Part 107 Study Guide - Alesia Films

This table is full of practice questions from the app “Prepware Remote Pilot” that I got wrong. I would copy and paste them into a table and I review all of them before the test!

All of the questions that are highlighted are questions I was actually asked on my test!! Or at least all the ones I could remember!

The most common topics I got asked on MY test were:

- AIRSPACE QUESTIONS
- WEATHER QUESTIONS (fronts, squalls & thunderstorm questions)
- ADB-OUT
- Humidity & Temperature & Density

Disclosure: Please remember the test is randomized, so just because I got these questions doesn’t mean you will too!

Practice Questions

Holding position signs have	White inscriptions on red background
How close can the remote PIC fly their sUAS to the Majors Airport (GVT) without having to contact ATC?	Contact with ATC must be made when operating within Class D airport, which is indicated by the blue airport and the blue dashed line surrounding it. The radius of Class D in the case is 4 NM, which is the common standard radius.
During your preflight inspection, you discover that the casing of your sUAS battery has expanded beyond its normal dimensions. What action should you take?	Follow the manufacturer’s guidance.
Where are squalls most likely to form?	At any altitude.
One weather phenomenon which will always occur when flying across a front is a change in the	Wind direction
According to 14 CFR Part 48, when would a small unmanned aircraft owner not be permitted to register it?	The sUAS must be registered by a person who is at least 13 years of age.

What services will a FSS provide?	Assistance during an emergency.
You are operating an sUAS that does not have GPS or an installed ground speed limiter. How can you determine the speed you are operating?	Dead reckoning.
Which weather phenomenon signals the beginning of the mature stage of a thunderstorm?	Precipitation beginning to fall.
In a 45 degree banking turn, a small unmanned aircraft will	Stall at a higher airspeed.
Absence of the sky condition and visibility of an ATIS broadcast indicates that	The ceiling is at least 5000 feet and visibility is 5 miles or more.
What are the VFR minimum visibility requirements over Plantation Airport?	Regardless of the location, crewmembers must conduct sUAS Part 107 operations with a minimum visibility of 3SM.
The angle of attack at which an airfoil stalls will	Remain the same regardless of gross weight.
What is the purpose of the runway hold position sign?	Denotes intersecting runways.
Which of the following lithium batteries should be not used?	A battery with a bulge on one of the sides of its case
What antidotal phrase can help reverse the hazardous attitude of “antiauthority”?	Follow the rules.
Each person who holds a pilot certificate, a U.S. driver’s license, or a medical certificate shall present it for inspection upon the request of the Administrator, the National Transportation Safety Board, or any	Authorized Administrator of the Department of Transportation
Under which operational requirement would the unmanned aircraft be restricted to visual line of sight operations?	If operating with a remote identification broadcast module.
Which is considered to be the most hazardous condition when flying an sUAS in the vicinity of thunderstorms?	Lightning.
The floor of the Class E airspace above Georgetown Airport is at	It is outside the magenta shaded area, which indicates the floor of Class E airspace is at 1200 feet AGL. The airport elevation is given in the airport data as 2623 feet MSL.

	Therefore, the Class E airspace above Georgetown is 3823 feet MSL (2623 + 1200)

The lateral dimensions of Class D airspace are based on	The instrument procedures for which the controlled airspace is established.
A civil small unmanned aircraft operating under Part 107 is permitted to	Operate if possessing either a U.S. registration or a foreign registration certificate.
Automatic Terminal Information Service (ATIS) is the continuous broadcast of recorded information concerning	Non Control information in selected high-activity terminal areas
When range and economy of operation are the principle goals, the remote pilot must ensure that the sUAS will be operated at the recommended	Long-range cruise performance
What is the purpose for the runway hold position markings on the taxiway?	Holds aircraft short of the runway
Upon GPS signal loss, the Remote Pilot should immediately	Operate the sUAS normally, noting to account for any mode or control changes that occur if GPS is lost.
Low-level turbulence can occur and icing can become hazardous in which type of fog?	Steam fog.
When may a remote pilot reduce the intensity of an aircraft lights during a night flight?	When it is in the interest of safety to dim the aircrafts lights.
An ATC radar facility issues the following advisory to a manned aircraft pilot flying north in a calm wind: “UNMANNED AIRCRAFT OPERATIONS AT NINE O’ CLOCK, 2 MILES…” Where should the RPIC look for this traffic?	An aircraft flying north in calm wind would be heading 360 degrees. When advised of traffic at the nine o clock position, the pilot should look 90 degrees left of the nose, to the west, but the remote PIC and sUAS need to look to the East as they are to the west of the manned aircraft.
What should remote pilots rely on for wire strike avoidance?	Visual Scanning
Sky Way airport is	A non-public use airport. The “Pvt” after the airport name indicates Sky Way Airport is a restricted or non-public use airport.
When a manned aircraft is approaching to land at an airport in Class G airspace without	Make all turns to the left, unless otherwise indicated

an operating control tower, the pilot will	
A strong steady wind exists out of the north. You need to photograph an area to the south of your location. You are located in an open field with no obstructions. Which of the following is not concern during this operation?	Strong wind may exceed the performance of the sUAS making it impossible to recover.
One in-flight condition necessary for structural icing to form is	Visible moisture
The amount of excess load that can be imposed on the wing of an airplane depends upon the	Speed of the airplane.
In the TAF for KMEM, what does “SHRA” stand for?	Rain showers.
What is the floor of the Savannah Class C airspace at the shelf area (outer circle?)	Within the outer magenta circle, there is a number 41 directly above the number 13. These numbers depict the floor and ceiling of the Class C airspace; the floor being 1300 ft MSL and the ceiling being 4100 feet MSL.
Every physical process of weather is accompanied by, or is the result of a	Heat exchange
An increase in load factor will cause an unmanned aircraft to	Stall at a higher speed
Which is true concerning the blue and magenta colors used to depict airports on Sectional Aeronautical Charts?	Airports with control towers underlying Class B, C, D and E airspace are shown in blue.

In this section of my study guide, I copied and pasted course material that was hard for me to understand so I could have a quick place to review these sections. Which I'm glad I did because I definitely got tested on them!

Everything highlighted in GREEN was a test question!

Density Altitude

The key to remember for this module is that aircraft operate better in denser air as opposed to less dense air. Denser air provides more air molecules to flow over the wing to create lift and more air molecules for the propeller to push against.

A few relationships to remember for the exam:

- As air pressure increases, air density increases
- As temperature increases, air density decreases
- As humidity increases, air density decreases
- As altitude increases, air density decreases (in general)

The term **Density Altitude** refers to the altitude that the aircraft "feels" like it is in. The denser the air, the lower the density altitude (since air is denser at lower altitudes), and the less dense the air, the higher the density altitude. So, in the relationships listed above, you would need to remember that each time air density INCREASES, density altitude DECREASES, and vice versa. For instance, if temperature went from 75 degrees to 80 degrees, this would mean the air became less dense, thus the density altitude would go up (since less dense air means higher density altitude).

Density altitude is depicted by the pressure altitude and ambient temperature. Density altitude can have a large effect on how your aircraft will perform. Density altitude is the altitude that your drone feels like it's flying at. For example, high density altitudes occur at higher altitudes, lower atmospheric pressures, high temperatures, and higher humidity. A hot and humid day can create high density altitude conditions. Hot and humid air makes the air thinner because the air molecules are spread out further from one another. The separation of air molecules makes the drone work harder because there are less air molecules for the drone to grab onto. Hot and humid conditions mimic the conditions of a higher altitude because of the thin air.

The higher in altitude you fly, the thinner the air will get. Higher altitudes are cooler, but that does not make that altitude denser. At higher altitudes, the atmospheric pressure is low which means there is not enough pressure to push air molecules closer together. A low-density altitude occurs at lower altitudes, higher atmospheric pressures, lower temperatures, and low humidity. The density altitude will be lower because at lower altitudes the atmospheric pressure is greater. If the air is cool and dry, the air molecules will be closer to each other. This means there will be more air molecules for the air to grab onto. It is easier for a drone to create lift in a low-density altitude than it is in a high-density environment.

Automatic Dependent Surveillance-Broadcast (ADS-B)

Automatic Dependent Surveillance-Broadcast **(ADS-B) Out** is a requirement for most manned aircraft these days. It is a system that uses high resolution GPS signal to send position, altitude, and velocity to ATC and aircraft equipped to receive the signal. While it is a great system, §107.53 prohibits sUAS from operating with this equipment transmitting, unless a special authorization is obtained from the FAA. In addition §89.125 says **ADS-B Out** can not be used to meet the requirements of Part 89 for Remote ID. However, according to Part 107, **ADS-B In** is allowed to be used on your drones.

Class A Airspace

Class A Airspace is generally the airspace from **18,000 feet MSL** up to and including 60,000 feet MSL (also referred to as “Flight Level” – or FL – 600). All flights in this airspace must be conducted under instrument flight rules (IFR).

Class B Airspace

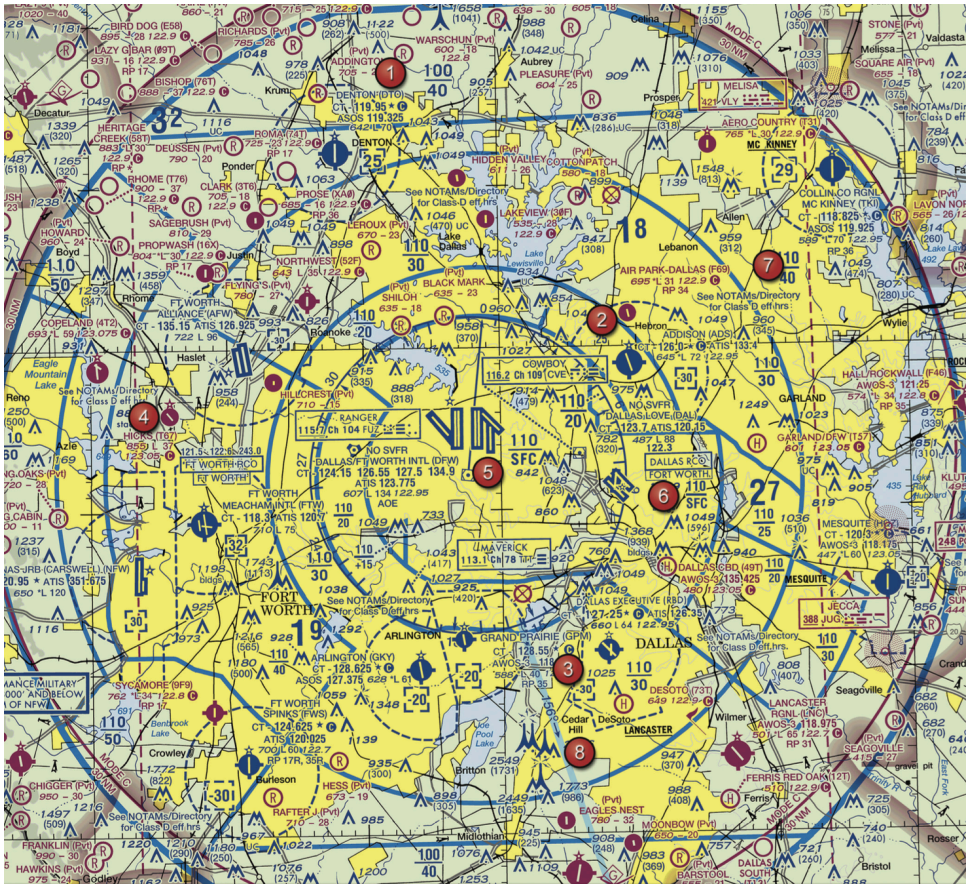
Class B airspace is for BIG airports (think Class **B** for **B**ig). This is the airspace around the busiest airports in the United States. The airspace is made up of several layers that get wider and wider as you get up in altitude. Generally, it is recommended to think of Class B airspace as an upside-down wedding cake

(graphic below), although Class B airspace is generally customized for each airport to account for the flow of aircraft landing and taking off at the airport.

Before entering Class B airspace, aircraft MUST receive prior ATC authorization. Manned aircraft are typically required to be equipped with a Mode-C (altitude reporting) transponder.

The typical ceiling for Class B airspace is 10,000 feet MSL (mean sea level, not above ground level) – remember this for the exam!

Class B airspace is depicted on sectional charts by a solid blue line (see image below).



Class C Airspace

Class C airspace is for airports smaller than Class B but bigger than Class D, in terms of passenger air traffic. Class C airspace usually consists of two rings: a surface area and a shelf area. The center ring (or the surface area) usually extends from the surface to 4,000 feet above the airport and usually has a diameter of about 5 NM. The outer ring (or shelf area) usually starts at 1,200 feet AGL and goes up to 4,000 AGL. The shelf area usually has a radius of 10 NM.

Traditional manned aircraft are required to establish radio contact with the ATC tower before entering the airspace. UAS remote pilots are required to obtain a

clearance before entering Class C airspace. Instructions for this process are consistently being updated and can be found on the FAA's website, faa.gov.

The typical ceiling for Class C airspace is 4,000 feet AGL (above ground level, not mean sea level) – remember this for the exam! However, the altitude will be listed on the sectional chart at mean sea level. For instance, if the airport elevation is 683 feet (as seen below - right under the word "ATIS" in the information for Toledo Express), the ceiling of the Class C airspace would likely be 4,700 MSL (approximately 4,000 feet AGL).

Class C airspace is depicted on sectional charts by a solid magenta line (see image below).

We will take a deeper dive into reading sectional charts in a later section of the course. Right now, we just want you to be familiar with the characteristics of Class C airspace.

Class D Airspace

Class D airspace is for airports smaller than Class B or C that still have a control tower. There is usually only one ring for this airspace, which extends up to 2,500 feet above the airport.

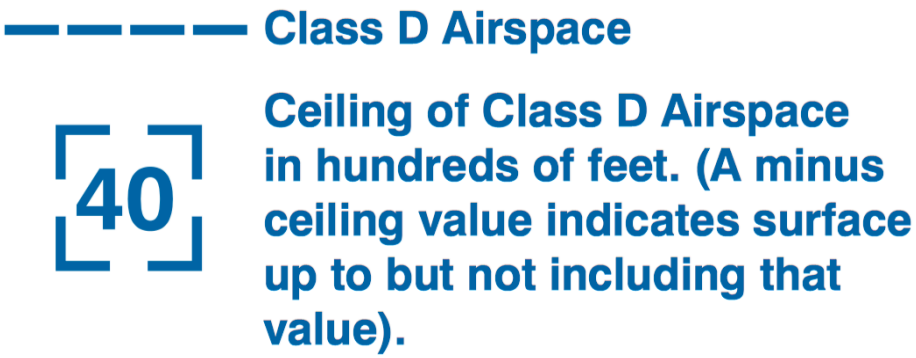
As with Class B and C airspace, prior authorization is required before flying in class D airspace. Traditional aircraft are simply required to establish two-way radio communication with the tower before entering the airspace.

The typical ceiling for Class D airspace is 2,500 feet AGL (above ground level, not mean sea level) – remember this for the exam! However, the

altitude will be listed on the sectional chart at mean sea level (MSL). For instance, if the airport elevation is 1,200 feet MSL, the ceiling of the Class D airspace would likely be 3,700 MSL (approximately 2,500 feet AGL).

Class D airspace is indicated on sectional charts by a blue dashed line.

The ceiling of Class D airspace is indicated by numbers within a blue dashed box. Note: Make sure to add two zeros to the end of this number for the ceiling altitude.



Class E Airspace

Class E Airspace is ANY controlled airspace that is NOT Class A, B, C, or D airspace. Class E airspace is frequently adjacent to other controlled airspace to allow for instrument procedures (IFR flights) in and out of airports. Surrounding airports with instrument procedures, you will typically see Class E airspace either starting at (1) the surface or (2) at 700 feet AGL.

In all of the other areas of the country not marked with Class B, C, or D, Class E airspace typically starts at 1,200 ft AGL and extends up to but not including 18,000 feet MSL.

Class E airspace is noted on the sectional charts by a (1) dashed or (2) shaded magenta line. Typically, the outer ring of Class E airspace extends out 10 nautical miles from the airport. The type of line will indicate the floor of the Class E airspace.

(1) A dashed magenta line indicates that the floor of Class E airspace is the surface.

(2) A shaded magenta line indicates that the floor of Class E airspace is 700 feet above ground level.

When to Request Prior Authorization

You may need to request prior authorization to fly in Class E airspace, depending on which type of Class E airspace you are in.

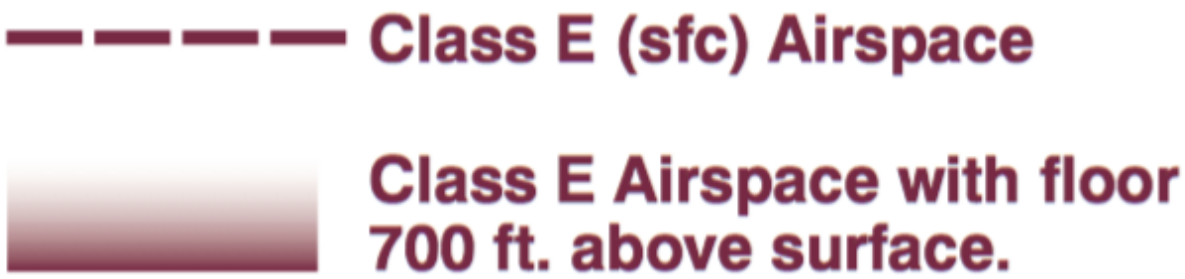
(1) If the Class E airspace is designated for an airport and extends to the surface, you must request prior authorization before entering.

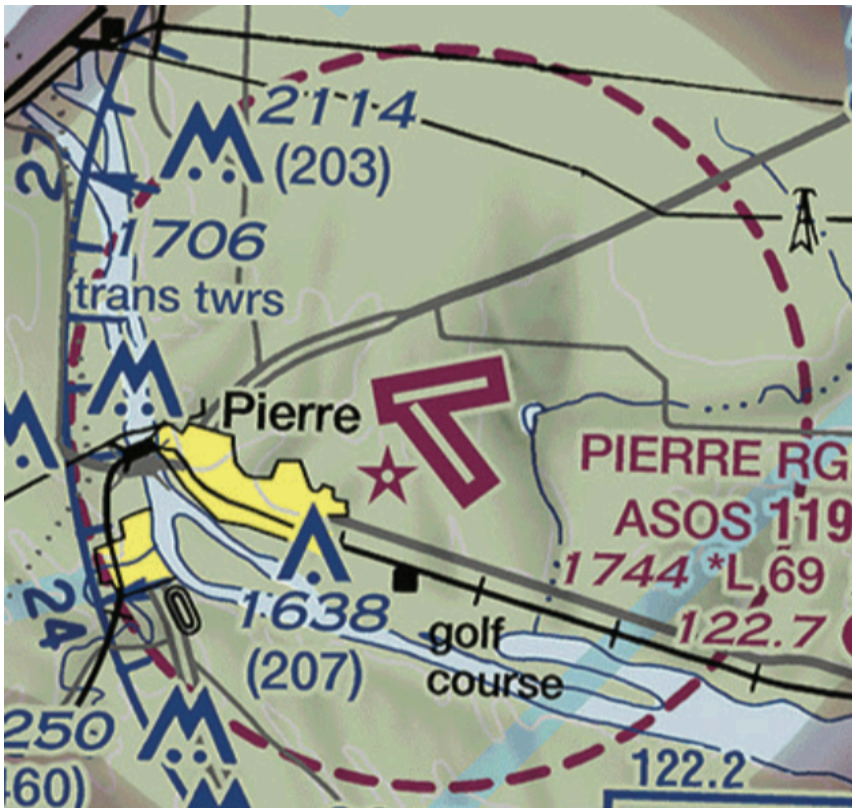
(2) If the Class E airspace starts at 700 feet AGL, you don't need prior authorization before entering.

If you take a look at the image of Pierre airfield below, you will see the dashed magenta line, indicating that Class E airspace begins at the surface. You'll also notice that this Class E airspace is designated for Pierre airfield (as it wraps

around the airfield). In this instance, you WOULD need to request prior authorization before entering.

We will cover Class E airspace more in the Sectional Charts section of the course.





Class G Airspace

Class G airspace is uncontrolled, meaning that the FAA does not provide services in this airspace, nor do they provide any aircraft tracking or redirection. This is a free zone. As such, UAS operations are unrestricted. All Class G airspace is also classified as Class E airspace from 1200 ft AGL, but not including 18,000 ft MSL.

Prior authorization is NOT required before operating in Class G airspace.

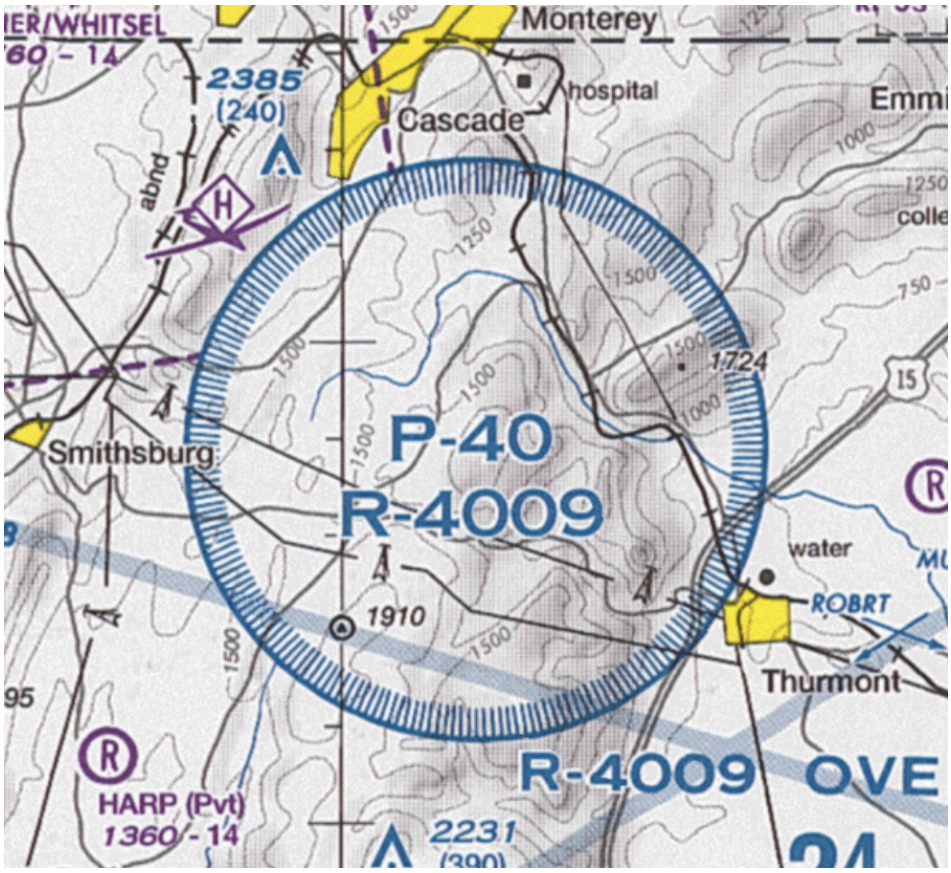
Special Use Airspace

Special Use Airspace is airspace where certain activities must be contained and/or areas where flight is not allowed. Special Use Airspace consists of:

- Prohibited Areas
- Restricted Areas
- Warning Areas
- Military Operation Areas
- Alert Areas; and
- Controlled Firing Areas (CFA)

Prohibited Areas

Prohibited areas are areas where flying is not allowed. Think: over the White House and other sensitive areas. Prohibited areas on charts are marked by a “P” and number, such as P-40.



Restricted Areas

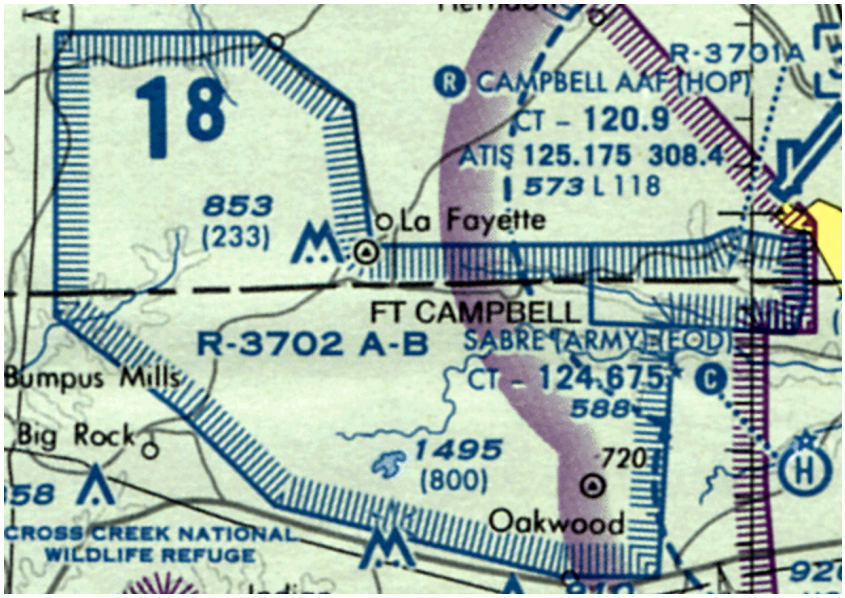
Restricted areas are not entirely prohibited from flight. However, generally only IFR flights are allowed in these areas and only during times when the restricted area is not in use by the controlling agency (generally this is referred to as the controlling agency “releasing” the airspace to the FAA). For instance, many restricted areas are controlled by the military and have artillery fire in the area.

In short, only the FAA or the controlling agency can authorize flights through restricted areas, and generally flights are only authorized for IFR activities.

A restricted area is noted on a sectional chart by an R and then a number, such as “R-4451.”

Make sure you know this for the exam:

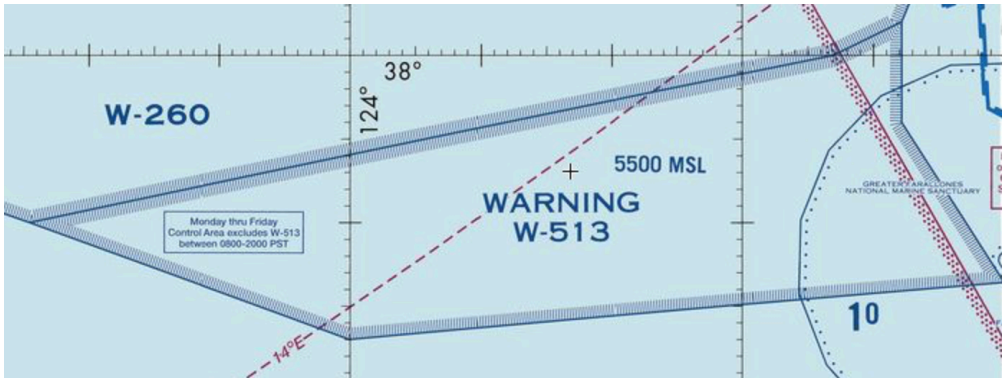
More information on a specific restricted area can generally be found in the notes to the sectional charts where the restricted area is found.



Warning Areas

Warning areas are similar to restricted areas in that they alert pilots to potential in-flight hazards. However, the US government does not have sole jurisdiction over warning areas.

Warning areas can begin as close as 3 NM from the US coastline and go outward. Warning areas are depicted by a W followed by numbers, such as “W–4153.”



Military Operation Areas

Military Operation Areas (MOAs) are just like the name says: areas where the military operates, such as a military training flight activity.

The purpose of specially designating these areas is so that the FAA can keep civilian air traffic out of the way of military training activities. Civilian flight activities are not specifically prohibited in these areas, but since the kinds of operations being conducted in MOAs can cause serious hazards, it is advised to exercise extreme caution.

MOAs are marked on sectional charts by name (e.g., Pine Crest MOA). More information such as specific altitudes of the areas and contact information of the controlling agency can usually be found on the back of the corresponding sectional chart.

Alert Areas

Alert Areas are areas where unusual aerial activity is taking place, such as dense flight training activities, parachute jumping, and glider towing, among others.

Alert Areas will be marked with an A followed by numbers, such as “A-65”, and will usually describe the unusual activity to be aware of.

Controlled Firing Areas (CFAs)

Controlled Firing Areas (CFA) are areas that would normally pose a threat to aircraft entering the area during active operations. However, CFAs have radar or spotter aircraft that send alerts when it is detected that aircraft are approaching the area, and the dangerous activity is suspended until the area is again clear.

Since air traffic does not have to be rerouted (due to the hazardous activity being temporarily suspended), these areas are not charted on sectional charts.

FIGURE 74

Class D and E Airspace, Obstructions, and Military Operation Areas (MOAs)

In this video, we go over how to interpret sectional charts for Class D and E airspace, as well as cover some examples of questions that the FAA might ask you regarding flying around obstructions (specifically, how to determine the height of the obstructions and how high you can fly above them).

If you'd like to follow along with your own file, you can download the FAA test materials below - we are using Figure 21 (the chart is also located just below the quiz questions). Remember, the sectional chart excerpts we use come straight from the FAA supplemental materials that you will be using on your exam, so you may recognize these charts on test day.

Airport Elevations

One test question that has been coming up on the test lately has to do with using the elevation of an airport to determine the floor of controlled airspace, in mean sea level (MSL), that surrounds that airport.

For instance, in area 1 of the chart below, we can see that the airspace that surrounds Sandpoint airport is Class E airspace from 700 feet above ground level (AGL) and upwards (as evidenced by the shaded magenta line). **Well what if we were asked to give the floor of that controlled airspace in MSL instead of AGL? We would first have to determine the elevation of the airport, and then add that to the above ground level altitude of the floor of the airspace.**

We can determine the MSL altitude of a given airport by looking at the portion of the sectional chart that provides data about the airport (highlighted by the blue box in the excerpt below). The number in the bottom left corner of the airport data section (circled in red) will tell you the elevation of that airport in mean sea level (MSL).

So in this example, we see that the elevation of Sandpoint airport is 2,131 feet MSL. We know that the controlled, Class E airspace that surrounds the airfield begins at 700 feet AGL. If "ground level" (aka 0 feet AGL) at this airport is 2,131 feet MSL, we would then add 700 feet to that number in order to determine what the floor of Class E airspace would be as measured in MSL. The answer? 2,831 feet MSL.

Make sure you know how to do this type of calculation for the exam!

Sectional Charts: Class C Airspace

Class C airspace, as discussed in the Airspace section of the course, surrounds airports that are bigger than Class D, but generally do not have enough

scheduled passenger flights and air traffic to warrant being Class B. Class C airspace typically has an inner ring and an outer ring (sometimes more).

Altitude Boundaries

Each ring of the Class C airspace will have a floor and a ceiling. The ceiling tends to be the same altitude for all of Class C airspace, but the floor will usually change depending on what ring of the airspace you find yourself in. The altitude boundaries will be displayed with the ceiling altitude (in hundreds, so remember to add two zeros) on top, a dash, and the altitude of the floor on the bottom (also in hundreds). And remember, the altitude boundaries are reported in Mean Sea Level (MSL).

Class D Airspace Underlying Other Airspace

Occasionally, a Class D airport/airspace will be underneath one of the outer rings of Class B or C airspace. In these instances, the Class D airspace will begin at the surface and usually go up to and butt up against the overlying airspace. If Class D airspace touches other airspace, it will usually have a minus sign in front

of the airspace ceiling number, which indicates that the airspace goes up to but does not include the altitude indicated. For instance, if the Class D airspace ceiling was shown as [-20], this would indicate that the airspace goes up to but does NOT include 2,000 feet MSL.

Common Traffic Advisory Frequency (CTAF)

We previously discussed CTAFs in our Radio Communications Module. If you haven't gone through that, it might be a good time to go back and take a look. The Common Traffic Advisory Frequency (CTAF) at a given airport is the radio frequency where manned aircraft pilots will announce their aircraft's position and their takeoff or landing intentions.

The FAA wants you to know how to recognize the CTAF frequency on a sectional chart. The CTAF frequency is indicated by a C with a colored circle around it in the airport information block. * Be able to find the CTAF number!

Military Training Routes (MTR)

In certain areas of the country, there are designated routes that are for high speed military aircraft activity. Unmanned aircraft activity can pose a serious hazard if operated within these areas. On sectional charts, Military Training Routes (MTR) are shown as grey lines with an "IR" or a "VR", followed by a series of numbers. If there are FOUR numbers after the letters, that means that

ALL flight segments on that route are BELOW 1,500 feet AGL. If there are THREE numbers after the letters, that means that at least one segment goes above 1,500 feet AGL.

Regardless of the type of MTR, remote pilots should exercise extreme caution when operating under or around MTRs.

And that was it for my Study Guide!

I hope you've at least skimmed through this and got some kind of motivation to purchase a Course because this Guide simply isn't everything. You will need someone to actually explain these concepts to you and give you video examples so you can fully understand what to do in every situation and be able to answer these test questions.

I wish you all the best of luck with studying and let me know how it goes!

Xoxo
Alesia