PRE-SOLO WRITTEN EXAM
GRAY AEROS LLC
(V2 08/2025)

Date of Exam:
STUDENT INFORMATION
Student Name _____
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.

PRE-SOLO 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 FAR and AIM QUESTIONS

PLEASE MAKE SURE TO REFERENCE THE FAR NUMBER OR BOOK & PAGE NUMBER

1. What makes you eligible for a Private Pilot License?

2. What **airman** documents are a Student and Private pilot required to have for solo Flights?

3. What **aircraft** certificates and documents must be on board for any flight? (HINT: The ARROW acronym doesn't cover all of them)

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

5. Which Class Medical Certificate is a Student and Private Pilot required to have?
   How long is the Medical Certificate valid for?

6. List the privileges and limitations placed on Student and Private Pilot certificates as per FAR part 61:

7. Discuss what preflight action concerning the airport and aircraft performance is specified in the regulations for a local flight.

8. 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. Establish and maintain an airspeed at which any further increase in angle of attack would result in a stall warning
   D. All of the above

9. Are Student Pilots permitted to use LAHSO?

10. What do each of the following light signals mean On the Ground and In Flight:

Steady Green:	**Steady Red:**	**Alternating Red and Green:**
Flashing Green:	**Flashing Red:**	**Flashing White:**

11. What are the visibility and cloud clearance requirements for VFR flight in:
    a. Class E airspace below 10,000ft MSL?
    b. Class E airspace above 10,000ft MSL?
    c. Class G airspace Day?
    d. Class G airspace Night?
    e. Class B airspace?
    f. Class C airspace?
    g. Class D airspace?

12. If an altimeter setting is not available before flight, the altimeter should be set to___.

13. 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.

14. When is a go-around appropriate?

15. What is the minimum fuel reserve for day/night VFR flight?

16. Who has the right-of-way when:
    A. Two aircraft are on final approach to land at the same time?
    B. Overtaking another aircraft, approaching head-on and another aircraft converging from the side?
    C. Head-on
    D. Converging from the right

17. Except when necessary for takeoffs and landings, what are the minimum safe altitudes when flying over CONGESTED and OTHER THAN CONGESTED areas?

18. VFR Day required instruments and equipment? VFR Night required instruments and equipment?

19. What is a Notice to Air Missions (NOTAM)?

20. What is the designated Emergency Radio frequency?

21. Define these various Squawk Codes:

7700:	**7500:**	**7600:**

22. When are METARs issued?

23. How often are TAFs issued?

24. Interpret this METAR:
    KLZU 101456Z 05010G15KT 6SM BR OVC006 23/22 A3019 RMK AO2 SLP225

25. Interpret this METAR:
    SPECI KDVN 101455Z AUTO 02007KT 7SM -RA SCT018 BKN026 OVC100 23/22 A3003 RMK AO2 LTG DSNT ALQDS

AERODYNAMICS

PLEASE MAKE SURE TO REFERENCE THE BOOK & PAGE NUMBER

26. What is the definition of Angle of Attack (AoA)?

27. Describe the various types of drag:

28. What are the THREE axis of rotation of a fixed-wing aircraft?

29. Describe the control surface used and the axis of which each motion revolves around;

Pitch:	Roll:	Yaw:

30. Describe how the Ailerons cause an aircraft to Roll/Bank:

31. How is Lift being manipulated on the Elevator during a climb?

32. Define and describe, using aerodynamic terms, what a Stall is:

33. What is a Spin, and, aerodynamically, what has happened leading to entering a Spin?

34. Define:
    a. Static Stability:
    b. Dynamic Stability:
    c. Longitudinal Stability:
    d. Lateral Stability:
    e. Directional Stability:

35. Describe the Left Turning Tendencies of Single Engine Fixed Wing Aircraft:

36. Explain the relationship between Ground Speed and Rate & Radius of Turns:

AIRCRAFT and PERFORMANCE QUESTIONS

PLEASE MAKE SURE TO REFERENCE THE BOOK & PAGE NUMBER

37. Describe the engine type on the aircraft you fly:

38. How is the engine cooled?

39. What is the Normal Operating engine RPM range?

40. What are the maximum and minimum limitations for:
    Oil Pressure:
    Oil Temperature:

41. The maximum oil capacity of your aircraft in quarts, and the minimum oil capacity to begin a flight in quarts?

42. What grade or grades of fuel can be safely used in your aircraft?
    What are the colors of the recommended fuels?

43. After engine start, what component is providing electrical energy to the aircraft?

44. What purpose(s) does the battery serve?

45. The maximum crosswind component specified by your POH for takeoffs and landings in the training aircraft is____knots.

46. What is the maximum weight for:

Ramp	**Landing**	**Passengers**	**Fuel**
Takeoff	**PIlot/Co-PIlot Seat**	**Baggage Compartment**	

47. Fill in the V-speed **definitions and the speeds** for your training airplane:

VSO	**VX**	**VFE**	**VNO**
VS1	**VY**	**VA**	**VNE**

48. On the Airspeed Indicator, there are ***White***, ***Green***, ***Yellow*** arcs and a ***Red*** Line. What do these represent?

White	**Yellow**
Green	**Red**

49. What is the best glide speed for your training airplane?

50. What procedure do you follow if on start-up the engine catches fire?

51. What is the EMERGENCY procedure for Engine Failure Before Takeoff?

52. What is the EMERGENCY procedure for Engine Failure Immediately After Takeoff?

53. What is the EMERGENCY procedure for Engine Failure During Flight?

54. What is the EMERGENCY procedure for Electrical Fire In Flight?

55. What is the EMERGENCY procedure for Loss of Electrical Power in Flight?

56. Describe the Fuel system of your aircraft:

57. What is the purpose of the Magneto Check during the Run-Up Checklist?

58. What is the difference between Pressure Altitude and Density Altitude?

59. What is the effect of Density Altitude on performance?

60. How does a headwind affect takeoff distance?

61. How might a tailwind affect your landing distance?

AIRPORT AND LOCAL AIRSPACE QUESTIONS

Instructions: The following questions pertain to Tampa Bay and the surrounding area.

62. What is the traffic pattern altitude (MSL) at:

KSPG	**KTPF**
KCLW	**FD77**

63. How do you enter and exit the traffic pattern at your airport?
    What radio communications are required?

64. What is the standard direction of turns in the traffic pattern?
    Give an example of a visual display indicating a nonstandard traffic pattern:

65. What is CTAF?

66. When is it recommended to begin listening to uncontrolled airport CTAF?

67. What is the frequency for the PIE VORTAC?

68. What does the 122.2 on top of the PIE VORTAC chart symbol indicate?

69. You're practicing landings and takeoffs at KZPH using runway 19. When on downwind, where are you in relation to the airport? Downwind runway 05?

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

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

72. 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 without any further instructions? Explain:

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

73. What is the ceiling of MacDill AFB (KMCF) Class D airspace?

74. If you're on the ground at KTPF (Peter O'Knight), what class and altitude are the overlying airspace layers?

75. Define the Maximum Elevation Figure (MEF) on a VFR Sectional Chart:

76. What is the MEF in the quadrangle with the KLAL (Lakeland Linder Rgnl) airport?

77. What is Special VFR and is a student pilot allowed to request SVFR?
    a. Can you find an example of an airport where SVFR services are not offered?

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

79. How is a VFR Checkpoint depicted on the VFR Sectional?

80. Concerning Obstruction symbology on the VFR Sectional; What is the difference between altitudes in Parentheses and altitudes not in Parentheses?

81. What are the various Special Use Airspace (SUA) depicted on the VFR Sectional?

WEIGHT AND BALANCE

82. What is the datum point definition and actual location for your training aircraft?

83. What are the definitions of:
    Moment

    Arm

    CG

84. What is the Empty Weight, CG, and Moment of your aircraft? And, what is the date of the most recent Weight and Balance Data Sheet?

85. What are the Station Arms for your aircraft:
    Pilot/Co-Pilot
    Passengers
    Baggage/Cargo
    Fuel

86. What is the useful load of your aircraft?

87. What flight and Stall recovery characteristics could you expect with a more ***Aft*** CG?

88. What flight and Stall recovery characteristics could you expect with a more ***Forward*** CG?

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

90. What could cause the CG to shift during flight?

    a. How does the CG move as fuel is burned?

91. How does a heavier aircraft affect takeoff and landing distance?

WEATHER THEORY and PRODUCTS

92. What are some examples of Inflight Aviation Advisories?

93. Which of these are examples of Surface Weather Observation services?
    a. AIRMET
    b. SIGMET
    c. TAF
    d. NWS

94. How can a Flight Service Station be contacted?

95. What is the method by which pilots can report inflight weather?
    a. When are these reports REQUIRED to be given?

96. What is meant by “unstable atmosphere"?

97. What is the significance of a close temperature and dewpoint spread?

98. How does temperature affect aircraft performance?

99. What is the difference between AWOS and ATIS?

100. What is the AWOS frequency at KFPY?

101. What does RADAR show? Not show?

102. How does atmospheric pressure act as we ascend in the aircraft? Descend?

103. What are some visual indicators of turbulence?