

Answers & commentary for SHV/FSVL theory exam for paragliders
Part 2: Legislation.
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LEGISLATION

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General Legal Framework and OACS

It is only the Confederation (the political institution that governs Switzerland) that has the authority to define the laws concerning the use of Swiss airspace. **Question 001**. The Confederation has delegated the implementation of laws and control the use of Swiss airspace to the OFAC/BAZL (French: Office Fédéral de l'Aviation Civile; German: Bundesamt für Zivilluftfahrt; English: Federal Office of Civil Aviation) . **Questions 002 and 055**. The Confederation has enacted an ordinance (law) on aircraft of special categories, which includes hang gliders and paragliders. This law is called OACS (French: Ordonnance sur les Aéronefs de Catégorie Spéciale) and became law on 24 November 1994. **Question 003**. The OACS is the legal code that governs the activity of free flight in Switzerland.

The chapter describe the details of the OACS.

The OACS gives a precise definition of a “*slope glider*”: flying machines, which use a slope to launch at running speed and are, immediately after the start, used for flights near slopes or gliding flights. **Question 004**. These aircraft do not need to be recorded in any federal register. **Question 005**. Although the use of an approved glider is recommended, the law does not require a review of the airworthiness of slope gliders. **Questions 006 and 045**. There are no restrictions on the use of uncertified gliders wings. It should be noted however that there are few pilots using an unapproved wing. The pilot has the primary responsibility for the airworthiness of a glider. **Question 007**. A helmet and parachute are only mandatory for the pilot's practical examination. Outside the exams, these are not required, but strongly recommended. **Questions 008 and 009**.

Only liability insurance specific for free flight is required by law (OACS). **Question 010**. This should cover a minimum of CHF1,000,000, providing for damages that might occur to uninvolved third parties on the ground. **Questions 011 and 012**. The party responsible for any damage must pay the difference if the amount of damage is greater than the guaranteed cover of the liability insurance. **Question 013**. Damages relating to any third party aircraft in flight are not covered by the mandatory liability insurance. **Question 014**. However, note that currently (2005) the SHV/FSVL offers an enhanced liability insurance to all members covering damage to third parties up to CHF2,000,000, including damage occurring in flight. The cost of this is very reasonable. These benefits are more appropriate than the minimum mandatory liability insurance. Therefore, if you decide not to join the FSVL after you qualify, it is important to review your liability insurance for the extent of the benefits and do not just accept the lowest premiums.

Any slope glider must have 2 sets of markings: (1) the identification number and (2) the plaque of the manufacturer. **Question 015**. The identification number is mandatory for any user of Swiss airspace. **Question 022**.

The identification number is composed of 5 or more digits, must be easily recognizable and affixed to the underside (lower surface) of the wing. These figures, which are usually adhered to the fabric of the wing, each must measure 40 cm in height. The SHV/FSVL is responsible for managing and allocating these numbers to each pilot. **Questions 016 to 018**. All wings flown by a particular pilot must have the same identification number,

identical to that on the certificate of liability insurance which the pilot must carry on each flight. **Question 019 and 20.** In practice, this number is usually identical to that of pilot license issued by the SHV/FSVL, but the law is only the number for the liability insurance and the identification on the wing must match.

The manufacturer's plaque (a small piece of fabric sewn into an edge or a wingtip) must include the following information: name of manufacturer, type of wing, the year of manufacture, the minimum and maximum loads specified by the manufacturer. Other information such as serial numbers and class certification are not mandatory. **Question 021.**

The minimum age for obtaining a license for free flight is 16 years. **Question 023.** But a student may begin flight school at age 15. There is no maximum age limit for having a pilot license, nor is a medical examination required, neither prior to, nor during a pilot's flight career. **Questions 024 and 046.** The validity of a glider pilot license is unrestricted, with respect to either the age of the pilot or minimum number of flights per year. **Questions 047 and 048.** Once licensed, a pilot is not required to list his flights in a flight log. **Questions 049.** Any pilots, domestic or foreign, domiciled in Switzerland must have a Swiss license for a gliding pilot to fly to Switzerland, even occasionally. Only foreign pilots domiciled abroad, who have an equivalent foreign license or international license (IPPI of the FAI - Federation Aeronautique Internationale) may occasionally fly in Swiss airspace. **Question 025.**

The flight training or instruction of unqualified students is not permitted without the direct supervision of a person holding an instructor's license that is recognized in Switzerland. **Questions 026 and 027.** The program of tests for pilots shall be determined in the directives of the SHV/FSVL and approved by the OFAC/BAZL (Federal Office of Civil Aviation). **Question 032.**

Flights with a passenger (tandem flight) can only be performed by pilots holding a relevant license (tandem license). **Question 028.** The flights with more than one passenger (e.g. 2 children) are not allowed. **Question 050.** There are 2 types of tandem patent: the license (A) and license (B). License (A) allows this pilot to take any passenger, including those without any license. **Questions 029 and 031.** License B allows the pilot to take a passenger who holds a pilot certificate ("solo" license) in the same category. For example a pilot with tandem paragliding B license, can not take a passenger who is a licensed delta pilot, but not a paraglider pilot. **Question 030.**

During his flight, a qualified pilot must carry 2 documents: certificate of insurance covering the identification number of the wing in which the flight is made and the paraglider pilot's license. **Question 033.** Official who are able to ask for these documents are: OFAC/BAZL officials, representatives of public order (e.g. police), managers of aerodromes. **Question 034.**

The takeoffs and landings of slope gliders are not permitted on public roads, ski slopes and a distance of less than 5km from active military or civilian airport runways (which do not have control zone CTR) and 2.5km from a heliport. **Questions 035, 042 and 043.** The following may regulate or prohibit the takeoff or landing of slope gliders, the Confederation, cantons, municipalities and landowners. **Question 036.** The chief of an airport may

authorize, under certain conditions, landing on the (or beside) runway of the airport.
Question 044.

The following should be circumnavigated, or flown over at a safe distance: gatherings of people in the outdoors, buildings, highways and ski slopes, the public transportation facilities, overhead power lines and other overhead cables. There is no other requirement for these matters, and notably no specified minimum height. **Question 037.**

Provided that no goods are transported and that the pilot has the necessary documents when crossing the border, the pilots of slope gliders are allowed to enter and/or leave Swiss airspace. Foreign laws must be respected. **Question 038.**

The takeoffs and landings on public waters must be subject to prior authorization from the cantonal administration for navigation. **Question 039.** Towing of slope gliders with winches or vehicles (up to 150 meters above ground level) is allowed, subject to prior authorization by the Federal Office of Civil Aviation (OFAC/BAZL). **Question 040.** The training of persons to operate the winches to launch slope gliders is not subject to any regulation. **Question 041.**

The radio frequencies reserved for the free flight, and without special training, is 130,925MHz for licensed pilots and 123,425MHz for pilot training. **Questions 051 to 053.**

Some useful abbreviations

ICAO: International Civil Aviation Organization. **Question 054.**

VFR: Visual Flight Rules. These are the rules that apply to any aircraft which must fly "by sight". They define the minimum required visibility and the safe distance required in relation to clouds, the priorities to be adopted on convergence of aircraft, etc... **Questions 065, 067 and 068.** All slope gliders should fly only in VFR conditions.

IFR: Instrument Flight Rules. These do not apply to slope gliders. They are restricted to aircraft with the appropriate equipment needed to fly in poor visibility ("blind"). **Questions 064 and 066.**

GND: Ground. **Question 069.** Not to be confused with AGL below.

AMSL: (Altitude) Above Mean Sea Level. **Question 070.**

AGL: (Altitude) Above Ground Level. **Question 071.**

FL: Flight Level (altitude). The number following this abbreviation represents hundreds of feet. Unfortunately the Americans, having commandeered international air law, never learned about meters. To find the number of meters, multiply the FL number by 30. For example, FL30 corresponds approximately 900m (30 x 30); FL100 is approximately 3000m (100 x 30); FL150 is approximately 4500m (150 x 30). FL 195 is approximately 5900m (195 x 30). **Questions 072 to 076.**

Airspace Structure

The ICAO has legally defined 7 airspaces in the troposphere, designated by letters (A) to (G). **Question 084.** In Switzerland, only 4 of these types of spaces apply: (C),(D),(E) and (G). Memory aid: “Ceiling Defines Every Glide”. **Questions 085 and 086.** Figure L1 shows the distribution of these 4 spaces. The spaces (E) and (G), called uncontrolled airspace, are the only places that paragliders may be used without permission and without radio contact with air control centers. The spaces (C) and (D) are called controlled airspace, and should only be used after prior authorization and with radio contact with air control centers. The paragliders should not use these airspaces. **Questions 087 to 089.**

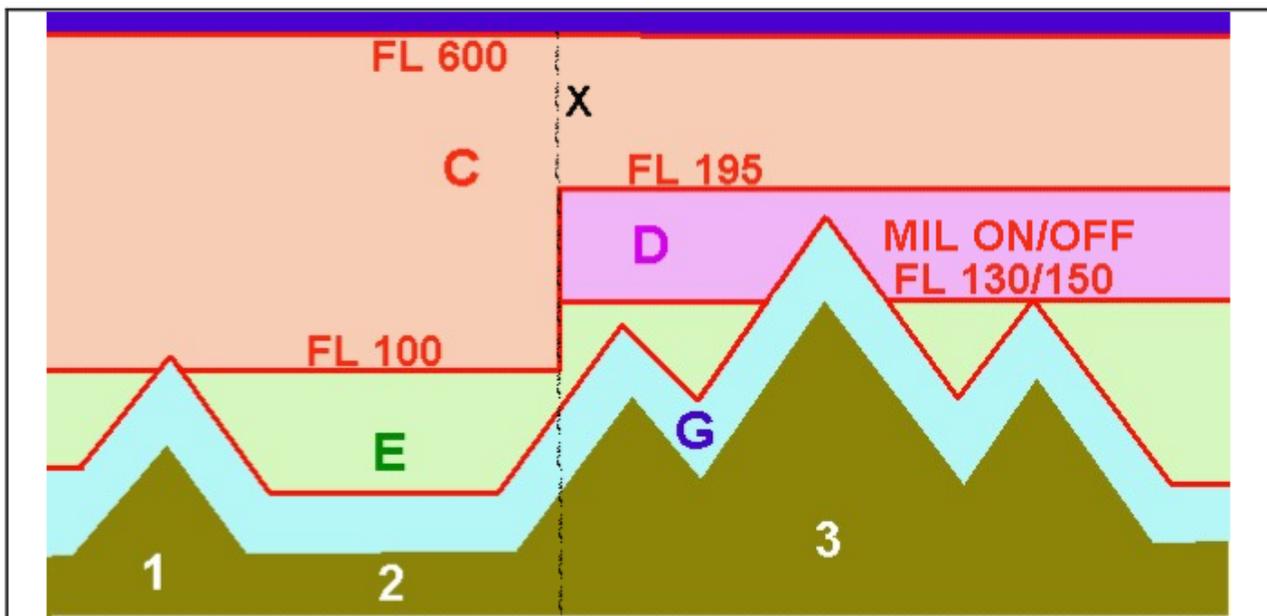


Figure L1: Vertical view of Swiss airspace. 1 = Jura, 2 = Plateau, 3 = Alps. X = vertical plane along the line of demarcation between the Plateau and the Alps.

The space (G) (or “Golf” in aviation alphabet) covers the whole of Switzerland from the ground to 600m above ground level (AGL). **Question 090.** Therefore the upper limit of (G) is 600m AGL and its lower limit is represented by the soil.

Above (G) is the airspace (E) (“Echo”). On the Jura and the Plateau, the upper limit of (E) is FL100 (3050m AMSL). **Question 092.** In the Alps, the upper limit of E varies according to hours and seasons. During times of military flights (MIL ON), Monday to Friday, except holidays, from 08:00 to 12:00 and from 13:30 to 17:00 approximately (these times vary from year to year and are set exactly on the gliding map), the upper limit of E on the Alps is generally FL130 (3950m AMSL). **Question 094.** Outside military flight hours (MIL OFF), this limit is usually FL150 (4600m AMSL). See Figure L1. **Question 097.** The dividing line between the Jura-Plateau region and the Alps is shown in Figure L2. It is precisely represented on the gliding map and the AIP. **Question 103.**

Knowledge of (C) and (D) airspace is less useful because paragliders can not use these. In the Alps, (D) extends from the upper limit of (E) to FL195 (5950m AMSL). (C) extends from FL195 to FL600. On the Plateau and the Jura, there is no airspace (D), and in this area (C) begins at FL100 extends to FL600.

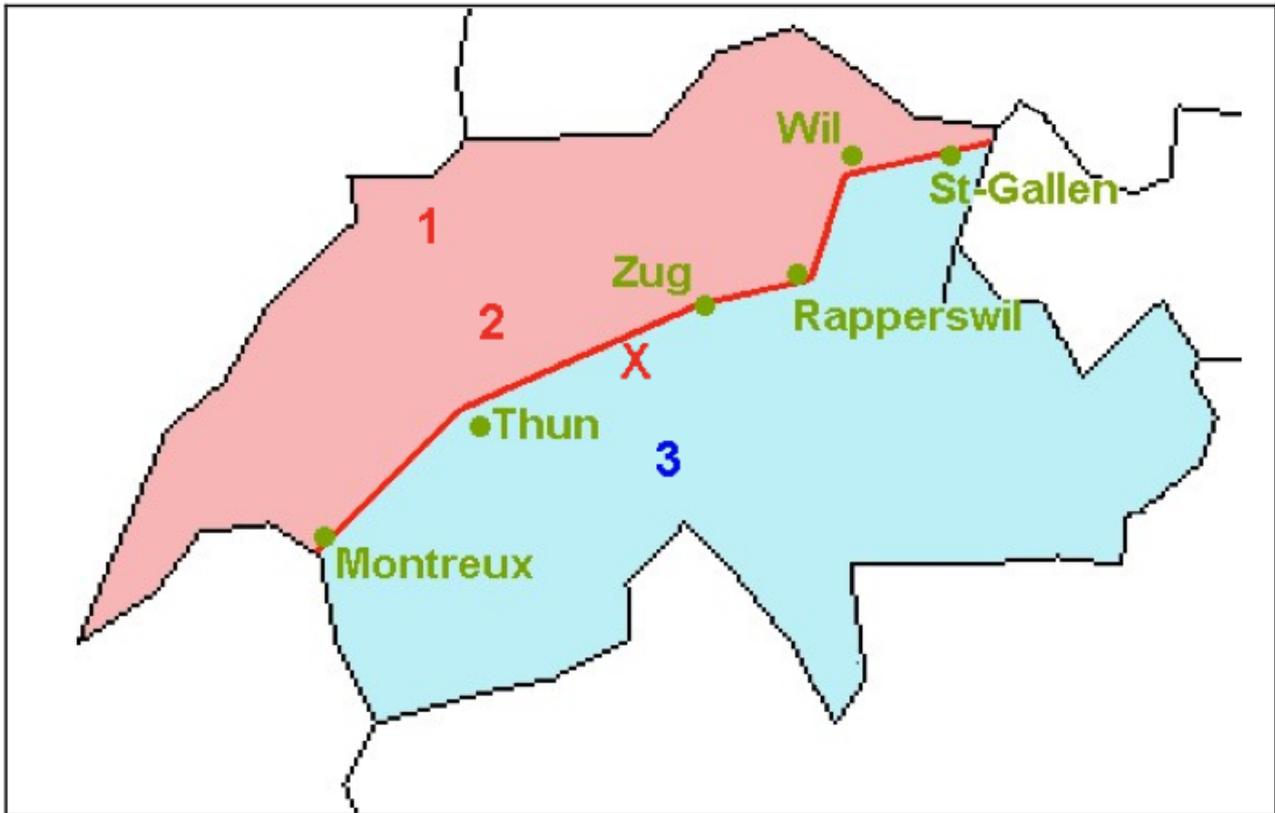


Figure L2: geographic separation (X) between the area of the Jura-Plateau (1 +2) and that of the Alps (3).

The vertical limits to remember are in summary:

600m AGL	Upper limit of (G) airspace
FL100 (3050 m AMSL)	Upper limit of (E) airspace (Jura-Plateau)
FL130 (3950 m AMSL)	Upper limit of (E) airspace (Alps, MIL ON)
FL150 (4600 m AMSL)	Upper limit of (E) airspace (Alps, MIL OFF)
FL195 (5950 m AMSL)	Lower limit of (C) airspace (Alps)

In many parts of the Swiss airspaces (E) and (G) there are areas only available to paragliders from 1st April to 31st October, and after military hours (MIL OFF). See Figure L3. We will see later that in normal gliding areas the legal separation distances from cloud are can be reduced. **Question 104.**

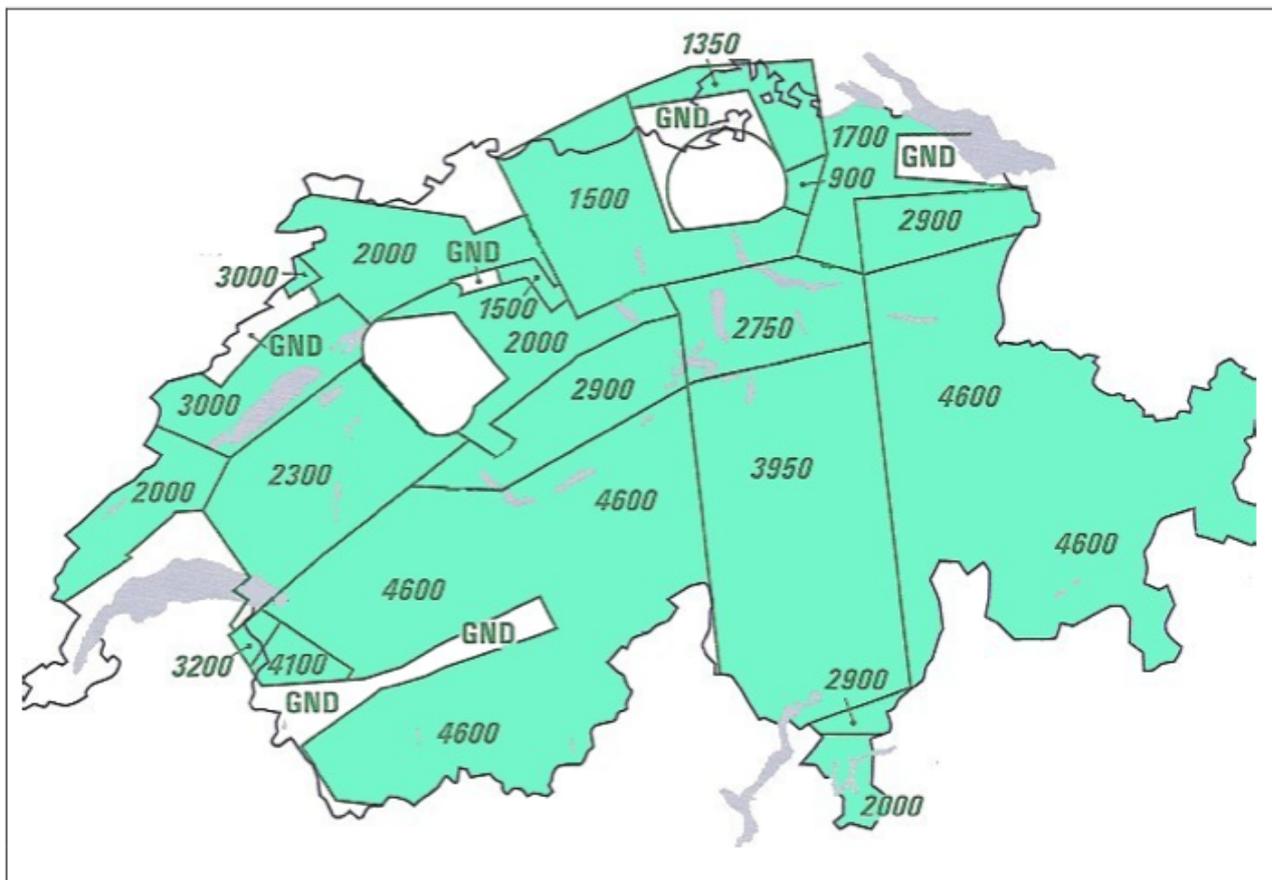


Figure L3: Gliding zones (light green) in Switzerland. The numbers represent the upper altitude limits AMSL in meters.

Additional gliding areas, especially during times of military flights (MIL ON) can be locally and temporarily declared (e.g. in parts of the Alps and during certain periods in the summer period). These typically have upper limits at 3950m AMSL. These areas are defined in the AIP (see below). **Question 095.**

Thus far we have discussed the general legal airspace in Switzerland. There are additionally a number of local limitations to airspaces (E) and (G) for paragliders: Firstly all dangerous, prohibited and regulated areas in Switzerland are completely or partially restricted to paragliders. There are also many spaces around, and between, major airports, which are reserved for large aircraft and IFR flights.

A **restricted area** is where aviation activities can only be conducted according to certain rules (e.g. flight height is controlled by air traffic control). Nature reserves and the Swiss National Park are also restricted zones, although they are not defined as such in the aviation regulations, the guideline requires flight to be conducted at high altitudes, which is not possible for paragliders.

An **exclusion zone** is an area in which any unauthorized aircraft activity is prohibited. There are no such areas permanently defined in Switzerland. However an example is, in early June 2003, a restricted area of a 30km radius around Evian was defined for a few days due to the intergovernmental meeting of the G8. A similar exclusion zone was defined around Davos in 2009. **Question 105.**

A **danger zone** is an area where an aviation activity can be dangerous. **Question 111.** There are three types of danger zones: (1) A gliding zone, in which the required separation distance from cloud is reduced for paragliders and sailplanes, and which may be dangerous for aircraft. (2) A flight zone in the clouds (only for suitably equipped and authorized gliders, and *never* for paragliders) which may pose a danger to any aircraft. **Question 110.** These areas of flight through clouds are precisely defined and, together with the radio frequency to be used, are noted on gliding maps. These zones can essentially cover almost all of the Swiss Alps and part of the Jura up to the canton of Neuchatel. And finally (3) A military firing zone (DCA or artillery), only active during a period (often short). Examples are: (i) The area LS-D7, polygonal, about 7-8km radius around Grandvillard (between Moléson and Vanil Noir), extending from ground to an altitude of 2750m. See Figure L6. (ii) The LS-D9 area in the valley of Conches, about 10km in radius, extending from ground to an altitude of 11,500m. See Figure L6. These hazardous areas are not continuously active. In 2002, for example, these two dangerous areas were active only for a few days from January - March and September - December.

Around and between major airports, there are 3 types of controlled airspace, which can be considered extensions of controlled spaces (C) and (D) continuing to ground level(see Figures L4 and L5):

(1) **Control zones** (CTR), located immediately around the runway, extending from the ground up to a certain altitude, defined for each airport specified on the gliding map. **Questions 080 and 081.**

(2) **Terminal management areas** or terminal control areas (TMA), around and above the CTR, covering a range of altitudes from the lower to the upper limits, and defined for each airport specified on gliding maps. The TMA is a hub around which the various airways converge. **Questions 082 and 083.**

(3) **Air lanes** or air corridors (AWY), connect the TMA to other airports. The upper limit is FL195. **Questions 077 and 078.** The lower limit of an AWY varies by the sector. This limit is shown on the gliding map. **Question 079.**

For examples of CTR, TMA and AWY see Figure L6. The CTR of Sion airport is an area lying surrounding the airport, about 20km long and 5km wide, extending from ground to 3950m. The corresponding TMA is contiguous and adjacent to the CTR, and extends eastward. Its upper limit is 3950m. The lower limit increases in increments: 900m, 1850m, 3050m. The CTR of Sion is permanent (both civil and military). The TMA in contrast is temporary (military), active a few weeks per year and indicated by the NOTAM.

The air corridor AWY B372 lies to the south and extends from Valais to Chablais. The lower limit is 5350m in the south-east and 4100m in the north-west. Its upper limit is 5950m, as with all AWY.

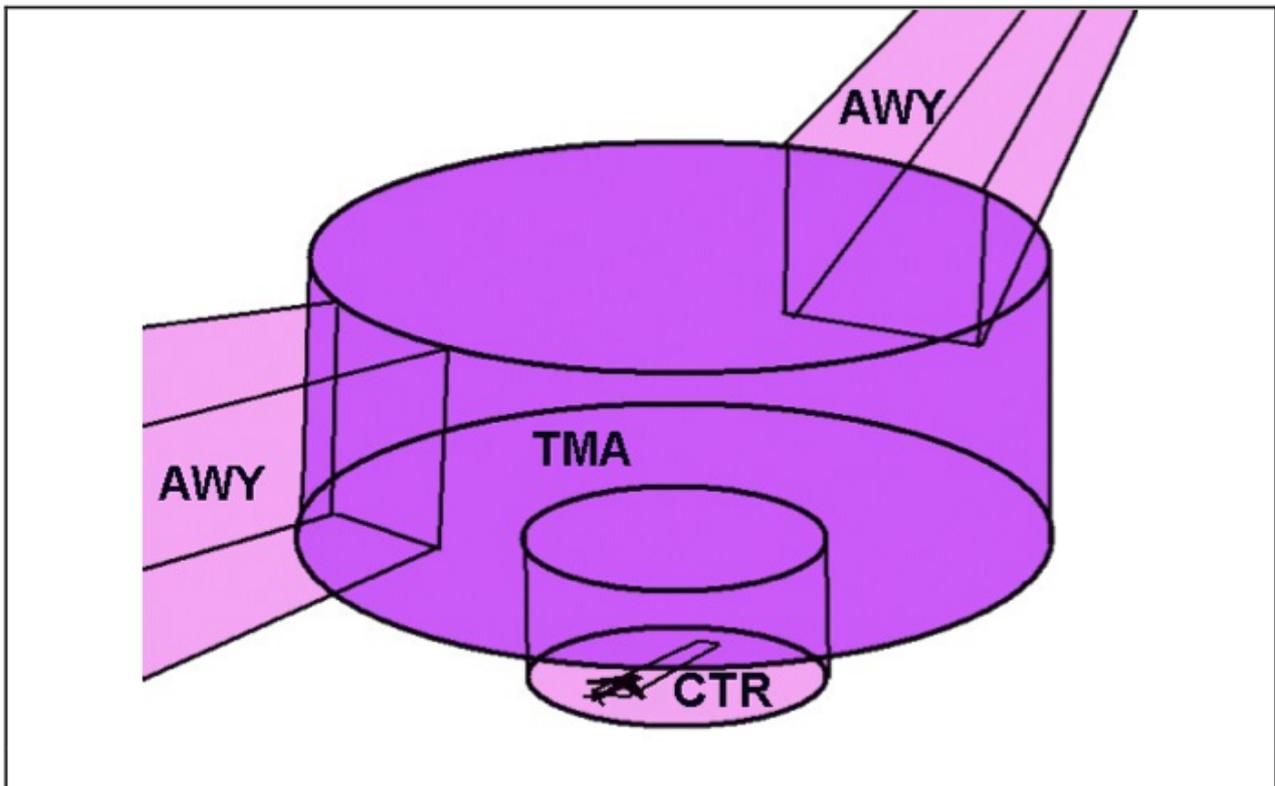


Figure L4: Representation of controlled spaces around and between major airports.
 In reality, the CTR and TMA are not usually cylindrical and symmetrical.

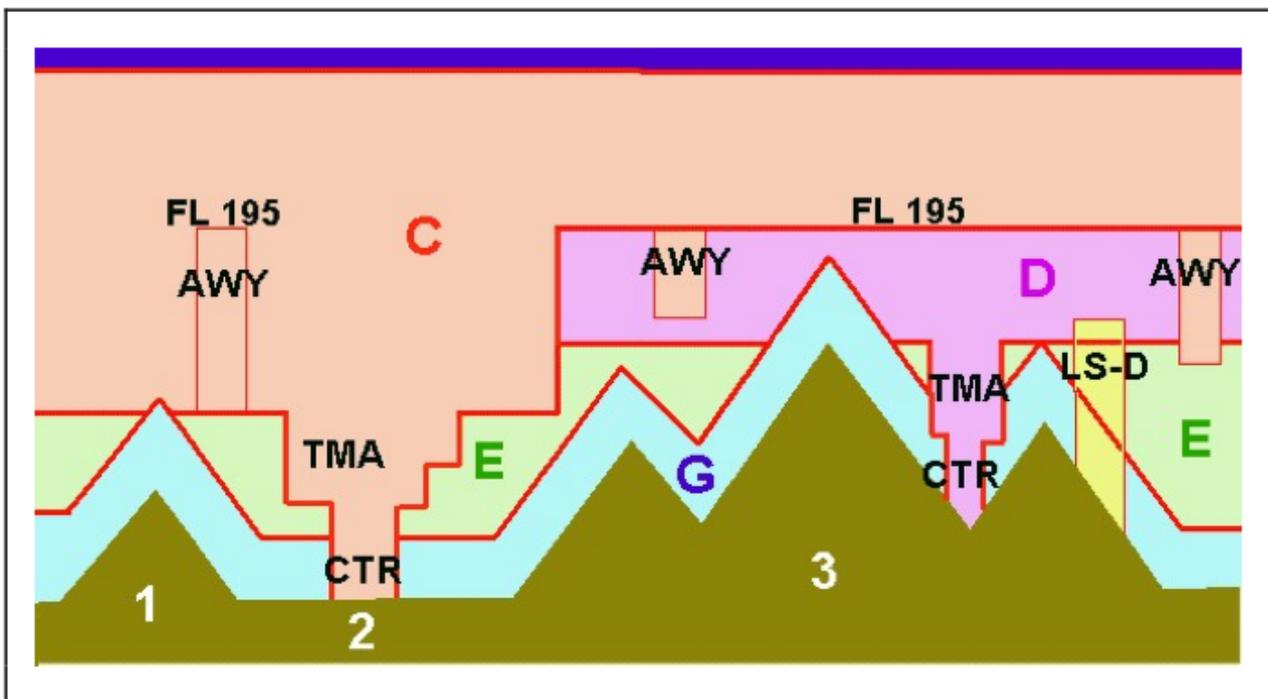


Figure L5: Vertical view of Swiss airspaces with controlled or restricted areas extending into E and G.
 1 = Jura, 2 = Plateau, 3 = Alps.

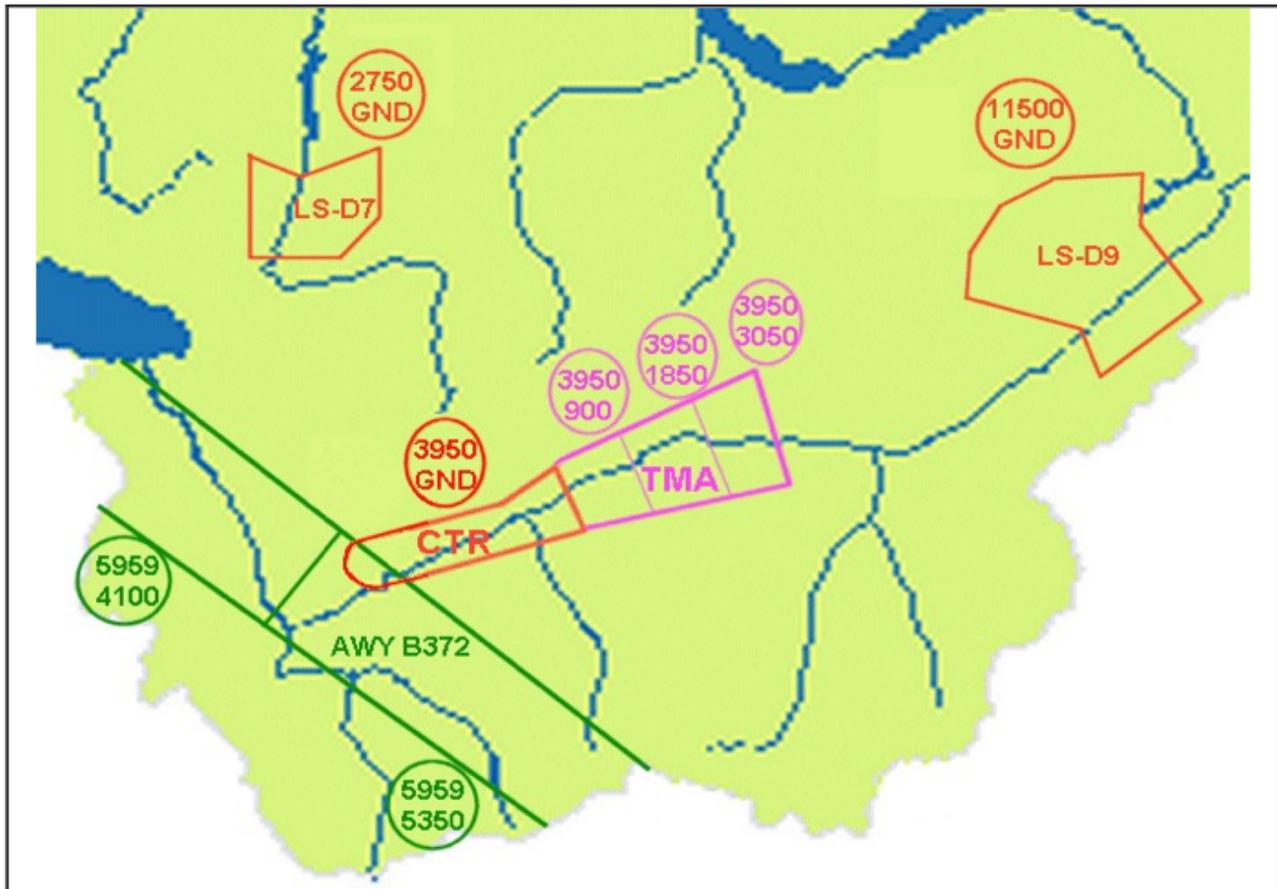


Figure L6: Examples of local airspace restrictions

Sources of Information on Airspace

There are 4 sources of information describing the structure of the airspace in Switzerland, including any temporary and/or permanent changes:

- 1) **The gliding map or GLDC** (GLD is the abbreviation for "glider"). See Figure L7. It is a topographical map with information on the extent of the various categories of airspace, hazardous sectors, overhead obstructions and military flight schedules military all portrayed on the gliding areas. **Question 106**. This map comes with the VFR collection of the AIP Skyguide service. This document provides hundreds of pages of information in addition to the map. **Questions 058 and 059**. The dividing line between the Jura-Plateau and the Alps is precisely defined on the gliding map and the AIP. **Question 103**. See Figure L2.
- 2) **The AIP** is the abbreviation for "Aeronautical Information Publication". This document contains general information and enduring information for users of Swiss airspace and that is essential to the safety of air navigation. The publication is updated monthly on average. **Questions 056 and 057**. In the AIP, there is also the location, dates and validity of gliding areas and additional temporary spaces that can be used by gliders (usually in the summer in the Alps) and the hours defined for military flights. **Question 096**. The dividing line between the Jura-Plateau and the Alps is precisely represented in the gliding map and the AIP. **Question 103**.

Flight Rules (VFR)

For paragliders, the following are the minimum required distances for visibility, distance from cloud and the priority rules between convergent aircraft.

Type of Airspace (See also Figure L8)	Minimum visibility	Minimum horizontal distance from cloud	Minimum vertical distance from cloud
FL100 = 3050m			
Space E above FL100 Question 093	8 km	1.5 km	300 m
Space E below FL100	5 km	1.5 km	300 m.
Space G. Question 091	1.5 km View to the ground	Out of cloud	Out of cloud
Gliding zone above FL100. Question 104	8 km	100 m	50 m
Soaring zone below FL100. Question 104	5 km	100 m	50 m

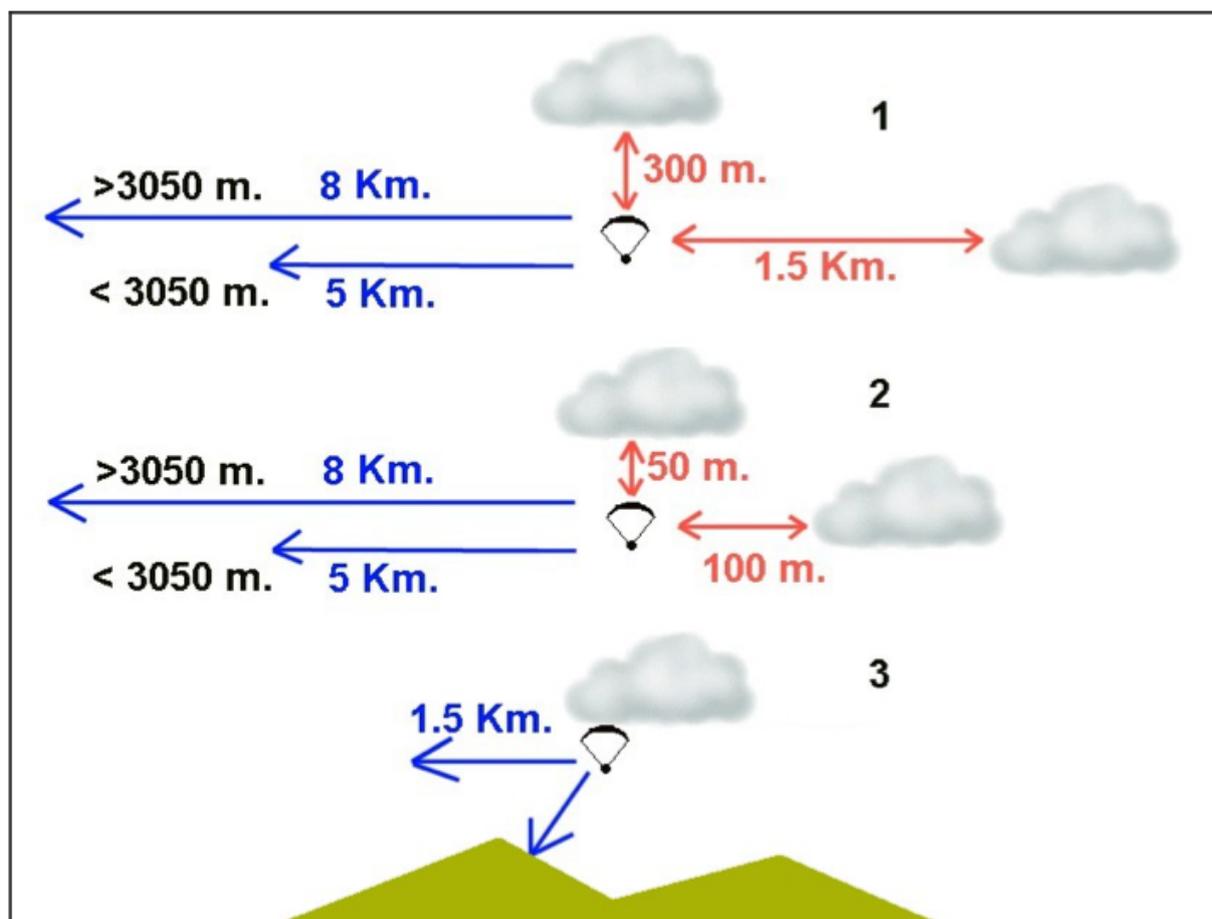


Figure L8: Rules governing distance from cloud and minimum visibility.
 1 = (E) airspace, 2 = gliding areas. 3 = (G) airspace.

The following are examples of the rules applied to various situations:

Situation	Minimum visibility	Minimum horizontal distance from cloud	Minimum vertical distance from cloud
Airspace E at 2800m AMSL Question 093	5 km	1.5 km	300 m
Airspace E at 3800m at AMSL Question 098	8 km	1.5 km	300 m
The Jura. Altitude 800m AGL and 1700m AMSL. Wednesday 15:30. It is therefore in airspace E, MIL ON. Question 099	5 km	1.5 km	300 m
The Jura. Altitude 500m AGL and 1400 m AMSL. Wednesday 15:30. It is therefore in airspace G. Question 100	1.5 km View to the ground	Out of cloud	Out of cloud
On the Alps. Altitude 800m AGL and 3300 m AMSL. Wednesday 14:30. It is therefore in airspace E, MIL ON. Question 101	8 km	1.5 km	300 m
In the Alps (Furka Pass). Altitude 400m AGL to 3800m AMSL. Wednesday 14:30. It is therefore in airspace G. Question 102	1.5 km View to the ground	Out of cloud	Out of cloud
Active gliding airspace 900m AGL, 3800m AMSL. Question 107	8 km	100 m	50 m
Active gliding airspace 900m AGL, 2800m AMSL. Question 108	5 km	100 m	50 m
Active gliding airspace 500m AGL, 3400m AMSL. It is therefore in airspace G. Question 109	1.5 km View to the ground	Out of cloud	Out of cloud

In air law there are several categories of aircraft that are assigned a priority based on its potential to maneuver out of danger. The aircraft with least maneuverability will always take precedence over the more maneuverable. Deltas, gliders and paragliders are legally treated at the same performance level. All three have priority over powered aircraft (with an engine), airships and helicopters. Airships have priority over powered aircraft. In contrast, a paragliders have to cede priority to balloons. See Figure L9. All classes will cede priority to an aircraft in distress. **Questions 133 to 137**. For example, if the path of an powered airplane and a paraglider converge substantially at the same altitude, the paraglider has priority. **Question 139**. It is however clear that these priority rules are valid

only in the airspace authorized for that aircraft. A paraglider should not assert its priority over an airliner if it has entered a TMA without permission!

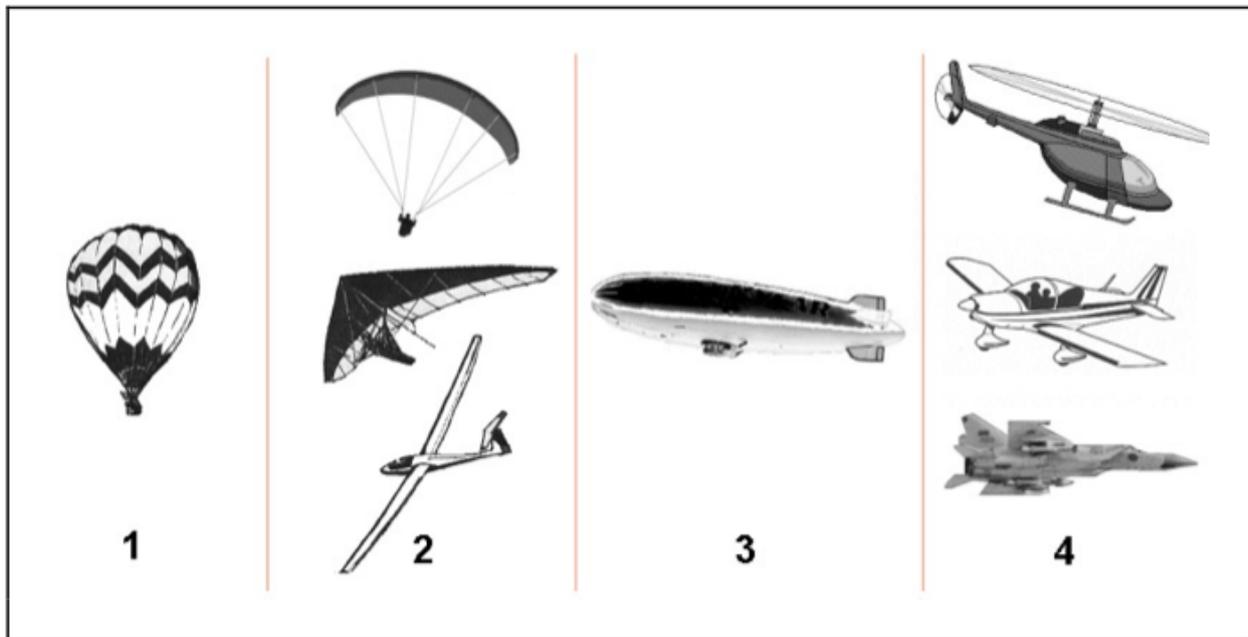


Figure L9: VFR priorities rules between aircraft: Lowest number has priority over aircraft of a higher number.

Aircraft with the same or different priorities can approach each other at a distance that excludes any risk of collision. **Questions 138 and 148.**

For aircraft of the same class (e.g. paragliders and gliders), according to VFR (Visual Flight Rules), the priorities are as follows (see Figure L10):

- a. When converging at the same altitude, the glider to the right has priority. **Question 142.**
- b. When two gliders converge head to head, both turn to the right. **Questions 143 and 140.**
- c. Overtaking at the same altitude is allowed if far from a hill or slope. The glider overtaking must always pass on the right. The glider in front (i.e. slower) has priority until the angle of between them is lower than 70° , then the normal priority to the right shall prevail. As long as the glider approaching from the rear in this corner (less than 70°), it is considered the "passing aircraft" and does not have priority. **Questions 144 to 147.**
- d. In a thermal, the first glider to enter chooses the direction of turn. All other gliders must follow the same circular direction. **Question 150.**
- e. When converging head to head, near a slope, the paraglider that has the hill to the right has priority. The glider with the slope to the left must give way, by turning right. **Question 141.**
- f. Overtaking or passing above or below must be done with a safe margin of distance. **Question 149.**
- g. Overtaking at the same height, passing above or below, near a slope, are all prohibited. **Question 144.**
- h. Spiral turns near a hill is prohibited.
- i. In landing, the lowest glider has priority. **Question 151.**

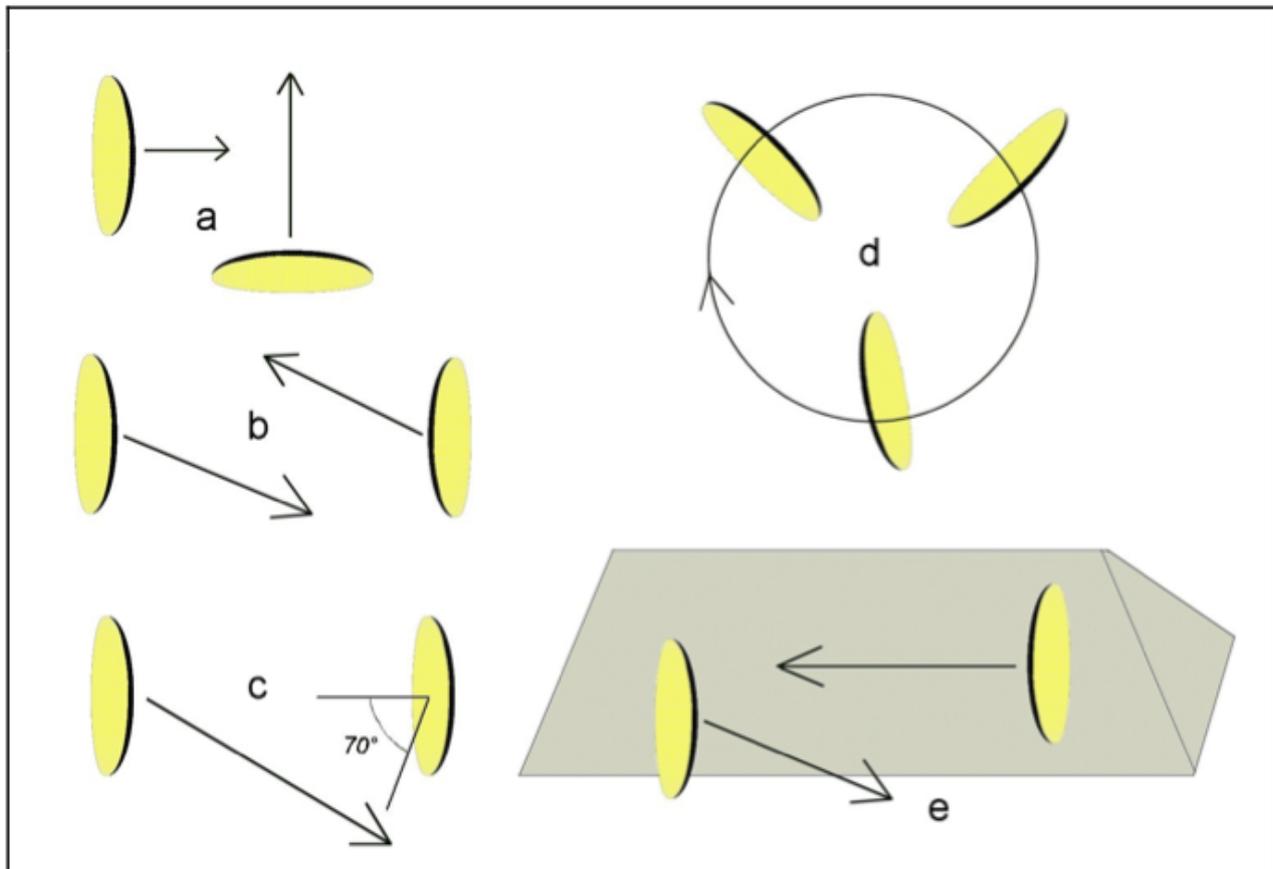


Figure L10: VFR rules of priority for aircraft in the same category.

For paragliders, there is no directive for a minimum distance from the terrain. **Question 152.** A yellow cross placed on a field indicates that the landing area is temporarily closed. **Question 153.**

Examination and Licensing of Free Flight Pilots

There are 3 types of license for slope glider pilot: (1) paraglider, (2) delta, (3) rigid wing. **Question 112.** If a pilot of one category wishes to extend his license to another category, he must pass two parts of the theoretical exam: "flying skills" and "equipment" for the new class and pass the practical exam. **Question 113.** It is the Swiss Federation of Free Flight (SHV/FSVL) (= *correct answer*) which is mandated by the OFAC/BAZL (= *wrong answer*) to issue official licenses to slope glider pilots. **Question 114.** Registration for the examinations and practical test of the glider pilot are all performed by the SHV/FSVL. **Question 115.**

Time limits for licensing examinations for glider pilots, as directed by SHV/FSVL, are:

Minimum time for registration before the event. Question 116.	9 days
Minimum time between the theoretical, (before) and the practical part. Question 117.	9 days
Maximum delay between the theoretical and practical part. Question 118.	36 months
Minimum time between failing an examination (theoretical or practical) and a new test. Question 119.	12 days
The maximum time after the examination for an appeal, if the applicant considers the decision of the examiner is within the guidelines. Question 121.	30 days

If, after the test, the candidate believes that the decision of the examiner is not in accordance with the rules, he may appeal to the OFAC/BAZL. **Question 120.**

In the theoretical examination, the candidate must answer correctly at least 16 questions out of 20 (80%) of each of the 5 subjects: aerodynamics, meteorology, law, flying skills, and equipment. **Question 122.** There are a total of 100 multiple-choice questions in the theory exam. If the candidate has failed one or two subjects, he must re take the failed subjects. If he has failed more than two subjects, the full theory test must be re-taken. **Question 123.**

To sit the theory test, candidates must bring the following documents: Validated training checklist, the call-up notice, proof of payment (receipt) in the form of a transfer slip stamped by the post office (not by the bank). Proof of insurance is not necessary for the theory test. **Question 124.**

To participate in the practical examination, candidates must bring the following documents: Validated training checklist, the call-up notice, proof of payment (receipt) in the form of a transfer slip stamped by the post office (not by the bank), insurance certificate, flight log, a portrait photo. The membership card from SHV/FSVL is not sufficient. **Question 125.** The candidate must have at least 40 major flights, registered in the flight log, checked and certified by an official instructor OFAC/BAZL SHV/FSVL. These flights must be conducted on at least 5 different sites (the launch site of the practical exam does not count). **Questions 126 and 127.** During the practical exam the candidate pilot must wear a helmet and carry an emergency parachute. His wing must have a certification recognized by the SHV/FSVL and be registered in accordance with current guidelines. **Question 128 and 045.** The practical test consists of 2 flights, each requiring a particular maneuver, and for which the candidate has 3 possible attempts. For each flight, just after correct approach, the candidate must land within 30m of a target landing point. See Figure L11a. The

maneuver of the first flight consists of 2 continuous circles (2 turns of 360°) to the right, without interruption, with the entrance and exit along a given axis, and within a maximum of 20 seconds. See Figure L11b. The maneuver of the second flight is in 2 circles, the first to the left and the second to the right (i.e. a figure 8) without interruption, with the entrance and exit along a given axis, and in a maximum of 30 seconds. See Figure L11c.
Questions 129 to 132.

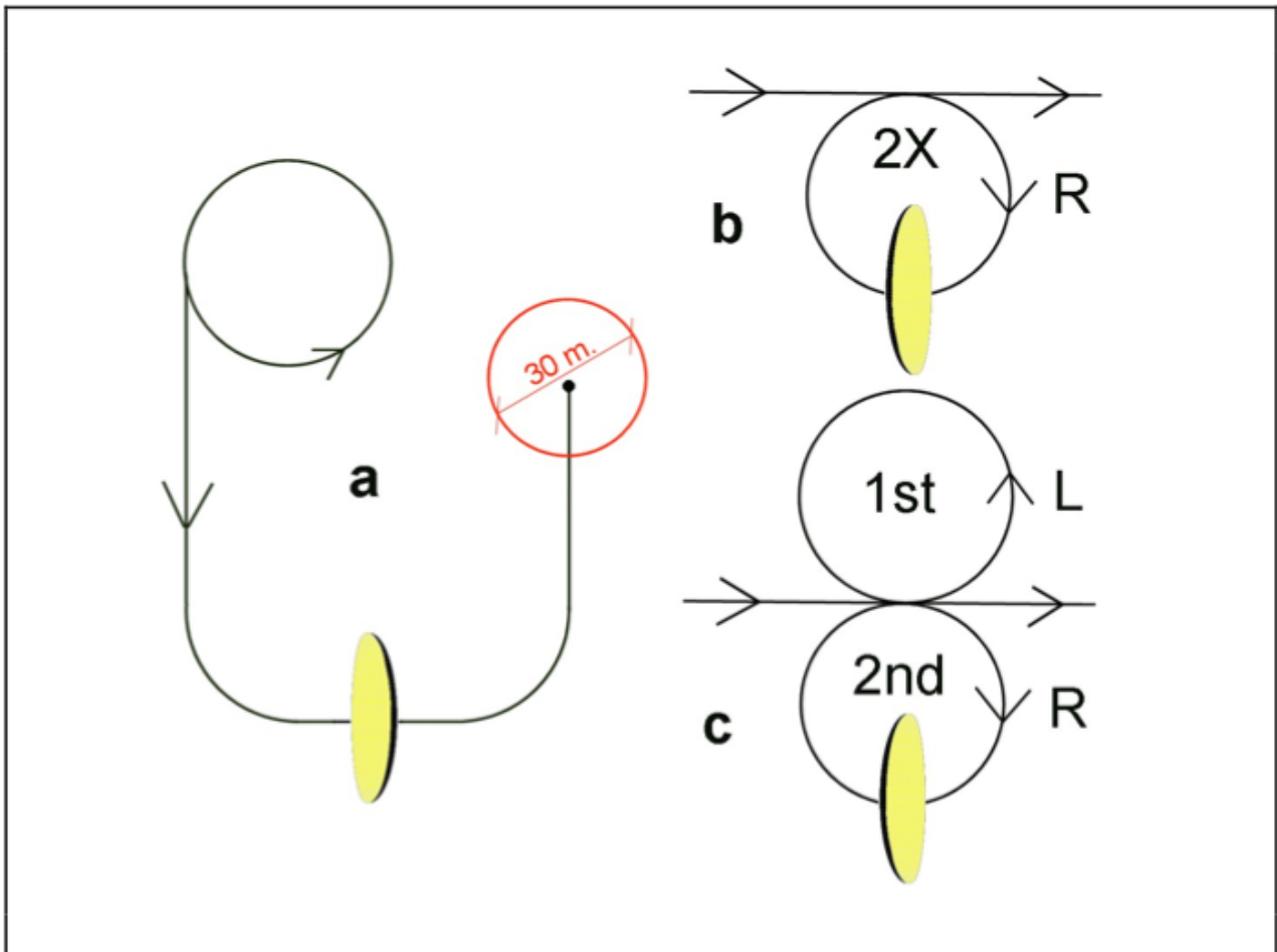


Figure L11: Maneuvers and landing requirement for the paraglider pilot exam.

Answers & commentary for SHV/FSVL theory exam for paragliders
Part 1: aerodynamics and flight mechanics.
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In total there are 5 units each covering the 5 branches of theoretical exam of SHV/FSVL:

- Aerodynamics and Flight Mechanics
- Meteorology
- Equipment
- Legislation
- Practicalities of Flight

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Good luck in your exams. Thank you for your understanding and your cooperation. Good flights and stay safe.

Jean Oberson, March 2005 & Andy Piers, April 2010