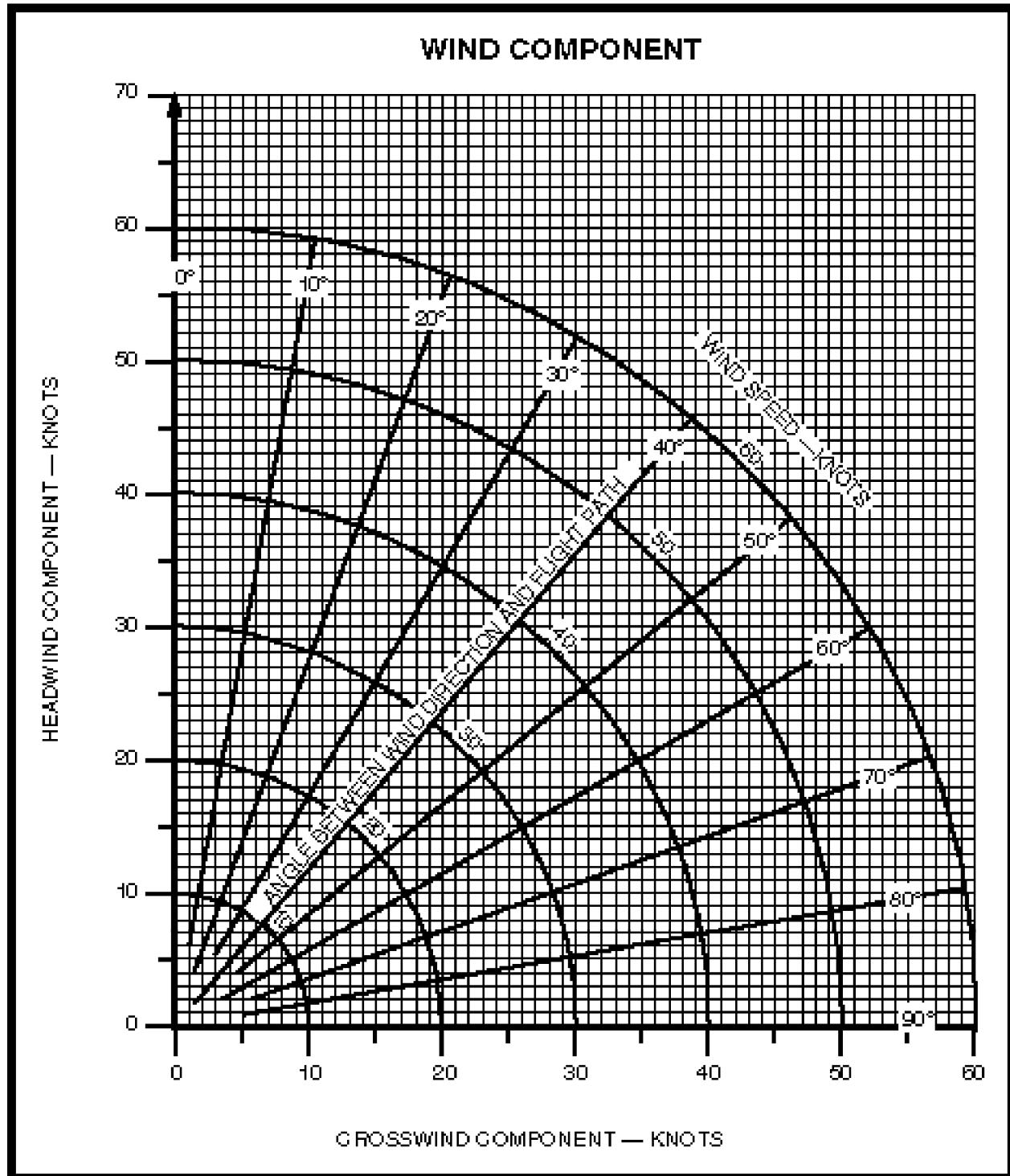


FIGURE 1.—Wind Component Chart.

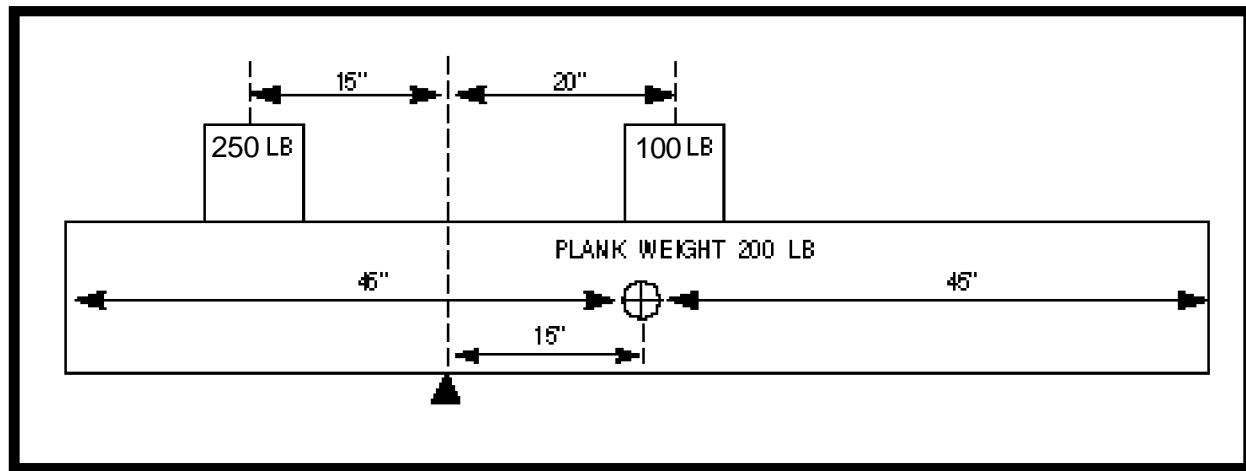


FIGURE 2.—Weight and Balance Diagram.

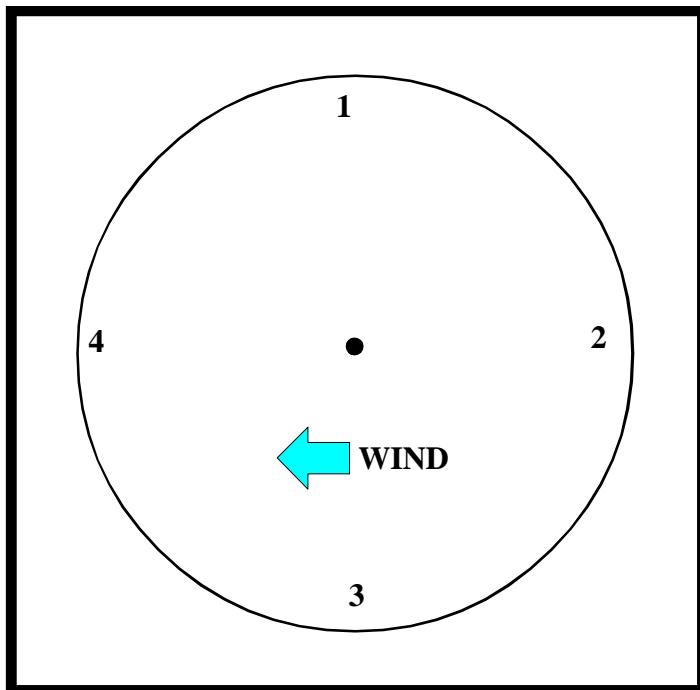


FIGURE 3.—Turn Around a Point Diagram.