AVIATION SEMINARS

SINCE 1974

2025

PRIVATE PILOT STUDY GUIDE

IMPORTANT INFORMATION FOR SEMINAR PREPARATION
PLEASE READ THIS CAREFULLY!

People attending our courses come to class with wide variations of both knowledge and experience – from those who are still waiting to take their first flight lesson, through those who have been ready for their flight tests for years (private or commercial), but haven't yet completed their FAA knowledge exam. However, our recommendations below are applicable for everyone.

The first thing you will discover is that our course manual is intentionally small. Many test preparation guides have 4 or 5 times as many pages, trying to cover much more information than necessary for the FAA Knowledge Exam. We believe that it is important to obtain all of the knowledge about flying that you can. We do not produce this book with the belief that it will contain all the information you need to know as a pilot, but instead wish to provide you with a study guide that is concise and specific to your FAA Exam. We have written the summaries to be as brief as possible while still providing the necessary background to explain the topic and questions. You'll find that we cover a lot more information and detail in the classroom!

Here's the most effective way to preview this material:

First, you will notice that we have bolded and italicized the correct answer to each of the FAA test questions in the book. We've learned that it is counterproductive to test yourself by reading a question and its selection of answers without first knowing the correct answer.

Second, read through each of the summaries. Directly following each summary, read each question followed by the associated correct answer. Don't bother to read the incorrect answers, and don't worry about slowing down to analyze and study at this time – we simply want you to become familiar with the type of information the FAA wants you to learn, and become exposed to the questions and correct answers. This will help you focus more productively in class, and will help prepare you for additional learning and study. IF YOU DO NOTHING ELSE, AT LEAST READ THROUGH THE BOOK THE DAY BEFORE THE TEST AS DESCRIBED ABOVE. Most people find that this can be done in about 2 hours.

Finally, make sure to take the Aviation Seminars Online Practice Exams after the class. Prior to taking the FAA exam, you should be scoring in the mid-80's on the practice exams.

THANK YOU FOR CHOOSING AVIATION SEMINARS FOR YOUR TEST PREPARATION!

COURSE SUMMARY

Aviation Seminars
681 Kenney Street
El Cajon, CA 92020

800-257-9444

THINGS YOU SHOULD KNOW ABOUT YOUR FAA COMPUTER EXAM

To get the best results on your exam:

As time allows, answer all the questions in the Course Summary BEFORE coming to class, so the instructor can clarify any with which you have trouble. Allow some time Saturday evening for a second review of those questions you missed.

Take some notes as you listen to the lecture, but also keep an eye on the visuals the instructor uses in the presentation.

Complete all your available on-line practice tests.

Take the exam within 3 days after the seminar.

About computer testing:

AVIATION SEMINARS constantly monitors for new areas that the FAA is asking of its current pilot applicants in the knowledge tests.

FAA airman knowledge testing is done by computer only. Two private companies are authorized by the FAA to administer computer tests. A complete list of those companies and their testing sites is available through the FAA's website.

Each FAA-approved computer testing company sets its own fees and maintains a nation-wide, toll-free registration/information telephone number.

There are no minimum flight time requirements to take the Private Pilot knowledge exam. However the applicant must be at least 15 years old at the time they take the written test.

The Private Pilot exam has 60 questions, which are chosen from over 600 in the exam database. You are allowed 2.5 hours to complete the exam.

A minimum score of 70% is required to pass the exam.

Bring with you to the test:

- Any failed test report, signed by a certified instructor.
- Government identification which includes current photograph, your signature, residential street address, and proof of age. Non-US citizens should bring passport or immigration green card.
- Evidence of completion of ground school and instructor sign-off. You will receive this at the end of our seminar.
- Flight computer and Plotter. We prefer a manual E6-B for more accurate wind solutions. Directions printed on the computer are allowed during the exam.
- Electronic calculator, if desired. You may be asked to clear the memory.

How to take the test:

Computer tests are designed to be easy to understand and user-friendly, requiring no previous computer experience.

When you arrive at the test center, the test proctor will review your registration information and exam sign-off, and confirm the correct test.

Look through and identify the contents of the "Computerized Testing Supplement" book which your proctor gives you. The most current version in use is FAA-CT-8080-2H. When you are fully confident of how computer testing works, the allotted time for your test will begin.

Testing software allows you to review questions already answered (and change answers if needed), or to skip over a difficult question and return to answer it later. Testing software keeps you advised of time remaining for your test. Use your full time to double-check your answers. Drop us a line on how you did in our CONTACT US portal in our website!

FEDERAL AVIATION REGULATIONS

PART 61 - CERTIFICATION OF PILOTS

Certificates Required

A pilot certificate and an appropriate current medical certificate or BasicMed must be on your person when you act as pilot in command or as a required crew-member. If requested, you must show your certificate to any federal, state, or local law enforcement officer. (FAR 61.3)

Medical Certificates (Class)

To act as a private pilot, you must possess at least a 3rd Class Medical Certificate or be on BasicMed. If any medical certificate (1st, 2nd, 3rd) is obtained before the age of 40, it is valid as a 3rd class for 60 months.

If any medical certificate (1st, 2nd, 3rd) is obtained after the age of 40, it is valid as a 3rd class for only 24 months. (FAR 61.23)

Medical Certificates (BasicMed)

BasicMed allows a pilot who has previously held a valid "class" medical certificate on or after July 15, 2006, to act as PIC with 3rd class privileges. (Not for hire)

Requirements for BasicMed

- Must hold a valid state driver's license.
- Must get a basic physical from a licensed physician, then again every 4 years (48 mo)
- Must take the on-line Medical Education Course (MEC) then again every 2 years (24 mos)

Limitations while flying under BasicMed

- Flight in U.S, Bahamas and Mexico only.
- Maximum altitude 18,000 feet MSL.
- Maximum speed 250 KIAS.
- Maximum occupants 6 (including pilot).
- Maximum aircraft weight 6,000 MTOW.

AIRCRAFT CLASSIFICATION

With respect to certification of **AIRMEN:**

CATEGORY - a broad classification of aircraft (airplane, glider, rotorcraft, lighter-than-air).

CLASS - airplane class ratings include single engine land, multiengine land, single engine sea, multi-engine sea.

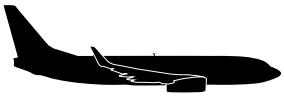
TYPE - a specific make and model of aircraft, such as Cessna 150 or Piper Seneca, etc.

A pilot must hold a type rating to act as pilot in command of an aircraft having a gross weight of more than 12,500 pounds or any pure jet. (FAR 61.5)

With respect to certification of **AIRCRAFT.**

The term "category" refers to normal, utility, and acrobatic aircraft. (How aircraft is loaded)

"Class" refers to airplane, helicopter, glider or hot air balloon. (FAR 1.1)



Recent Flight Experience

To act as pilot in command, you must have passed a Flight Review within the last 24 calendar months. (FAR 61.56)

Pilot Qualifications

Training and a logbook endorsement from an authorized flight instructor are required to act as pilot in command of a high performance or complex airplane.

High performance = an engine with more than 200 HP.

Complex = retractable gear + flaps + controllable pitch propeller (FADEC Included)

To carry passengers during the day, you need to have made 3 takeoffs and 3 landings within the last 90 days in an aircraft of the same category and class, and type, if a type rating is required. Takeoffs and landings in a tail wheel airplane must be to a full stop.

To carry passengers at night, you need to also have made 3 takeoffs and landings to a full stop at night (one hour after sunset to one hour before sunrise) within the last 90 days in an aircraft of the same category and class.

If you have not met these requirements and are carrying passengers, then you must land before one hour after sunset. Example: If sunset is 1830, the latest time passengers may be carried is 1929. (FAR 61.57)

Change of Address

If you change your permanent address, you must notify the FAA Airmen Certification Branch within **30 days.** (FAR 61.60)

Private Pilot Privileges

A private pilot may share operating expenses of a flight with the passengers, and act as pilot in command carrying passengers who pay for the flight, if a donation is made to a charitable organization for the flight. (FAR 61.118)

PART 91 - GENERAL OPERATING RULES

Responsibility of Pilot

The pilot in command is the final authority as to the operation of an aircraft, and determines if an aircraft is in condition for safe flight.

In an in flight emergency, you may deviate from any FAR or any ATC clearance to the extent required to meet that emergency. If you deviate from a regulation, you must send a report of that deviation upon request. (FAR 91.3)

If you are given landing priority by ATC after declaring an emergency, you are required, if requested by ATC, to submit a detailed report of the emergency to the chief of the ATC facility within 48 hours. (FAR 91.123)

Preflight Action

As pilot in command (for every flight), you must become familiar with all available information concerning that flight, and determine runway lengths at airports of intended use and the aircraft's takeoff and landing distance data.

For flights not in the vicinity of an airport, you must also be familiar with weather, fuel required, and an alternative course of action if the flight cannot be completed as planned. (FAR 91.103)

Aircraft Certificates Required Onboard

OPERATING LIMITATIONS - either a current FAA-approved flight manual, approved manual material, markings or placards, or any combination stating each operating limitation.

(Experimental and Special Light Sport Aircraft limitations are attached to the Airworthiness Certificate)

AIRWORTHINESS CERTIFICATE - remains valid as long as the aircraft is maintained and operated as required by FAR's and has a Return-to-Service statement after maintenance.

REGISTRATION CERTIFICATE – is valid for a period of 3 years.

Alcohol And Drugs

You may not act as pilot within 8 hours after the consumption of alcohol, or while having more than .04 percent of alcohol in the blood.

It takes about 3 hours to rid your body of the alcohol from just one beer.

A person under the influence of alcohol or drugs may not be carried aboard unless in an emergency or if the person is a medical patient under proper care. (FAR 91.17)

Must report arrest or conviction for driving while intoxicated by alcohol or drugs to the FAA, Civil Aviation Security Division within 60 days.

Dropping Objects

Objects may be dropped from an aircraft if precautions are taken to avoid injury/damage to persons/property on the surface. (FAR 91.15)

Use of Seatbelts

Pilots are required to conduct a safety briefing to passengers before each flight.

Required flight crew-members must keep shoulder harnesses fastened during takeoff and landing, and must keep seatbelts fastened during takeoff and landing and en route.

The pilot in command must brief passengers on the use of seatbelts and notify them to fasten. their seatbelts during taxi, takeoff and landing. (FAR 91.107)

Supplemental Oxygen

Above 12,500 MSL up to 14,000 MSL, flight crew must use oxygen during that flight time in excess of 30 minutes at those altitudes.

Above 14,000 MSL, the flight crew (Pilot) must use it continuously.

Above 15,000 MSL, each occupant must be provided with oxygen. (FAR 91.211)

Right of Way Rules

An aircraft in distress have the right of way over all other aircraft.

All manned aircraft have right away over all unmanned aircraft (including drones).

APPROACHING HEAD ON- each alters course to the right; regardless of category (Even Gliders).

CONVERGING- An aircraft towing' another has right of way over all other powered aircraft. A glider has right of way over all powered aircraft.

An airship has right of way over an airplane.

Otherwise, the aircraft on the right has the right of way. The other aircraft must give way. This also applies to a seaplane and motorboat.

OVERTAKING- the faster alters course to the right and passes well clear.

LANDING- the aircraft landing has right of way over all aircraft on the surface. When two aircraft are landing, the lower has the right of way, but it cannot take advantage of that rule to cut in front of the other. (FAR 91.113)

Operation Near Other Aircraft

Formation flight is not allowed except by prior arrangement with the pilot in command of each flight. (FAR 91.111)

Restricted/Experimental Aircraft aircraft are prohibited from operating over densely populated areas or along congested airways. (FAR 91.313 and 91.319)

Aircraft Speed Limits

250 knots below 10,000 MSL.

200 knots beneath lateral limits of Class B airspace and in VFR corridor through Class B airspace. (FAR 91 .117)

200 knots within 4nm of the primary airport of Class C and Class D. (AIM 3-2-4)

Acrobatic Flight

Acrobatic flight is prohibited when:
- over any congested area of a city, town or settlement;
-below 1500 AGL;
- visibility is less than 3 miles. (FAR 91 .303)

Parachutes must be worn by the pilot and all passengers during any intentional maneuver exceeding 60 degrees bank or 30 degrees pitch up or down.

A chair-type parachute must have been packed by certified parachute rigger within the preceding 180 days. (FAR 91.307)

Navigation Lights

The definition of nighttime is the time between the end of evening civil twilight and the beginning of morning civil twilight.

However, Navigation lights must be turned on from sunset to sunrise. The right wingtip light is green, the left wingtip is red, the taillight is white, and the rotating beacon is flashing red.

Determine which way an airplane is flying if you can only see one or two navigation lights. (FAR 91.209)

Fuel Requirements

You must have enough planned fuel to fly to the first point of intended landing, and then fly after that for 30 minutes at normal cruising speed in the daytime, and 45 minutes at night. (FAR 91.151)

ATC Light Signals

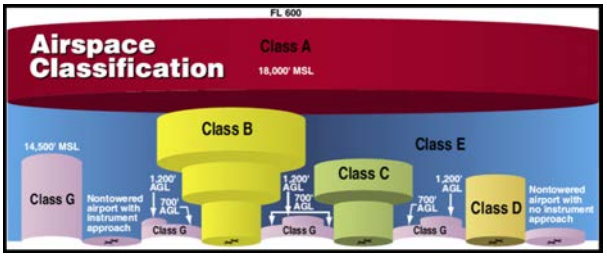
Color and Type of Signal	Aircraft on the Ground	Aircraft in Flight
Steady green	Cleared for takeoff	Cleared to land
Flashing green	Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
Steady red	Stop	Give way to other aircraft and continue circling
Flashing red	Taxi clear of the runway in use	Airport unsafe, do not land
Flashing white	Return to starting point on airport	Not applicable
Alternating red and green	Exercise extreme caution!!!!	Exercise extreme caution!!!!

Minimum Safe Altitudes

Anywhere - an altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

Over a congested area - 1000 feet above the highest obstacle within a horizontal radius of 2000 feet.

Over other than a congested area - 500 feet from any person or property. (FAR 91.119)



CLASS A : Airspace at and above 18,000 MSL. VFR flights are prohibited.

CLASS B: Airspace surrounding large major airports. About 10,000 feet high. Altitude and geographic limits are shown on sectional charts by blue solid lines.

To fly in **Class B** airspace requires:

-two-way communication with ATC;
-a transponder with altitude encoding (Mode C) capability when below 10,000 MSL and within 30 NM of the primary airport;
-Private Pilot Certificate, or Student Pilot Certificate with appropriate logbook endorsement. (FAR 91.131)

CLASS C: Airspace surrounding regional type airports. Altitude and geographic limits are shown on sectional charts by magenta solid lines.
Class C airspace consists of a 5 NM radius inner circle from the surface to 4000 AGL, and an outer circle extending from 5 to 10 NM, and from 1200 AGL to 4000 AGL. An outer area called the Outer Procedural Radius exists out to 20 NM.

To fly within **Class C** airspace requires:
- two-way communication with ATC.
- a transponder with altitude encoding (Mode C) capability.

CLASS D: Airspace at other smaller airports other than B or C that have an operating control tower. Two-way communications are required Shown on a sectional chart as blue airport icon and segmented circle.

The lateral dimensions of Class D airspace are individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures (i.e. Keyhole)

When the control tower is not in operation, this airspace becomes an untowered Class E airport.

While on the ground at the primary airport, a clearance to 'taxi to' a runway means you are given permission to taxi via taxiways to the runway, but not to cross any intersecting runways on the way to the runway that you are cleared to.

Further clearance is required to cross all runways. You must also hold short of taxiing onto the active runway that you are taxiing to. After landing at a tower-controlled airport, contact ground control when instructed to do so.

CLASS E: Any controlled airspace not designated as Class A, B, C, or D is considered Class E. It extends up to, but not including 18,000 MSL.

The base of Class E airspace is shown by:
-magenta dashed lines indicate controlled airspace that starts at the surface, called Class E Surface Area;
-magenta shaded area indicate controlled airspace starts at 700' feet AGL.

Controlled Airspace (Class E)

Controlled airspace (Class E) is where IFR traffic mainly operates and is given clearance to fly through the clouds at specific routes and altitudes, and given separation from other IFR traffic by ATC.

VFR traffic must maintain minimum visibility and cloud clearance requirements to see and avoid IFR and other VFR traffic when flying in controlled airspace. (FAR 91.155)

Additionally, VFR traffic must receive a Special VFR clearance to operate in airspace when the weather is below basic VFR minimums. (FAR 91.157)

An ATC clearance provides authorization to proceed under specified traffic conditions in controlled airspace.

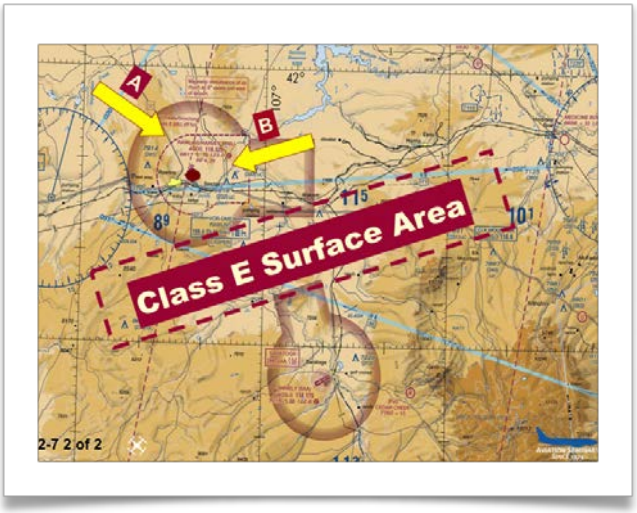
Federal airways are pre-established routes in controlled airspace that VFR and IFR traffic may use. Federal airways extend from 1200 AGL up to 18,000 MSL, and extend 4 NM either side of centerline (8 NM width)

Transition Area

A Transition Area (Magenta) is an area of controlled airspace over an airport used to help protect IFR traffic by forcing VFR traffic to be further from the clouds and have at least 3 miles of flight visibility.

These increased distance from clouds and visibility for VFR traffic is necessary for both IFR and VFR traffic to see each other when the IFR traffic emerges from the clouds.

Transition Area's can start at either the surface (B) or 700 feet AGL (A).



A = Controlled Airspace begins at 700 feet AGL.
B = Controlled Airspace begins at surface.
(Inside dotted line = Class E Surface Area)

CLASS G AIRSPACE: Any airspace that is not controlled airspace. Usually not higher than 1,200 feet AGL, but can extend upward to 14,500 Feet MSL in mountainous areas

Special VFR (SVFR)

Special VFR can be used to depart a Class D airport when the reported weather is below 1,000 foot ceiling and/or less than 3 SM visibility, but at least 1 mile.

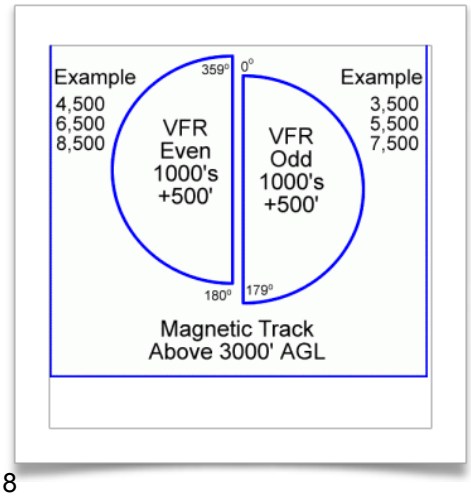
Pilot must request a SVFR from ATC. Only ATC can issue a SVFR departure / arrival clearance. Pilot must be able to be reasonably certain they can remain clear of clouds with at least 1 mile flight visibility.

Special VFR at night is not allowed unless pilot is instrument rated and your airplane is instrument equipped. (FAR 91 .157)

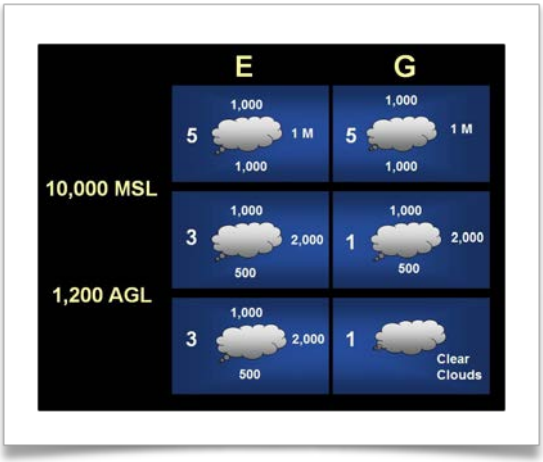
This night rule is for safety reasons. At night, pilots have an increased risk of inadvertently flying into a cloud and losing ground reference. IFR pilots would better be able to handle this situation than a VFR pilot who hasn't been adequately trained to fly on instruments.

VFR Cruising Altitudes

Whenever above 3000 AGL, if your magnetic course is 0 to 179 degrees, fly odd thousands plus 500 feet (3500 MSL, 5500 MSL etc). ii your magnetic course is 180 to 359 degrees, fly even thousands plus 500 feet.~ Remember that the airway direction is magnetic course. (FAR 91.159)



Weather Minimums for VFR Traffic



Aircraft Maintenance — General

The owner or operator of an aircraft is responsible to maintain the aircraft in an airworthy condition. (FAR 91.403)

A private or commercial pilot may perform simple preventive maintenance. Preventive maintenance is allowed by 14 CFR 43.7.

The signature, certificate number, and kind of certificate held by the person and a description of the work done must be entered in the aircraft maintenance record. (14 CFR Part 91.407)

Carrying Passengers After Alteration

Only a Private Pilot or higher can test fly an aircraft after a major repair or alteration before passengers can be carried. (FAR 91.407)

Aircraft Inspections

Review maintenance records and perform a preflight inspection to determine airworthiness.

The aircraft maintenance records (logbooks) contain the date of the last annual and 100 hour inspection, and the return to service statement showing the aircraft is legal to fly.

All aircraft need annual inspections every 12 calendar months. If last annual was performed on July 12, this year, the next annual inspection will be due no later than July 31, next year.

The transponder must be inspected every 24 calendar months. (14 CFR Part 91.413)

AIRWORTHINESS DIRECTIVES (AD's)

Airworthiness Directives are issued on aircraft by serial number for maintenance type problems or parts that are required to be inspected, repaired or replaced. Virtually every aircraft will have had an AD at sometime in the aircraft's history.

Compliance with an Airworthiness Directive is mandatory and must be shown in the aircraft maintenance records.

A pilot may fly an airplane that is not in compliance with an AD only if the AD allows it.

Commercial Use Maintenance

For hire and rental aircraft also used for flight instruction requires annual and 100-hour inspections. 100 hour inspections are based on the aircraft tachometer reading.

The 100-hour limitation may be exceeded by not more than 10 hours if necessary to reach a place at which the inspection can be done. If 100-hour is due at 3302.5 hours, but was actually done at 3309.5 hours, the next 100-hour Is due at 3402.5 hours. (FAR 91 .409)

ADVISORY CIRCULARS (AC's)

FAA advisory circulars are issued to inform the aviation public of non-regulatory material of interest. They are available by ordering those desired from the Government Printing Office or on-line at FAA.gov.

Those relating to Airmen are covered in subject numbers 60, Airspace in subject numbers 70, and General Operating Rules in subject numbers 90.

PART 830 - NATIONAL TRANSPORTATION SAFETY BOARD RULING

The operator of an aircraft must immediately notify the NTSB when an accident occurs or any of the following incidents:

- Inability of required crewmember to perform duties as a result of injury or illness.
- In-flight fire.
- Flight control system malfunction or failure.
- Overdue aircraft is believed to have been involved in an accident.
- Serious injury that requires hospitalization within 7 days for at least **48 hours.**

The operator is required to file a detailed accident report within **10 days,** and an incident report when requested.

Wreckage may be moved prior to the time the NTSB takes custody, to protect the wreckage from further damage. (NTSB 830)

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3001.
With respect to the certification of airmen, which is a category of aircraft?
A) Gyroplane, helicopter, airship, free balloon.
B) Airplane, rotorcraft, glider, lighter-than-air.
C) Single-engine land and sea, multiengine land and sea.

3002.
With respect to the certification of airmen, which is a class of aircraft?
A) Airplane, rotorcraft, glider, lighter-than-air.
B) Single-engine land and sea, multiengine land and sea.
C) Lighter-than-air, airship, hot air balloon, gas balloon.

3003.
With respect to the certification of aircraft, which is a category of aircraft?
A) Normal, utility, acrobatic.
B) Airplane, rotorcraft, glider.
C) Landplane, seaplane.

3004.
With respect to the certification of aircraft, which is a class of aircraft?
A) Airplane, rotorcraft, glider, balloon.
B) Normal, utility, acrobatic, limited.
C) Transport, restricted, provisional.

3005.
The definition of nighttime is
A) sunset to sunrise.
B) 1 hour after sunset to 1 hour before sunrise.
C) the time between the end of evening civil twilight and the beginning of morning civil twilight.

3013. AVSEM
What regulation allows a private or commercial pilot to perform preventive maintenance?
A) 14 CFR Part 91.403
B) 14 CFR Part 43.7
C) 14 CFR Part 61.113

3014. AVSEM
Which operation would be described as preventive maintenance?
A) Replenishing hydraulic fluid and servicing landing gear wheel bearings.
B) Alteration of main seat support brackets.
C) Engine adjustments to allow automotive gas to be used.

3016.
What document(s) must be in your personal possession or readily accessible in the aircraft while operating as pilot in command of an aircraft?
A) Certificates showing accomplishment of a checkout in the aircraft and a current biennial flight review.
B) A pilot certificate with an endorsement showing accomplishment of an annual flight review and a pilot logbook showing recency of experience.
C) An appropriate pilot certificate and an appropriate current medical certificate if required.

3017.
When must a current pilot certificate be in the pilot's personal possession?
A) When acting as a crew chief during launch and recovery.
B) Only when passengers are carried.
C) Anytime when acting as pilot in command or as a required crew-member.

3018.
A pilot acting as pilot in command, or in any other capacity as a required pilot flight crewmember, must have in their personal possession or readily accessible in the aircraft a current
A) logbook endorsement to show that a flight review has been satisfactorily accomplished.
B) medical certificate if required and an appropriate pilot certificate.
C) endorsement on the pilot certificate to show that a flight review has been satisfactorily accomplished.

3019.
Each person who holds a pilot certificate or a medical certificate shall present it for inspection upon the request of the Administrator, the National Transportation Safety Board, or any
A) authorized representative of the Department of Transportation.
B) person in a position of authority.
C) federal, state, or local law enforcement officer.

3020.
A Third-Class Medical Certificate is issued to a 36-year-old pilot on August 10, this year. To exercise the privileges of a Private Pilot Certificate, the medical certificate will be valid until midnight on
A) August 10, 2 years later.
B) August 31, 5 years later.
C) August 31, 2 years later.

3021.
A Third-Class Medical Certificate is issued to a 51-year old pilot on May 3, this year. To exercise the privileges of a Private Pilot Certificate, the medical certificate will be valid until midnight on
A) May 3, 1 year later.
B) May 31, 1 year later.
C) May 31, 2 years later.

3022.
For private pilot operations, a Second-Class Medical Certificate issued to a 42-year old pilot on July 15, this year, will expire at midnight on
A) July 15, 2 years later.
B) July 31, 1 year later.
C) July 31, 2 years later.

3023.
For private pilot operations, a First-Class Medical Certificate issued to a 23-year old pilot on October 21, this year, will expire at midnight on
A) October 21, 2 years later
B) October 31, next year.
C) October 31, 5 years later.

3023-1
To operate under BasicMed the pilot-in-command must have completed a physical examination by a state-licensed physician within the preceding
A) 48 months
B) 24 months
C) 1 year

3023-2
For private pilot operations under BasicMed, the pilot-in-command is allowed to fly with no more than
A) 6 passengers
B) 5 passengers
C) 5 occupants

3023-3
To maintain BasicMed privileges you are required to complete the medical examination checklist (MEC) every
A) 48 months
B) 24 months
C) 1 year

3023 - AVSEM
What is the maximum altitude a private pilot operating under BasicMed can fly?
A) 10,000 feet
B) 18,000 feet
C) 1,200 feet

3023 - AVSEM
For private pilot operations under BasicMed, the pilot-in-command is allowed to fly with no more than
A) 6 occupants
B) 5 occupants
C) 6 passengers

3023 - AVSEM
For private pilot operations under BasicMed, the pilot-in-command is allowed to fly an aircraft that
A) weighs a maximum of 6,000 pounds and 6 seats
B) weighs a maximum of 7,500 pounds and 5 seats
C) weighs a maximum of 6,000 pounds and 7 seats

3024.
The pilot in command is required to hold a type rating in which aircraft?
A) Aircraft operated under an authorization issued by the Administrator.
B) Aircraft having a gross weight of more than 12,500 pounds.
C) Aircraft involved in ferry flights, training flights, or test flights.

3025.
What is the definition of a high-performance airplane?
A) An airplane with 180 horsepower, or retractable landing gear, flaps, and a fixed-pitch propeller.
B) An airplane with an engine of more than 200 horsepower.
C) An airplane with a normal cruise speed in excess of 200 knots.

3026.
Before a person holding a private pilot certificate may act as pilot in command of a high-performance airplane, that person must have
A) passed a flight test in that airplane from an FAA inspector.
B) an endorsement in that person's logbook that he or she is competent to act as pilot in command.
C) received ground and flight instruction from an authorized flight instructor who then endorses that person's logbook.

3027.
In order to act as pilot in command of a high performance airplane, a pilot must have
A) received and logged ground and flight instruction in an airplane that has more than 200 horsepower.
B) made and logged three solo takeoffs and landings in a high performance airplane.
C) passed a flight test in a high performance airplane.

3028.
To act as pilot in command of an aircraft carrying passengers, the pilot must have made at least three takeoffs and three landings in an aircraft of the same category, class, and if a type rating is required, of the same type, within the preceding
A) 90 days.
B) 12 calendar months.
C) 24 calendar months.

3029.
If recency of experience requirements for night flight are not met and official sunset is 1830, the latest time passengers may be carried is
A) 1829.
B) 1859.
C) 1929.

3030.
To act as pilot in command of an aircraft carrying passengers, a pilot must show by logbook endorsement the satisfactory completion of a flight review or completion of a pilot proficiency check within the preceding
A) 6 calendar months.
B) 12 calendar months.
C) 24 calendar months.

3031.
To act as pilot in command of an aircraft carrying passengers, the pilot must have made three takeoffs and three landings within •the preceding 90 days in an aircraft of the same
A) make and model.
B) category and class, but not type
C) category, class, and type, if type rating required.

3032.
The takeoffs and landings required to meet the recency of experience requirements for carrying passengers in a tail wheel airplane.
A) may be touch and go or full stop.
B) must be touch and go.
C) must be to a full stop.

3033.
The three takeoffs and landings that are required to act as pilot in command at night must be done during the time period from
A) sunset to sunrise.
B) hour after sunset to 1 hour before sunrise.
C) the end of evening twilight to the beginning of morning civil twilight.

3034.
To meet the recency of experience requirements to act as pilot in command carrying passengers at night, a pilot must have made at least three takeoffs and three landings to a full stop within the preceding 90 days in
A) the same category and class of aircraft to be used.
B) the same type of aircraft to be used
C) any aircraft.

3035.
If a certified pilot changes permanent mailing address and fails to notify the FAA Airmen Certification Branch of the new address, the pilot is entitled to exercise the privileges of the pilot certificate for a period of only
A) 30 days after the date of the move.
B) 60 days after the date of the move.
C) 90 days after the date of the move,

3036.
A certified private pilot may not act as pilot in command of an aircraft towing a glider unless there is entered in the pilot's logbook a minimum of
A) 100 hours of pilot-in-command time in the aircraft category, class, and type, if required, that the pilot is using to tow a glider.
B) 200 hours of pilot-in-command time in the aircraft category, class, and type, if required, that the pilot is using to tow a glider.
C) 100 hours of pilot flight time in any aircraft, that the pilot is using to tow a glider.

3037.
To act as pilot in command of an aircraft towing a glider, a pilot is required to have made within the preceding 12 months
A) at least three flights as observer in a glider being towed by an aircraft.
B) at least three flights in a powered glider.
C) at least three actual or simulated glider tows while accompanied by a qualified pilot.

3064.
In regard to privileges and limitations, a private pilot may
A) not be paid in any manner for the operating expenses of a flight.
B) not pay less than the pro rata share of the operating expenses involve only fuel, oil, airport expenditures, or rental fees.
C) act as pilot in command of an aircraft carrying a passenger for compensation if the flight is in connection with a business or employment.

3065.
According to regulations pertaining to privileges and limitations, a private pilot may
A) not pay less than the pro rata share of the operating expenses of a flight with passengers provided the expenses involve only fuel, oil, airport expenditures, or rental fees.
B) not to be paid in any manner for the operating expenses of a flight.
C) be paid for the operating expenses of a flight if at least three takeoffs and three landings were made by the pilot within the preceding 90 days.

3066.
What exception, if any, permits a private pilot to act as pilot in command of an aircraft carrying passengers who pay for the flight?
A) If the passengers pay all the operating expenses.
B) If a donation is made to a charitable organization for the flight.
C) There is no exception.

3068.
Unless otherwise specified, Federal Airways include that Class E airspace extending upward from
A) 700 feet above the surface up to and including 17,999 feet MSL.
B) 1,200 feet above the surface up to and including 17,999 feet MSL.
C) the surface up to and including 18,000 feet MSL.

3069.
Normal VFR operations in Class D airspace with an operating control tower require the ceiling and visibility to be at least
A) 1,000 feet and 1 mile.
B) 1,000 feet and 3 miles.
C) 2,500 feet and 3 miles.

3070.
The final authority as to the operation of an aircraft is the
A) Federal Aviation Administration.
B) pilot in command.
C) aircraft manufacturer.

3072.
If an in-flight emergency requires immediate action, the pilot in command may
A) deviate from the FAR's to the extent required to meet the emergency, but must submit a written report to the Administrator within 24 hours.
B) deviate from the FAR's to the extent required to meet that emergency.
C) not deviate from the FAR's unless prior to the deviation approval is granted by the Administrator.

3073.
When must a pilot who deviates from a regulation during an emergency send a written report of that deviation to the Administrator?
A) Within 7 days.
B) Within 10 days.
C) Upon request.

3074.
Who is responsible for determining if an aircraft is in condition for safe flight?
A) A certificated aircraft mechanic.
B) The pilot in command.
C) The owner or operator.

3075.
Where may an aircraft's operating limitations be found?
A) On the Airworthiness Certificate.
B) In the current, FAA-approved flight manual, approved manual material, markings, and placards, or any combination thereof.
C) In the aircraft airframe and engine logbooks.

3076.
Under what conditions may objects be dropped from an aircraft?
A) Only in an emergency.
B) If precautions are taken to avoid injury or damage to persons or property on the surface.
C) If prior permission is received from the Federal Aviation Administration.

3077.
A person may not act as a crew-member of a civil aircraft if alcoholic beverages have been consumed by that person within the preceding
A) 8 hours.
B) 12 hours.
C) 24 hours.

3078.
Under what condition, if any, may a pilot allow a person who is obviously under the influence of drugs to be carried aboard an aircraft?
A) In an emergency or if the person is a medical patient under proper care.
B) Only if the person does not have access to the cockpit or pilot's compartment.
C) Under no condition.

3079.
No person may attempt to act as a crew-member of a civil aircraft with
A) .008 percent by weight or more alcohol in the blood.
B) .004 percent by weight or more alcohol in the blood.
C) .04 percent by weight or more alcohol in the blood.

3080.
Which preflight action is specifically required of the pilot prior to each flight?
A) Check the aircraft logbooks for appropriate entries.
B) Become familiar with all available information concerning the flight.
C) Review wake turbulence avoidance procedures.

3081.
Preflight action, as required for all flights away from the vicinity of an airport, shall include
A) the designation of an alternate airport.
B) a study of arrival procedures at airports/ heliports of intended use.
C) an alternate course of action if the flight cannot be completed as planned.

3082.
In addition to other preflight actions for a VFR flight away from the vicinity of the departure airport, regulations specifically require the pilot in command to
A) review traffic control light signal procedures.
B) check the accuracy of the navigation equipment and the emergency locator transmitter (ELT).
C) determine runway lengths at airports of intended use and the aircraft's takeoff and landing distance data.

3083.
Flight crew-members are required to keep their safety belts and shoulder harnesses fastened during
A) takeoffs and landings.
B) all flight conditions.
C) flight in turbulent air.

3084.
Which best describes the flight conditions under which flight crew-members are specifically required to keep their safety belts and shoulder harnesses fastened?
A) Safety belts during takeoff and landing; shoulder harnesses during takeoff and landing.
B) Safety belts during takeoff and landing; shoulder harnesses during takeoff and landing and while en route.
C) Safety belts during takeoff and landing and while en route; shoulder harnesses during takeoff and landing.

3085.
With respect to passengers, what obligation, if any, does a pilot in command have concerning the use of safety belts?
A) The pilot in command must instruct the passengers to keep their safety belts fastened for the entire flight.
B) The pilot in command must brief the passengers on the use of safety belts and notify them to fasten their safety belts during taxi, takeoff, and landing.
C) The pilot in command has no obligation in regard to passengers' use of safety belts.

3086.
With certain exceptions, safety belts are required to be secured about passengers during
A) taxi, takeoffs, and landings.
B) all flight conditions.
C) flight in turbulent air.

3087.
Safety belts are required to be properly secured about which persons in an aircraft and when?
A) Pilots only, during takeoffs and landings.
B) Passengers, during taxi, takeoffs, and landings only.
C) Each person on board the aircraft during the entire flight.

3088.
No person may operate an aircraft in formation flight
A) over a densely populated area.
B) in Class D airspace under special VFR.
C) except by prior arrangement with the pilot in command of each aircraft.

3089.
Which aircraft has the right-of-way over all other air traffic?
A) A balloon.
B) An aircraft in distress.
C) An aircraft on final approach to land.

3090.
What action is required when two aircraft of the same category converge, but not head-on?
A) The faster aircraft shall give way.
B) The aircraft on the left shall give way.
C) Each aircraft shall give way to the right.

3091.
Which aircraft has the right-of-way over the other aircraft listed?
A) Glider.
B) Airship.
C) Aircraft refueling other aircraft.

3092.
An airplane and an airship are converging. If the airship is left of the airplane's position, which aircraft has the right-of-way?
A) The airship.
B) The airplane.
C) Each pilot should alter course to the right.

3093.
Which aircraft has the right-of-way over the other aircraft listed?
A) Airship.
B) Aircraft towing other aircraft.
C) Gyroplane.

3094.
What action should the pilots of a glider and an airplane take if on a head-on collision course?
A) The airplane pilot should give way to the left.
B) The glider pilot should give way to the right.
C) Both pilots should give way to the right.

3095.
When two or more aircraft are approaching an airport for the purpose of landing, the right-of-way belongs to the aircraft
A) that has the other to its right.
B) that is the least maneuverable.
C) at the lower altitude, but it shall not take advantage of this rule to cut in front of or to overtake another.

3096.
A seaplane and a motorboat are on crossing courses. If the motorboat is to the left of the seaplane, which has the right-of-way?
A) The motorboat.
B) The seaplane.
C) Both should alter course to the right.

3097.
Unless otherwise authorized, what is the maximum indicated airspeed at which a person may operate an aircraft below 10,000 feet MSL?
A) 200 knots.
B) 250 knots.
C) 288 knots.

3098.
Unless otherwise authorized, the maximum indicated airspeed at which aircraft may be flown at or below 2,500 feet AGL and within 4 nautical miles of the primary airport of class C airspace is
A) 200 knots.
B) 230 knots.
C) 250 knots.

3099.
When flying in the airspace underlying Class B airspace, the maximum speed authorized is
A) 200 knots.
B) 230 knots.
C) 250 knots.

3100.
When flying in a VFR corridor designated through Class B airspace, the maximum speed authorized is
A) 180 knots.
B) 200 knots.
C) 250 knots.

3101.
Except when necessary for takeoff or landing, what is the minimum safe altitude for a pilot to operate an aircraft anywhere?
A) An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
B) An altitude of 500 feet above the surface and no closer than 500 feet to any person, vessel, vehicle, or structure.
C) An altitude of 500 feet above the highest obstacle within a horizontal radius of 1,000 feet.

3102.
Except when necessary for takeoff or landing, what is the minimum safe altitude required for a pilot to operate an aircraft over congested areas?
A) An altitude of 1,000 feet above any person, vessel, vehicle, or structure.
B) An altitude of 500 feet above the highest obstacle within a horizontal radius of 1,000 feet of the aircraft.
C) An altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

3103.
Except when necessary for takeoff or landing, what is the minimum safe altitude required for a pilot to operate an aircraft over other than a congested area?
A) An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
B) An altitude of 500 feet AGL, except over open water or a sparsely populated area, which requires 500 feet from any person, vessel, vehicle, or structure.
C) An altitude of 500 feet above the highest obstacle within a horizontal radius of 1,000 feet.

3104.
Except when necessary for takeoff or landing, an aircraft may not be operated closer than what distance from any person, vessel, vehicle, or structure?
A) 500 feet.
B) 700 feet.
C) 1,000 feet.

3105.
If an altimeter setting is not available before flight, to which altitude should the pilot adjust the altimeter?
A) The elevation of the nearest airport corrected to mean sea level.
B) The elevation of the departure area.
C) Pressure altitude corrected for nonstandard temperature.

3106.
Prior to takeoff, the altimeter should be set to which altitude or altimeter setting?
A) The current local altimeter setting, if available, or the departure airport elevation.
B) The corrected density altitude of the departure airport.
C) The corrected pressure altitude for the departure airport.

3107.
At what altitude shall the altimeter be set to 29.92, when climbing to cruising flight level?
A) 14,500 feet MSL.
B) 18,000 feet MSL.
C) 24,000 feet MSL.

3108.
When an ATC clearance has been obtained, no pilot in command may deviate from that clearance, unless that pilot obtains an amended clearance. The one exception to this regulation is
A) when the clearance states 'at pilot's discretion.'
B) an emergency.
C) if the clearance contains a restriction.

3109.
When would a pilot be required to submit a detailed report of an emergency which caused the pilot to deviate from an ATC clearance?
A) When requested by ATC.
B) Immediately.
C) Within 7 days.

3110.
What action, if any, is appropriate if the pilot deviates from an ATC instruction during an emergency and is given priority?
A) Take no special action since you are pilot in command.
B) File a detailed report within 48 hours to the chief of the appropriate ATC facility, if requested.
C) File a report to the FAA Administrator, as soon as possible.

3111.
A steady green light signal directed from the control tower to an aircraft in flight is a signal that the pilot
A) is cleared to land.
B) should give way to other aircraft and continue circling.
C) should return for landing.

3112.
Which light signal from the control tower clears a pilot to taxi?
A) Flashing white.
B) Flashing green
C) Steady green.

3113.
If the control tower uses a light signal to direct a pilot to give way to other aircraft and continue circling, the light will be
A) flashing red.
B) steady red.
C) alternating red and green.

3114.
A flashing white light signal from the control tower to a taxiing aircraft is an indication to
A) taxi at a faster speed.
B) taxi only on taxiways and not cross runways.
C) return to the starting point on the airport.

3115.
An alternating red and green light signal directed from the control tower to an aircraft in flight is a signal to
A) hold position.
B) exercise extreme caution.
C) not land; the airport is unsafe.

3116.
While on final approach for landing, an alternating green and red light followed by a flashing red light is received from the control tower. Under these circumstances, the pilot should
A) discontinue the approach, fly the same traffic pattern and approach again, and land.
B) exercise extreme caution and abandon the approach, realizing the airport is unsafe for landing.
C) abandon the approach, circle the airport to the right, and expect a flashing white light when the airport is safe for landing.

3117.
A blue segmented circle on a Sectional Chart depicts which class airspace?
A) Class B.
B) Class C.
C) Class D.

3118.
Airspace at an airport with a part-time control tower is classified as Class D airspace only
A) when the weather minimums are below basic VFR.
B) when the associated control tower is in operation.
C) when the associated Flight Service Station is in operation.

3119.
Unless otherwise authorized, two-way radio communications with Air Traffic Control are required for landings or takeoffs
A) at all tower controlled airports regardless of weather conditions.
B) at all tower controlled airports only when weather conditions are less than VFR.
C) at all tower controlled airports within Class D airspace only when weather conditions are less than VFR.

3124.
Two-way radio communication must be established with the Air Traffic Control facility having jurisdiction over the area prior to entering which class airspace?
A) Class C.
B) Class E.
C) Class G.

3125.
What minimum radio equipment is required for operation within Class C airspace?
A) Two-way radio communications equipment and a 4096-code transponder.
B) Two-way radio communications equipment, a 4096-code transponder, and DME.
C) Two-way radio communications equipment, a 4096-code transponder, and an encoding altimeter.

3126.
What minimum pilot certification is required for operation within Class B airspace?
A) Recreational Pilot Certificate.
B) Private Pilot Certificate or Student Pilot Certificate with appropriate logbook endorsements.
C) Private Pilot Certificate with an instrument rating.

3127.
What minimum pilot certification is required for operation within Class B airspace?
A) Private Pilot Certificate or Student Pilot Certificate with appropriate logbook endorsements.
B) Commercial Pilot Certificate.
C) Private Pilot Certificate with an instrument rating.

3128.
What minimum radio equipment is required for VFR operation within Class B airspace?
A) Two-way radio communications equipment and a 4096-code transponder.
B) Two-way radio communications equipment, a 4096-code transponder, and an encoding altimeter.
C) Two-way radio communications equipment, a 4096-code transponder, an encoding altimeter, and a VOR or TACAN receiver.

3129.
An operable 4096-code transponder with an encoding altimeter is required in which airspace?
A) Class A, Class B (and within 30 miles of the Class B primary airport), and Class C.
B) Class D and Class E (below 10,000 feet MSL).
C) Class D and Class G (below 10,000 feet MSL).

3130.
In which type of airspace are VFR flights prohibited?
A) Class A.
B) Class B.
C) Class C.

3131.
What is the specific fuel requirement for flight under VFR during daylight hours in an airplane?
A) Enough to complete the flight at normal cruising speed with adverse wind conditions.
B) Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed.
C) Enough to fly to the first point of intended landing and to fly after that for 45 minutes at normal cruising speed.

3132.
What is the specific fuel requirement for flight under VFR at night in an airplane?
A) Enough to complete the flight at normal cruising speed with adverse wind conditions.
B) Enough to fly to the first point of intended landing and to fly after that for 30 minutes at normal cruising speed.
C) Enough to fly to the first point of intended landing and to fly after that for 45 minutes at normal cruising speed.

3136.
During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum distance below clouds requirement for VFR flight at night is
A) 500 feet.
B) 1,000 feet.
C) 1,500 feet.

3137.
What minimum visibility and clearance from clouds are required for VFR operations in Class G airspace at 700 feet AGL or below during daylight hours?
A) 1 mile visibility and clear of clouds.
B) 1 mile visibility, 500 feet below, 1,000 feet above, and 2,000 feet horizontal clearance from clouds.
C) 3 miles visibility and clear of clouds.

3138.
What minimum flight visibility is required for VFR flight operations on an airway below 10,000 feet MSL?
A) 1 mile.
B) 3 miles.
C) 4 miles.

3139.
The minimum distance from clouds required for VFR operations on an airway below 10,000 feet MSL is
A) remain clear of clouds.
B) 500 feet below, 1,000 feet above, and 2,000 feet horizontally.
C) 500 feet above, 1,000 feet below, and 2,000 feet horizontally.

3140.
During operations within controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum distance above clouds requirement for VFR flight is
A) 500 feet.
B) 1,000 feet.
C) 1,500 feet.

3141.
VFR flight in controlled airspace above 1,200 feet AGL and below 10,000 feet MSL requires a minimum visibility and vertical cloud clearance of
A) 3 miles, and 500 feet below or 1,000 feet above the clouds in controlled airspace.
B) 5 miles, and 1,000 feet below or 1,000 feet above the clouds at all altitudes.
C) 5 miles, and 1,000 feet below or 1,000 feet above the clouds only in Class A airspace.

3142.
During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum flight visibility for VFR flight at night is
A) 1 mile.
B) 3 miles.
C) 5 miles.

3143.
Outside controlled airspace, the minimum flight visibility requirement for VFR flight above 1,200 feet AGL and below 10,000 feet MSL during daylight hours is
A) 1 mile.
B) 3 miles.
C) 5 miles.

3144.
During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum distance below clouds requirement for VFR flight at night is
A) 500 feet.
B) 1,000 feet.
C) 1,500 feet.

3145.
The minimum flight visibility required for VFR flights above 10,000 feet MSL and more than 1,200 feet AGL in controlled airspace is
A) 1 mile.
B) 3 miles.
C) 5 miles.

3146.
For VFR flight operations above 10,000 feet MSL and more than 1,200 feet AGL, the minimum horizontal distance from clouds required is
A) 1,000 feet.
B) 2,000 feet.
C) 1 mile.

3147.
During operations at altitudes of more than 1,200 feet AGL and at or above 10,000 feet MSL, the minimum distance above clouds requirement for VFR flight is
A) 500 feet.
B) 1,000 feet.
C) 1,500 feet.

3148.
No person may take off or land an aircraft under basic VFR at an airport that lies within Class D airspace unless the
A) flight visibility at that airport is at least 1 mile.
B) ground visibility at that airport is at least 1 mile.
C) ground visibility at that airport is at least 3 miles.

3149.
The basic VFR weather minimums for operating an aircraft within Class D airspace are
A) 500-foot ceiling and 1 mile visibility.
B) 1,000-foot ceiling and 3 miles visibility.
C) clear of clouds and 2 miles visibility.

3150.
A special VFR clearance authorizes the pilot of an aircraft to operate VFR while within Class D airspace when the visibility is
A) less than 1 mile and the ceiling is less than 1,000 feet
B) at least 1 mile and the aircraft and remain clear of clouds.
C) at least 3 miles and the aircraft can remain clear of clouds.

3151.
What is the minimum weather condition required for airplanes operating under special VFR in Class D airspace?
A) 1 mile flight visibility.
B) 1 mile flight visibility and 1,000-foot ceiling.
C) 3 miles flight visibility and 1,000-foot ceiling.

3153.
What are the minimum requirements for airplane operations under special VFR in Class D airspace at night?
A) The airplane must be under radar surveillance at all times while in Class D airspace.
B) The airplane must be equipped for IFR with an altitude reporting transponder.
C) The pilot must be instrument rated, and the airplane must be IFR equipped.

3154.
No person may operate an airplane within Class D airspace at night under special VFR unless the
A) flight can be conducted 500 feet below the clouds.
B) airplane is equipped for instrument flight.
C) flight visibility is at least 3 miles.

3155.
Which cruising altitude is appropriate for a VFR flight on a magnetic course of 135°?
A) Even thousandths.
B) Even thousandths plus 500 feet.
C) Odd thousandths plus 500 feet.

3156.
Which VFR cruising altitude is acceptable for a flight on a Victor Airway with a magnetic course of 175°? The terrain is less than 1,000 feet.
A) 4,500 feet.
B) 5,000 feet.
C) 5,500 feet.

3157.
Which VFR cruising altitude is appropriate when flying above 3,000 feet AGL on a magnetic course of 185°?
A) 4,000 feet.
B) 4,500 feet.
C) 5,000 feet.

3158.
Each person operating an aircraft at a VFR cruising altitude shall maintain an odd-thousand plus 500-foot altitude while on a
A) magnetic heading of 0° through 179°.
B) magnetic course of 0° through 179°.
C) true course of 0° through 179°.

3159.
In addition to a valid Airworthiness Certificate, what documents or records must be aboard an aircraft during flight?
A) Aircraft engine and airframe logbooks, and owner's manual.
B) Radio operator's permit, and repair and alteration forms.
C) Operating limitations and Registration Certificate.

3162.
Except in Alaska, during what time period should lighted position lights be displayed on an aircraft?
A) End of evening civil twilight to the beginning of morning civil twilight.
B) 1 hour after sunset to 1 hour before sunrise.
C) Sunset to sunrise.

3163.
When operating an aircraft at cabin pressure altitudes above 12,500 feet MSL up to and including 14,000 feet MSL, supplemental oxygen shall be used during
A) the entire flight time at those altitudes.
B) that flight time in excess of 10 minutes at those altitudes.
C) that flight time in excess of 30 minutes at those altitudes.

3164.
Unless each occupant is provided with supplemental oxygen, no person may operate a civil aircraft of U.S. registry above a maximum cabin pressure altitude of
A) 12,500 feet MSL.
B) 14,000 feet MSL.
C) 15,000 feet MSL.

3165.
An operable 4096-code transponder with an encoding altimeter is required in which airspace?
A) Class A, Class B (and within 30 miles of the Class B primary airport), and Class C.
B) Class D and Class E (below 10,000 feet MSL).
C) Class D and Class G (below 10,000 feet MSL).

3166.
With certain exceptions, all aircraft within 30 miles of a Class B primary airport from the surface upward to 10,000 feet MSL must be equipped with
A) an operable VOR or TACAN receiver and an ADF receiver.
B) instruments and equipment required for IFR operations.
C) an operable transponder having either Mode S or 4096-code capability with Mode C automatic altitude reporting capability.

3167.
No person may operate an aircraft in acrobatic flight when
A) flight visibility is less than 5 miles.
B) over any congested area of a city, town, or settlement.
C) less than 2,500 feet AGL.

3168.
In which controlled airspace is acrobatic flight prohibited?
A) Class D airspace, Class E airspace designated for Federal Airways.
B) All Class E airspace below 1,500 feet AGL.
C) All Class G airspace.

3169.
What is the lowest altitude permitted for acrobatic flight?
A) 1,000 feet AGL.
B) 1,500 feet AGL.
C) 2,000 feet AGL.

3170.
No person may operate an aircraft in acrobatic flight when the flight visibility is less than
A) 3 miles.
B) 5 miles.
C) 7 miles.

3172.
An approved chair-type parachute may be carried in an aircraft for emergency use if it has been packed by an appropriately rated parachute rigger within the preceding
A) 120 days.
B) 180 days.
C) 365 days.

3173.
With certain exceptions, when must each occupant of an aircraft wear an approved parachute?
A) When a door is removed from the aircraft to facilitate parachute jumpers.
B) When intentionally pitching the nose of the aircraft up or down 30° or more.
C) When intentionally banking in excess of 30°.

3178.
Which is normally prohibited when operating a restricted category civil aircraft?
A) Flight under instrument flight rules.
B) Flight over a densely populated area.
C) Flight within Class D airspace.

3179.
Unless otherwise specifically authorized, no person may operate an aircraft that has an experimental certificate
A) beneath the floor of Class B airspace.
B) over a densely populated area or in a congested airway.
C) from the primary airport within Class D airspace.

3181.
The responsibility for verifying that maintenance personnel make the appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service lies with the
A) owner or operator.
B) pilot in command.
C) mechanic who performed the work.

3182.
Completion of an annual inspection and the return of the aircraft to service should always be indicated by
A) the relicensing date on the Registration Certificate.
B) an appropriate notation in the aircraft maintenance records.
C) an inspection sticker placed on the instrument panel that lists the annual inspection completion date.

3183.
If an alteration or repair substantially affects an aircraft's operation in flight, that aircraft must be test flown by an appropriately-rated pilot and approved for return to service prior to being operated
A) by any private pilot.
B) with passengers aboard.
C) for compensation or hire.

3184.
Before passengers can be carried in an aircraft that has been altered in a manner that may have appreciably changed its flight characteristics, it must be flight tested by an appropriately-rated pilot who holds at least a
A) Commercial Pilot Certificate with an instrument rating.
B) Private Pilot Certificate.
C) Commercial Pilot Certificate and a mechanic's certificate.

3185.
An aircraft's annual inspection was performed on July 12, this year. The next annual inspection will be due no later than
A) July 1, next year.
B) July 13, next year.
C) July 31, next year.

3186.
To determine the expiration date of the last annual aircraft inspection, a person should refer to the
A) Airworthiness Certificate.
B) Registration Certificate.
C) aircraft maintenance records.

3187.
How long does the Airworthiness Certificate of an aircraft remain valid?
A) As long as the aircraft has a current Registration Certificate.
B) Indefinitely, unless the aircraft suffers major damage.
C) As long as the aircraft is maintained and operated as required by Federal Aviation Regulations.

3188.
What aircraft inspections are required for rental aircraft that are also used for flight instruction?
A) Annual and 100-hour inspections.
B) Biannual and 100-hour inspections.
C) Annual and 50-hour inspections.

3189.
An aircraft had a 100-hour inspection when the tachometer read 1259.6. When is the next 100-hour inspection due?
A) 1349.6 hours.
B) 1359.6 hours.
C) 1369.6 hours.

3190.
A 100-hour inspection was due at 3302.5 hours on the tachometer. The 100-hour inspection was actually done at 3309.5 hours. When is the next 100-hour inspection due?
A) 3312.5 hours.
B) 3402.5 hours.
C) 3409.5 hours.

3191.
No person may use an ATC transponder unless it has been tested and inspected within at least the preceding
A) 6 calendar months.
B) 12 calendar months.
C) 24 calendar months.

3192. FAA
Maintenance records show the last transponder inspection was performed on September 1, 2015. The next inspection will be due no later than
A) September 30, 2016
B) September 1, 2017
C) September 30, 2017

3193.
Which records or documents shall the owner or operator of an aircraft keep to show compliance with an applicable Airworthiness Directive?
A) Aircraft maintenance records.
B) Airworthiness Certificate and Pilot's Operating Handbook.
C) Airworthiness and Registration Certificates.

3194.
If an aircraft is involved in an accident which results in substantial damage to the aircraft, the nearest NTSB field office should be notified
A) immediately.
B) within 48 hours.
C) within 7 days.

3195.
Which incident requires an immediate notification to the nearest NTSB field office?
A) A forced landing due to engine failure.
B) Landing gear damage, due to a hard landing.
C) Flight control system malfunction or failure.

3196.
Which incident would necessitate an immediate notification to the nearest NTSB field office?
A) An in-flight generator/alternator failure.
B) An in-flight fire.
C) An in-flight loss of VOR receiver capability.

3197.
Which incident requires an immediate notification be made to the nearest NTSB field office?
A) An overdue aircraft that is believed to be involved in an accident.
B) An in-flight radio communications failure.
C) An in-flight generator or alternator failure.

3198
May aircraft wreckage be moved prior to the time the NTSB takes custody?
A) Yes, but only if moved by a federal, state, or local law enforcement officer.
B) Yes, but only to protect the wreckage from further damage.
C) No, it may not be moved under any circumstances.

3199.
The operator of an aircraft that has been involved in an accident is required to file an accident report within how many days?
A) 5.
B) 7.
C) 10.

3200.
The operator of an aircraft that has been involved in an incident is required to submit a report to the nearest field office of the NTSB
A) within 7 days.
B) within 10 days
C) when requested.

3599.
(Refer to figure 25, area 4) The floor of Class B airspace overlying Hicks Airport (T67) north-northwest of Fort Worth Meacham Field is
A) at the surface.
B) 3,200 feet MSL.
C) 4,000 feet MSL.

3600.
(Refer to figure 25, area 2) The floor of Class B airspace at Addison Airport is
A) at the surface.
B) 3,000 feet MSL.
C) 3,100 feet MSL.

3620-1.
(Refer to figure 22, area 1) The visibility and cloud clearance requirements to operate VFR during daylight hours over Sandpoint Airport at 1,200 feet AGL are
A) 1 mile and clear of clouds.
B) 1 mile and 1,000 feet above, 500 feet below, and 2,000 feet horizontally from each cloud
C) 3 miles and 1,000 feet above, 500 feet below, and 2,000 feet horizontally from each cloud.

3621
(Refer to figure 26, area 2) The visibility and cloud clearance requirements to operate VFR during daylight hours over the town of Cooperstown between 1,200 feet AGL and 10,000 feet MSL are
A) 1 mile and clear of clouds.
B) 1 mile and 1,000 feet above, 500 feet below, and 2,000 feet horizontally from clouds.
C) 3 miles and 1,000 feet above, 500 feet below, and 2,000 feet horizontally from clouds.

3623.
(Refer to figure 26, east of area 5) The airspace overlying and within 5 miles of Barnes County Airport is
A) Class D airspace from the surface to the floor of the overlying Class E airspace.
B) Class E airspace from the surface to 1,200 feet MSL.
C) Class G airspace from the surface to 700 feet AGL.

3624.
(Refer to figure 25, area 7) The airspace overlying Collin County Regional – McKinney airport is controlled from the surface to
A) 2,900 feet MSL
B) 2,500 feet MSL.
C) 700 feet AGL.

3625.
(Refer to figure 25, area 4.) The airspace directly overlying Fort Worth Meacham Intl. is
A) Class B airspace to 10,000 feet MSL.
B) Class C airspace to 5,000 feet MSL.
C) Class D airspace to 3,200 feet MSL.

3626.
(Refer to figure 23, south of area 3) What is the floor of the Savannah Class C airspace at the shelf area (outer circle)?
A) 1,300 feet AGL.
B) 1,300 feet MSL.
C) 1,700 feet MSL.

3627.
(Refer to figure 20, area 1.) What minimum radio equipment is required to land and take off at Norfolk International?
A) Mode C transponder and omnireceiver.
B) Mode C transponder and two-way radio.
C) Mode C transponder, omnireceiver, and DME.

3628.
(Refer to figure 25) At which airports is fixed-wing Special VFR not authorized?
A) Fort Worth Meacham and Fort Worth Alliance.
B) Dallas-Fort Worth International and Dallas Love Field.
C) Addison and Dallas Executive.

3629.
(Refer to figure 22, east of area 2) The vertical limits of that portion of Class E airspace designated as a Federal Airway over Magee Airport are
A) 1,200 feet AGL to 17,999 feet MSL.
B) 700 feet MSL to 12,500 feet MSL.
C) 7,500 feet MSL to 17,999 feet MSL.

3709.
FAA advisory circulars (some free, others at cost) are available to all pilots and are obtained by
A) distribution from the nearest FAA district office.
B) ordering those desired from the Government Printing Office.
C) subscribing to the Federal Register.

3715.
During a night flight, you observe a steady red light and a flashing red light ahead and at the same altitude. What is the general direction of movement of the other aircraft?
A) The other aircraft is crossing to the left.
B) The other aircraft is crossing to the right.
C) The other aircraft is approaching head-on.

3716.
During a night flight, you observe a steady white light and a flashing red light ahead and at the same altitude. What is the general direction of movement of the other aircraft?
A) The other aircraft is flying away from you.
B) The other aircraft is crossing to the left.
C) The other aircraft is crossing to the right.

3717.
During a night flight, you observe steady red and green lights ahead and at the same altitude. What is the general direction of movement of the other aircraft?
A) The other aircraft is crossing to the left.
B) The other aircraft is flying away from you.
C) The other aircraft is approaching head-on.

3779.
The vertical limit of Class C airspace above the primary airport is normally
A) 1,200 feet AGL.
B) 3,000 feet AGL.
C) 4,000 feet AGL.

3780.
The normal radius of the procedural outer area of Class C airspace is
A) 5 nautical miles.
B) 15 nautical miles.
C) 20 nautical miles.

3781.
All operations within Class C airspace must be in
A) accordance with instrument flight rules.
B) compliance with ATC clearances and instructions.
C) an aircraft equipped with a 4096-code transponder with Mode C encoding capability.

3782.
Under what condition may an aircraft operate from a satellite airport within Class C airspace?
A) The pilot must file a flight plan prior to departure.
B) The pilot must monitor ATC until clear of the Class C airspace.
C) The pilot must contact ATC as soon as practicable after takeoff.

3787.
The lateral dimensions of Class D airspace are based on
A) the number of airports that lie within the Class D airspace.
B) 5 statute miles from the geographical center of the primary airport.
C) the instrument procedures for which the controlled airspace is established.

3788.
A non-towered satellite airport, within the same Class D airspace as that designated for the primary airport, requires radio communications be established and maintained with the
A) satellite airport's UNICOM.
B) associated Flight Service Station.
C) primary airport's control tower.

3799.
Which initial action should a pilot take prior to entering Class C airspace?
A) Contact approach control on the appropriate frequency.
B) Contact the tower and request permission to enter.
C) Contact the FSS for traffic advisories.

3811.
After landing at a tower-controlled airport, when should the pilot contact ground control?
A) When advised by the tower to do so.
B) Prior to turning off the runway.
C) After reaching a taxiway that leads directly to the parking area.

3812.
If instructed by ground control to taxi to Runway 9, the pilot may proceed
A) via taxiways and across runways to, but not onto, Runway 9.
B) to the next intersecting runway where further clearance is required.
C) via taxiways and across runways to Runway 9, where an immediate takeoff may be made.

3813.
What ATC facility should the pilot contact to receive a special VFR departure clearance in Class D airspace?
A) Automated Flight Service Station.
B) Air Traffic Control Tower.
C) Air Route Traffic Control Center.

3819.
When activated, an emergency locator transmitter (ELT) transmits on
A) 118.0 and 118.8 MHz.
B) 121.5 and 406 MHz.
C) 123.0 and 119.0 MHz.

3820.
When must the battery in an emergency locator transmitter (ELT) be replaced (or recharged if the battery is rechargeable)?
A) After one-half the battery's useful life.
B) During each annual and 100-hour inspection.
C) Every 24 calendar months.

3821.
When may an emergency locator transmitter (ELT) be tested?
A) Anytime.
B) At 15 and 45 minutes past the hour.
C) During the first 5 minutes after the hour.

3822.
Which procedure is recommended to ensure that the emergency locator transmitter (ELT) has not been activated?
A) Turn off the aircraft ELT after landing.
B) Ask the airport tower if they are receiving an ELT signal.
C) Monitor 121.5 before engine shutdown.

3837.
An ATC clearance provides
A) priority over all other traffic.
B) adequate separation from all traffic.
C) authorization to proceed under specified traffic conditions in controlled airspace.

3854.
FAA advisory circulars containing subject matter specifically related to Airmen are issued under which subject number?
A) 60.
B) 70.
C) 90.

3855.
FAA advisory circulars containing subject matter specifically related to Airspace are issued under which subject number?
A) 60.
B) 70.
C) 90.

3856.
FAA advisory circulars containing subject matter specifically related to Air Traffic Control and General Operations are issued under which subject number?
A) 60.
B) 70.
C) 90.

3971.
What should an owner or operator know about Airworthiness Directives (AD's)?
A) They are mandatory.
B) They are voluntary.
C) For Informational purposes only.

3972.
May a pilot operate an aircraft that is not in compliance with an Airworthiness Directive (AD)?
A) Yes, AD's are only voluntary.
B) Yes, if allowed by the AD.
C) Yes, under VFR conditions only.

3974.
Who may perform preventative maintenance on an aircraft?
A) None of the above.
B) Student or Recreational pilot,
C) Private or Commercial pilot.

3975.
The airworthiness of an aircraft can be determined by a preflight inspection and a
A) review of the maintenance records.
B) statement from the owner or operator that the aircraft is airworthy.
C) log book endorsement from a flight instructor.

3977.
Who is responsible for ensuring Airworthiness Directives (AD's) are complied with?
A) Owner or operator.
B) Mechanic with inspection authorization (IA).
C) Repair station.

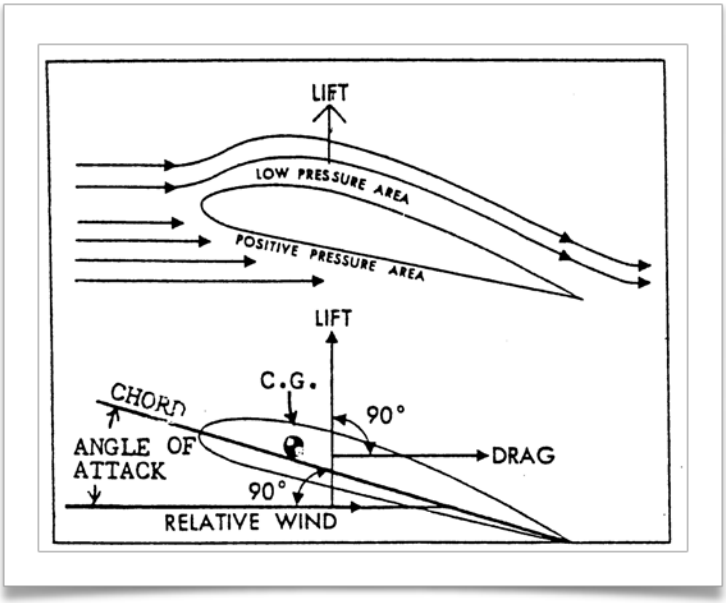
3108-1. FAA
As Pilot in Command of an aircraft, under which situation can you deviate from an ATC clearance?
A) When operating in Class A airspace at night.
B) If an ATC clearance is not understood and in VFR conditions.
C) In response to a traffic alert and collision avoidance system resolution advisory.

3079-1. FAA
How soon after the arrest or conviction for driving while intoxicated by alcohol or drugs shall it be reported to the FAA, Civil Aviation Security Division?
A) No later than 60 days after the motor vehicle action.
B) No later than 30 working days after the motor vehicle action.
C) Required to be reported upon renewal of medical certificate.

*3079-1 * New regulatory guidance now applies to 'arrests' in addition to 'convictions.' The FAA can have the test question with or without the word arrest. 60 days however is still the correct answer for either.*

AERODYNAMICS AND AIRCRAFT OPERATIONS

Definitions

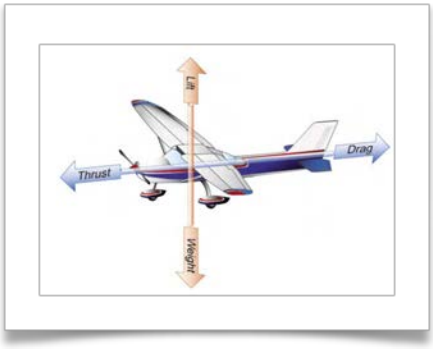


Angle of attack is the angle between the wing chord line and the direction of the relative wind. It changes as your flight path changes.

Chord line is the line between the leading and the trailing edge of the airfoil.

Relative wind is the direction of the airflow with respect to the wing. It is also the direction opposite and parallel to the flight path.

Forces Acting On The Aircraft



Lift is the difference in pressure between the upper (lower pressure) and lower (higher pressure area) wing surfaces.

Drag is the rearward force of wind resistance.

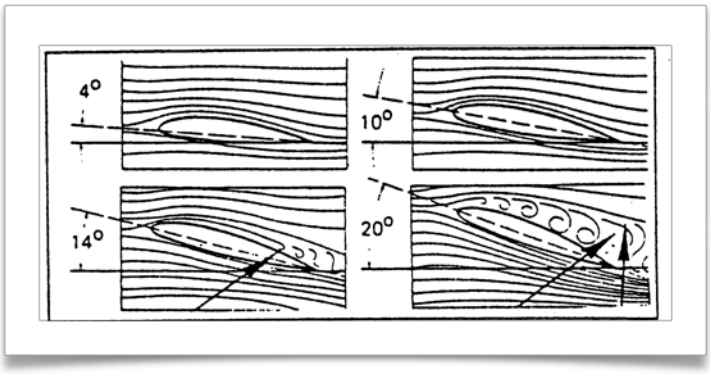
Forces Acting On The Aircraft (Cont)
Thrust is the forward acting force, produced by the propeller.

Lift equals weight whenever you are in straight and level flight, or climbing or descending at a constant rate (un-accelerated flight). Thrust is equal to drag whenever your airspeed is constant.

Angle Of Attack And Stalling Speeds
An airplane can be stalled at any airspeed and in any flight attitude.

The angle of attack at which an airplane stalls will always remain the same.

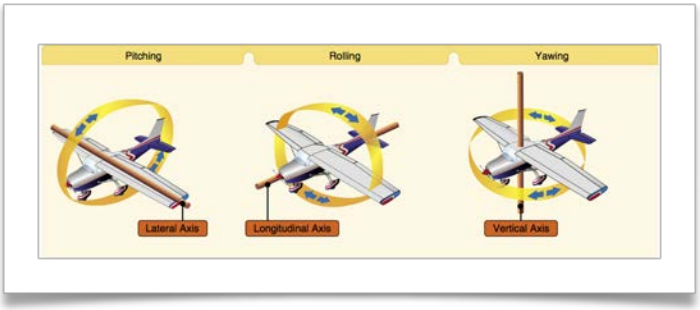
An airplane will spin only after having been stalled. During a spin to the left, both wings remain stalled, but the right wing is less stalled than the left wing.



Load Factor
Load factor is the actual load on the wings at any time divided by the weight of the airplane. Increased Load factor in turns, for example, will cause an airplane to stall at a higher airspeed.

The amount of excess load that can be imposed on the wing of an airplane depends upon the speed of the airplane.

Functions Of The Flight Controls



Ailerons roll the airplane about the longitudinal axis to change the bank. The airplane turns because of the

Flight Controls (Continued)

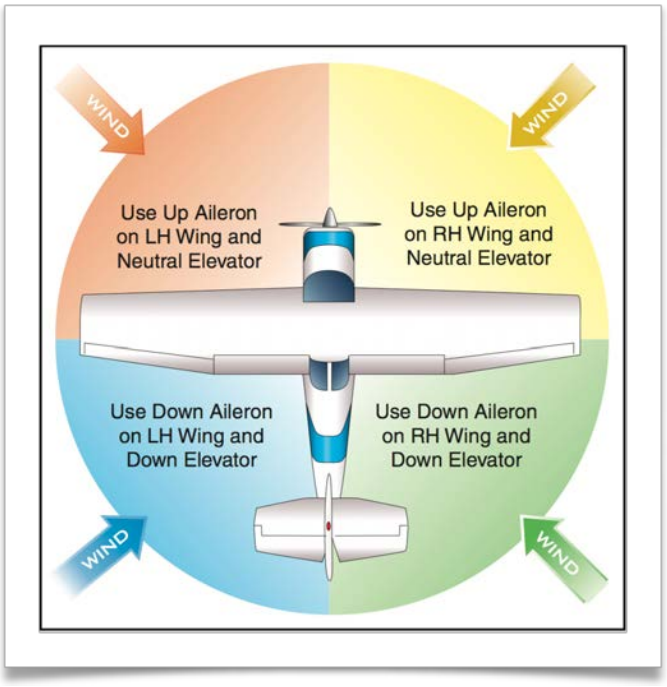
horizontal component of lift.

Elevators pitch the airplane about the lateral axis to change the angle of attack.

Rudder controls yaw about the vertical axis, not to turn the airplane, but to overcome adverse yaw produced by the depressed aileron on the high wing.

Wing flaps increase drag to increase the angle of descent and allow steeper approaches to a landing without increasing airspeed.

The most dangerous wind while taxiing in a nose-wheel equipped airplane is a quartering tailwind.



Air Density

High temperatures, high elevations, high humidity, and low atmospheric pressure all result in lower air density and decreased performance.

Air that is less dense (higher density altitude) will give you less performance because:
- the wings produce less lift;
- the engine produces less power;
- the propeller exerts less force.

Regardless of altitude and air density, the indicated airspeed at which an airplane stalls and your indicated speed on landing approach will remain the same.

Ground Effect

Ground effect is the result of interference of the earth with airflow patterns about an airplane, and will be realized when you are less than the wingspan above the surface. It causes a decrease in induced drag.

Ground effect allows you to become airborne before reaching recommended takeoff speed. Any excess speed on landing may cause considerable floating.

Stability

Longitudinal stability (the nose pitching up or down) is determined by location of the center of gravity with respect to the center of lift.

An airplane said to be inherently stable will require less effort to control.

An airplane (except T-tail) will pitch nosedown when power is reduced because the downwash on the elevator from the propeller slipstream is reduced and elevator effectiveness is reduced.

AIRCRAFT AND ENGINE OPERATION

'P' Factor And Torque

At high angles of attack, the descending propeller blade has a greater angle of attack than the ascending blade, thus it pulls more and yaws the airplane to the left.

The most torque and P-factor are experienced at high angles of attack, high power settings, and low airspeeds.

Engine Operation

The first action after starting an aircraft engine should be to adjust for proper RPM and check for desired indications on the engine gauges.

When starting an engine by hand, have a competent pilot at the controls in the cockpit.

Dual ignition, in addition to providing an increased safety factor, also provides improved engine performance.

A constant speed propeller permits the pilot to select the blade angle for the most efficient performance. The throttle controls power output as registered on the manifold pressure gauge and the propeller control regulates blade angle to provide a constant RPM. Avoid high manifold pressure setting with low RPM.

Engine cooling is caused by airflow and is especially dependent on the circulation of lubricating oil.

Overheating can be caused by:
- lower than specified fuel octane/rating,
- too high power setting,
- climbing at an excessive rate of climb and insufficient airspeed,
- mixture set too lean, and
- oil level being too low;

Engine Operation (Continued)

Higher temperatures will cause loss of power, excessive oil consumption and possible engine damage.

Detonation occurs when the unburned charge (fuel) in the cylinders explodes instead of burning evenly. If you suspect
that the engine is detonating during climb-out, lower the nose to increase airspeed.

Pre-ignition is the uncontrolled firing of the fuel/air charge in advance of normal spark ignition.

While at a high altitude airport and while checking your magnetos, if you notice a roughness in the engine that gets worse when you check carburetor heat, check the results obtained with a leaner mixture setting.

Fuel

Use the correct octane of fuel specified for your aircraft. If the correct octane is not available, a higher octane should be used.

Make sure there is no water or contamination in the fuel by:
- draining the fuel sumps and the fuel strainer before each flight, and
- filling the tanks after completion of a flight to minimize the possibility of condensation of water on the inner walls of partially filled tanks.

Do not run the fuel tanks dry because the engine-driven fuel pump or electric fuel boost pump may draw air into the fuel system and cause vapor lock.

Float-type carburetor operation is based on the difference in air pressure at the venturi throat and the air inlet.

The main purpose of the fuel/air mixture control is to decrease the fuel flow to compensate for decreased air density at higher altitudes.

As you climb out to a higher altitude, if no adjustment is made to the mixture, your mixture will become richer.

Induction Icing

Carburetor icing is caused by sudden cooling of the air as it expands in the venturi of the carburetor.

Carburetor icing will most likely occur with temperatures between 20 and 70 degrees F with high relative humidity.

Carb ice reduces the amount of air coming into the carburetor. The indication for an airplane with fixed pitch propeller is the loss of RPM.

When you apply carb heat there will be a drop in RPM. If there is no carb ice, the RPM will remain there. If carb ice is present when you apply carb heat, the RPM will drop then rise as the ice melts.

Carburetor heat reduces the density of the air by heating it, and this makes the mixture richer. It decreases engine output and increases operating temperatures.

Float-type carburetor systems, in comparison to fuel injection systems are considered to be more susceptible to evaporative icing.

Emergencies And Miscellaneous Information

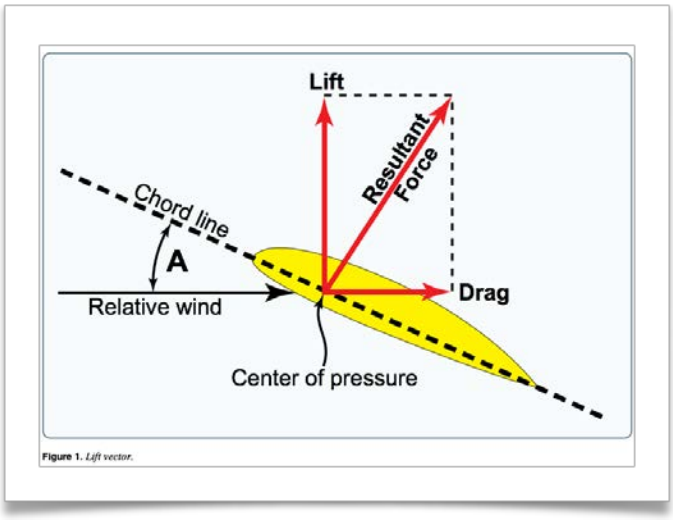
Perform a walk-around inspection of the aircraft before each flight.

Use a written checklist to ensure that all items are checked in a logical sequence.

If an aircraft has been stored an extended period of time, check for damage or obstructions caused by animals, birds or insects.

If you lose power immediately after takeoff, immediately establish the proper gliding attitude and airspeed.

During an emergency approach, it is important to maintain a constant glide speed. Speed variations will nullify attempts at accurately determining the landing spot.



TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3201.
The four forces acting on an airplane in flight are;
A) lift, weight, thrust, and drag.
B) lift, weight, gravity, and thrust.
C) lift, gravity, power, and friction.

3202.
When are the four forces that act on an airplane in equilibrium?
A) During unaccelerated flight.
B) When the aircraft is accelerating.
C) When the aircraft is at rest on the ground.

3203.
(Refer to figure 1.) The acute angle A is the angle of
A) incidence.
B) attack.
C) dihedral.

3204.
The term 'angle of attack' is defined as the angle
A) between the wing chord line and the relative wind.
B) between the airplane's climb angle and the horizon.
C) formed by the longitudinal axis of the airplane and the chord line of the wing.

3205.
What is the relationship of lift, drag, thrust, and weight when the airplane is in straight-and-level flight?
A) Lift equals weight and thrust equals drag.
B) Lift, drag, and weight equal thrust.
C) Lift and weight equal thrust and drag.

3207.
In what flight condition is torque effect the greatest in a single-engine airplane?
A) Low airspeed, high power, high angle of attack.
B) Low airspeed, low power, low angle of attack.
C) High airspeed, high power, high angle of attack.

3208.
The left turning tendency of an airplane caused by P-factor is the result of the
A) clockwise rotation of the engine and the propeller turning the airplane counter-clockwise.
B) propeller blade descending on the right, producing more thrust than the ascending blade on the left.
C) gyroscopic forces applied to the rotating propeller blades acting 90° in advance of the point the force was applied.

3209.
When does P-factor cause the airplane to yaw to the left?
A) When at low angles of attack.
B) When at high angles of attack.
C) When at high airspeeds.

3210.
An airplane said to be inherently stable will
A) be difficult to stall.
B) require less effort to control.
C) not spin.

3211.
What determines the longitudinal stability of an airplane?
A) The location of the CG with respect to the center of lift.
B) The effectiveness of the horizontal stabilizer, rudder, and rudder trim tab.
C) The relationship of thrust and lift to weight and drag.

3212.
What causes an airplane (except a T-tail) to pitch nosedown when power is reduced and controls are not adjusted?
A) The CG shifts forward when thrust and drag are reduced.
B) The downwash on the elevators from the propeller slipstream is reduced and elevator effectiveness is reduced.
C) When thrust is reduced to less than weight, lift is also reduced and the wings can no longer support the weight.

3213.
What is the purpose of the rudder on an airplane?
A) To control yaw.
B) To control over-banking tendency.
C) To control roll.

3214.
(Refer to figure 2.) If an airplane weighs 2,300 pounds, what approximate weight would the airplane structure be required to support during a 60° banked turn while maintaining altitude?
A) 2,300 pounds.
B) 3,400 pounds.
C) 4,600 pounds.

3215.
(Refer to figure 2.) If an airplane weighs 3,300 pounds, what approximate weigh would the airplane structure be required to support during a 30° banked turn while maintaining altitude?
A) 1,200 Pounds
B) 3,100 Pounds
C) 3,960 Pounds

3216.
(Refer to figure 2.) If an airplane weighs 4,500 pounds, what approximate weigh would the airplane structure be required to support during a 45° banked turn while maintaining altitude?
A) 4,500 Pounds
B) 6,750 Pounds
C) 7,200 Pounds

3217.
The amount of excess load that can be imposed on the wing of an airplane depends upon the;
A) position of the CG.
B) speed of the airplane.
C) abruptness at which the load is applied.

3218.
Which basic flight maneuver increases the load factor on an airplane as compared to straight-and-level flight?
A) Climbs.
B) Turns.
C) Stalls.

3219.
One of the main functions of flaps during approach and landing is to
A) decrease the angle of descent without increasing the airspeed.
B) permit a touchdown at a higher indicated airspeed.
C) increase the angle of descent without increasing the airspeed.

3220.
What is one purpose of wing flaps?
A) To enable the pilot to make steeper approaches to a landing without increasing the airspeed
B) To relieve the pilot of maintaining continuous pressure on the controls.
C) To decrease wing area to vary the lift.

3221.
Excessively high engine temperatures will
A) cause damage to heat-conducting hoses and warping of the cylinder cooling fins.
B) cause loss of power, excessive oil consumption, and possible permanent internal engine damage.
C) not appreciably affect an aircraft engine.

3222.
If the engine oil temperature and cylinder head temperature gauges have exceeded their normal operating range, the pilot may have been operating with
A) the mixture set too rich.
B) higher-than-normal oil pressure.
C) too much power and with the mixture set too lean.

3223.
One purpose of the dual ignition system on an aircraft engine is to provide for
A) improved engine performance.
B) uniform heat distribution.
C) balanced cylinder head pressure.

3224.
On aircraft equipped with fuel pumps, when is the auxiliary electric driven pump used?
A) All the time to aid the engine-driven fuel pump.
B) In the event engine-driven fuel pump fails.
C) Constantly except in starting the engine.

3225.
The operating principle of float-type carburetors is based on the
A) automatic metering of air at the venturi as the aircraft gains altitude.
B) difference in air pressure at the venturi throat and the air inlet.
C) increase in air velocity in the throat of a venturi causing an increase in air pressure.

3226.
The basic purpose of adjusting the fuel/air mixture at altitude is to
A) decrease the amount of fuel in the mixture in order to compensate for increased air density.
B) decrease the fuel flow in order to compensate for decreased air density.
C) increase the amount of fuel in the mixture to compensate for the decrease in pressure and density of the air.

3227.
During the run-up at a high-elevation airport, a pilot notes a slight engine roughness that is not affected by the magneto check but grows worse during the carburetor heat check. Under these circumstances, what would be the most logical initial action?
A) Check the results obtained with a leaner setting of the mixture.
B) Taxi back to the flight line for a maintenance check.
C) Reduce manifold pressure to control detonation.

3228.
While cruising at 9,500 feet MSL, the fuel/air mixture is properly adjusted. What will occur if a descent to 4,500 feet MSL is made without readjusting the mixture?
A) The fuel/air mixture may become excessively lean.
B) There will be more fuel in the cylinders than is needed for normal combustion, and the excess fuel will absorb heat and cool the engine.
C) The excessively rich mixture will create higher cylinder head temperatures and may cause detonation.

3229.
Which condition is most favorable to the development of carburetor icing?
A) Any temperature below freezing and a relative humidity of less than 50 percent.
B) Temperature between 32 and 50 °F and low humidity.
C) Temperature between 20 and 70 °F and high humidity.

3230.
The possibility of carburetor icing exists even when the ambient air temperature is as
A) high as 70 °F and the relative humidity is high
B) high as 95 °F and there is visible moisture
C) low as 0 °F and the relative humidity is high

3231.
If an aircraft is equipped with a fixed-pitch propeller and a float-type carburetor, the first indication of carburetor ice would most likely be
A) a drop in oil temperature and cylinder head temperature.
B) engine roughness.
C) loss of RPM.

3232.
Applying carburetor heat will
A) result in more air going through the carburetor.
B) enrich the fuel/air mixture.
C) not affect the fuel/air mixture.

3233.
What change occurs in the fuel/air mixture when carburetor heat is applied?
A) A decrease in RPM results from the lean mixture.
B) The fuel/air mixture becomes richer.
C) The fuel/air mixture becomes leaner.

3234.
Generally speaking, the use of carburetor heat tends to
A) decrease engine performance.
B) increase engine performance.
C) have no effect on engine performance.

3235.
The presence of carburetor ice in an aircraft equipped with a fixed-pitch propeller can be verified by applying carburetor heat and noting
A) an increase in RPM and then a gradual decrease in RPM.
B) a decrease in RPM and then a constant RPM indication.
C) a decrease in RPM and then a gradual increase in RPM.

3236.
With regard to carburetor ice, float-type carburetor systems in comparison to fuel injection systems are generally considered to be
A) more susceptible to icing.
B) equally susceptible to icing.
C) susceptible to icing only when visible moisture is present.

3237.
If the grade of fuel used in an aircraft engine is lower than specified for the engine, it will most likely cause
A) a mixture of fuel and air that is not uniform in all cylinders.
B) lower cylinder head temperatures.
C) detonation.

3238.
Detonation occurs in a reciprocating aircraft engine when
A) the spark plugs are fouled or shorted out or the wiring is defective.
B) hot spots in the combustion chamber ignite the fuel/air mixture in advance of normal ignition.
C) the unburned charge in the cylinders explodes instead of burning normally.

3239.
If a pilot suspects that the engine (with a fixed-pitch propeller) is detonating during climb-out after takeoff, the initial corrective action to take would be to
A) lean the mixture.
B) lower the nose slightly to increase airspeed.
C) apply carburetor heat.

3240.
The uncontrolled firing of the fuel/air charge in advance of normal spark ignition is known as
A) combustion.
B) pre-ignition.
C) detonation.

3241.
Which would most likely cause the cylinder head temperature and engine oil temperature gauges to exceed their normal operating ranges?
A) Using fuel that has a lower-than-specified fuel rating.
B) Using fuel that has a higher-than-specified fuel rating.
C) Operating with higher-than-normal oil pressure.

3242.
What type fuel can be substituted for an aircraft if the recommended octane is not available?
A) The next higher octane aviation gas.
B) The next lower octane aviation gas.
C) Unleaded automotive gas of the same octane rating.

3243.
Filling the fuel tanks after the last flight of the day is considered a good operating procedure because this will
A) force any existing water to the top of the tank away from the fuel lines to the engine.
B) prevent expansion of the fuel by eliminating airspace in the tanks.
C) prevent moisture condensation by eliminating airspace in the tanks.

3244.
For internal cooling, reciprocating aircraft engines are especially dependent on
A) a properly functioning thermostat.
B) air flowing over the exhaust manifold.
C) the circulation of lubricating oil.

3245.
An abnormally high engine oil temperature indication may be caused by
A) the oil level being too low.
B) operating with a too high viscosity oil.
C) operating with an excessively rich mixture.

3246.
What effect does high density altitude, as compared to low density altitude, have on propeller efficiency and why?
A) Efficiency is increased due to less friction on the propeller blades.
B) Efficiency is reduced because the propeller exerts less force at high density altitudes than at low density altitudes.
C) Efficiency is reduced due to the increased force of the propeller in the thinner air.

3263.
As altitude increases, the indicated airspeed at which a given airplane stalls in a particular configuration will
A) decrease as the true airspeed decreases.
B) decrease as the true airspeed increases.
C) remain the same regardless of altitude.

3290.
Which combination of atmospheric conditions will reduce aircraft takeoff and climb performance?
A) Low temperature, low relative humidity, and low density altitude.
B) High temperature, low relative humidity, and low density altitude.
C) High temperature, high relative humidity, and high density altitude.

3301.
What force makes an airplane turn?
A) The horizontal component of lift.
B) The vertical component of lift.
C) Centrifugal force.

3302.
When taxiing with strong quartering tailwinds, which aileron positions should be used?
A) Aileron down on the downwind side.
B) Ailerons neutral.
C) Aileron down on the side from which the wind is blowing.

3303.
Which aileron positions should a pilot generally use when taxiing in strong quartering headwinds.
A) Aileron up on the side from which the wind is blowing.
B) Aileron down on the side from which the wind is blowing.
C) Ailerons Neutral.

3304.
Which wind condition would be most critical when taxiing a nose wheel equipped high-wing airplane.
A) Quartering tailwind.
B) Direct crosswind.
C) Quartering heading..

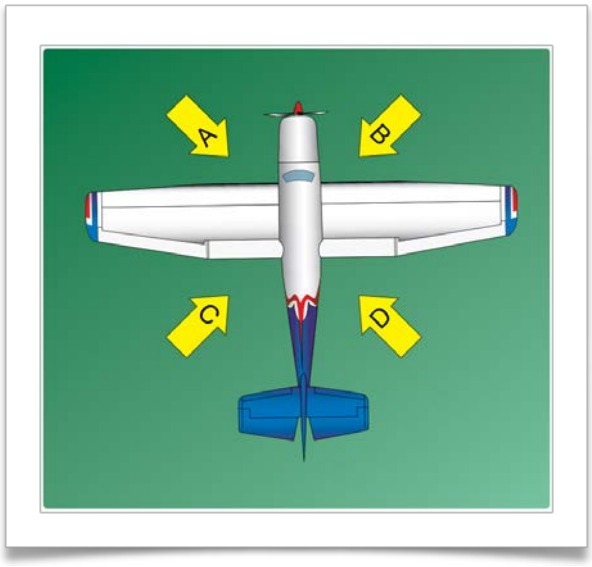


Figure 9. – *Control Position for Taxi.*

3305.
(Refer to figure 9, arrow A.) How should the flight controls be held while taxiing a tricycle-gear equipped airplane into a left quartering headwind?
A) Left aileron up, elevator neutral.
B) Left aileron down, elevator neutral.
C) Left aileron up, elevator down.

3306.
(Refer to figure 9, arrow B.) How should the flight controls be held while taxiing a tailwheel airplane into a right quartering headwind?
A) Right aileron up, elevator up.
B) Right aileron down, elevator neutral.
C) Right aileron up, elevator down.

3307.
(Refer to figure 9, arrow C.) How should the flight controls be held while taxiing a tailwheel airplane with a left quartering tailwind?
A) Left aileron up, elevator neutral.
B) Left aileron down, elevator neutral.
C) Left aileron up, elevator down.

3308.
(Refer to figure 9, arrow C) How should the flight control be held while taxiing tricycle-gear equipped airplane with a left quartering tailwind?
A) Left aileron up, elevator neutral.
B) Left aileron down, elevator down.
C) Left aileron up, elevator down.

3309.
In what flight condition must an aircraft be placed in order to spin?
A) Partially stalled with one wing low.
B) In a steep diving spiral.
C) Stalled.

3310.
During a spin to the left, which wing(s) is/are stalled?
A) Both wings are stalled.
B) Neither wing is stalled.
C) Only the left wing is stalled.

3311.
The angle of attack at which an airplane wing stalls will
A) increase if the CG is moved forward.
B) change with an increase in gross weight.
C) remain the same regardless of gross weight.

3312.
What is ground effect?
A) The result of the interference of the surface of the Earth with the airflow patterns about an airplane.
B) The result of an alteration in airflow patterns increasing induced drag about the wings of an airplane.
C) The result of the disruption of the airflow patterns about the wings of an airplane to the point where the wings will no longer support the airplane in flight.

3313.
Float caused by the phenomenon ground effect will be most realized during an approach to land when at
A) less than the length of the wingspan above the surface.
B) twice the length of the wingspan above the surface
C) a higher-than-normal angle of attack.

3314.
What must a pilot be aware of as a result of ground effect?
A) Wingtip vortices increase creating wake turbulence problems for arriving and departing aircraft.
B) Induced drag decreases; therefore, any excess speed at the point of flare may cause considerable floating.
C) A full stall landing will require less up elevator deflection than would a full stall when done free of ground effect.

3315.
Ground effect is most likely to result in which problem?
A) Settling to the surface abruptly during landing.
B) Becoming airborne before reaching recommended takeoff speed.
C) Inability to get airborne even though airspeed is sufficient for normal takeoff needs.

3316.
During an approach to a stall, an increased load factor will cause the airplane to
A) stall at a higher airspeed.
B) have a tendency to spin.
C) be more difficult to control.

3317.
Angle of attack is defined as the angle between the chord line of an airfoil and the
A) direction of the relative wind.
B) pitch angle of an airfoil.
C) rotor plane of rotation.

3651.
What action can a pilot take to aid in cooling an engine that is overheating during a climb?
A) Reduce rate of climb and increase airspeed.
B) Reduce climb speed and increase RPM.
C) Increase climb speed and increase RPM.

3652.
What is one procedure to aid in cooling an engine that is overheating?
A) Enrichen the fuel mixture.
B) Increase the RPM.
C) Reduce the airspeed.

3653.
How is engine operation controlled on an engine equipped with a constant-speed propeller?
A) The throttle controls power output as registered on the manifold pressure gauge and the propeller control regulates engine RPM.
B) The throttle controls power output as registered on the manifold pressure gauge and the propeller control regulates a constant blade angle.
C) The throttle controls engine RPM as registered on the tachometer and the mixture control regulates the power output.

3654.
What is an advantage of a constant-speed propeller?
A) Permits the pilot to select and maintain a desired cruising speed.
B) Permits the pilot to select the blade angle for the most efficient performance.
C) Provides a smoother operation with stable RPM and eliminates vibrations.

3655.
A precaution for the operation of an engine equipped with a constant-speed propeller is to
A) avoid high RPM settings with high manifold pressure.
B) avoid high manifold pressure settings with low RPM.
C) always use a rich mixture with high RPM settings.

3656.
What should be the first action after starting an aircraft engine?
A) Adjust for proper RPM and check for desired indications on the engine gauges.
B) Place the magneto or ignition switch momentarily in the OFF position to check for proper grounding.
C) Test each brake and the parking brake.

3657.
Should it become necessary to handprop an airplane engine, it is extremely important that a competent pilot
A) call 'contact' before touching the propeller.
B) be at the controls in the cockpit.
C) be in the cockpit and call out all commands.

3658.
In regard to preflighting an aircraft, what is the minimum expected of a pilot prior to every flight?
A) Drain fuel from each quick drain.
B) Perform a walk-around inspection of the aircraft.
C) Check the required documents aboard the aircraft.

3659.
Why is the use of a written checklist recommended for preflight inspection and engine start?
A) To ensure that all necessary items are checked in a logical sequence.
B) For memorizing the procedures in an orderly sequence.
C) To install confidence in the passengers.

3660.
What special check should be made on an aircraft during preflight after it has been stored an extended period of time?
A) ELT batteries and operation.
B) Condensation in the fuel tanks.
C) Damage or obstructions caused by animals, birds or insects.

3308. FA
To minimize the side loads placed on the landing gear during touchdown, the pilot should keep the
A) direction of motion of the aircraft parallel to the runway.
B) longitudinal axis of the aircraft parallel to the direction of its motion.
C) downwind wing lowered sufficiently to eliminate the tendency for the aircraft to drift.

3202-2. FAA
(Refer to figure 62.) In flying the rectangular course, when would the aircraft be turned less than 90°?
A) Corners 1 and 4.
B) Corners 1 and 2.
C) Corners 2 and 4.

3202-3. FAA
(Refer to figure 66.) While practicing S-turns, a consistently smaller half-circle is made on one side of the road than on the other, and this turn is not completed before crossing the road or reference line. This would most likely occur in turn
A) 1-2-3 because the bank is decreased too rapidly during the latter part of the turn.
B) 4-5-6 because the bank is increased too rapidly during the early part of the turn.
C) 4-5-6 because the bank is increased too slowly during the latter part of the turn.

3202-4. FAA
If an emergency situation requires a downwind landing, pilots should expect a faster;
A) airspeed at touchdown, a longer ground roll, and better control throughout the landing roll.
B) groundspeed at touchdown, a longer ground roll, and the likelihood of overshooting the desired touchdown point.
C) groundspeed at touchdown, a shorter ground roll, and the likelihood of undershooting the desired touchdown point.

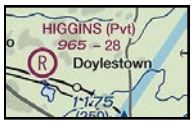
3203-1 FAA
When executing an emergency approach to land in a single-engine airplane, it is important to maintain a constant glide speed because variations in glide speed
A) increase the chances of shock cooling the engine.
B) increase the airplane’s rate of descent and decrease gliding distance.
C) nullify all attempts at accuracy in judgment of gliding distance and landing spot.

NAVIGATION

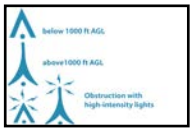
Note: Asterisks at the end of a statement indicate information given on the Sectional Chart legend, in the appendix at the end of this course summary, and also in the exam book on the FAA test.

Flag symbol is used as a visual checkpoint to identify position for initial callup.*

Terrain elevation shown by contour shading on Sectional Chart, with contour lines.*



Obstructions are shown as either above or below 1000 AGL*



Airport data shows tower frequency, elevation, lighting, runway length and Unicom frequency.*

Restricted areas may be entered only with the controlling agency's authorization.

Warning areas contain unusual, often invisible hazards such as aerial gunnery or guided missiles over international waters.

Alert areas are areas of high volume training activity. All pilots, without exception, are responsible for collision avoidance.

Military training routes such as IR-644 contain military training flights above 1500 ft. AGL at speeds in excess of 250 knots.

Military Operation Areas (MOA) pose no restriction to VFR flight. Just exercise extreme caution when military activity is being conducted. Contact FSS for advisories.

It is recommended you maintain at least 2,000 feet AGL over National Wildlife Refuges.

VOR (VHF Omnidirectional Range)

All radio aids are oriented to MAGNETIC north.

A radial is a magnetic bearing from a station, or the direction you must fly to go away from the station.

The VOR receiver allows you to fly inbound TO a VOR station, or fly outbound FROM a station, or determine where you are located relative to the station.

Components:

Omnibearing selector (OBS) enables you to select the course you wish to fly. This selector should always agree with your course or heading. If reading a VOR indicator, imagine your aircraft on the same heading as the OBS.

TO-FROM flag tells you, if flying the course selected, if you are getting closer TO or farther FROM the station.

LEFT-RIGHT needle tells you, if flying the course selected, to turn right or left to center the needle and. put you on course.

To test the VOR, tune to a VOR test frequency (VOT). The LEFT-RIGHT needle should center with OBS of 360, and FROM flag, and OBS of 180, and TO flag.

Know the VOR types per Legend 1.

GLOBAL POSITIONING SYSTEM (GPS)

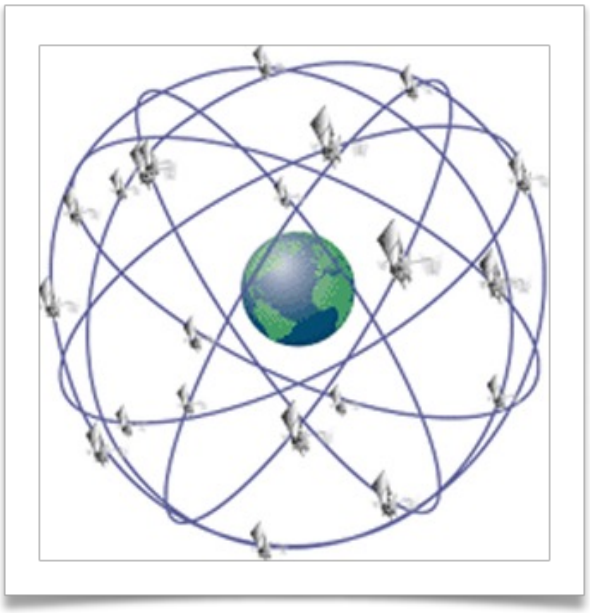
There are 24 Global Positioning satellites in the civilian GPS system.

A minimum of 5 GPS satellites are always observable.

It takes 4 GPS satellites to yield a THREE dimensional position (latitude, longitude, altitude).

A GPS receiver verifies integrity (usability) of the GPS system through Receiver Autonomous Integrity Monitoring (RAIM).

If check capability is lost in flight, the pilot would have no assurance of the accuracy of their GPS position.



TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3510.
(Refer to figure 18) The marginal weather in central Kentucky is due to low
A) ceiling.
B) visibility.
C) ceiling and visibility.

3511.
(Refer to figure 18) What weather phenomenon is causing IFR conditions in central Oklahoma?
A) Low visibility only.
B) Low ceilings and visibility.
C) Heavy rain showers

3512.
(Refer to figure 18) According to the Weather Depiction Chart, the weather for a flight from southern Michigan to north Indiana is ceilings
A) less than 1,000 feet and/or visibility less than 3 miles.
B) greater than 3, 000 feet and visibility greater than 5 miles.
C) 1,000 to 3,000 feet and/or visibility 3 to 5 miles.

3513.
Radar weather reports are of special interest to pilots because they indicate
A) large areas of low ceilings and fog.
B) location of precipitation along with type, intensity, and trend.
C) location of precipitation along with type, intensity, and cell movement of precipitation.

3530.
(Refer to figure 20, area 3.) Determine the approximate latitude and longitude of Currituck County Airport.
A) 36°24'N - 76°01'W.
B) 36°48'N - 76°01'W.
C) 47°24'N - 75°58'W.

3531.
(Refer to figure 20.) Determine the magnetic course from First Flight Airport (area 5) to Hampton Roads Airport (area 2).
A) 141°.
B) 321°.
C) 332°.

3533
(Refer to figure 20, area 3; and figure 28.) The VOR is tuned to Elizabeth City VOR, and the aircraft is positioned over Shawboro. Which VOR indication is correct?
A) 2.
B*) 5.*
C) 8.

3535.
(Refer to figure 21, area 2.) Which airport is located at approximately 47° 35’30” N latitude and 100°43’00” W longitude?
A) Turtle Lake.
B) Makeef.
C) Johnson.

3538.
(Refer to figure 21.) Determine the magnetic heading for a flight from Mercer County Regional Airport (area 3) to Minot International (area 1). The wind is from 330° at 25 knots, the true airspeed is 100 knots, and the magnetic variation is 10° east.
A) 002°.
B) 012°.
C) 352°.

3539.
(Refer to figure 21.) What course should be selected on the omnibearing selector (OBS) to make a direct flight from Mercer County Regional Airport (area 3) to the Minot VORTAC (area 1) with a TO indication?
A) 359°.
B) 179°.
C) 001°.

3546.
(Refer to figure 22.) What is the magnetic heading for a flight from Priest River Airport (area 1) to Shoshone County Airport (area 3)? The wind is from 030° at 12 knots, and the true airspeed is 95 knots.
A) 121°.
B) 143°.
C) 136°.

3547.
(Refer to figure 22.) Determine the magnetic heading for a flight from St. Maries Airport (area 4) to Priest River Airport (area 1). The wind is from 340° at 10 knots, and the true airspeed is 90 knots.
A) 345°.
B) 327°.
C) 329°.

3550.
(Refer to figure 23.) Determine the magnetic heading for a flight from Allendale County Airport (area 1) to Claxton-Evans County Airport (area 2). The wind is from 090° at 16 knots and the true airspeed is 90 knots and the magnetic variation is 6°W.
A) 209°
B) 230°
C) 212°

3551.
(Refer to figures 23 and 58.) Determine the compass heading for a flight from Claxton-Evan County Airport (area 2) to Hampton Varnville Airport (area 1). The wind is from 280° at 08 knots and the true airspeed is 85 knots and the magnetic variation is 6°W.
A) 033°
B) 042°
C) 038°

3552.
(Refer to figure 23.) What is the approximate position of the aircraft if the VOR receivers indicate the 320° radial of Savannah VORTAC (area 3) and the 184° radial of Allendale VOR (area 1)?
A) Southeast of Guyton.
B) Town of Springfield.
C) 3 miles east of Marlow.

3553.
(Refer to figure 23.) On what course should the VOR receiver (OBS) be set to navigate direct from Hampton Varnville Airport (area 1) to Savannah VORTAC (area 3)?
A) 003°.
B) 195°.
C) 200°.

3556.
(Refer to figure 24). Determine the magnetic course from Airpark East Airport (area 1) to Winnsboro Airport (area 2). Magnetic variation is 6°30'E.
A) 075°.
B) 082°.
C) 091°.

3560.
(Refer to figure 24.) On what course should the VOR receiver (OBS) be set in order to navigate direct from Majors Airport (area 1) to Quitman VORTAC (area 2)?
A) 101°.
B) 108°.
C) 281°.

3565.
(Refer to figure 25.) Determine the magnetic heading for a flight from Fort Worth Meacham (area 4) to Denton Muni (area 1). The wind is from 330° at 25 knots, the true airspeed is 110 knots, and the magnetic variation is 7°E.
A) 003°.
B) 017°.
C) 023°.

3566.
(Refer to figure 25, area 5.) The VOR is tuned to the Dallas/Fort Worth VORTAC. The omnibearing selector (OBS) is set on 253°, with a TO indication, and a right course deviation indicator (CDI) deflection. What is the aircraft's position from the VORTAC.
A) East-northeast
B) North-northeast
C) West-southwest

3567.
(Refer to figure 26, area 2.) What is the approximated latitude and longitude of Cooperstown Airport?
A) 47°25'N - 98°06'W.
B) 47°25'N - 99°54'W.
C) 47°55'N - 98°06'W.

3568.
(Refer to figure 26.) Determine the magnetic course from Tomlinson Airport (area 1) to Jamestown Airport (area 4).
A) 153°
B) 154°
C) 159°

3570.
(Refer to figure 26, area 4 and 2; and figure 28.) The VOR is tuned to Jamestown VOR, and the aircraft is positioned over Cooperstown Airport. Which VOR indication is correct?
A) 2.
B) 5.
C) 8.

3577.
(Refer to figure 28, illustration 1.) The VOR receiver has the indications shown. What is the aircraft's position relative to the station?
A) North
B) East.
C) South.

3578.
(Refer to figure 28, illustration 7.) The VOR receiver has the indications shown. What is the aircraft's position relative to the station?
A) East.
B) Southeast.
C) West.

3579.
(Refer to figure 28, illustration 5.) The VOR receiver has the indications shown. What radial is the aircraft crossing?
A) 030°.
B) 210°.
C) 300°.

3601.
(Refer to figure 20 Area 4.) What hazards to aircraft may exist in warning areas such as Warning W-50B?
A) Unusual, often visible, hazards such as aerial gunnery or guided missiles over international waters.
B) High volume of pilot training or unusual type of aerial activity.
C) Heavy military aircraft traffic in the approach and departure area of the North Atlantic Control Area.

3602.
(Refer to figure 26, area 2.) What hazards to aircraft may exist in areas such as Devils Lake East MOA?
A) Unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles.
B) Military training activities that necessitate acrobatic or abrupt flight maneuvers.
C) High volume of pilot training or an unusual type of aerial activity.

3603.
(Refer to figure 21, area 3.) What type military flight operations should a pilot expect along IR 644?
A) IFR training flights above 1,500 feet AGL at speeds in excess of 250 knots.
B) VFR training flights above 1,500 feet AGL at speeds less than 250 knots.
C) Instrument training flights below 1,500 feet AGL at speeds in excess of 150 knots.

3618.
(Refer to figure 26, area 3.) When flying over Arrowwood National Wildlife Refuge, a pilot should fly no lower than
A) 2,000 feet AGL.
B) 2,500 feet AGL.
C) 3,000 feet AGL.

3631.
(Refer to figure 20, area 5.) The CAUTION box denotes what hazard to aircraft?
A) Unmarked blimp hangers at 308 feet MSL.
B) Unmarked balloon on cable to 3,008 feet AGL.
C) Unmarked balloon on cable to 3,008 feet MSL.

3632.
(Refer to figure 20, area 2.) The flag symbol at Lake Drummond represents a
A) compulsory reporting point for Norfolk Class C airspace.
B) compulsory reporting point for Hampton Roads Airport.
C) visual checkpoint used to identify position for initial call-up to Norfolk Approach Control.

3633.
(Refer to figure 20, area 2.) The elevation of the Chesapeake Regional Airport is
A) 19 feet.
B) 55 feet.
C) 230 feet.

3634.
(Refer to figure 21.) The terrain elevation of the light tan area between Minot (area 1) and Audubon Lake (area 2) varies from;
A) sea level to 2,000 feet MSL.
B) 2,000 feet to 2,500 feet MSL.
C) 2,000 feet to 2,700 feet MSL.

3635.
(Refer to figure 21.) Which public use airports depicted are indicated as having fuel?
A) Minot Intl. (area 1)
B) Minot Intl. (area 1) and Garrison (area 2).
C) Mercer County Regional Airport (area 3) and Garrison (area 2).

3636.
(Refer to figure 23.) The flag symbols at Statesboro Bullock County Airport, Claxton-Evans County Airport, and Ridgeland Airport are
A) outer boundaries of Savannah Class C airspace.
B) airports with special traffic patterns.
C) visual checkpoints to identify position for initial call-up prior to entering Savannah Class C airspace.

3637. FAA
(Refer to figure 23 lower right) What is the height of the lighted obstacle approximately 6 nautical miles southwest of Savannah International?
A) 1,500 feet MSL.
B) 1,531 feet AGL.
C) 1,548 feet MSL.

3638. FAA
(Refer to figure 23, area 3.)
The top of the group obstruction approximately 11 nautical miles from the Savannah VORTAC on the 009° radial is;
A) 400 feel AGL.
B) 454 feel AGL.
C) 432 feet AGL.

3639.
(Refer to figure 24, area 1.) What minimum altitude is necessary to vertically clear the obstacle on the northeast side of Airpark East Airport by 500 feet?
A) 1,010 feet MSL.
B) 1,273 feet MSL.
C) 1,283 feet MSL.

3640.
(Refer to figure 24, area 2.) What minimum altitude is necessary to vertically clear the obstacle on the southeast side of Winnsboro Airport by 500 feet?
A) 823 feet MSL.
B) 1,013 feel MSL.
C) 1,403 feet MSL.

3641.
(Refer to figure 25, area 2.) The control tower frequency for Addison Airport is
A) 122.95 MHz.
B) 126.0 MHz.
C) 133.4 MHz.

3642.
(Refer to figure 25, area 8.) What minimum altitude is required to fly over the Cedar Hill TV towers in the congested area south of Dallas Executive (RBD)?
A) 2,655 feet MSL.
B) 3,549 feet MSL.
C) 3,449 feet MSL.

3643.
(Refer to figure 25, area 5.) The navigation facility at Dallas-Ft. Worth International (DFW) is a
A) VOR.
B) VORTAC.
C) VOR/DME.

3783.
Under what condition, if any, may pilots fly through a restricted area?
A) When flying on airways with an ATC clearance.
B) With the controlling agency's authorization.
C) Regulations do not allow this.

3785.
What action should a pilot take when operating under VFR in a Military Operations Area (MOA)?
A) Obtain a clearance from the controlling agency prior to entering the MOA.
B) Operate only on the airways that transverse the MOA.
C) Exercise extreme caution when military activity is being conducted.

3786.
Responsibility for collision avoidance in an alert area rests with;
A) the controlling agency.
B) all pilots.
C) Air Traffic Control.

3831.
Pilots flying over a national wildlife refuge are requested to fly no lower than
A) 1,000 feet AGL.
B) 2,000 feet AGL.
C) 3,000 feet AGL.

3978.
How many satellites make up the Global Positioning System (GPS)?
A) 22.
B) 24.
C) 25.

3979.
What is the minimum number of Global Positioning System (GPS) satellites that are observable by a user anywhere on earth?
A) 4.
B) 5.
C) 6.

3980.
How many Global Positioning System (GPS) satellites are required to yield a three dimensional position (latitude, longitude, and altitude) and time solution?
A) 4.
B) 5.
C) 6.

3598-3.
If receiver autonomous integrity monitoring (RAIM) capability is lost in flight;
A) the pilot may still rely on the GPS displayed altitude for vertical information.
B) the pilot has no assurance of the accuracy of the GPS position.
C) GPS position is reliable provided as least 3 GPS satellites are available.

3529-1

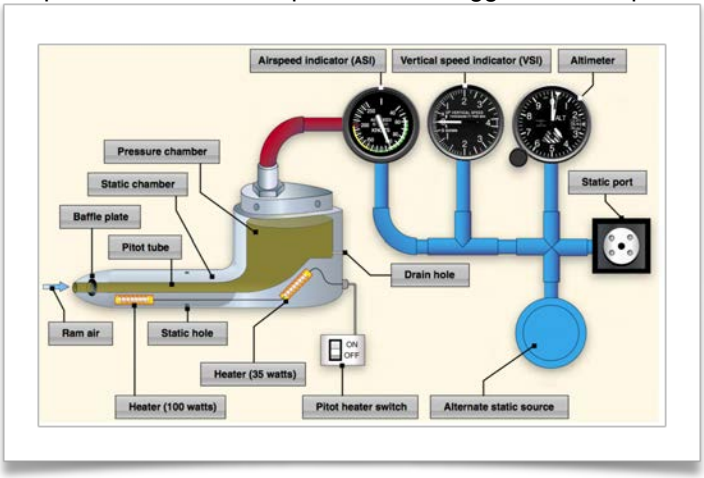
AS*
If a true heading of 135° results in a ground track of 130° and a true airspeed of 135 knots results in a groundspeed of 140 knots, the wind would be from
A) 019° and 12 knots.
B) 200° and 13 knots.
C) 246° and 13 knots.

(*Hint: Newer FAA Questions like this, try working the answers to find the right answer for easiest solutions)

Instruments

Pitot Static System

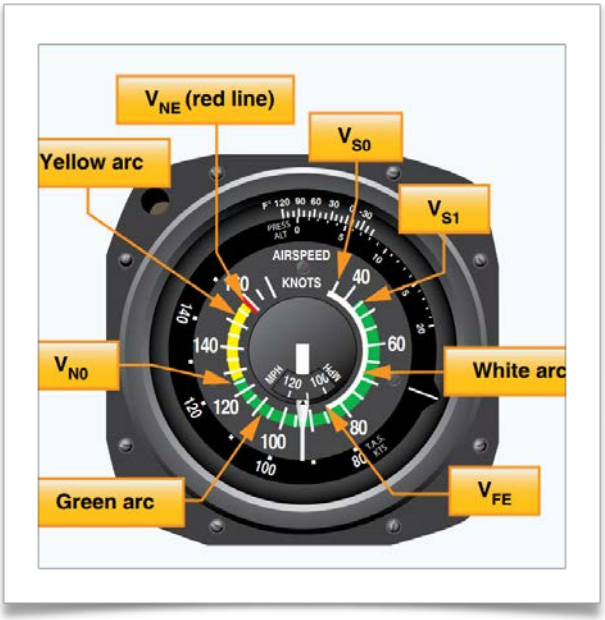
The pitot tube provides impact pressure for only the airspeed indicator. If the pitot tube is clogged, the airspeed



indicator will be inoperative.

The static vents provide information to the altimeter, vertical speed indicator and airspeed indicator. If the static vents become clogged, the airspeed indicator, altimeter and vertical speed indicator will be inoperative.

Airspeed Indicator

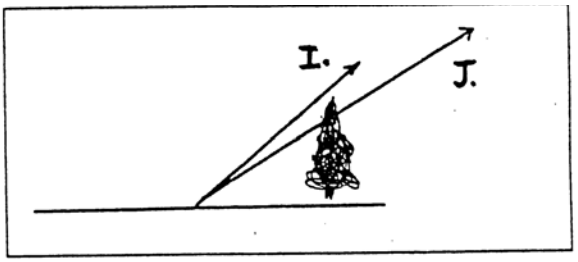


A. Never exceed speed is the maximum speed the airplane can be operated in smooth air (red radial line).
B. Caution range (yellow arc).
C. Maximum structural cruising speed (higher airspeed limit of green arc) - Vno.

Airspeed Indicator (Continued)

D. Normal operating range (green arc).
E. Maximum flap extended speed (higher airspeed limit of white arc) - Vfe.
F. Flap operating range (white arc).
G. Power off stalling speed, flaps and landing gear retracted (lower limit of green arc).
H. Power off stalling speed, flaps and landing gear in landing position (lower airspeed limit of white arc) - Vso.

Airspeeds not marked on the airspeed indicator:



I. Best angle of climb speed gives the greatest gain in altitude over the shortest horizontal distance - Vx.
J. Best rate of climb speed gives the greatest gain in altitude in the least time - Vy.
K. Maneuvering speed is the best speed for severe turbulence - Va.
L. Maximum landing gear extended speed - Vle.

Altimeter

Absolute altitude is the altitude above the surface. True altitude is the actual height above sea level. Indicated altitude is the same as true altitude when at sea level under standard conditions. True altitude is lower than indicated altitude in colder than standard air temperature

Altimeter (Continued)

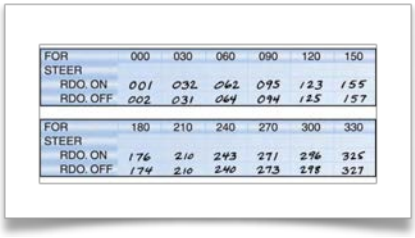
If the altimeter is set to the current altimeter setting, it will indicate true altitude at airport elevation. If you do not have the altimeter setting available before takeoff, set the altimeter to airport elevation.

HIGH TO LOW, or HOT TO COLD, LOOK OUT BELOW. Pressure levels are raised on warm days and the indicated altitude is lower than true altitude. If you change the altimeter setting from 29.15 UP to 29.85 (.70 increase), the altimeter will go UP, and show a 700 foot increase, It increases 1000 feet per inch.

Magnetic Compass

Magnetic compass indications are accurate only in straight-and-level unaccelerated flight.

Magnetic variation is the angle between true north and magnetic north, and is found on Sectional charts. It is shown by a magenta dashed line.



FOR STEER	000	030	060	090	120	150
RDO. ON	001	032	062	095	123	155
RDO. OFF	002	031	064	094	125	157
FOR STEER	180	210	240	270	300	330
RDO. ON	176	210	243	271	296	325
RDO. OFF	174	210	240	273	298	327

Compass deviation is the angle between magnetic north and compass north (where the compass points). It is caused by magnetic fields within the airplane distorting the lines of magnetic force.

Errors in the compass include:

Turning error - Turning on a south heading in either direction, the compass will lead your turn. Turning on a north heading in either direction, the compass will lag your turn.

Acceleration error - On an east / west heading, if you accelerate, the compass turns north; if you decelerate, the compass turns south. (ANDS)
The compass indications are accurate only in straight and level flight.

Attitude Indicator

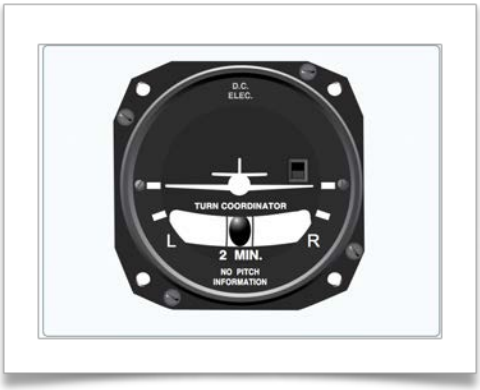
The proper adjustment is to align the miniature airplane (C) to the horizon bar (B). Direction/amount of bank are indicated by angle between miniature airplane and horizon bar.

Heading Indicator

To be accurate, the heading indicator must be periodically aligned with the magnetic compass as the gyro precesses.

Turn Coordinator

The turn coordinator shows movement of the aircraft about the yaw and roll axes.



TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3006.
Which V-speed represents maneuvering speed?
A) VA.
B) VLO.
C) VNE.

3007.
Which V-speed represents maximum flap extended speed?

A) Vfe
B) Vlof
C) Vfc

3008.
Which V-speed represents maximum landing gear extended speed?

A) Vle
B) Vlo
C) Vfe

3009.
Vno is defined as the
A) normal operating range.
B) never-exceed speed.
C) maximum structural cruising speed.

3010.
Vso is defined as the
A) stalling speed or minimum steady flight speed in the landing configuration.
B) stalling speed or minimum steady flight speed in a specified configuration.
C) stalling speed or minimum takeoff safety speed.

3011.
Which would provide the greatest gain in altitude in the shortest distance during climb after takeoff?
A) VY.
B) VA.
C) VX.

3012.
After takeoff, which airspeed would the pilot use to gain the most altitude in a given period of time?
A) VY.
B) VX.
C) VA.

3247.
If the pitot tube and outside static vents become clogged, which instruments would be affected?
A) The altimeter, airspeed indicator, and turn-and-slip indicator.
B) The altimeter, airspeed indicator, and vertical speed indicator.
C) The altimeter, attitude indicator, and turn-and-slip indicator.

3248.
Which instrument will become inoperative if the pitot tube becomes clogged?
A) Altimeter.
B) Vertical speed.
C) Airspeed.

3249.
Which instrument(s) will become inoperative if the static vents become clogged?
A) Airspeed only.
B) Altimeter only.
C) Airspeed, altimeter, and vertical speed.

3250.
(Refer to figure 3) Altimeter 1 indicates
A) 500 feet.
B) 1,500 feet.
C) 10,500 feet.

3251.
(Refer to figure 3) Altimeter 2 indicates
A)1,500 feet.
B) 4,500 feet.
C) 14,500 feet.

3252.
(Refer to figure 3) Altimeter 3 indicates
A) 9,500 feet.
B) 10,950 feet.
C) 15,940 feet.

3253.
(Refer to figure 3) Which altimeter(s) indicate(s) more than 10,000 feet?
A) 1, 2, and 3.
B) 1 and 2 only.
C) 1 only.

3254.
Altimeter setting is the value to which the barometric pressure scale of the altimeter is set so the altimeter indicates
A) calibrated altitude at field elevation.
B) absolute altitude at field elevation.
C) true altitude at field elevation.

3255.
How do variations in temperature affect the altimeter?
A) Pressure levels are raised on warm days and the indicated altitude is lower than true altitude.
B) Higher temperatures expand the pressure levels and the indicated altitude is higher than true altitude.
C) Lower temperatures lower the pressure levels and the indicated altitude is lower than true altitude.

3256.
What is true altitude?
A) The vertical distance of the aircraft above sea level.
B) The vertical distance of the aircraft above the surface.
C) The height above the standard datum plane.

3257.
What is absolute altitude?
A) The altitude read directly from the altimeter.
B) The vertical distance of the aircraft above the surface.
C) The height above the standard datum plane.

3261.
If it is necessary to set the altimeter from 29.15 to 29.85, what change occurs?
A) 70-foot increase in indicated altitude.
B) 70-foot increase in density altitude.
C) 700-foot increase in indicated altitude.

3262.
The pitot system provides impact pressure for which instrument?
A) Altimeter.
B) Vertical-speed indicator.
C) Airspeed indicator.

3263.
As altitude increases, the indicated airspeed at which a given airplane stalls in a particular configuration will
A) decrease as the true airspeed decreases.
B) decrease as the true airspeed increases.
C) remain the same regardless of altitude.

3264.
What does the red line on an airspeed indicator represent?
A) Maneuvering speed.
B) Turbulent or rough-air speed.
C) Never-exceed speed.

3265.
(Refer to figure 4) What is the full flap operating range for the airplane?
A) 60 to 100 MPH.
B) 60 to 208 MPH.
C) 65 to 165 MPH.

3266.
(Refer to figure 4) What is the caution range of the airplane?
A) 0 to 60 MPH.
B) 100 to 165 MPH.
C) 165 to 208 MPH.

3267.
(Refer to figure 4) The maximum speed at which the airplane can be operated in smooth air is
A) 100 MPH.
B) 165 MPH.
C) 208 MPH.

3268.
(Refer to figure 4) Which color identifies the never-exceed speed?
A) Lower limit of the yellow arc.
B) Upper limit of the white arc.
C) The red radial line.

3269.
(Refer to figure 4) Which color identifies the power-off stalling speed in a specified configuration?
A) Upper limit of the green arc.
B) Upper limit of the white arc.
C) Lower limit of the green arc.

3270.
(Refer to figure 4) What is the maximum flaps-extended speed?
A) 65 MPH.
B) 100 MPH.
C) 165 MPH.

3271.
(Refer to figure 4) Which color identifies the normal flap operating range?
A) The lower limit of the white arc to the upper limit of the green arc.
B) The green arc.
C) The white arc.

3272.
(Refer to figure 4) Which color identifies the power-off stalling speed with wing flaps and landing gear in the landing configuration?
A) Upper limit of the green arc.
B) Upper limit of the white arc.
C) Lower limit of the white arc.

3273.
(Refer to figure 4) What is the maximum structural cruising speed?
A) 100 MPH.
B) 165 MPH.
C) 208 MPH.

3274.
What is an important airspeed limitation that is not color coded on airspeed indicators?
A) Never-exceed speed.
B) Maximum structural cruising speed.
C) Maneuvering speed.

3275.
(Refer to figure 5) A turn coordinator provides an indication of the
A) movement of the aircraft about the yaw and roll axis.
B) angle of bank up to but not exceeding 30°.
C) attitude of the aircraft with reference to the longitudinal axis.

3276.
(Refer to figure 6) To receive accurate indications during flight from a heading indicator, the instrument must be
A) set prior to flight on a known heading.
B) calibrated on a compass rose at regular intervals.
C) periodically realigned with the magnetic compass as the gyro precesses.

3277.
(Refer to figure 7) The proper adjustment to make on the attitude indicator during level flight is to align the
A) horizon bar to the level-flight indication.
B) horizon bar to the miniature airplane.
C) miniature airplane to the horizon bar.

3278
(Refer to figure 7) How should a pilot determine the direction of bank from an attitude indicator such as the one illustrated?
A) By the direction of deflection of the banking scale (A).
B) By the direction of deflection of the horizon bar (B).
C) By the relationship of the miniature airplane (C) to the deflected horizon bar (B).

3279.
Deviation in a magnetic compass is caused by the
A) presence of flaws in the permanent magnets of the compass.
B) difference in the location between true north and magnetic north.
C) magnetic fields within the aircraft distorting the lines of magnetic force.

3280.
In the Northern Hemisphere, a magnetic compass will normally indicate initially a turn toward the west if
A) a left turn is entered from a north heading.
B) a right turn is entered from a north heading.
C) an aircraft is accelerated while on a north heading.

3281
In the Northern Hemisphere, a magnetic compass will normally indicate initially a turn toward the east if
A) an aircraft is decelerated while on a south heading.
B) an aircraft is accelerated while on a north heading.
C) a left turn is entered from a north heading.

3282
In the Northern Hemisphere, a magnetic compass will normally indicate a turn toward the north if
A) a right turn is entered from an east heading.
B) a left turn is entered from a west heading.
C) an aircraft is accelerated while on an east or west heading.

3283.
In the Northern Hemisphere, the magnetic compass will normally indicate a turn toward the south when
A) a left turn is entered from an east heading.
B) a right turn is entered from a west heading.
C) the aircraft is decelerated while on a west heading.

3284
In the Northern Hemisphere, if an aircraft is accelerated or decelerated, the magnetic compass will normally indicate
A) a turn momentarily.
B) correctly when on a north or south heading.
C) a turn toward the south.

3286.
During flight, when are the indications of a magnetic compass accurate?
A) Only in straight-and-level unaccelerated flight.
B) As long as the airspeed is constant.
C) During turns if the bank does not exceed 18°.

3287
An airplane has been loaded in such a manner that the CG is located aft of the aft CG limit. One undesirable flight characteristic a pilot might experience with this airplane would be
A) a longer takeoff run.
B) difficulty in recovering from a stalled condition.
C) stalling at higher-than-normal airspeed.

3390.
If a flight is made from an area of low pressure into an area of high pressure without the altimeter setting being adjusted, the altimeter will indicate
A) the actual altitude above sea level.
B) higher than the actual altitude above sea level.
C) lower than the actual altitude above sea level.

3391.
If a flight is made from an area of high pressure into an area of lower pressure without the altimeter setting being adjusted, the altimeter will indicate
A) lower than the actual altitude above sea level.
B) higher than the actual altitude above sea level.
C) the actual altitude above sea level.

3392.
Under what condition will true altitude be lower than indicated altitude?
A) In colder than standard air temperature.
B) In warmer than standard air temperature.
C) When density altitude is higher than indicated altitude.

3393.
Which condition would cause the altimeter to indicate a lower altitude than true altitude?
A) Air temperature lower than standard.
B) Atmospheric pressure lower than standard.
C) Air temperature warmer than standard.

AERONAUTICAL INFORMATION MANUAL

AIRPORT LIGHTING AND MARKING AIDS
Airport Beacons

Operation of the airport rotating beacon during the daytime indicates the weather in Class D airspace is below basic VFR minimums.

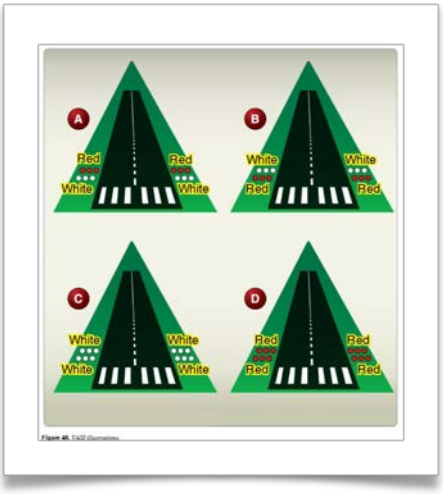
A military airport is identified at night by dual peaked (2 quick) white flashes between green flashes.

To set high intensity runway lights on medium intensity, a pilot should click the microphone seven times (to turn them on at high intensity), then click it FIVE times within 5 seconds (to reduce to medium)

Airport taxiways are identified at night by blue omnidirectional lights.

VFR approaches to land at night should be made the same as during daytime.

VASI (Visual Approach Slope Indicator)



Useful saying:
Red over white, you're all right. Red over red, you're dead!

Runway Markings

Runway numbers are determined from the approach direction, and are aligned in relation to magnetic north. A runway marked 8 is aligned 080 degrees magnetic direction.

Refer to Figure 48.
A. Displaced threshold - you may taxi and take-off but not land.
B. The approach end of runway 12.
C. Closed runway or taxiway (X displayed).
D. Approach end of runway 30.
E. Non-usable portion of the runway. May only be used as an emergency overrun.

Refer to Figure 64.
A. Surface painted runway marking.
B. Stop Bar ILS Hold
C. Vehicle Lanes
D. Hold Markings for LAHSO
E. Taxiway Hold markings
F. Taxiway Edge markings

Refer to Figure 65
A. Runway 4-22
B. Runway 4 Approach Area
C. ILS Area
D. No Entry for aircraft
E. Taxiway Bravo
F. Runway 22
G. Runway Safety Area / Obstacle Free Zone
H. ILS Critical Hold
I. Inbound Destination Sign to terminal
J. Outbound Destination Sign to runway
K. Destination Sign to Taxiway Bravo
L. Runway Distance remaining
M. Hotspot
N. Taxiway Ending Marker

Segmented Circle
The windsock at the airport should be used for wind direction, not some distant off airport smoke stack or lake. When departing from an uncontrolled airport, comply with the FAA traffic pattern established for the airport.

Figure 50 - The segmented circle shows right-hand and left-hand traffic during takeoff and landing. Runways 9 and 35 have left-traffic, and runways 17 and 27 have right-traffic.

These have been arranged to avoid flight over an area to the southeast of the airport. With the wind as indicated, you should, when landing on runway 27, expect a right-quartering headwind.

When approaching a runway served by a VASI, stay at or above the glideslope.

ATC AND OTHER FACILITIES

Terminal Radar Program (TRSA)

Basic radar service is traffic advisories and limited vectoring for VFR aircraft.

Stage III service provides sequencing and separation for participating VFR aircraft.

When arriving VFR and desiring radar advisory service, contact approach control on the appropriate frequency. When departing VFR, request radar advisory service from ground control, on initial contact.

Radar Traffic Information Service

'Traffic at 9 o'clock, 2 miles, southbound' means traffic is off your left wingtip, 2 miles away. If you are headed north, the traffic would be to your west.

** Each o'clock position = 30 degrees.*

Common Traffic Advisory Frequency (CTAF)

CTAF is the common frequency to be used when arriving at an airport that does not have an operating control tower.

CTAF for each airport is listed on the sectional chart, and also in the Chart Supplements.

Transponder Operation

An operable transponder with altitude encoding (Mode C) is required within 30NM of the Class B primary airport, in Class C airspace, and at & above 10,000 MSL.

Code 1200 is the code for VFR aircraft and should be squawked whenever flying VFR.

7700 is Distress or Urgency Code.*
7600 is Loss of Communications.*
7500 is Hijack code.*

**Avoid rolling through these codes when changing.*

Arrival

When initially contacting a facility, state the facility name and intentions. The proper way to say 10,500 feet is "ONE ZERO THOUSAND FIVE HUNDRED" or 4,500 feet "FOUR THOUSAND FIVE HUNDRED."

If the radio fails when landing at a controlled airport, observe the traffic flow, enter the pattern, and look for a light signal from tower

After landing at a controlled airport, contact ground control when advised to do so by the tower.

Chart Supplement
(Formerly known as Airport / Facility Directory)

Can show where there are "Hot Spots" on an airport.

Refer to Figure 52.
Lincoln Municipal is 4 miles northwest of the city.

Runway 18 and 35 have right traffic.

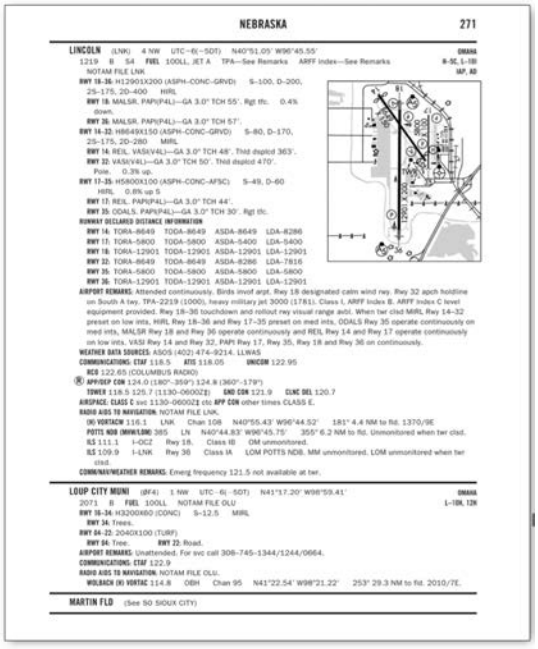
Common Traffic Advisory Frequency (CTAF) is on 118.5 MHz.

When approaching Lincoln from the west, the initial contact with approach control should be on 124.0 MHz.

Know traffic pattern information. Left is standard. Right traffic has "Rgt Tfc" in the info.

Information about parachute jumping and glider operations is also noted in a Chart Supplement.

Chart Supplement Example *(Figure 52)*



NEBRASKA 271

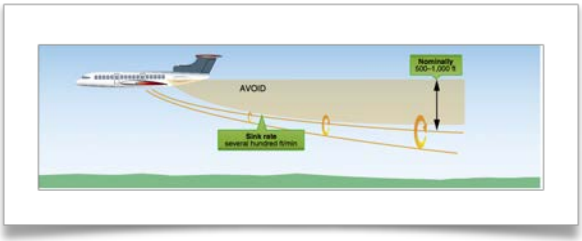
LINCOLN (LNK) 4 NW UTC-6(-5DT) N40°51.05' W96°45.55' OMAHA
1219 B 54 FUEL 100LL, JET A TPA—See Remarks ARFF Index—See Remarks H-5C, L-1B
NOTAM FILE LNK IAP, AD
RWY 18-36: H12901X200 (ASPH-CONC-GRVD) S-100, D-200, 2S-175, 2D-400 MIRL
RWY 18: MALSR. PAPI(P4L)—GA 3.0° TCH 55'. Rgt tfc. 0.4% down.
RWY 36: MALSR. PAPI(P4L)—GA 3.0° TCH 57'.
RWY 14-32: H8649X150 (ASPH-CONC-GRVD) S-80, D-170, 2S-175, 2D-280 MIRL
RWY 14: REIL. VASI(V4L)—GA 3.0° TCH 48'. Thld displcd 363'.
RWY 32: VASI(V4L)—GA 3.0° TCH 50'. Thld displcd 470'. Pole. 0.3% up.
RWY 17-35: H5800X100 (ASPH-CONC-AFSC) S-49, D-60 HIRL 0.8% up S
RWY 17: REIL. PAPI(P4L)—GA 3.0° TCH 44'.
RWY 35: ODALS. PAPI(P4L)—GA 3.0° TCH 30'. Rgt tfc.
RUNWAY DECLARED DISTANCE INFORMATION
RWY 14: TORA-8649 TODA-8649 ASDA-8649 LDA-8286
RWY 17: TORA-5800 TODA-5800 ASDA-5400 LDA-5400
RWY 18: TORA-12901 TODA-12901 ASDA-12901 LDA-12901
RWY 32: TORA-8649 TODA-8649 ASDA-8286 LDA-7816
RWY 35: TORA-5800 TODA-5800 ASDA-5800 LDA-5800
RWY 36: TORA-12901 TODA-12901 ASDA-12901 LDA-12901
AIRPORT REMARKS: Attended continuously. Birds invof arpt. Rwy 18 designated calm wind rwy. Rwy 32 apch holdline on South A twy. TPA-2219 (1000), heavy military jet 3000 (178L). Class I, ARFF Index B. ARFF Index C level equipment provided. Rwy 18–36 touchdown and rollout rwy visual range avbl. When twr clsd MIRL Rwy 14–32 preset on low ints, HIRL Rwy 18–36 and Rwy 17–35 preset on med ints, ODALS Rwy 35 operate continuously on med ints, MALSR Rwy 18 and Rwy 36 operate continuously and REIL Rwy 14 and Rwy 17 operate continuously on low ints. VASI Rwy 14 and Rwy 32, PAPI Rwy 17, Rwy 35, Rwy 18 and Rwy 36 on continuously.
WEATHER DATA SOURCES: ASOS (402) 474-9214. LLWAS
COMMUNICATIONS: CTAF 118.5 ATIS 118.05 UNICOM 122.95
RCO 122.65 (COLUMBUS RADIO)
® APP/DEP CON 124.0 (180°-359°) 124.8 (360°-179°)
TOWER 118.5 125.7 (1130-0600Z‡) GND CON 121.9 CLNC DEL 120.7
AIRSPACE: CLASS C svc 1130-0600Z‡ ctc APP CON other times CLASS E.
RADIO AIDS TO NAVIGATION: NOTAM FILE LNK.
(H) VORTACW 116.1 LNK Chan 108 N40°55.43' W96°44.52' 181° 4.4 NM to fld. 1370/9E
POTTS NDB (MHW/LOM) 385 LN N40°44.83' W96°45.75' 355° 6.2 NM to fld. Unmonitored when twr clsd.
ILS 111.1 I-OCZ Rwy 18. Class IB OM unmonitored.
ILS 109.9 I-LNK Rwy 36 Class IA LOM POTTS NDB. MM unmonitored. LOM unmonitored when twr clsd.
COMM/NAVAID/WEATHER REMARKS: Emerg frequency 121.5 not available at twr.

LOUP CITY MUNI (BF4) 1 NW UTC-6(-5DT) N41°17.20' W98°59.41' OMAHA
2071 B FUEL 100LL NOTAM FILE OLU L-10H, 12K
RWY 10-28: H3200X60 (CONC) S-12.5 MIRL
RWY 34: Trees.
RWY 04-22: 2040X100 (TURF)
RWY 04: Tree. RWY 22: Road.
AIRPORT REMARKS: Unattended. For svc call 308-745-1344/1244/0664.
COMMUNICATIONS: CTAF 122.9
RADIO AIDS TO NAVIGATION: NOTAM FILE OLU.
WOLBACH (H) VORTAC 114.8 OBH Chan 95 N41°22.54' W98°21.22' 253° 29.3 NM to fld. 2010/7E.

MARTIN FLD (See SO. SIOUX CITY)

Wake Turbulence

Wake turbulence is created only when the airplane's wings are developing lift.



The greatest vortex strength occurs when the generating aircraft is heavy, 'clean', and slow.

Wake turbulence tends to sink below the flight path of the generating aircraft, and into the flight path of aircraft operating below the aircraft generating the turbulence. Remain above and upwind of the heavy aircraft.

The wind condition that requires the most caution when avoiding wake turbulence on landing is a light quartering tailwind.

Flight Plan (ICAO Form)

Pilots must use the ICAO flight plan form when the flight will enter international airspace controlled by FAA facilities.

Refer to Figure 51
Block 15 - Level: Enter initial cruising altitude.
Block 16 - Aerodrome: Enter destination airport if no stopover is planned for more than 1 hour.
TEE - Time Estimated Enroute: Is total usable fuel on board in hours and minutes.

MEDICAL FACTS FOR PILOTS

Carbon Monoxide (CO)

Large accumulations of CO result in loss of muscular power.

Susceptibility to CO poisoning increases as altitude increases.

Hypoxia

Hypoxia is a state of oxygen deficiency that keeps the brain from functioning properly.

Hypoxia susceptibility due to the inhalation of carbon monoxide increases as altitude increases.

Hyperventilation

Hyperventilation is a lack of carbon dioxide as a result of rapid or extra breathing, and emotional tension, anxiety, or fear.

Remedy hyperventilation by slowing your breathing rate to reduce the output of carbon dioxide build-up in the body.

Spatial Disorientation

Spatial disorientation is a temporary confusion resulting from misleading information being sent to the brain by various sensory organs.

The best way to overcome the effects of spatial disorientation is always rely on the aircraft instrument indications NOT body signals.

Vision
Most midairs happen on clear sunny days.
Haze causes traffic to appear to be farther away than actual distance.

If no relative motion to your aircraft or other aircraft, you are on a collision course!

Scan for other aircraft in the daytime by using a series of short, regularly spaced eye movements to search each 10-degree sector. At night, use peripheral vision by scanning slowly to permit off-center viewing.

Pilots are responsible to report Near Midair Collisions (NMAC) of less than 500 feet to the nearest FAA ATC or FSS facility.

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3120.
While operating in class D airspace, each pilot of an aircraft approaching to land on a runway served by a visual approach slope indicator (VASI) shall
A) maintain a 3° glide until approximately 1/2 mile to the runway before going below the VASI.
B) maintain an altitude at or above the glide slope until a lower altitude is necessary for a safe landing.
C) stay high until the runway can be reached in a power-off landing.

3121.
When approaching to land on a runway served by a visual approach slope indicator (VASI), the pilot shall
A) maintain an altitude that captures the glide slope at least 2 miles downwind from the runway threshold.
B) maintain, an altitude at or above the glide slope.
C) remain on the glide slope and land between the two-light bar

3123.
Which is the correct traffic pattern departure procedure to use at a non-controlled airport?
A) Depart in any direction consistent with safety, after crossing the airport boundary.
B) Make all turns to the left.
C) Comply with any FAA traffic pattern established for the airport.

3604. AS
(Refer to figure 21, area 2.) What is the recommended communications procedure for a landing at Garrison Airport (D05)?
A) Transmit intentions on 122.9 MHz when 10 miles out and give position reports in the traffic pattern.
B) Contact Elizabeth City FSS for airport advisory service.
C) Contact New Bern FSS for area traffic information.

3605. AS
(Refer to figure 22, area 2.) The CTAF/MULTICOM frequency for Coeur D'Alene - Boyington Airport is;
A) 122.8 MHz.
B) 122.9 MHz.
C) 123.0 MHz.

3606.
(Refer to figure 22, area 2; and figure 31.) At Coeur D'Alene , which frequency should be used as a Common Traffic Advisory Frequency (CTAF) to self-announce position and intentions?
A) 122.05 MHz.
B) 122.1/108.8 MHz.
C) 122.8 MHz.

3607.
(Refer to figure 22, area 2; and figure 31.) At Coeur D'Alene, which frequency should be used as a Common Traffic Advisory Frequency (CTAF) to monitor airport traffic?
A) 122.05 MHz.
B) 135.075 MHz.
C) 122.8 MHz.

3608.
(Refer to figure 22, area 2; and figure 31.) What is the correct UNICOM frequency to be used at Coeur D'Alene to request fuel?
A) 135.075 MHz.
B) 122.1/108.8 MHz.
C) 122.8 MHz.

3609.
(Refer to figure 25, area 3.) If Dallas Executive Tower (RBD) is not in operation, which frequency should be used as a Common Traffic Advisory Frequency (CTAF) to monitor airport traffic?
A) 127.25 MHz.
B) 122.95 MHz.
C) 126.35 MHz.

3610.
(Refer to figure 26, area 2.) What is the recommended communication procedure when inbound to land at Cooperstown Airport?
A) Broadcast intentions when 10 miles out on the CTAF/MULTICOM frequency on 122.9 MHz.
B) Contact UNICOM when 10 miles out on 122.8 MHz.
C) Circle the airport in a left turn prior to entering traffic.

3611.
(Refer to figure 26, area 4.) The CTAF/UNICOM frequency at Jamestown Airport is
A) 122.0 MHz.
B) 123.0 MHz.
C) 123.6 MHz.

3612.
(Refer to figure 26, east of area 5.) What is the CTAF/UNICOM frequency at Barnes County Airport?
A) 122.0 MHz.
B) 122.8 MHz.
C) 123.6 MHz.

3614.
The correct method of stating 4,500 feet MSL to ATC is
A) 'FOUR THOUSAND FIVE HUNDRED.'
B) 'FOUR POINT FIVE.'
C) 'FORTY-FIVE HUNDRED FEET MSL.'

3615.
The correct method of stating 10,500 feet MSL to ATC is
A) 'TEN THOUSAND, FIVE HUNDRED FEET.'
B) 'TEN POINT FIVE.'
C) 'ONE ZERO THOUSAND, FIVE HUNDRED.'

3619.
(Refer to figure 71, area 4 and legend 1.) For information about the parachute jumping operations at Lincoln-Harder (LHM), refer to
A) notes on the border of the chart.
B) the Chart Summary.
C) the Notices to Airmen (NOTAM) publication.

3710.
Prior to starting each maneuver, pilots should
A) check altitude, airspeed, and heading indications.
B) visually scan the entire area for collision avoidance.
C) announce their intentions on the nearest CTAF.

3710-1 AVSEM
When must a pilot report a near mid-air collision and to whom?
A) 500 feet or less of separation to the nearest FAA ATC or FSS facility.
B) More than 1,000 feet to the nearest NTSB field office.
C) Only with close calls and when instructed to do so by ATC.

3711.
The most important rule to remember in the event of a power failure after becoming airborne is to
A) immediately establish the proper gliding attitude and airspeed.
B) quickly check the fuel supply for possible fuel exhaustion.
C) determine the wind direction to plan for the forced landing.

3712.
What is the most effective way to use the eyes during night flight?
A) Look only at far away, dim lights.
B) Scan slowly to permit off-center viewing.
C) Concentrate directly on each object for a few seconds.

3713.
The best method to use when looking for other traffic at night is to
A) look to the side of the object and scan slowly.
B) scan the visual field very rapidly.
C) look to the side of the object and scan rapidly.

3714.
The most effective method of scanning for other aircraft for collision avoidance during nighttime hours is to use
A) regularly spaced concentration on the 3-, 9-, and 12-o'clock positions.
B) a series of short, regularly spaced eye movements to search each 30-degree sector.
C) peripheral vision by scanning small sectors and utilizing off-center viewing.

3718.
Airport taxiway edge lights are identified at night by
A) white directional lights.
B) blue omnidirectional lights.
C) alternate red and green lights.

3719.
VFR approaches to land at night should be accomplished
A) at a higher airspeed.
B) with a steeper descent.
C) the same as during daytime.

3760.
A slightly high glide slope indication from a precision approach path indicator is
A) four white lights.
B) three white lights and one red light.
C) two white lights and two red lights.

3764.
A below glide slope indication from a pulsating approach slope indicator is a
A) pulsating white light.
B) steady white light.
C) pulsating red light.

3765.
(Refer to figure 47.) Illustration A indicates that the aircraft is
A) below the glide slope.
B) on the glide slope.
C) above the glide slope.

3766.
(Refer to figure 47.) VASI lights as shown by illustration C indicate that the airplane is
A) off course to the left.
B) above the glide slope.
C) below the glide slope.

3767.
(Refer to figure 47.) While on final approach to a runway equipped with a standard 2-bar VASI, the lights appear as shown by illustration D. This means that the aircraft is
A) above the glide slope.
B) below the glide slope.
C) on the glide slope.

3768.
To set the high intensity runway lights on medium intensity, the pilot should click the microphone seven times, and then click it
A) one time within four seconds.
B) three time within three seconds.
C) five times within five seconds.

3769.
An airport's rotating beacon operated during daylight hours indicates
A) there are obstructions on the airport.
B) that weather at the airport located in Class D airspace is below basic VFR weather minimums.
C) the Air Traffic Control tower is not in operation.

3770.
A lighted heliport may be identified by a
A) green, yellow, and white rotating beacon.
B) flashing yellow light.
C) blue lighted square landing area.

3771.
A military air station can be identified by a rotating beacon that emits
A) white and green alternating flashes.
B) two quick, white flashes between green flashes.
C) green, yellow, and white flashes.

3772.
How can a military airport be identified at night?
A) Alternate white and green light flashes.
B) Dual peaked (two quick) white flashes between green flashes.
C) White flashing lights with steady green at the same location.

3773.
(Refer to figure 48.) That portion of the runway identified by the letter A may be used for
A) landing.
B) taxiing and takeoff.
C) taxiing and landing.

3774.
(Refer to figure 48.) According to the airport diagram, which statement is true?
A) Runway 30 is equipped at position E with emergency arresting gear to provide a means of stopping military aircraft.
B) Takeoffs may be started at position A on Runway 12, and the landing portion of this runway begins at position B.
C) The takeoff and landing portion of Runway 12 begins at position B.

3776.
(Refer to figure 48.) Area C on the airport depicted is classified as a
A) stabilized area.
B) multiple heliport.
C) closed runway.

3777.
(Refer to figure 49.) The arrows that appear on the end of the north/south runway indicate that the area
A) may be used only for taxiing.
B) is usable for taxiing, takeoff, and landing.
C) cannot be used for landing, but may be used for taxiing and takeoff.

3778.
The numbers 9 and 27 on a runway indicate that the runway is oriented approximately
A) 009° and 027° true.
B) 090° and 270° true.
C) 090° and 270° magnetic.

3778-3
(Refer to Figure 64.) Which symbol indicates a taxiway/taxiway intersection hold position marking?
A) B
B) D
C) E

3778-4
(See Figure 64.) Which marking indicates a vehicle lane?
A) A
B) C
C) E

3792.
An ATC radar facility issues the following advisory to a pilot flying on a heading of 090°: 'TRAFFIC 3 O'CLOCK, 2 MILES, WESTBOUND...' Where should the pilot look for this traffic?
A) East.
B) South.
C) West.

3793.
An ATC radar facility issues the following advisory to a pilot flying on a heading of 360°: 'TRAFFIC 10 O'CLOCK, 2 MILES, SOUTHBOUND...' Where should the pilot look for this traffic?
A) Northwest.
B) Northeast.
C) Southwest.

3794.
An ATC radar facility issues the following advisory to a pilot during a local flight: 'TRAFFIC 2 O'CLOCK, 5 MILES, NORTHBOUND...' Where should the pilot look for this traffic?
A) Between directly ahead and 90° to the left.
B) Between directly behind and 90° to the right.
C) Between directly ahead and 90° to the right.

3795.
An ATC radar facility issues the following advisory to a pilot flying north in a calm wind: “TRAFFIC 9 O’CLOCK, 2 MILES, SOUTHBOUND...” Where should the pilot look for this traffic?
A) South.
B) North.
C) West.

3796.
Basic radar service in the terminal radar program is best described as
A) safety alerts, traffic advisories, and limited vectoring to VFR aircraft.
B) mandatory radar service provided by the Automated Radar Terminal System (ARTS) program.
C) wind-shear warning at participating airports.

3797.
From whom should a departing VFR aircraft request radar traffic information during ground operations?
A) Clearance delivery.
B) Tower, just before takeoff.
C) Ground control, on initial contact.

3798.
Stage III Service in the terminal radar program provides
A) IFR separation (1,000 feet vertical and 3 miles lateral) between all aircraft.
B) warning to pilots when their aircraft are in unsafe proximity to terrain, obstructions, or other aircraft.
C) sequencing and separation for participating VFR aircraft

3800.
When making routine transponder code changes, pilots should avoid inadvertent selection of which codes?
A) 0700, 1700, 7000.
B) 1200, 1500, 7000.
C) 7500, 7600, 7700.

3801.
When operating under VFR below 18,000 feet MSL, unless otherwise authorized, what transponder code should be selected?
A) 1200.
B) 7600.
C) 7700.

3803.
If Air Traffic Control advises that radar service is terminated when the pilot is departing Class C airspace, the transponder should be set to code
A) 0000.
B) 1200.
C) 4096.

3804.
If the aircraft's radio fails, what is the recommended procedure when landing at a controlled airport?
A) Observe the traffic flow, enter the pattern, and look for a light signal from the tower.
B) Enter a crosswind leg and rock the wings.
C) Flash the landing lights and cycle the landing gear while circling the airport.

3805.
(Refer to figure 49) Select the proper traffic pattern and runway for landing.
A) Left-hand traffic and Runway 18.
B) Right-hand traffic and Runway 18.
C) Left-hand traffic and Runway 22.

3806.
(Refer to figure 49) If the wind is as shown by the landing direction indicator, the pilot should land on
A) Runway 18 and expect a crosswind from the right.
B) Runway 22 directly into the wind.
C) Runway 36 and expect a crosswind from the right.

3806-1
(Refer to Figure 65.) Sign F confirms your position on
A) runway 22
B) routing towards runway 22
C) taxiway 22

3806-2
(Refer to Figure 65.) Sign E is a visual clue that
A) confirms the aircraft's location to be on taxiway
B) warns the pilot of approaching taxiway B.
C) holding area B is ahead.

3806-3
(Refer to Figure 65.) A left turn at the intersection depicting sign A would place the aircraft
A) ready for a Runway 4 intersection takeoff.
B) on the taxiway leading to Runway 4.
C) ready for a Runway 22 intersection takeoff.

3807.
(Refer to figure 50) The segmented circle indicates that the airport traffic is
A) left-hand for Runway 36 and right-hand for Runway 18.
B) left-hand for Runway 18 and right-hand for Runway 36.
C) right-hand for Runway 9 and left-hand for Runway 27.

3808.
(Refer to figure 50) The traffic patterns indicated in the segmented circle have been arranged to avoid flights over an area to the
A) south of the airport
B) north of the airport.
C) southeast of the airport.

3809.
(Refer to figure 50) The segmented circle indicates that a landing on Runway 26 will be with a
A) right-quartering headwind.
B) left-quartering headwind.
C) right-quartering tailwind.

3810.
(Refer to figure 50) Which runway and traffic pattern should be used as indicated by the wind cone in the segmented circle?
A) Right-hand traffic on Runway 9.
B) Right-hand traffic on Runway 18.
C) Left-hand traffic on Runway 36.

3810. AVSEM
(Refer to Figure 50) You are approaching an uncontrolled airport for a landing on runway 19. You see a small lake directly east of the airport and you observe ripples on the southeast portion of the lake. You should
A) proceed to a different airport.
B) continue with your landing on runway 19.
C) examine the windsock and select an appropriate runway.

3814.
What procedure is recommended when climbing or descending VFR on an airway?
A) Execute gentle banks, left and right for continuous visual scanning of the airspace.
B) Advise the nearest FSS of the altitude changes.
C) Fly away from the centerline of the airway before changing altitude.

3818.
How should a VFR flight plan be closed at the completion of the flight at a controlled airport?
A) The tower will automatically close the flight plan when the aircraft turns off the runway.
B) The pilot must close the flight plan with the nearest FSS or other FAA facility upon landing.
C) The tower will relay the instructions to the nearest FSS when the aircraft contacts the tower for landing.

3824.
Wingtip vortices are created only when an aircraft is
A) operating at high airspeeds.
B) heavily loaded.
C) developing lift.

3825.
The greatest vortex strength occurs when the generating aircraft is
A) light, dirty, and fast.
B) heavy, dirty, and fast.
C) heavy, clean, and slow.

3826.
Wingtip vortices created by large aircraft tend to
A) sink below the aircraft generating turbulence.
B) rise into the traffic pattern.
C) rise into the takeoff or landing path of a crossing runway.

3827.
When taking off or landing at an airport where heavy aircraft are operating, one should be particularly alert to the hazards of wingtip vortices because this turbulence tends to
A) rise from a crossing runway into the takeoff or landing path.
B) rise into the traffic pattern area surrounding the airport.
C) sink into the flightpath of aircraft operating below the aircraft generating the turbulence.

3828.
The wind condition that requires maximum caution when avoiding wake turbulence on landing is a
A) light, quartering headwind.
B) light, quartering tailwind.
C) strong headwind.

3829.
When landing behind a large aircraft, the pilot should avoid wake turbulence by staying
A) above the large aircraft's final approach path and landing beyond the large aircraft's touchdown point.
B) below the large aircraft's final approach path and landing before the large aircraft's touchdown point.
C) above the large aircraft's final approach path and landing before the large aircraft's touchdown point.

3830.
When departing behind a heavy aircraft, the pilot should avoid wake turbulence by maneuvering the aircraft
A) below and downwind from the heavy aircraft.
B) above and upwind from the heavy aircraft.
C) below and upwind from the heavy aircraft.

3832.
Large accumulations of carbon monoxide in the human body result in
A) tightness across the forehead.
B) loss of muscular power.
C) an increased sense of well-being.

3833.
What effect does haze have on the ability to see traffic or terrain features during flight?
A) Haze causes the eyes to focus at infinity.
B) The eyes tend to overwork in haze and do not detect relative movement easily.
C) All traffic or terrain features appear to be farther away than their actual distance.

3834.
The most effective method of scanning for other aircraft for collision avoidance during daylight hours is to use
A) regularly spaced concentration on the 3-, 9-, and 12-o'clock positions.
B) a series of short, regularly spaced eye movements to search each 10-degree sector.
C) peripheral vision by scanning small sectors and utilizing off-center viewing.

3835.
Which technique should a pilot use to scan for traffic to the right and left during straight-and-level flight?
A) Systematically focus on different segments of the sky for short intervals.
B) Concentrate on relative movement detected in the peripheral vision area.
C) Continuous sweeping of the windshield from right to left.

3836.
How can you determine if another aircraft is on a collision course with your aircraft?
A) The other aircraft will always appear to get larger and closer at a rapid rate.
B) The nose of each aircraft is pointed at the same point in space.
C) There will be no apparent relative motion between your aircraft and the other aircraft.

3838.
(Refer to figure 52) When approaching Lincoln Municipal from the west at noon for the purpose of landing, initial communications should be with
A) Lincoln Approach Control on 124.0 MHz.
B) Minneapolis Center on 128.75 MHz.
C) Lincoln Tower on 118.5 MHz.

3839.
(Refer to figure 52) Which type radar service is provided to VFR aircraft at Lincoln Municipal?
A) Sequencing to the primary Class C airport and standard separation.
B) Sequencing to the primary Class C airport and conflict resolution so that radar targets do not touch, or 1,000 feet vertical separation.
C) Sequencing to the primary Class C airport, traffic advisories, conflict resolution, and safety alerts.

3840.
(Refer to figure 52) What is the recommended communications procedure for landing at Lincoln Municipal during the hours when the tower is not in operation?
A) Monitor airport traffic and announce your position and intentions on 118.5 MHz.
B) Contact UNICOM on 122.95 MHz for traffic advisories.
C) Monitor ATIS for airport conditions, then announce your position on 122.95 MHz.

3841.
(Refer to figure 52) Where is Loup City Municipal located with relation to the city?
A) Northeast approximately 3 miles.
B) Northwest approximately 1 mile.
C) East approximately 10 miles.

3842.
(Refer to figure 52) Traffic patterns in effect at Lincoln Municipal are
A) to the right on Runway 18 and Runway 35; to the left on Runway 17 and Runway 36.
B) to the left on Runway 18 and Runway 36; to the right on Runway 17 and Runway 36.
C) to the right on Runways 14 - 32.

3844.
Which statement best defines hypoxia?
A) A state of oxygen deficiency in the body.
B) An abnormal increase in the volume of air breathed.
C) A condition of gas bubble formation around the joints or muscles.

3845.
Rapid or extra deep breathing while using oxygen can cause a condition known as
A) hyperventilation.
B) aerosinusitis.
C) aerotitis.

3846.
Which would most likely result in hyperventilation?
A) Emotional tension, anxiety, or fear.
B) The excessive consumption of alcohol.
C) An extremely slow rate of breathing and insufficient oxygen.

3847.
A pilot should be able to overcome the symptoms or avoid future occurrences of hyperventilation by
A) closely monitoring the flight instruments to control the airplane.
B) slowing the breathing rate, breathing into a bag, or talking aloud.
C) increasing the breathing rate in order to increase lung ventilation.

3848.
Susceptibility to carbon monoxide poisoning increases as
A) altitude increases.
B) altitude decreases.
C) air pressure increases.

3849.
What preparation should a pilot make to adapt the eyes for night flying?
A) Wear sunglasses after sunset until ready for flight.
B) Avoid red lights at least 30 minutes before the flight.
C) Avoid bright white lights at least 30 minutes before the flight.

3850.
The danger of spatial disorientation during flight in poor visual conditions may be reduced by
A) shifting the eyes quickly between the exterior visual field and the instrument panel.
B) having faith in the instruments rather than taking a chance on the sensory organs.
C) leaning the body in the opposite direction of the motion of the aircraft.

3851.
A state of temporary confusion resulting from misleading information being sent to the brain by various sensory organs is defined as
A) spatial disorientation.
B) hyperventilation.
C) hypoxia.

3852.
Pilots are more subject to spatial disorientation if
A) they ignore the sensations of muscles and inner ear.
B) body signals are used to interpret flight attitude.
C) eyes are moved often in the process of cross-checking the flight instruments.

3853.
If a pilot experiences spatial disorientation during flight in a restricted visibility condition, the best way to overcome the effect is to
A) rely upon the aircraft instrument indications.
B) concentrate on yaw, pitch, and roll sensations.
C) consciously slow the breathing rate until symptoms clear and then resume normal breathing rate.

3955-5.
(Refer to Figure 65) Which airport marking is a runway safety area/obstacle free zone boundary?
A) G
B) H
C) N

3955-6.
(Refer to Figure 65.) From the cockpit, marking G confirms the aircraft to be
A) on a taxiway, about to enter runway zone.
B) on a runway, about to clear.
C) near an instrument approach clearance zone.

3998. FAA
When should pilots state their position on the airport when calling the tower for takeoff?
A) When visibility is less than 1 mile.
B) When parallel runways are in use.
C) When departing from a runway intersection.

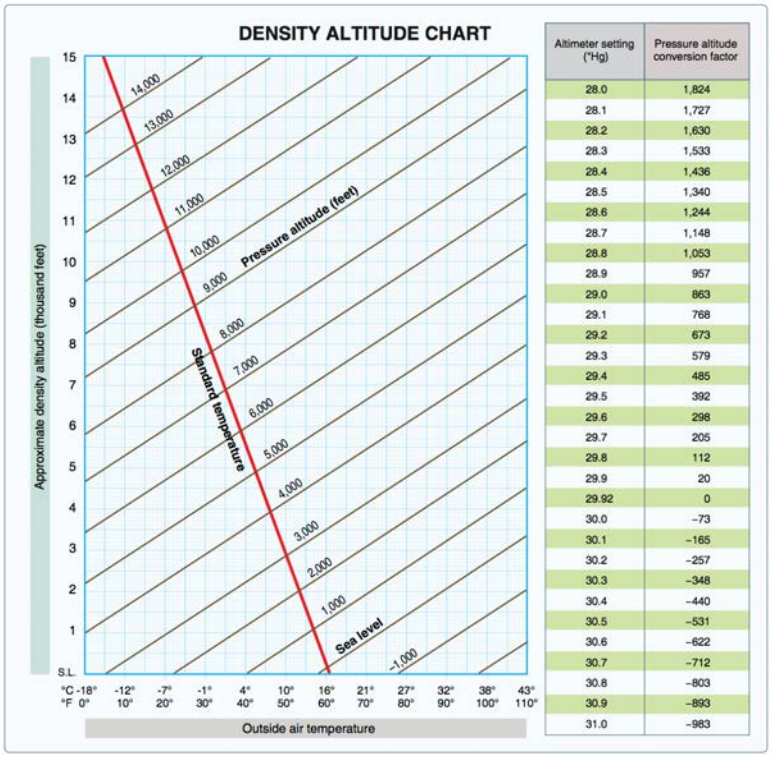
AIRCRAFT PERFORMANCE

Pressure Altitude And Density Altitude

Watch out for HIGH, HOT and HUMID! These reduce aircraft performance.

Pressure altitude is indicated altitude corrected for nonstandard pressure. It is determined by setting 29.92 in the altimeter setting window and reading the indicated altitude it is used in most performance charts and computer solutions for density altitude. Pressure altitude is equal to true altitude (actual height above sea level) when standard conditions exist.

Density altitude is pressure altitude corrected for nonstandard temperature. It is greater (higher) than pressure altitude when the 'temperature is greater than standard. It is used to determine aircraft performance. If the density altitude is computed to be 5,000 feet, your airplane will perform as if it were at 5,000 MSL on a standard day (29.92 altimeter setting and standard temperature).



Altimeter setting ("Hg)	Pressure altitude conversion factor
28.0	1,824
28.1	1,727
28.2	1,630
28.3	1,533
28.4	1,436
28.5	1,340
28.6	1,244
28.7	1,148
28.8	1,053
28.9	957
29.0	863
29.1	768
29.2	673
29.3	579
29.4	485
29.5	392
29.6	298
29.7	205
29.8	112
29.9	20
29.92	0
30.0	−73
30.1	−165
30.2	−257
30.3	−348
30.4	−440
30.5	−531
30.6	−622
30.7	−712
30.8	−803
30.9	−893
31.0	−983

Figure 8. *Density altitude chart.*

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3258.
What is density altitude?
A) The height above the standard datum plane.
B) The pressure altitude corrected for nonstandard temperature.
C) The altitude read directly from the altimeter.

3259.
What is pressure altitude?
A) The indicated altitude corrected for position and installation error.
B) The altitude indicated when the barometric pressure scale is set to 29.92.
C) The indicated altitude corrected for nonstandard temperature and pressure.

3260.
Under what condition is indicated altitude the same as true altitude?
A) If the altimeter has no mechanical error.
B) When at sea level under standard conditions.
C) When at 18,000 feet MSL with the altimeter set at 29.92.

3289.
If the outside air temperature (OAT) at a given altitude is warmer than standard, the density altitude is
A) equal to pressure altitude.
B) lower than pressure altitude.
C) higher than pressure altitude.

3291.
What effect does high density altitude have on aircraft performance?
A) It increases engine performance.
B) It reduces climb performance.
C) It increases takeoff performance.

3292.
(Refer to figure 8) What is the effect of a temperature increase from 25 to 50 °F on the density altitude if the pressure altitude remains at 5,000 feet?
A) 1,200-foot increase.
B) 1,400-foot increase.
C) 1,650-foot increase.

3293.
(Refer to figure 8) Determine the pressure altitude with an indicated altitude of 1,380 feet MSL with an altimeter setting of 28.22 at standard temperature.
A) 2,913 feet MSL.
B) 2,991 feet MSL.
C) 3,010 feet MSL.

3294.
(Refer to figure 8) Determine the density altitude for these conditions:
Altimeter setting 29.25
Runway temperature +81 °F
Airport elevation 5,250 ft MSL
A) 4,600 feet MSL.
B) 5,877 feet MSL.
C) 8,500 feet MSL.

3295.
(Refer to figure 8) Determine the pressure altitude at an airport that is 3,563 feet MSL with an altimeter setting of 29.96.
A) 3,527 feet MSL.
B) 3,556 feet MSL.
C) 3,639 feet MSL.

3296.
(Refer to figure 8) What is the effect of a temperature increase from 30 to 50 °F on the density altitude if the pressure altitude remains at 3,000 feet MSL?
A) 900-foot increase.
B) 1,100-foot decrease.
C) 1,300-foot increase.

3297.
(Refer to figure 8) Determine the pressure altitude at an airport that is 1,386 feet MSL with an altimeter setting of 29.97.
A) 1,341 feet MSL.
B) 1,451 feet MSL.
C) 1,562 feet MSL.

3298.
(Refer to figure 8) Determine the density altitude for these conditions:
Altimeter setting 30.35
Runway temperature +25 °F
Airport elevation 3,894 ft MSL
A) 2,000 feet MSL.
B) 2,900 feet MSL.
C) 3,500 feet MSL.

3299.
(Refer to figure 8) What is the effect of a temperature decrease and a pressure altitude increase on the density altitude from 90 °F and 1,250 feet pressure altitude to 55 °F and 1,750 feet pressure altitude?
A) 1,300-foot decrease.
B) 1,700-foot decrease.
C) 1,700-foot increase.

3300.
What effect, if any, does high humidity have on aircraft performance?
A) It increases performance.
B) It decreases performance.
C) It has no effect on performance.

3388.
Under which condition will pressure altitude be equal to true altitude?
A) When the atmospheric pressure is 29.92 inches Hg.
B) When standard atmospheric conditions exist.
C) When indicated altitude is equal to the pressure altitude.

3389.
Under what condition is pressure altitude and density altitude the same value?
A) At sea level, when the temperature is 0 °F.
B) When the altimeter has no installation error.
C) At standard temperature.

3394.
Which factor would tend to increase the density altitude at a given airport?
A) An increase in barometric pressure.
B) An increase in ambient temperature.
C) A decrease in relative humidity.

3678.
(Refer to figure 35) Approximately what true airspeed should a pilot expect with 65 percent maximum continuous power at 9,500 feet with a temperature of 36 °F below standard?
A) 178 MPH.
B) 181 MPH.
C) 183 MPH.

3679.
(Refer to figure 35) What is the expected fuel consumption for a 1,000-nautical mile flight under the following conditions?
Pressure altitude 8,000 ft
Temperature 22 °C
Manifold pressure 20.8 inches Hg
Wind Calm
A) 60.2 gallons.
B) 70.1 gallons.
C) 73.2 gallons.

3680.
(Refer to figure 35) What is the expected fuel consumption for a 500-nautical mile flight under the following conditions?
Pressure altitude 4,000 ft
Temperature +29 °C
Manifold pressure 21.3” Hg
Wind Calm
A) 31.4 gallons.
B) 36.1 gallons.
C) 40.1 gallons.

3681.
(Refer to figure 35) What fuel flow should a pilot expect at 11,000 feet on a standard day with 65 percent maximum continuous power?
A) 10.6 gallons per hour.
B) 11.2 gallons per hour.
C) 11.8 gallons per hour.

3682.
(Refer to figure 35) Determine the approximate manifold pressure setting with 2,450 RPM to achieve 65 percent maximum continuous power at 6,500 feet with a temperature of 36 °F higher than standard.
A) 19.8 inches Hg.
B) 20.8 inches Hg.
C) 21.0 inches Hg.

3683.
(Refer to figure 36) What is the headwind component for a landing on Runway 18 if the tower reports the wind as 220° at 30 knots?
A) 19 knots.
B) 23 knots.
C) 26 knots.

3684.
(Refer to figure 36) Determine the maximum wind velocity for a 45° crosswind if the maximum crosswind component for the airplane is 25 knots.
A) 25 knots.
B) 29 knots.
C) 35 knots.

3685.
(Refer to figure 36) What is the maximum wind velocity for a 30° crosswind if the maximum crosswind component for the airplane is 12 knots?
A) 16 knots.
B) 20 knots.
C) 24 knots.

3686.
(Refer to figure 36) With a reported wind of north at 20 knots, which runway (6, 29, or 32) is acceptable for use for an airplane with a 13 knot maximum crosswind component?
A) Runway 6.
B) Runway 29.
C) Runway 32.

3687.
(Refer to figure 36) With a reported wind of south at 20 knots, which runway (10, 14, or 24) is appropriate for an airplane with a 13-knot maximum crosswind component?
A) Runway 10.
B) Runway 14.
C) Runway 24

3688.
(Refer to figure 36) What is the crosswind component for a landing on Runway 18 if the tower reports the wind as 220° at 30 knots
A) 19 knots.
B) 23 knots.
C) 30 knots.

3689.
(Refer to figure 38.) Determine the total distance required to land.
OAT 32 °F
Pressure altitude 8,000 ft
Weight 2,600 lb
Headwind component 20 kts
Obstacle 50 ft
A) 850 feet.
B) 1,400 feet.
C) 1,750 feet.

3690.
(Refer to figure 37) Determine the distance required to land.
OAT Std.
Pressure altitude 2,000 ft.
Weight 2,300 lbs.
Wind component Calm.
Obstacle 25ft.
A) 1,150 feet.
B) 1,450 feet.
C) 850 feet.

3691.
(Refer to figure 37) Determine the total distance required to land.
OAT 90°F
Pressure altitude 3,000 ft.
Weight 2,900 lbs.
Headwind component 10 kts.
Obstacle 50 ft.
A) 1,450 feet.
B) 1,550 feet.
C) 1,725 feet.

3692.
(Refer to figure 37) Determine the approximate total distance required to land over a 50-foot obstacle.
OAT 90°F
Pressure altitude 4,000 ft.
Weight 2,800 lbs.
Headwind component 10 kts.
A) 1,525 feet.
B) 1,950 feet.
C) 1,775 feet.

3693.
(Refer to figure 38) Determine the approximate landing ground roll distance.
Pressure altitude Sea level
Headwind 4 kts.
Temperature Std.
A) 356 feet.
B) 401 feet.
C) 490 feet.

3694.
(Refer to figure 38) Determine the total distance required to land over a 50-foot obstacle.
Pressure altitude 7.500 ft.
Headwind 8 kts.
Temperature 32°F
Runway Hard surface
A) 1,205 feet.
B) 1,004 feet.
C) 1,506 feet.

3695.
(Refer to figure 39) Determine the total distance required to land over a 50-foot obstacle.
Pressure altitude 5,000 ft.
Headwind 8 kts.
Temperature 41°F
Runway Hard surface
A) 837 feet.
B) 956 feet
C) 1,076 feet.

3696.
(Refer to figure 38) Determine the approximate landing ground roll distance.
Pressure altitude 5,000 ft.
Headwind Calm.
Temperature 101°F
A) 445 feet.
B) 495 feet.
C) 545 feet.

3697.
(Refer to figure 38) Determine the total distance required to land over a 50-foot obstacle.
Pressure altitude 3,750 ft
Headwind 12 kts
Temperature Std
A) 794 feet.
B) 816 feet.
C) 836 feet.

3698.
(Refer to figure 38) Determine the approximate landing ground roll distance.
Pressure altitude 1,250 ft
Headwind 8 kts
Temperature Std
A) 275 feet.
B) 366 feet.
C) 470 feet.

3705.
(Refer to figure 40) Determine the total distance required for takeoff to clear a 50-foot obstacle.
OAT Std
Pressure altitude 4,000 ft
Takeoff weight 2,800 lb
Headwind component Calm
A) 1,500 feet.
B) 1,750 feet.
C) 2,000 feet.

3706.
(Refer to figure 40) Determine the total distance required for takeoff to clear a 50-foot obstacle.
OAT Std
Pressure altitude Sea level
Takeoff weight 2,700 lb
Headwind component Calm
A) 1,000 feet.
B) 1,400 feet.
C) 1,700 feet.

3707.
(Refer to figure 40) Determine the approximate ground roll distance required for takeoff.
OAT 100
Pressure altitude 2,000 ft
Takeoff weight 2,750 lb
Headwind component Calm
A) 1,150 feet.
B) 1,300 feet.
C) 1,800 feet.

3708.
(Refer to figure 40) Determine the approximate ground roll distance required for takeoff.
OAT 90°F
Pressure altitude 2,000 ft
Takeoff weight 2,500 lb
Headwind component 20 kts
A) 650 feet.
B) 850 feet.
C) 1,000 feet.

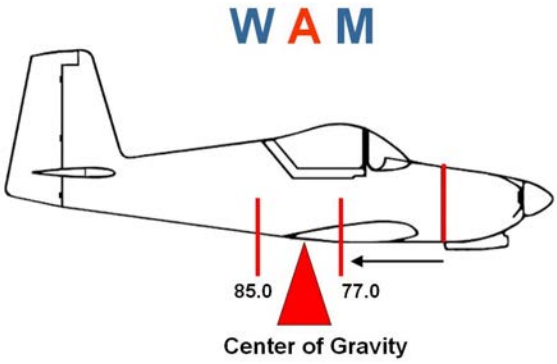
3XXX FAA AVSEM
A pilot and a two passengers landed on a east-west gravel strip with an elevation of 1,800 feet. The temperature is warmer than expected and after computing the density altitude it is determined the take-off distance over a 50 foot obstacle is 1,980 feet. The airplane is 75 pounds under gross weight. What would be the best choice of action?
A) Taking off into the wind will give the extra climb-out time needed.
B) Try a takeoff without the passengers to make sure the climb is adequate.
C) Wait until the temperature decreases, and recalculate the take-off performance.

WEIGHT AND BALANCE

Definitions

Empty weight of an airplane includes the airframe and power plant (engine) unusable fuel and undrainable oil.

Useful load consists of the pilot, passengers, usable fuel, oil and baggage. Fuel weighs 6 lbs per gallon, and oil weighs 7.5 lbs/gal. Remember these numbers, you will use them for the rest of your life as a pilot!



Datum line is an arbitrary point from which all measurements of arm are measured. It is usually at the tip of the propeller or the firewall on smaller general aviation aircraft.

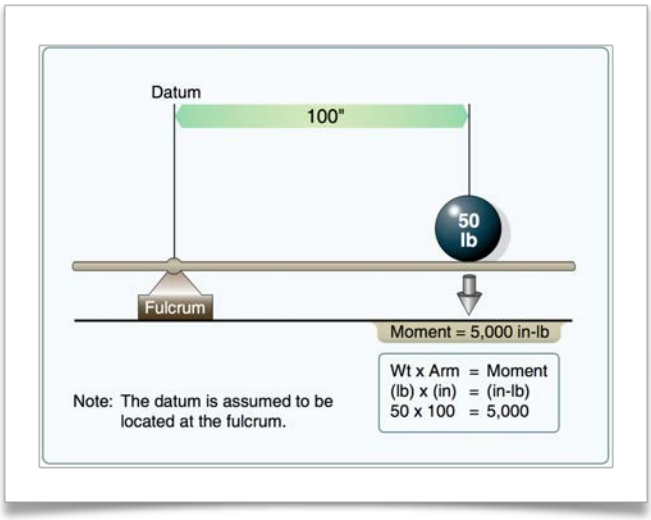
Arm is the distance in inches from the datum line to the center of gravity (CG) the airplane would balance if it could rest on an airplane stand (as depicted above)

Moment is a number derived by multiplying the weight of an item by the distance from the datum line (arm).

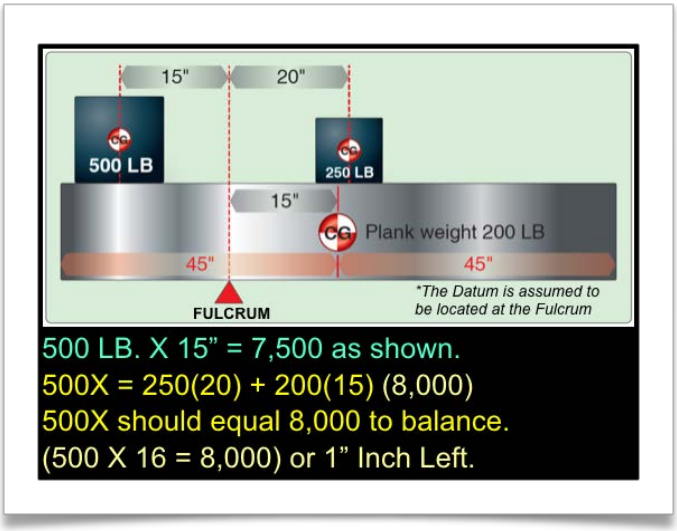
Weight x Arm = Moment (WAM)

To find the loaded center of gravity, add the moments for all items, including the empty aircraft. Divide this by the total loaded weight. If the center of gravity (CG) is aft of limits the airplane will be less stable at all speeds, and you may be unable to recover from a stalled condition.

To find the new center of gravity after fuel burnout, subtract the weight of the fuel from the loaded aircraft weight, and the moment of the fuel burned from the loaded moment. Divide the new moment by the new weight to get the new CG position.



Moments are determined by calculating the weight and distance (Arm) from the fulcrum to the applied weight (Moment)



Refer to Figure 60

As shown, this plank couldn't balance itself and the right side of the plank would go down to the ground.

The test question asks how the 500 pound weight should be shifted to make the plank balance on the fulcrum.

Answer, if you move the 500 pound plank to the left 1 inch (from 15 to 16 inches) it would increase its downforce in relation to the fulcrum and lift the right side back up.

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3287.
An airplane has been loaded in such a manner that the CG is located aft of the aft CG limit. One undesirable flight characteristic a pilot might experience with this airplane would be
A) a longer takeoff run.
B) difficulty in recovering from a stalled condition.
C) stalling at higher-than-normal airspeed.

3288.
Loading an airplane to the most aft CG will cause the airplane to be
A) less stable at all speeds.
B) less stable at slow speeds, but more stable at high speeds.
C) less stable at high speeds, but more stable at low speeds.

3661.
Which items are included in the empty weight of an aircraft?
A) Unusable fuel and undrainable oil.
B) Only the airframe, power plant, and optional equipment.
C) Full fuel tanks and engine oil to capacity.

3662.
An aircraft is loaded 110 pounds over maximum certificated gross weight. If fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?
A) 15.7 Gallons.
B) 16.2 Gallons.
C) 18.4 Gallons.

3663.
If an aircraft is loaded 90 pounds over maximum certificated gross weight and fuel (gasoline) is drained to bring the aircraft within limits, how much fuel should be drained?
A) 10 Gallons.
B) 12 Gallons.
C) 15 Gallons.

3664.

GIVEN:	WEIGHT (LB)	ARM (IN)	MOMENT (LB-IN)
Empty weight	1,495.0	101.4	151,593.0
Pilot and passengers	380.0	64.0	---
Fuel (30 gal usable no reserve)	---	96.0	---

The CG is located how far aft of datum?
A) CG 92.44.
B) CG 94.01.
C) CG 119.8.

3665.
(Refer to figures 32 and 33) Determine if the airplane weight and balance is within limits.
Front seat occupants 340 lb
Rear seat occupants 295 lb
Fuel (main wing tanks) 44 gal
Baggage 56 lb
A) 20 pounds overweight, CG aft of aft limits.
B) 20 pounds overweight, CG within limits.
C) 20 pounds overweight, CG forward of forward limits.

3666.
(Refer to figures 32 and 33) What is the maximum amount of baggage that can be carried when the airplane is loaded as follows?
Front seat occupants 387 lb
Rear seat occupants 293 lb
Fuel 35 gal
A) 45 pounds.
B) 63 pounds.
C) 220 pounds.

3667.
(Refer to figures 32 and 33) Calculate the weight and balance and determine if the CG and the weight of the airplane are within limits.
Front seat occupants 350 lb
Rear seat occupants 325 lb
Baggage 27 lb
Fuel 35 gal
A) CG 81.7, out of limits forward.
B) CG 83.4, within limits.
C) CG 84.1, within limits.

3668.
(Refer to figures 32 and 33) Determine if the airplane weight and balance is within limits.
Front seat occupants 415 lb
Rear seat occupants 110 lb
Fuel, main tanks 44 gal
Fuel, aux. tanks 19 gal
Baggage 32 lb
A) 19 pounds overweight, CG within limits.
B) 19 pounds overweight, CG out of limits forward.
C) Weight within limits, CG out of limits.

3669.
(Refer to figure 34) What is the maximum amount of baggage that may be loaded aboard the airplane for the CG to remain within the moment envelope?

	WEIGHT (LB)	MOM/1000
Empty weight	1,350	51.5
Pilot and front passenger	250	---
Rear passengers	400	---
Baggage	---	---
Fuel, 30 gal	---	---
Oil, 8 qt	---	-0.2

A) 105 pounds.
B) 110 pounds.
C) 120 pounds.

3670.
(Refer to figure 34) Calculate the moment of the airplane and determine which category is applicable.

	WEIGHT (LB)	MOM/1000
Empty weight	1,350	51.5
Pilot and front passenger	310	---
Rear passengers	96	---
Fuel, 38 gal	---	---
Oil, 8 qt	---	-0.2

A) 79.2, utility category.
B) 80.8, utility category.
C) 81.2, normal category.

3671.
(Refer to figure 34) What is the maximum amount of fuel that may be aboard the airplane on takeoff if loaded as follows?

	WEIGHT (LB)	MOM/1000
Empty weight	1,350	51.5
Pilot and front passenger	340	---
Rear passengers	310	---
Baggage	45	---
Oil, 8 qt	---	---

A) 24 gallons.
B) 32 gallons.
C) 40 gallons.

3672.
(Refer to figure 34) Determine the moment with the following data:

	WEIGHT (LB)	MOM/1000
Empty weight	1,350	51.5
Pilot and front passenger	340	---
Fuel (std tanks)	Capacity	---
Oil, 8 qt	---	---

A) 69.9 pound-inches.
B) 74.9 pound-inches.
C) 77.6 pound-inches.

3673.
(Refer to figure 34) Determine the aircraft loaded moment and the aircraft category.

	WEIGHT (LB)	MOM/1000
Empty weight	1,350	51.5
Pilot and front passenger	380	---
Fuel, 48 gal	288	---
Oil, 8 qt	---	---

A) 78.2, normal category.
B) 79.2, normal category.
C) 80.4, utility category.

3674.
(Refer to figures 32 and 33) Upon landing, the front passenger (180 pounds) departs the airplane. A rear passenger (204 pounds) moves to the front passenger position. What effect does this have on the CG if the airplane weighed 2,690 pounds and the MOM/100 was 2,260 just prior to the passenger transfer?
A) The CG moves forward approximately 3 inches.
B) The weight changes, but the CG is not affected.
C) The CG moves forward approximately 0.1 inch.

3675.
(Refer to figures 32 and 33) Which action can adjust the airplane's weight to maximum gross weight and the CG within limits for takeoff?
Front seat occupants 425 lb Rear seat occupants 300 lb Fuel, main tanks 44 gal
A) Drain 12 gallons of fuel.
B) Drain 9 gallons of fuel.
C) Transfer 12 gallons of fuel from the main tanks to the auxiliary tanks.

3676.
(Refer to figures 32 and 33) What effect does a 35-gallon fuel burn (main tanks) have on the weight and balance if the airplane weighed 2,890 pounds and the MOMJ100 was 2,452 at takeoff?
A) Weight is reduced by 210 pounds and the CG is aft of limits.
B) Weight is reduced by 210 pounds and the CG is unaffected.
C) Weight is reduced to 2,680 pounds and the CG moves forward.

3677.
(Refer to figures 32 and 33) With the airplane, loaded as follows, what action can be taken to balance the airplane?
Front seat occupants 411 lb
Rear seat occupants 100 lb
Main wing tanks 44 gal
A) Fill the auxiliary wing tanks.
B) Add a 100-pound weight to the baggage compartment.
C) Transfer 10 gallons of fuel from the main tanks to the auxiliary tanks.

3663-1 FAA
(Refer to figure 60) How should the 500-pound weight be shifted to balance the plank on the fulcrum?
A) 1 inch to the left.
B) 1 inch to the right.
C) 4.5 inches to the right.

3663-2 FAA
(Refer to figure 61) If 50 pounds of weight is located at point X and 100 pounds at point Z, how much weight must be located at point Y to balance the plank?
A) 30 pounds.
B) 50 pounds.
C) 300 pounds.

WEATHER THEORY

Temperature, Pressure And Moisture

Every physical process of weather is a result of a heat exchange.

The standard sea level temperature is 59 degrees F, or 15 degrees C. It decreases an average of 3 1/2 degrees F per 1000 ft, or 2 degrees C.

The standard sea level pressure is 29.92k Hg. Pressure decreases one inch per 1000 feet.

The amount of water vapor which air can hold largely depends on air temperature. Warm air can hold more moisture than cold air.

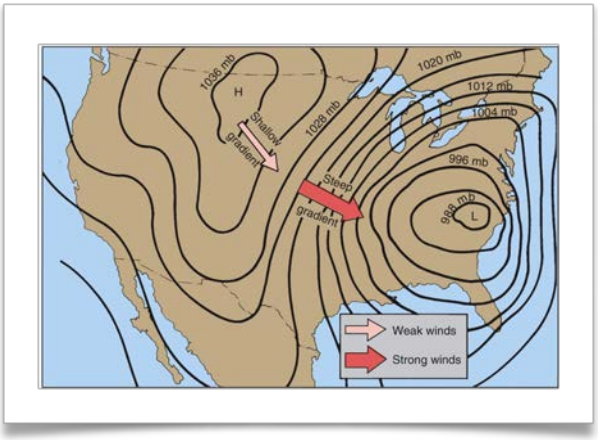
Dew point is the temperature to which the air must be cooled to become saturated. Relative humidity (given in percent) is the amount of moisture in the air compared to the amount the air could hold at that temperature.

Moisture is added to unsaturated air by the processes of evaporation and sublimation.

Clouds, fog or dew will always form when water vapor condenses. When the temperature-dew point spread decreases below 4 degrees F, you can expect decreasing visibility due to an obscuration, fog, low clouds or precipitation.

Determine the base of cumulus clouds by dividing the temperature-dew point spread by 4.4 degrees F.

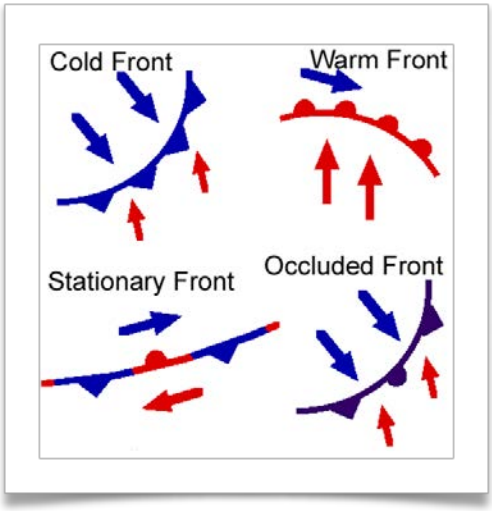
Pressure Systems (Wind)



Variations in altimeter settings between weather reporting points is caused by unequal heating of the earth's surface.

Above 2000 AGL, wind flow is parallel to isobars. The difference in surface wind and winds aloft is primarily due to friction between the wind and the surface.

Air Masses And Fronts



A front is a boundary between two masses of air that differ in temperature, pressure and/or moisture content.

When flying across a front, you will always encounter a change in wind and temperature. One of the most easily recognized discontinuities across a front is temperature.

Stability

Stability of the atmosphere can be determined by the ambient (actual) temperature lapse rate.

Warming from below decreases the stability of an air mass.

In general:

Stability	Stable	Unstable
Characteristic	Warm air over cold surface.	Cold air over warm surface
Cloud type	Stratiform	Cumuliform
Smoothness	Smooth air	Turbulent
Frontal type	Warm front	Cold front
Precipitation	Steady rain	Showers and thunderstorms
Visibility	Poor	Good

Unstable air forced upward will cause clouds with considerable vertical development and associated turbulence. Moist, stable air flowing upslope will produce stratus type clouds.

Clouds are divided into four families, according to height. (Low, medium, high and those with extensive vertical development.)

Temperature Inversions

A temperature inversion exists where there is an increase in temperature as altitude is increased.

Air is stable. Expect smooth air and poor visibility due to fog, haze, or low clouds.

The most frequent type of ground based inversion is that produced by terrestrial radiation on a clear, relatively still night.

Lenticular Clouds

Standing lenticular clouds are stationary lens-shaped clouds that show little or no movement, but contain strong winds and turbulence.

Possible mountain wave turbulence can be anticipated when winds of 40 knots or greater blow across a mountain ridge, and the air is stable.

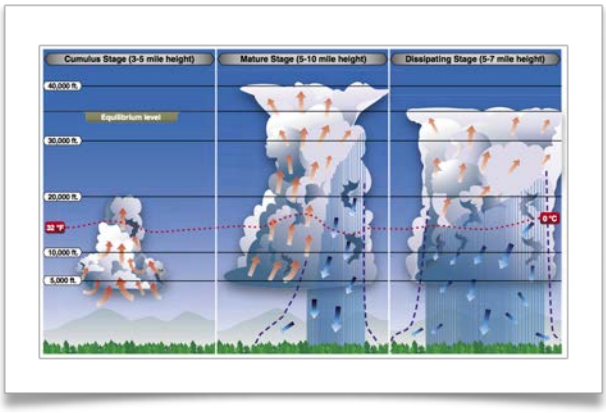
Wind Shear

Wind shear is a change in wind direction and/ or speed in a horizontal or vertical direction, and occurs at all altitudes.

It may be encountered during periods of strong temperature inversion. Expect wind shear in an inversion when winds at 2000 to 4000 feet above the surface are at least 25 knots.

Upon encountering severe turbulence, attempt to maintain a level flight attitude best you can.

Cumulonimbus Clouds CB (Thunderstorms)



Towering cumulus clouds have convective turbulence, but have not yet become thunderstorms.

The suffix nimbus refers to a rain cloud. Cumulonimbus clouds have the greatest turbulence, and lightning is always associated with thunderstorms. The wind shear turbulence creates the most hazard.

Sometimes, on the backside of a CB, there can be puffy ball type clouds that appear to sag below the anvil called Cumulonimbus Mammatus. This is an indication of extreme turbulence.

The three ingredients needed to form a thunderstorm are unstable air, high humidity, and a lifting action

Thunderstorms (The Three Stages)

Stage One: CUMULUS (Building) - Continuous updrafts extend from the earth to above the cloud tops.

Stage Two: MATURE – Rain begins to fall. Updrafts and downdrafts are present. The thunderstorm reaches its greatest intensity.

Stage Three: DISSIPATING – Downdrafts are the biggest hazard in this stage.

Embedded thunderstorms are obscured by massive cloud layers and cannot be visually seen.

A squall line is a non-frontal band of active thunderstorms that often develop ahead of a cold front.

Squall line thunderstorms produce the most severe conditions, such as heavy hail and destructive winds.

Classified as a squall line when there is an increase in wind of 15 knots or more for at least 1 minute.

Radar is no assurance of VFR conditions.

Structural Icing

Structural icing will not occur unless there is visible moisture.

The highest rate of accumulation of icing will be found in freezing rain.

Ice pellets at the surface are evidence there is freezing rain and warmer air at a higher altitude.

Frost will form if the temperature of the collecting surface is at or below the dew point of the adjacent air and the dew point is below freezing.

It spoils the smooth flow of air over the wings, resulting in loss of lift, and may prevent an airplane from becoming airborne.

Fog

Radiation fog occurs with warm, moist air over low, flatland areas on clear, calm nights.

Advection fog occurs when an air mass moves inland from the coast. It requires wind, as does upslope fog.

Low level turbulence and icing can occur in steam fog.

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3206.
How will frost on the wings of an airplane affect takeoff performance?
A) Frost will disrupt the smooth flow of air over the wing, adversely affecting its lifting capability.
B) Frost will change the camber of the wing, increasing its lifting capability.
C) Frost will cause the airplane to become airborne with a higher angle of attack, decreasing the stall speed.

3381.
Every physical process of weather is accompanied by, or is the result of, a
A) movement of air.
B) pressure differential.
C) heat exchange.

3382.
What causes variations in altimeter settings between weather reporting points?
A) Unequal heating of the Earth's surface.
B) Variation of terrain elevation.
C) Coriolis force.

3383.
A temperature inversion would most likely result in which weather condition?
A) Clouds with extensive vertical development above an inversion aloft.
B) Good visibility in the lower levels of the atmosphere and poor visibility above an inversion aloft.
C) An increase in temperature as altitude is increased.

3384.
The most frequent type of ground or surface-based temperature inversion is that which is produced by
A) terrestrial radiation on a clear, relatively still night.
B) warm air being lifted rapidly aloft in the vicinity of mountainous terrain.
C) the movement of colder air under warm air, or the movement of warm air over cold air.

3385.
Which weather conditions should be expected beneath a low-level temperature inversion layer when the relative humidity is high?
A) Smooth air, poor visibility, fog, haze, or low clouds.
B) Light wind shear, poor visibility, haze, and light rain.
C) Turbulent air, poor visibility, fog, low stratus type clouds, and showery precipitation.

3386.
What are the standard temperature and pressure values for sea level?
A) 15 °C and 29.92 inches Hg.
B) 59 °C and 1013.2 millibars.
C) 59 °F and 29.92 millibars.

3395.
The wind at 5,000 feet AGL is southwesterly while the surface wind is southerly. This difference in direction is primarily due to
A) stronger pressure gradient at higher altitudes.
B) friction between the wind and the surface.
C) stronger Coriolis force at the surface.

3397.
What is meant by the term 'dewpoint'?
A) The temperature at which condensation and evaporation are equal.
B) The temperature at which dew will always form.
C) The temperature to which air must be cooled to become saturated.

3398.
The amount of water vapor which air can hold depends on the
A) dewpoint.
B) air temperature.
C) stability of the air.

3399.
Clouds, fog, or dew will always form when
A) water vapor condenses.
B) water vapor is present.
C) relative humidity reaches 100 percent.

3400.
What are the processes by which moisture is added to unsaturated air?
A) Evaporation and sublimation.
B) Heating and condensation.
C) Supersaturation and evaporation.

3401.
Which conditions result in the formation of frost?
A) The temperature of the collecting surface is at or below freezing when small droplets of moisture fall on the surface.
B) The temperature of the collecting surface is at or below the dewpoint of the adjacent air and the dewpoint is below freezing.
C) The temperature of the surrounding air is at or below freezing when small drops of moisture fall on the collecting surface.

3402.
The presence of ice pellets at the surface is evidence that there
A) are thunderstorms in the area.
B) has been cold frontal passage.
C) is a temperature inversion with freezing rain at a higher altitude.

3403.
What measurement can be used to determine the stability of the atmosphere?
A) Atmospheric pressure.
B) Actual lapse rate.
C) Surface temperature.

3404.
What would decrease the stability of an air mass?
A) Warming from below.
B) Cooling from below.
C) Decrease in water vapor.

3405.
What is a characteristic of stable air?
A) Stratiform clouds.
B) Unlimited visibility.
C) Cumulus clouds.

3406.
Moist, stable air flowing upslope can be expected to
A) produce stratus type clouds.
B) cause showers and thunderstorms.
C) develop convective turbulence.

3407.
If an unstable air mass is forced upward, what type clouds can be expected?
A) Stratus clouds with little vertical development.
B) Stratus clouds with considerable associated turbulence.
C) Clouds with considerable vertical development and associated turbulence.

3408.
What feature is associated with a temperature inversion?
A) A stable layer of air.
B) An unstable layer of air.
C) Chinook winds on mountain slopes.

3409.
What is the approximate base of the cumulus clouds if the surface air temperature at 1,000 feet MSL is 70 °F and the dewpoint is 48 °F?
A) 4,000 feet MSL.
B) 5,000 feet MSL.
C) 6,000 feet MSL.

3410.
At approximately what altitude above the surface would the pilot expect the base of cumuliform clouds if the surface air temperature is 82°F and the dewpoint is 38°F
A) 9,000 feet AGL.
B) 10,000 feet AGL.
C) 11,000 feet AGL.

3412.
What are characteristics of a moist, unstable air mass?
A) Cumuliform clouds arid showery precipitation.
B) Poor visibility and smooth air.
C) Stratiform clouds and showery precipitation.

3413.
What are characteristics of unstable air?
A) Turbulence and good surface visibility.
B) Turbulence and poor surface visibility.
C) Nimbostratus clouds and good surface visibility.

3414.
A stable air mass is most likely to have which characteristic?
A) Showery precipitation.
B) Turbulent air.
C) Poor surface visibility.

3415.
The suffix 'nimbus,' used in naming clouds, means
A) a cloud with extensive vertical development.
B) a rain cloud.
C) a middle cloud containing ice pellets.

3416.
Clouds are divided into four families according to their
A) outward shape.
B) height range.
C) composition.

3417.
An almond or lens-shaped cloud which appears stationary, but which may contain winds of 50 knots or more, is referred to as
A) an inactive frontal cloud.
B) a funnel cloud.
C) a lenticular cloud.

3418.
Crests of standing mountain waves may be marked by stationary, lens-shaped clouds known as
A) mammatocumulus clouds.
B) standing lenticular clouds.
C) roll clouds.

3419.
What clouds have the greatest turbulence?
A) Towering cumulus.
B) Cumulonimbus.
C) Nimbostratus.

3420.
What cloud types would indicate convective turbulence?
A) Cirrus clouds.
B) Nimbostratus clouds.
C) Towering cumulus clouds.

3421.
The boundary between two different air masses is referred to as a
A) frontolysis.
B) frontogenesis.
C) front.

3422.
One of the most easily recognized discontinuities across a front is
A) a change in temperature.
B) an increase in cloud coverage.
C) an increase in relative humidity.

3423.
One weather phenomenon which will always occur when flying across a front is a change in the
A) wind direction.
B) type of precipitation.
C) stability of the air mass.

3424.
Steady precipitation preceding a front is an indication of
A) stratiform clouds with moderate turbulence.
B) cumuliform clouds with little or no turbulence.
C) stratiform clouds with little or no turbulence.

3425.
Possible mountain wave turbulence could be anticipated when winds of 40 knots or greater blow
A) across a mountain ridge, and the air is stable.
B) down a mountain valley, and the air is unstable.
C) parallel to a mountain peak, and the air is stable.

3426.
Where does wind shear occur?
A) Only at higher altitudes.
B) Only at lower altitudes.
C) At all altitudes, in all directions.

3427.
When may hazardous wind shear be expected?
A) When stable air crosses a mountain barrier where it tends to flow in layers forming lenticular clouds.
B) In areas of low-level temperature inversion, frontal zones, and clear air turbulence.
C) Following frontal passage when stratocumulus clouds form indicating mechanical mixing.

3428.
A pilot can expect a wind-shear zone in a temperature inversion whenever the windspeed at 2,000 to 4,000 feet above the surface is at least
A) 10 knots.
B) 15 knots.
C) 25 knots.

3429.
One in-flight condition necessary for structural icing to form is
A) small temperature/dewpoint spread.
B) stratiform clouds.
C) visible moisture.

3430.
In which environment is aircraft structural ice most likely to have the highest accumulation rate?
A) Cumulus clouds with below freezing temperatures.
B) Freezing drizzle.
C) Freezing rain.

3431.
Why is frost considered hazardous to flight?
A) Frost changes the basic aerodynamic shape of the airfoils, thereby decreasing lift.
B) Frost slows the airflow over the airfoils, thereby increasing control effectiveness.
C) Frost spoils the smooth flow of air over the wings, thereby decreasing lifting capability.

3432.
How does frost affect the lifting surfaces of an airplane on takeoff?
A) Frost may prevent the airplane from becoming airborne at normal takeoff speed.
B) Frost will change the camber of the wing, increasing lift during takeoff.
C) Frost may cause the airplane to become airborne with a lower angle of attack at a lower indicated airspeed.

3433.
The conditions necessary for the formation of cumulonimbus clouds are a lifting action and
A) unstable air containing an excess of condensation nuclei.
B) unstable, moist air.
C) either stable or unstable air.

3434.
What feature is normally associated with the cumulus stage of a thunderstorm?
A) Roll cloud.
B) Continuous updraft.
C) Frequent lightning.

3435.
Which weather phenomenon signals the beginning of the mature stage of a thunderstorm?
A) The appearance of an anvil top.
B) Precipitation beginning to fall.
C) Maximum growth rate of the clouds.

3436.
What conditions are necessary for the formation of thunderstorms?
A) High humidity, lifting force, and unstable conditions.
B) High humidity, high temperature, and cumulus clouds.
C) Lifting force, moist air, and extensive cloud cover.

3437.
During the life cycle of a thunderstorm, which stage is characterized predominately by downdrafts?
A) Cumulus.
B) Dissipating.
C) Mature.

3438.
Thunderstorms reach their greatest intensity during the
A) mature stage.
B) downdraft stage.
C) cumulus stage.

3439.
Thunderstorms which generally produce the most intense hazard to aircraft are
A) squall line thunderstorms.
B) steady-state thunderstorms.
C) warm front thunderstorms.

3440.
A nonfrontal, narrow band of active thunderstorms that often develop ahead of a cold front is known as a
A) prefrontal system.
B) squall line.
C) dry line.

3452.
Which weather phenomenon is always associated with a thunderstorm?
A) Lightning.
B) Heavy rain.
C) Hail

3441.
If there is thunderstorm activity in the vicinity of an airport at which you plan to land, which hazardous atmospheric phenomenon might be expected on the landing approach?
A) Precipitation static.
B) Wind-shear turbulence.
C) Steady rain.

3442.
Upon encountering severe turbulence, which flight condition should the pilot attempt to maintain?
A) Constant altitude and airspeed.
B) Constant angle of attack.
C) Level flight attitude.

3443.
What situation is most conducive to the formation of radiation fog?
A) Warm, moist air over low, flatland areas on clear, calm nights.
B) Moist, tropical air moving over cold, offshore water.
C) The movement of cold air over much warmer water.

3444.
If the temperature/dewpoint spread is small and decreasing, and the temperature is 62 °F, what type weather is most likely to develop?
A) Freezing precipitation.
B) Thunderstorms.
C) Fog or low clouds.

3445.
In which situation is advection fog most likely to form?
A) A warm, moist air mass on the windward side of mountains.
B) An air mass moving inland from the coast in winter.
C) A light breeze blowing colder air out to sea.

3446.
What types of fog depend upon wind in order to exist?
A) Radiation fog and ice fog.
B) Steam fog and ground fog.
C) Advection fog and upslope fog.

3447.
Low-level turbulence can occur and icing can become hazardous in which type of fog?
A) Rain-induced fog.
B) Upslope fog.
C) Steam fog.

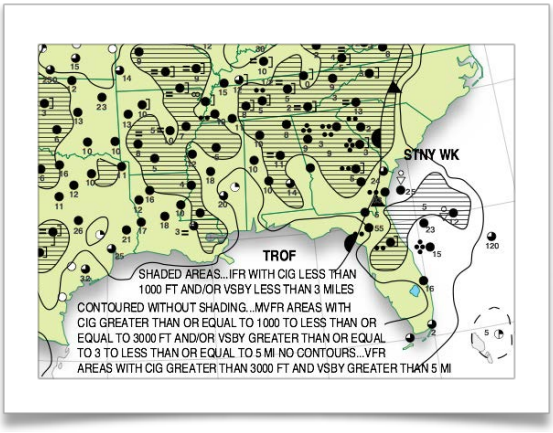
WEATHER REPORTS AND FORECASTS

Ceiling

Ceiling is the height above the earth's surface of the lowest layer of clouds reported as broken or overcast and not classified as thin. Vertical visibility (VV) into the obscuration is also reported, as a ceiling. For the weather to be VFR, the ceiling, if any, must be at least 1000 feet,. and the visibility must be at least 3 miles.

REPORTS AND FORECASTS

Weather Depiction Chart (Report)



Numbers below a cloud cover symbol indicate height, in hundreds of feet, of the lowest cloud layer. Numbers and symbols to left of cloud cover symbol indicate visibility and type of obstruction to visibility.

Shows where weather conditions were reported above or below VFR minimums.

Use this chart to determine general weather conditions on which to base flight planning.

Low Level Significant Weather Prognostic Chart (Forecast)

Shows forecast weather, for determining areas to avoid (freezing levels and turbulence.)

Legend on the chart shows VFR, marginal VFR or IFR weather, upper-level of turbulence, and freezing levels.

SURFACE OBSERVATIONS (Figure 12)

A METAR is an hourly routine weather report.
A SPECI is a special report, issued when necessary between regular reports.

At KJFK the wind is reported from 180 true at 4 knots.

At KINK the wind is reported from 110° true at 12 knots gusting to 18 knots.

The weather at KINK, KBOI, and KLAX is reported to be VFR

At KMDW the visibility is reported as 1-1/2 statute miles with rain. The ceiling is 700 feet overcast.

The RAB 35 remarks at KMDW means the rain began at 35 minutes past the hour. This report was issued at 1856Z therefore, the rain began at 1835Z.

Temperature and dewpoint are shown in Celsius. At KLAX the temperature is 16°C and the dewpoint is 15°C.

Terminal Aerodrome Forecast (TAF)

TAF's are issued every six hours (4 times a day) and generally apply to a 24 or 30 hour period, and an area within five statute miles from the center of an airport runway complex.

NSW means No Significant Weather. The only clouds forecast in a TAF are cumulonimbus (CB)

The weather information is listed in the following order: wind, visibility, significant weather such as precipitation and obstructions to visibility, and cloud cover.

Refer to Figure 15. The valid time in the KMEM TAF is from the 12th day at 1800Z to the 13th day at 2400Z. (30 hour chart adds day in front of the time)

The visibility at KMEM for the two hours between 1310Z and 1312Z is forecast to be 3 statute miles.

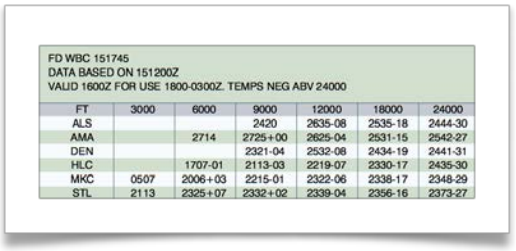
At KMEM after 1600Z the wind is expected to be variable at 6 knots. (day+time = 131600)

FM 1600 means from 1600Z . FM 051600 in the KOKC time group means the wind is forecast to be 10 knots from 1600Z until the 2200Z to 2400Z time period when it is expected to become (BECMG) 200° at 13 gusting to 20 knots.

At KOKC the clear sky (SKC) in the FM 1600 group is expected to become (BECMG) overcast at 2,000 feet between 2200Z and 2400Z.

P6SM means Prevailing Visibility is Greater than 6 Statute Miles. This is shown in the BECMG as 0606Z to 0608Z in the KOKC TAF.

Winds Aloft Forecast



FD WBC 151745
DATA BASED ON 151200Z
VALID 1600Z FOR USE 1800-0300Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000
ALS			2420	2635-08	2535-18	2444-30
AMA		2714	2725+00	2625-04	2531-15	2542-27
DEN			2321-04	2532-08	2434-19	2441-31
HLC		1707-01	2113-03	2219-07	2330-17	2435-30
MKC	0507	2006+03	2215-01	2322-06	2338-17	2348-29
STL	2113	2325+07	2332+02	2339-04	2356-16	2373-27

Shows true direction, velocity, and temperature.

2512+14 means winds from 250° true at 12 knots, temperature +14 C.

9900 indicates light and variable winds, less than *5* knots.

Winds greater than 100 knots have 50 added to their direction. 730649 means winds from 230 true at 106 knots, temperature -49 C.

Area Forecast (FA)

Use the area forecast to determine forecast weather conditions over SEVERAL STATES.

SIG CLD AND WX area contains a summary of cloudiness and weather significant to flight operations broken down by states or other geographical areas.

ENROUTE WEATHER ADVISORIES

Inflight Advisories

Convective SIGMETs are issued for tornadoes, embedded thunderstorms, and hail ¾ inch or greater in diameter.

SIGMET advisories include weather conditions potentially hazardous to all aircraft, including severe icing.

AIRMET advisories include less severe conditions which may be hazardous, particularly to light aircraft.

Automatic Terminal Information Service (ATIS)

Continuous broadcast of recorded information concerning non-control information in high activity terminal areas.

Telephone Weather Briefing

When telephoning for a weather briefing, identify yourself as a pilot, state your intended route, destination, and type of aircraft, and whether you intend to fly VFR only.

A Standard Briefing is requested for complete weather information.

An Abbreviated Briefing is requested to supplement mass-disseminated data or to update a previous weather briefing.

An Outlook Briefing should be requested if your planned departure is 6 or more hours away.

Pilot Report (PIREP)

UA/OV OKC-TUL / TM 1800 / FL 120 / TP BE9O / SK BKN018-TOP055 / OVC072-TOPO89 / CLR ABV / TA M7 / WV 08021 / TB LGT 055-072 / IC LGT-MOD RIME 072-089.

Oklahoma to Tulsa, Time (TM) was 1800Z, Altitude (FL) 12,000 feet msl, Aircraft type (TP) Beechcraft C-90, First cloud layer had a base of 1,800 feet Broken with the first layer tops at 5,500 feet.

The second cloud layer base was 7,200 feet and the tops were 8,900 feet and clear above. Temperature aloft (TA) was minus -7c and the winds were 080 at 21 knots, Turbulence (TB) was light between 5,500 and 7,200 and they experienced light to moderate rime icing between 7,200 until they popped out on top of the clouds at 8,900 feet.

TEST QUESTIONS (Use Test Supplement 8080-2H)

*NOTE: CORRECT ANSWER IN **BOLD** ITALICS*

3455.
When telephoning a weather briefing facility for preflight weather information, pilots should state
A) Whether they intend to fly VFR only.
B) true airspeed.
C) fuel on board.

3456.
To get a complete weather briefing for the planned flight, the pilot should request
A) a general briefing.
B) an abbreviated briefing.
C) a standard briefing.

3457.
Which type weather briefing should a pilot request, when departing within the hour, if no preliminary weather information has been received?
A) Outlook briefing.
B) Abbreviated briefing.
C) Standard briefing.

3458.
Which type of weather briefing should a pilot request to supplement mass disseminated data?
A) An outlook briefing.
B) A supplemental briefing.
C) An abbreviated briefing.

3459.
To update a previous weather briefing, a pilot should request
A) an abbreviated briefing.
B) a standard briefing.
C) an outlook briefing.

3460.
A weather briefing that is provided when the information requested is 6 or more hours in advance of the proposed departure time is
A) an outlook briefing.
B) a forecast briefing.
C) a prognostic briefing.

3461.
When requesting weather information for the following morning, a pilot should request
A) an outlook briefing.
B) a standard briefing.
C) an abbreviated briefing.

3462.
(Refer to figure 12) Which of the reporting stations have VFR weather?
A) All.
B) KINK, KBOI, and KJFK.
C) KINK, KBOI, and KLAX.

3463.
For aviation purposes, ceiling is defined as the height above the Earth's surface of the
A) lowest reported obscuration and the highest layer of clouds reported as overcast.
B) lowest broken or overcast layer or vertical visibility into an obscuration.
C) lowest layer of clouds reported as scattered, broken, or thin.

3464.
(Refer to figure 12) The wind direction and velocity at KJFK is from
A) 180° true at 4 knots.
B) 180° magnetic at 4 knots.
C) 040° true at 18 knots.

3465.
(Refer to figure 12) What are the wind conditions at Wink, Texas, (KINK)?
A) Calm
B) 110° at 12 knots, gusts 18 knots
C) 111° at 2 knots. Gusts 18 knots.

3466.
(Refer to figure 12) The remarks section for KMDW has RAB35 listed. This entry means
A) blowing mist has reduced the visibility to 1-1/2 SM.
B) rain began at 1835Z.
C) the barometer has risen .35 inches Hg.

3467.
(Refer to figure 12) What are the current conditions depicted for Chicago Midway Airport (KMDW)?
A) Sky 700 feet overcast, visibility 1-1/2SM, rain.
B) Sky 7000 feet overcast, visibility 1-1/2SM, heavy rain.
C) Sky 700 feet overcast, visibility 11, occasionally 2SM, with rain.

3472.
(Refer to figure 14) The base and tops of the overcast layer reported by a pilot are
A) 1,800 feet MSL and 5,500 feet MSL.
B) 5,500 feet AGL and 7,200 feet MSL.
C) 7,200 feet MSL and 8,900 feet MSL.

3473.
(Refer to figure 14) The wind and temperature at 12,000 feet MSL as reported by a pilot are
A) 090° at 21 MPH and -9 °F.
B) 080° at 21 knots and -7 °C.
C) 090° at 21 knots and -9 °C.

3474.
(Refer to figure 14) If the terrain elevation is 1,295 feet MSL, what is the height above ground level of the base of the ceiling?
A) 505 feet AGL.
B) 1,295 feet AGL.
C) 6,586 feet AGL.

3475.
(Refer to figure 14) The intensity of the turbulence reported at a specific altitude is
A) moderate at 5,500 feet and at 7,200 feet.
B) moderate from 5,500 feet to 7,200 feet.
C) light from 5,500 feet to 7,200 feet.

3476.
(Refer to figure 14) The intensity and type of icing reported by a pilot is
A) light to moderate.
B) light to moderate rime.
C) light to moderate clear.

3478.
From which primary source should information be obtained regarding expected weather at the estimated time of arrival if your destination has no Terminal Forecast?
A) Low-Level Prognostic Chart.
B) Weather Depiction Chart.
C) Area Forecast.

3479 FAA
(Refer to figure 15) What is the valid period for the TAF for KMEM?
A) 12th at 1700Z.
B) 1218Z to 1324Z.
C) 12th 1800Z to 13th 2400Z.

3480.
(Refer to figure 15) In the TAF for KMEM, what does 'SHRA' stand for?
A) Rain showers.
B) A shift in wind direction is expected.
C) A significant change in precipitation is possible.

3481.
(Refer to figure 15) Between 1000Z and 1200Z the visibility at KMEM is forecast to be?
A) 1/2 statute mile.
B) 3 statute miles.
C) 6 statute miles.

3482.
(Refer to figure 15) What is the forecast wind for KMEM from 1600Z until the end of the forecast?
A) No significant wind.
B) Variable in direction at 6 knots.
C) Variable in direction at 4 knots.

3483.
(Refer to figure 15) In the TAF from KOKC, the FM (FROM) Group is forecast for the hours from 1600Z to 2200Z with the wind from
A) 180° at 10 knots.
B) 160° at 10 knots.
C) 180° at 10 knots, becoming 200° at 13 knots.

3484.
(Refer to figure 15) In the TAF from KOKC, the clear sky becomes
A) overcast at 2,000 feet during the forecast period between 2200Z and 2400Z.
B) overcast at 200 feet with a 40% probability of becoming overcast at 600 feet during the forecast period between 2200Z and 2400Z.
C) overcast at 200 feet with the probability of becoming overcast at 400 feet during the forecast period between 2200Z and 2400Z.

3485.
(Refer to figure 15) During the time period from 0600Z to 0800Z, what visibility is forecast for KOKC?
A) Greater than 6 statute miles.
B) Possibly 6 statute miles.
C) Not forecasted.

3486.
(Refer to figure 15) The only cloud type forecast in TAF reports is
A) Nimbostratus.
B) Cumulonimbus.
C) Scattered cumulus.

3487.
To best determine general forecast weather conditions over several states, the pilot should refer to
A) Aviation Area Forecasts.
B) Weather Depiction Charts.
C) Satellite Maps.

3489.
To determine the freezing level and areas of probable icing aloft, the pilot should refer to the
A) Inflight Aviation Weather Advisories.
B) Weather Depiction Chart.
C) Area Forecast.

3490.
The section of the Area Forecast entitled 'VFR CLDS/ WX' contains a general description of
A) cloudiness and weather significant to flight operations broken down by states or other geographical areas.
B) forecast sky cover, cloud tops, visibility, and obstructions to vision along specific routes.
C) clouds and weather which cover an area greater than 3,000 square miles and is significant to VFR flight operations.

3495.
What is indicated when a current CONVECTIVE SIGMET forecasts thunderstorms?
A) Moderate thunderstorms covering 30 percent of the area.
B) Moderate or severe turbulence.
C) Thunderstorms obscured by massive cloud layers.

3496.
SIGMET's are issued as a warning of weather conditions hazardous to which aircraft?
A) Small aircraft only.
B) Large aircraft only.
C) All aircraft.

3497.
What information is contained in a CONVECTIVE SIGMET?
A) Tornadoes, embedded thunderstorms, and hail 3/4 inch or greater in diameter.
B) Severe icing, severe turbulence, or widespread dust storms lowering visibility to less than 3 miles.
C) Surface winds greater than 40 knots or thunderstorms equal to or greater than video integrator processor (VIP) level 4.

3498.
Which in-flight advisory would contain information on severe-icing?
A) Convective SIGMET.
B) SIGMET.
C) AIRMET.

3499.
AIRMET's are issued as a warning of weather conditions particularly hazardous to which aircraft?
A) Small single-engine aircraft.
B) Large multiengine aircraft.
C) All aircraft.

3500.
(Refer to figure 17) What wind is forecast for STL at 9,000 feet?
A) 230° true at 32 knots.
B) 230° true at 25 knots.
C) 230° magnetic at 25 knots.

3501.
(Refer to figure 17) What wind is forecast for STL at 18,000 feet?
A) 230° true at 56 knots.
B) 235° true at 06 knots.
C) 235° magnetic at 06, peak gusts to 16 knots.

3502.
(Refer to figure 17) Determine the wind and temperature aloft forecast for DEN at 30,000 feet.
A) 023° magnetic at 53 knots, temperature 47 °C.
B) 230° true at 53 knots, temperature -47 °C.
C) 235° true at 34 knots, temperature -7 °C.

3503.
(Refer to figure 17) Determine the wind and temperature aloft forecast for 6,000 feet at MKC.
A) 200° true at 6 knots, temperature +3C .
B) 050° true at 7 knots, temperature missing.
C) 200° magnetic at 6 knots, temperature +3C.

3505.
What values are used for Winds Aloft Forecasts?
A) Magnetic direction and knots.
B) Magnetic direction and miles per hour.
C) True direction and knots.

3506.
When the term 'light and variable' is used in reference to a Winds Aloft Forecast, the coded group and windspeed is
A) 0000 and less than 7 knots.
B) 9900 and less than 5 knots.
C) 9999 and less than 10 knots.

3509.
(Refer to figure 18.) Of what value is the Weather Depiction Chart to the pilot?
A) For determining general weather conditions on which to base flight planning.
B) For a forecast of cloud coverage, visibilities, and frontal activity.
C) For determining frontal trends and air mass characteristics.

3520.
(Refer to figure 19) How are Significant Weather Prognostic Charts best used by a pilot?
A) For overall planning at all altitudes.
B) For determining areas to avoid (freezing levels and turbulence).
C) For analyzing current frontal activity and cloud coverage.

3521.
(Refer to figure 19) Interpret the weather symbol depicted in Utah on the 12-hour Significant Weather Prognostic Chart.
A) Moderate turbulence, surface to 18,000 feet.
B) Thunderstorm tops at 18,000 feet.
C) Base of clear air turbulence, 18,000 feet.

3522.
(Refer to figure 19) What weather is forecast for the Florida during the first 24 hours?
A) Ceiling less than 1,000 to 3,000 feet and/or visibility less than 3 to 5 miles.
B) Ceiling 1,000 to 3,000 feet and/or visibility 3 to 5 miles.
C) Ceiling less than 1,000 feet and/or visibility less than 3 miles.

3526.
What should pilots state initially when telephoning a weather briefing facility for preflight weather information?
A) Tell the number of occupants on board.
B) Identify themselves as pilots.
C) State their total flight time.

3527.
When telephoning a weather briefing facility for preflight weather information, pilots should state
A) the full name and address of the pilot in command.
B) the intended route, destination, and type of aircraft.
C) the radio frequencies to be used.

3528.
When telephoning a weather briefing facility for preflight weather information, pilots should state
A) the full name and address of the formation commander.
B) that they possess a current pilot certificate.
C) whether they intend to fly VFR only.

3571.
(Refer to figure 27) An aircraft departs an airport in the eastern daylight time zone at 0945 EDT for a 2-hour flight to an airport located in the central daylight time zone. The landing should be at what coordinated universal time?
A) 1345Z.
B) 1445Z.
C) 1545Z.

3572.
(Refer to figure 27) An aircraft departs an airport in the central standard time zone at 0930 CST for a 2-hour flight to an airport located in the mountain standard time zone. The landing should be at what time?
A) 0930 MST.
B) 1030 MST.
C) 1130 MST.

3573.
(Refer to figure 27) An aircraft departs an airport in the central standard time zone at 0845 CST for a 2-hour flight to an airport located in the mountain standard time zone. The landing should be at what coordinated universal time?
A) 1345Z.
B) 1445Z.
C) 1645Z.

3574.
(Refer to figure 27) An aircraft departs an airport in the mountain standard time zone at 1615 MST for a 2-hour 15-minute flight to an airport located in the Pacific standard time zone. The estimated time of arrival at the destination airport should be
A) 1630 PST.
B) 1730 PST.
C) 1830 PST.

3575.
(Refer to figure 27) An aircraft departs an airport in the Pacific standard time zone at 1030 PST for a 4-hour flight to an airport located in the central standard time zone. The landing should be at what coordinated universal time?
A) 2030Z.
B) 2130Z.
C) 2230Z.

3576.
(Refer to figure 27) An aircraft departs an airport in the mountain standard time zone at 1515 MST for a 2-hour 30-minute flight to an airport located in the Pacific standard time zone. What is the estimated time of arrival at the destination airport?
A) 1645 PST.
B) 1745 PST.
C) 1845 PST.

3791.
Automatic Terminal Information Service (ATIS) is the continuous broadcast of recorded information concerning
A) pilots of radar-identified aircraft whose aircraft is in dangerous proximity to terrain or to an obstruction.
B) nonessential information to reduce frequency congestion.
C) non-control information in selected high-activity terminal areas.