

PRESOLO WRITTEN EXAM

Date of Exam _____

STUDENT INFORMATION

Student Name _____

Student Pilot Certificate Number _____

FLIGHT INSTRUCTOR INFORMATION

Instructor _____

Instructor Certificate Number _____

INTRODUCTION

Student Actions:

As specified in CFR 14 Part 61.87, you (the student pilot) must demonstrate satisfactory aeronautical knowledge on a knowledge test that meets the requirements of this paragraph:

- Applicable sections of parts 61 and 91 of this chapter
- Airspace rules / procedures for the airport where the solo is performed
- Flight characteristics and operational limitations for the make and model of aircraft to be flown.

Instructor Actions:

As specified in CFR 14 Part 61.87, you (the authorized instructor) must:

- Administer the test
- At the conclusion of the test, review all incorrect answers with the student before authorizing that student to conduct a solo flight.
- Perform the proper Logbook and Student Pilot Certificate endorsements
- Keep exam for three (3) years and make copy for school records

The Flight Instructor and Student Pilot upon comprehensive review will decide the best date, time, and weather condition to allow the Student to perform safe solo flight.

Advisory Circular 61-101, Presolo Written Test, indicates that student pilots should have adequate knowledge to operate safely during solo flight in your local training environment. Since the surrounding area includes controlled airspace, such as Class B, C, D, or E airspace, you will be asked to answer appropriate questions on operations in these areas. There are supply-type (fill in the blank) and selection-type (multiple choice) questions to allow the instructor a way to evaluate the student's knowledge and application of Aeronautical Knowledge.

PRESOLO WRITTEN EXAM

This exam contains general questions, aircraft questions, and airport and airspace questions. Normally, the general and aircraft questions apply to all students; however, some of the airport and airspace questions may not be applicable. Flight instructors who administer this test may add or delete questions as necessary to make the exam more appropriate to the training aircraft and surrounding flight environment.

GENERAL QUESTIONS

Instructions: All students should answer the general questions.

1. What personal documents and endorsements are student pilots required to have for solo flights?

2. Who has the final authority and responsibility for the operation of the aircraft when you are flying solo?

3. Discuss what preflight action concerning the airport and aircraft performance is specified in the regulations for a local flight. (91.103)

4. Who is responsible for determining the airworthiness condition of the aircraft?

- a. The aircraft owner
- b. A certified mechanic
- c. The pilot-in-command
- d. An FAA inspector

5. When taxiing with a quartering tailwind, what is the appropriate aileron position?

- a. Ailerons neutral
- b. Aileron down on the side from which the wind is blowing
- c. Aileron up on the side from which the wind is blowing

6. When practicing stalls, you should:

- a. perform clearing turns.
- b. start at an altitude that will allow for completion no lower than 1500' AGL.
- c. recover immediately.
- d. all of the above

7. Are Student Pilots permitted to use LAHSO? _____.

8. What are the visibility and cloud clearance requirements for VFR flight in class E airspace (assume below 10,000ft MSL)?

- a. 1 mile and clear of clouds
- b. 3 miles and 1000' ceiling
- c. 3 statute miles, 500' below, 1000' above, 2000' horizontal
- d. 5 statute miles, 1000' below, 1000' above, 1 statute mile horizontal

9. If an altimeter setting is not available before flight, the altimeter should be set to:
- pressure altitude corrected for nonstandard temperature.
 - 29.92.
 - field elevation of the departure airport.
 - the reported altimeter of an appropriate available station.

10. What do each of the following light signals mean?

	On the Ground	In Flight
Steady Green		
Flashing Green		
Steady Red		
Flashing Red		
Alternating Red and Green		
Flashing White		

11. What aircraft certificates and documents must be on board for any flight?

A _____
 R _____
 O _____
 W _____

12. No person may operate an aircraft so close to another aircraft as to create a(n) _____.

13. During engine run up, you cause rocks, debris, and propeller blast to be directed toward another aircraft or person. Could this be considered careless or reckless operation of an aircraft? _____

14. You may not fly as pilot of a civil aircraft within _____ hours after consumption of any alcoholic beverage, or while you have _____ % by weight or more alcohol in your blood.

15. What are the general requirements pertaining to the use of safety belts and shoulder harnesses?

16. When is a go-around appropriate?

17. List the privileges and limitations placed on student pilots as per FAR part 61.

18. What general steps should you follow after an engine failure in flight?

19. What is the minimum fuel reserve for day VFR flight, and on what power setting is the fuel reserve based?

20. Who has the right-of-way when two aircraft are on final approach to land at the same time?

21. What should you do if you are flying a head-on collision course with another aircraft?

If another single-engine aircraft is converging from the right, who has the right-of-way?

22. Except when necessary for takeoffs and landings, what are the minimum safe altitudes when flying over congested and other than congested areas?

23. When operating in controlled airspace, who is responsible for collision avoidance?

In uncontrolled airspace?

24. VFR DAY REQUIRED INSTRUMENTS (91.205)

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AIRCRAFT QUESTIONS

Instructions: All students should answer the aircraft questions. Additional questions that are pertinent to the make and model aircraft to be flown are found in the attachments pertaining to the specific make and model aircraft you are training in.

1. Fill in the V-speed definitions and the speeds for your training airplane.

	<u>DEFINITION</u>	<u>SPEED</u>
V_{SO}		
V_{S1}		
V_X		
V_y		
V_{FE}		
V_A		
V_{NO}		
V_{NE}		

2. What is the best glide speed for your training airplane? _____ KIAS

3. What flap settings should be used in your airplane for the following operations?

Takeoff: Normal _____ Short Field _____ Soft Field _____

Landing: Normal _____ Short Field _____ Soft Field _____

4. The total usable fuel capacity for your aircraft is _____ gallons. On a standard day (sea level temperature, 59°F, altimeter 29.92 in. Hg.), the fuel consumption rate during normal (75% power) cruise is _____ gallons per hour.

6. What grade or grades of fuel can be safely used in your aircraft? _____

What are the colors of the recommended fuels? _____

What happens to the color of the fuel if two grades are mixed? _____

7. The maximum oil capacity of your aircraft is _____ quarts, and the minimum oil capacity to begin a flight is _____ quarts.

8. The maximum crosswind component specified by your instructor for solo takeoffs and landings in the training aircraft is _____ -knots.

9. What procedure do you follow if on start up the engine erupts on fire?

10. What is the takeoff and landing distance over a 50-foot obstacle for your aircraft at your airport? Assume maximum certificated takeoff weight, 80°F, winds calm, and an altimeter setting of 29.52. _____

AIRPORT AND LOCAL AIRSPACE QUESTIONS

Instructions: The following questions pertain to Sarasota and surrounding local areas. Note questions 11, 12 and 13 are optional and not required for this exam.

1. What is the traffic pattern altitude (MSL) at Sarasota (KSRQ)?

2. How do you enter and exit the traffic pattern at your airport? _____

What, if any, radio communications are required? _____

3. What radio calls are required in the traffic pattern at an uncontrolled airport?

What radio calls are recommended at Venice airport?

4. What is the standard direction of turns in the traffic pattern? _____

Give an example of a visual display indicating a nonstandard traffic pattern.

5. What is CTAF? _____

Explain CTAF procedures at your training airport(s).

6. Identify the following frequencies:

Sarasota Tower _____ Sarasota Ground _____ Sarasota ATIS _____

7. How can you determine if a runway is closed?

8. If you receive ATC instructions that you feel may compromise safety or will cause you to violate a FAR, what should you do?

9. In addition to equipment requirements and a student pilot certificate, what other requirement(s), if any, must be met before a student pilot is authorized to fly solo within Class B airspace? _____

10. Explain the general transponder equipment and use requirement(s) when operating within or near Class B airspace. _____

11. You have called ATC prior to entering Class C airspace, and the controller responds with your call sign and tells you to, "Standby." Are you now allowed to enter this airspace with out any further instructions? _____ Explain.

What if the controller responds with "aircraft calling from the east, standby", can you enter class C airspace? _____

12. What Class C Airspace boundaries could affect your solo flight? _____ Explain how you can use navigation equipment and/or ground reference points to identify the Class C airspace inner core surface area and the outer area. (Draw a diagram, if necessary.)

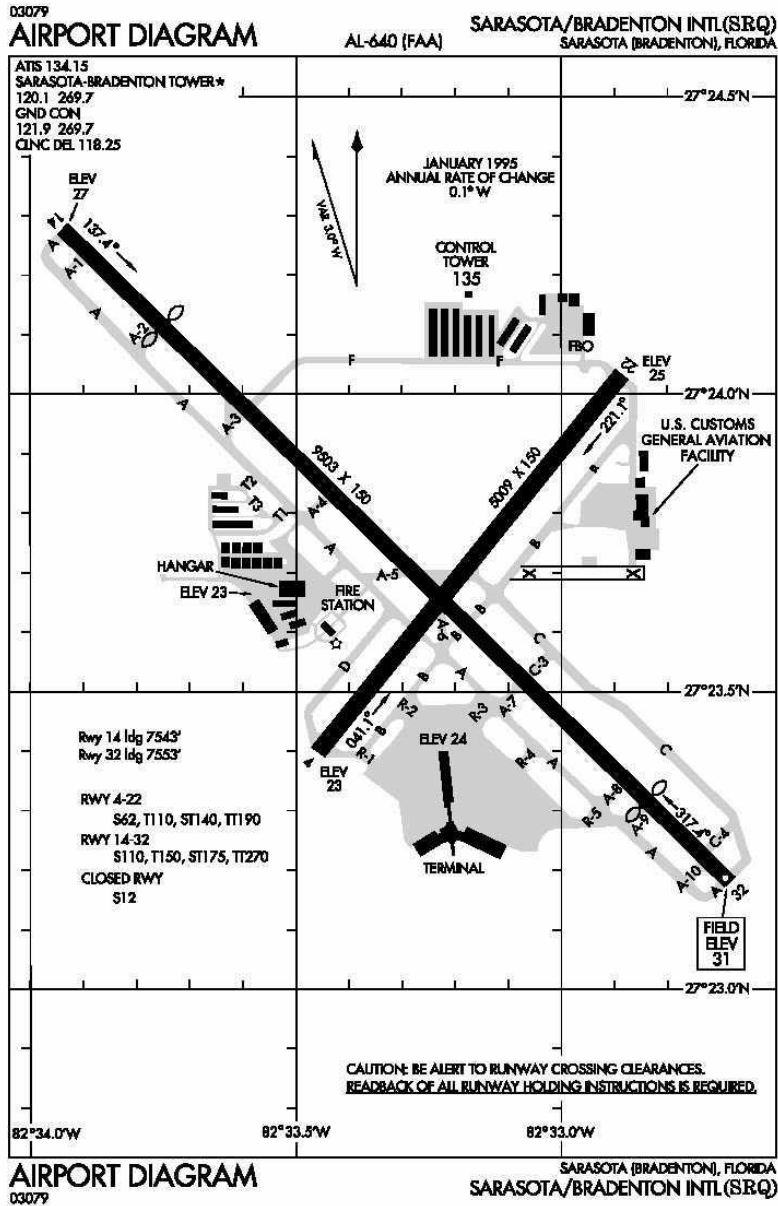
13. What are the typical dimensions of Class D airspace and what requirement(s) must be met prior to entry? _____

14. Explain the minimum visibility and ceiling requirements for VFR flight in Class D airspace.

15. Can a student request a special VFR clearance in Class D airspace when visibility is less than three miles? _____ Explain your answer

16. If you are flying solo to the practice area, to another airport, or on a cross country and you return to Sarasota and find the airport is closed, what should you do?

Draw and label the traffic pattern for Runway 32 when you approach from the south and are told to “enter straight in runway 32” at Sarasota and how you, the student, would fly it! (use all white space on sheet)



Weight and Balance

1. What is the datum point? _____
2. Review the sample chart below, complete the YOUR AIRPLANE columns. Use 48 gallons of useable fuel, a 180lb pilot, 200lb co-pilot, 150lb passenger in back seat, and 25 lbs of baggage placed in the baggage compartment you think would be best. (use the charts on the next page to help you compute arms and moments)
3. What is the useful load of this aircraft? _____

SECTION 6 CESSNA
 WEIGHT AND BALANCE/ MODEL 172S NAV III
 EQUIPMENT LIST GFC 700 AFCS

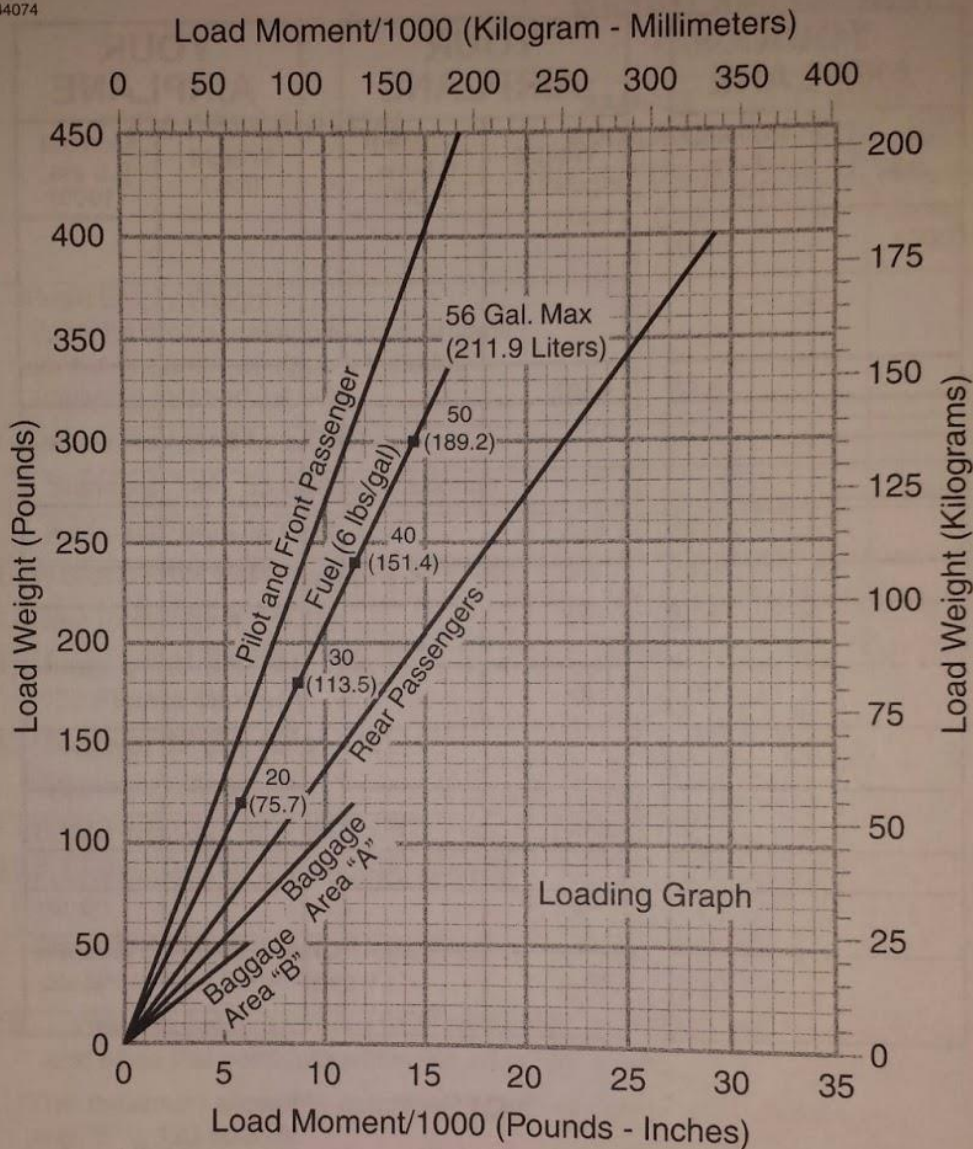
SAMPLE LOADING PROBLEM

ITEM DESCRIPTION	WEIGHT AND MOMENT TABULATION			
	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs)	Moment (lb-ins/1000)	Weight (lbs)	Moment (lb-ins/1000)
1 - Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel and full oil)	1642	62.6		
2 - Usable Fuel (At 6 Lbs./Gal.)				
- Standard Fuel - 53 Gallons Maximum				
- Reduced Fuel - 35 Gallons	210	10.1		
3 - Pilot and Front Passenger (FS 34 to 46)	340	12.6		
4 - Rear Passengers (FS 73)	310	22.6		
5 - *Baggage "A" (FS 82 to 108) 120 Pounds Maximum	56	5.3		
6 - *Baggage "B" (FS 108 to 142) 50 Pounds Maximum				
7 - RAMP WEIGHT AND MOMENT	2558	113.2		
8 - Fuel allowance for engine start, taxi and runup	-8.0	-0.4		
9 - TAKEOFF WEIGHT AND MOMENT (Subtract Step 8 from Step 7)	2550	112.8		
10 - Locate this point (2550 at 112.8) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.				
*The maximum allowable combined weight capacity for baggage in areas "A" and "B" is 120 pounds.				

Figure 6-3 (Sheet 1 of 2)

LOADING GRAPH

B4074



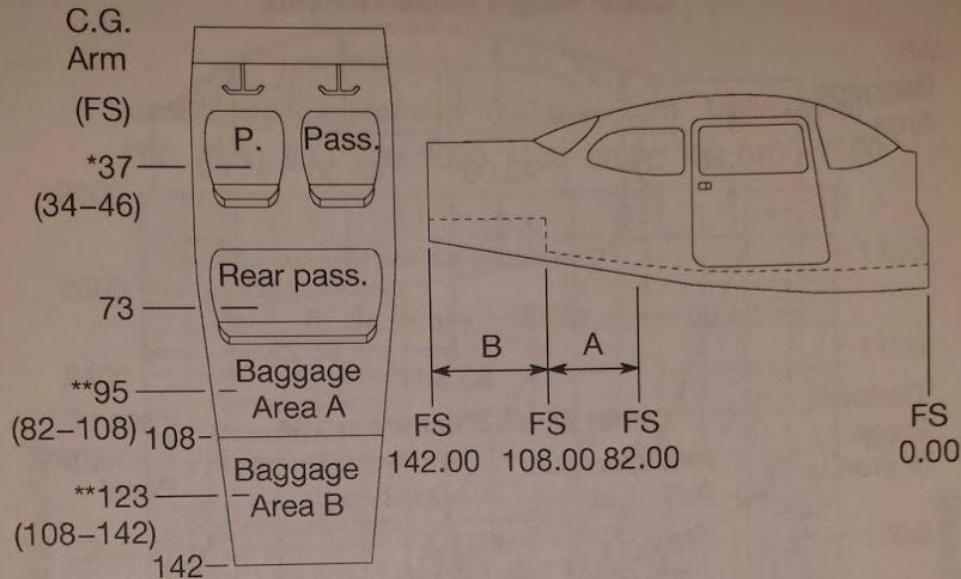
NOTE

Line representing adjustable seats shows the pilot and front seat passenger center of gravity on adjustable seats positioned for average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant C.G. range.

Figure 6-4

LOADING ARRANGEMENTS

B4075



0585T1016

*Pilot and front seat passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.

**Arm measured to the center of the areas shown.

NOTE

- The usable fuel C.G. arm is located at FS 48.00.
- The aft baggage wall (approximate FS 108.00) or aft baggage wall (approximate FS 142.00) can be used as a convenient interior reference point for determining the location of baggage area fuselage stations.
- To achieve an airplane loading within the utility category, it may be necessary to remove the rear passenger seat assembly from the airplane. Refer to Figure 6-9 for applicable weight and arm.

Figure 6-5

CESSNA
MODEL 172S NAV III
GFC 700 AFCS

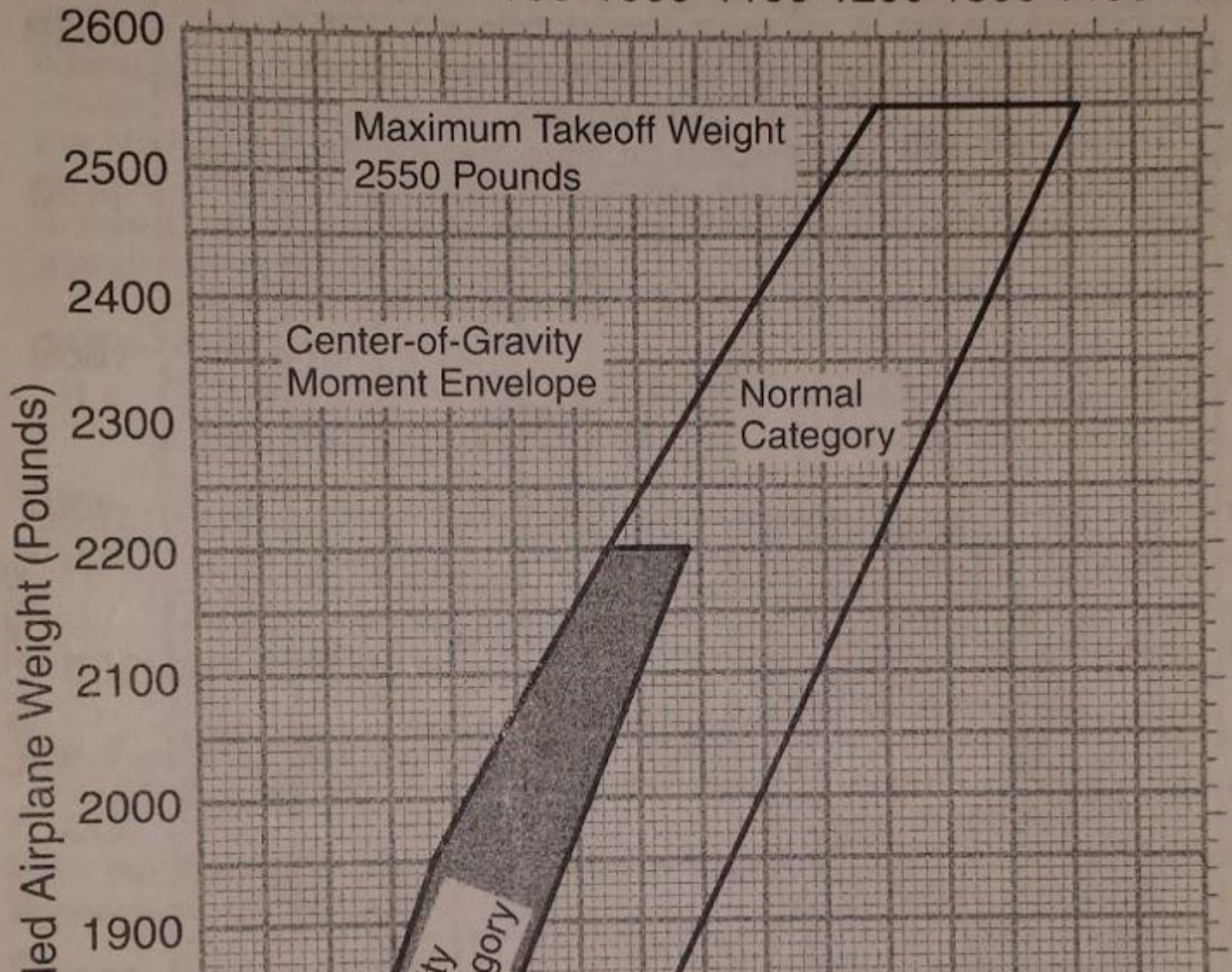
SECTION
WEIGHT AND BALANCE
EQUIPMENT

CENTER OF GRAVITY MOMENT ENVELOPE

B4077

Loaded Airplane Moment/1000 (Kilogram - Millimeters)

600 700 800 900 1000 1100 1200 1300 1400 1500



3. Are you within CG and weight limits for this flight? _____
4. What flight characteristics could you expect with a more aft CG?

5. What makes up the empty weight of the airplane?

6. Would an engine consuming oil on a flight affect the CG of an aircraft? _____
7. What could cause the CG to shift during flight? _____

8. Under what circumstances can you take off over gross weight? _____

Cruise Performance

1. What is a safe maximum cruise rpm for operations on a standard day at 3,000msl?

2. How much fuel would you burn (gph) in cruise flight at 5,000ft pressure altitude with OAT of -5 degrees celsius? _____
3. Is that burn rate with the engine leaned or rich? _____
4. As density altitude increases, the maximum power the engine is capable of producing _____?
5. Fuel burn rates, power output, cruise speeds, and other performance data is based on a brand new airplane, without any bugs on it, fresh paint, and new powerful engine that is leaned to peak efficiency, and flown by a professional pilot. T/F?
6. An airplane with a best climb rate of 700ft/min at sea level can be assumed to have a higher or lower rate of climb at 6,000ft density altitude? _____
7. If the airplane does not appear to be capable of touching down on the first _____ of the runway, a go around should be initiated when? _____
8. A normal approach to landing would include descent rates of up to 1000ft./min T/F?
9. If a landing cannot be made using a normal approach (normal maneuvers, turns, and descents), when should you initiate a go around? _____
10. What are the general requirements pertaining to the use of safety belts and shoulder harnesses? _____

11. If your aircraft has a mode C transponder, when is it required to be turned on? _____

12. List three sources for the local altimeter setting at KSRQ. _____

13. When practicing steep turns, stalls and maneuvering during slow flight, the entry altitude must allow a recovery to be completed no lower than how many feet agl? _____
14. Discuss the steps in the go around process. _____

15. What general steps should you follow after an engine failure in flight? _____

16. During flight, you notice a steady decrease in power. What is likely the cause and the appropriate remedy for the situation? _____

17. What is the emergency frequency? _____
18. Describe the changes in V_g and V_a with changes in the gross weight of an aircraft. _____

19. Describe the limitations on flap use in your airplane. _____

20. Under what circumstances should you use carburetor heat? _____

21. Under What circumstances could a spin occur in your aircraft? _____

22. Describe the spin recovery procedure for your aircraft. _____

23. What is the stall speed of your aircraft in a level 60 degree bank with flaps up? _____

SECTION 5
PERFORMANCE

MODEL 172S
GFC 700

CRUISE PERFORMANCE

CONDITIONS:

2550 Pounds

Recommended Lean Mixture

Pressure Altitude Feet	RPM	20°C BELOW STANDARD TEMP			STANDARD TEMPERATURE			20°C ABOVE STANDARD T	
		% MCP	KTAS	GPH	% MCP	KTAS	GPH	% MCP	KTAS
2000	2550	83	117	11.1	77	118	10.5	72	117
	2500	78	115	10.6	73	115	9.9	68	115
	2400	69	111	9.6	64	110	9.0	60	109
	2300	61	105	8.6	57	104	8.1	53	102
	2200	53	99	7.7	50	97	7.3	47	95
	2100	47	92	6.9	44	90	6.6	42	89
4000	2600	83	120	11.1	77	120	10.4	72	119
	2550	79	118	10.6	73	117	9.9	68	117
	2500	74	115	10.1	69	115	9.5	64	114
	2400	65	110	9.1	61	109	8.5	57	107
	2300	58	104	8.2	54	102	7.7	51	101
	2200	51	98	7.4	48	96	7.0	45	94
	2100	45	91	6.6	42	89	6.4	40	87
6000	2650	83	122	11.1	77	122	10.4	72	121

Perform the following calculations using the conditions provided:

Field Elevation: 1000'
Temperature 75 F
Weight Max Gross
Wind 10kt Headwind
Runway Hard Surface
Altimeter Setting 29.92

T/O Distance (to clear 50' obs.) _____
Rate of Climb _____
Landing Distance (50' obs) _____

Field Elevation 5500'
Temperature 90F
Weight Max Gross
Wind Calm
Runway Hard Surface
Altimeter setting 29.42

T/O Distance (to clear 50' obs.) _____
Rate of Climb _____
Landing Distance (50' obs) _____

Date Completed _____

Instructor Signature and Certificate _____

Student Signature _____

REMEMBER TO HAVE FUN YOU EARNED IT!

Pre-Solo Checklist

- Student completed Sarasota Aero Pre-Solo Written.
- Student Logbook endorsed for Aeronautical Knowledge.
- Student Pilot completed Aeronautical Experience requirements for solo flight.
 - Received and logged flight training for the maneuvers and procedures for single engine airplane:
 - (1) Proper flight preparation procedures, including preflight planning and preparation, powerplant operation, and aircraft systems;
 - (2) Taxiing or surface operations, including runups;
 - (3) Takeoffs and landings, including normal and crosswind;
 - (4) Straight and level flight, and turns in both directions;
 - (5) Climbs and climbing turns;
 - (6) Airport traffic patterns, including entry and departure procedures;
 - (7) Collision avoidance, windshear avoidance, and wake turbulence avoidance;
 - (8) Descents, with and without turns, using high and low drag configurations;
 - (9) Flight at various airspeeds from cruise to slow flight;
 - (10) Stall entries from various flight attitudes and power combinations with recovery initiated at the first indication of a stall, and recovery from a full stall;
 - (11) Emergency procedures and equipment malfunctions;
 - (12) Ground reference maneuvers;
 - (13) Approaches to a landing area with simulated engine malfunctions;
 - (14) Slips to a landing; and
 - (15) Go-arounds.
- Student pilot Certificate endorsed.
- First solo or 90 day sign off endorsement complete.