**Private Pilot Study Guide C-172M**

**Required Aircraft Documents** (ARROW)

1. **A**irworthiness Certificate
2. **R**egistration
3. **O**perating limitations
4. **W**eight and balance

**Required Pilot Documents**

1. Current pilots license
2. Current medical certificate
3. Valid government issued photo ID
4. Logbook (student)

**Day VFR Required Equip.** (A TOMATO FLAMES)

1. **A**nti-collision lights
2. **T**achometer (each engine)
3. **O**il pressure gauge (each engine)
4. **M**anifold pressure gauge (each alt. engine)
5. **A**irspeed indicator
6. **T**emperature gauge (liquid cooled engines)
7. **O**il temperature gauge (air cooled engines)
8. **F**uel quantity indicator (each tank)
9. **L**anding gear position indicator
10. **A**ltimeter
11. **M**agnetic compass
12. **E**LT
13. **S**eat belts
14. **F**lotation device (for hire, beyond power off gliding distance from shore)

**Night VFR Required Equip.** (FLAPS)

1. **F**uses (set, in reach of pilot)
2. **L**anding light (for hire)
3. **A**nti-collision lights
4. **P**osition lights
5. **S**ource of electric power

**Medical Certificates**

|  |  |  |
| --- | --- | --- |
| **Class** | **Under 40** | **Over 40** |
| First  | 12 Months | 6 months |
| Second  | 12 Months | 12 months |
| Third  | 60 Months | 24 months |

**Required Inspections** (GA AV1ATES)

1. **G**PS (every 28 Days IFR)
2. **A**nnual (12 months IA)
3. **A**irworthiness Directives (as required)
4. **V**OR (30 days IFR)
5. **1**00 hour inspection (for hire A&P)
6. **A**ltimeter (24 months for IFR)
7. **T**ransponder (24 months)
8. **E**LT (12 months 1hr use, shelf life, <%50)
9. **S**tatic/pitot system(24months for IFR)

**Removal of Inoperative Equipment**

1. Check VFR type Certificate
2. Check kinds of operation list
3. Check FAR 91.205
4. Check AD’s

If equipment is not required by any of the above, you may remove and amend weight and balance or placard INOP

**Pilot Currency Requirments**

1. BFR or FAA checkride every 24 months
2. Daytime to carry passengers – 3 takeoffs and landings within 90 days
3. Nighttime to carry passengers – 3 takeoffs and landings within 90 days (landings must be full stop)

**Oxygen Requirements**

Above 12,500 – Required crew after 30 minutes

Above 14,000 – Required crew, continuously

Above 15,000 – Everyone onboard

**VFR Cruising Altitudes**

Magnetic headings above 3000ft AGL

East (0 to 179) – odd 1,000’s +500ft

West (359 – 180) – even 1,000’s +500ft



**Wildlife Areas**

Maintain at least 2000ft agl

**4 Types of Hypoxia**

1. **Hypoxic Hypoxia** - (most common) with increasing altitude, the partial pressure of oxygen gets lower and the lungs cannot effectively transfer oxygen from the air to the blood
2. **Hypemic Hypoxia** - reduced ability of the blood to carry oxygen to the pilot (caused most commonly by carbon monoxide)
3. **Stagnant Hypoxia** – when the blood flow is compromised for any reason, then sufficient oxygen cannot get to the body tissues (happens in cold temperatures)
4. **Histoxic Hypoxia** - the cell expecting and needing the oxygen is impaired and cannot use the oxygen (alcohol can cause this)

**Scuba Diving**

12 hours - after diving that does not require controlled ascent (non decompression stop diving), 24 hours - after diving that does require controlled ascent (decompression stop diving)

**Spin Recovery**

1. Throttle – Idle
2. Rudder – Full opposite direction of rotation
3. Elevator – Full forward
4. Rudder – Neutral (after rotation stops)
5. Controls – As required to regain level flight



**Control Axis**

**Airspace Equipment & Entry Requirements**

**Class A** - Instrument flight plan, Two way radio communication, Mode C transponder

**Class B** - Two way radio communication, Mode C transponder, Clearance into class B

**Class C** - Two way radio communication, Mode C Transponder

**Class D** - Two way radio communication

**Controlled Airspace Dimensions**

**Class A** - Above 18,000 MSL

**Class B** - Individually tailored, surface to 10,000 MSL, 30 NM mode C veil

**Class C** - Individually tailored, usually two rings with a radius of 5NM and 10NM respectively, airspace extends to 4,000 AGL but charted in MSL

**Class D** - Airspace extends to 2,500 AGL but charted in MSL, 5NM diameter, may include extensions to accommodate instrument approaches

**Class E** - Airspace begins at the surface, 700, 1,200, or 1,500 AGL or 14,500 MSL depending on location, extending up to 17,999 MSL. Also extends above FL600. Below 10,000 MSL 250kts speed limit no speed limit above 10,000 MSL

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**Weather Reports**

**Airmet (WA)** – Hazardous to GA

* 6hrs or as needed
* Sierra – Mtn obstructions/IFR cond
* Tango – Mod turbulence, LLWS <2000AGL, sfc winds >30kts
* Zulu – Mod icing not associated with thunderstorms, freezing levels

**Sigmet (WS)** – Hazardous to all

* As needed, valid for 2 hrs
* Sand /dust storm, volcanic ash, severe icing, severe or extensive turbulence, visibility < 3SM for 3000 sq. mi.

**Convective Sigmet (WST)** - Worst

* As needed, valid 2 hrs
* Tornados, embedded thunderstorms, wind shear/gusts hail >3/4 in, sfc winds >50kts, lines 60NM in length affecting 40% of length or Thunderstorms covering 3000 sq. mi.

**TAF (5sm radius)**

* 00Z, 06Z, 12Z, 18Z
* Valid 24-30hrs

**IM SAFE – fitness to fly**

* **I**llness - Is the pilot suffering from any [illness](http://en.wikipedia.org/wiki/Disease) or symptom of an illness which might affect them in flight,
* **M**edication - Is the pilot currently taking any [drugs](http://en.wikipedia.org/wiki/Drug) (prescription or over-the-counter),
* **S**tress - Psychological or emotional [factors](http://en.wikipedia.org/wiki/Mental_health) which might affect the pilot's performance,
* **A**lcohol – Less than .04 BAC, more than 8 hrs since last drink
* **F**atigue - Has the pilot had sufficient [sleep](http://en.wikipedia.org/wiki/Sleep) and rest in the recent past
* **E**ating - Is the pilot sufficiently nourished?



**DECIDE model**

**Detect -** the fact that a change has occurred.
**Estimate -** the need to counter or react to the change.
**Choose -** a desirable outcome for the success of the flight.
**Identify -** actions which could successfully control the change.
**Do -** the necessary action to adapt to the change.
**Evaluate -** the effect of the action.

**PAVE**

**P**ilot
**A**ircraft
en**V**ironment
**E**xternal pressures

**Squawk Codes**

* **1200** Visual Flight Rules (VFR)
* **7500** Hijack
* **7600** Communications failure
* **7700** emergency
* **7777** military intercept code

**Engine**

* Lycoming O-320 150HP
* Air cooled
* Carbureted
* Horizontally opposed
* Four cylinder direct drive
* Oil cap 8qts (6-8 qts recommended)
* 14V electrical system
* 60Amp alternator

**Fuel System**

* 42gal/ 38 usable (19 per side)
* Range 615 mi/ 4.7hrs (no reserve)







