Take-Home Self-Test:
The Cessna 210L Centurion
Systems, Components and Procedures

Flight Express, Inc.

The answers to this take-home self-test can be found in the following five reference sources:

1. **The Pilot's Operating Handbook (POH) for a Cessna 210L Centurion.** *I used the POH for a 1976 L model – the same one we use as the basis of our initial airplane familiarization program in ground school – to write this test. Differences may exist if you look at the POH for a different model year, but these differences are minor. If you look at the POH for an M or N model, however, the differences will be more significant. Moreover, some questions or answers may not seem to make sense if you use an M or N model POH.*

2. **The POH Supplement for the Standby Alternator System.** *This supplement was issued to you during ground school. You may also find one in an appropriately equipped airplane.*

3. **The POH Supplement for the Factory Known Icing Equipment.** *This supplement was issued to you during ground school. You may also find one in an appropriately equipped airplane.*

4. **The Flight Express, Inc. Winter Operations Manual.** *This manual was issued to you during ground school.*

NAME: _____
DATE: _____

1. What kind of engine does the Cessna 210L use? (POH Section 1-3)
   Manufacturer: _____
   Model: _____
   Number of cylinders: _____
   Displacement: _____

2. What is the maximum horsepower rating *for takeoff*? (POH Section 1-3) _____

3. For how long can this power be used at a time? (POH Section 1-3) _____

4. At what RPM is this power achieved? (POH Section 1-3) _____

5. What is the maximum *continuous* horsepower rating? (POH Section 1-3) _____

6. At what RPM is this power achieved? (POH Section 1-3) _____

7. What kind of original factory propeller did the Cessna 210L use? (POH Section 1-3)
   Manufacturer: _____ prop. dia., min.: _____
   Number of blades: _____ prop. dia., max.: _____

8. The Cessna 210L has _____. (POH Section 1-3)
   A.) a carburetor
   B.) a fuel injection system
   C.) both

9. What is the Cessna 210L's: *total* fuel capacity? (POH Section 1-3) _____
   usable fuel capacity? (POH Section 1-3) _____

10. What two grades of aviation fuel are approved for the 210L? (POH Section 1-3)
    _____ _____

11. What is the Cessna 210L's maximum gross weight for takeoff and landing? (POH Section 1-4)
    _____

12. How many pounds of fuel will the Cessna 210L burn per hour while cruising at maximum gross weight at a pressure altitude of 4,000 feet at 2,400 RPM and 24" manifold pressure when the outside air temperature is 7° C and the mixture has been leaned as recommended? (POH Section 5-18) _____

13. What grade of oil is recommended for use in the Cessna 210L during the 50-hour engine break-in period? (POH Section 1-4) _____

14. What grade and viscosity of oil is recommended for use in the Cessna 210L *after* the 50-hour engine break-in period when the outside air temperature range is generally above 4° C? (POH Section 1-4)
    _____

15. What is the Cessna 210L's *total* oil capacity when the oil filter is installed? (POH Section 1-4)

_____

16. What is the Cessna 210L's oil *sump* capacity? (POH Section 1-4)
(*NOTE: This is what you will actually check using the oil dipstick*.) _____

17. What is the minimum number of quarts of oil with which you should operate the Cessna 210L? (POH Section 4-6)
(*NOTE: Flight Express, Inc. company policy dictates a minimum oil level which is* ***one quart greater*** *than the minimum published in the POH.*) _____

Give the following important operating speeds for the Cessna 210L. (POH Section 2-4)

18. V_{NE} _____

19. V_{NO} _____

20. V_A (max. weight) _____

21. V_{FE} (10° flaps) _____

22. V_{LO} _____

23. V_{LE} _____

Give the following important operating speeds for the Cessna 210L. (POH Section 2-5)

24. Maximum full-flap extension speed: _____

25. V_S (max. weight / no flaps) _____

Give the following important operating speeds for the Cessna 210L. (POH Section 4-3)

26. V_Y (sea level) _____

27. V_X (sea level) _____

28. What is the Cessna 210L's maximum *demonstrated* crosswind component? (POH Section 4-3)

_____

29. In what category is the Cessna 210L certificated? (POH Section 2-7) _____

30. If ice or some other blockage prevents air from flowing normally into the Cessna 210L's engine, what will happen? (POH Section 7-23)

A.) Unless the pilot activates the emergency alternate engine air system, the engine will quit.
B.) A spring-loaded alternate air door will open automatically, but this may cause a slight power loss.
C.) The engine will quit. This is why icing conditions must be avoided at all times.

31. How does the cabin heat work in the Cessna 210L? (POH Section 7-23)

A.) Hot exhaust gasses are ducted into the cabin.
B.) A small gasoline-driven heater unit, drawing approximately .5 gallons per hour, creates heat in a combustion chamber which is then transferred to the cabin via an exchanger coil.
C.) A shroud around the left muffler forms a heating chamber for cabin heater air.

32. Is the Cessna 210L's engine air cooled or liquid cooled? (POH Section 7-24) _____

33. What are the three positions of the Cessna 210L's fuel selector valve? (POH Section 7-25)

_____
_____
_____

34. Can fuel be used from both tanks simultaneously in the Cessna 210L? _____

35. If one of the Cessna 210L's fuel tanks is filled only to the bottom of the filler neck extension (collar), how many gallons of fuel will be in that tank? (POH Section 2-9) _____

36. On which fuel tank must the Cessna 210L be taken off and landed? (POH Section 2-8)

_____

37. The Cessna 210L is equipped with an electric auxiliary fuel pump. Which statement is true? (POH Sections 7-27 and 7-28)

A.) The electric auxiliary fuel pump should be operated during takeoff, during the approach to landing, while maneuvering and when switching tanks in flight.
B.) The electric auxiliary fuel pump should ***not*** be used in flight except in an emergency situation, because to do so would cause an excessively rich mixture, flooding and possible engine stoppage.
C.) The electric auxiliary fuel pump will not function unless the propeller is turning.

38. The Cessna 210L has a "steering lag" while taxiing; only *steady*, *smooth* pedal inputs will result in a controlled turn. Thus, it takes *patience* and *anticipation* to taxi a 210 correctly. Pedal inputs must be applied *early* and held *steadily* and *firmly* for a relatively long time to cause a change in direction while rolling on the ground. Small, quick, light or jerky pedal inputs will not result in any movement of the nosewheel. This is because "when the rudder pedal is depressed, a _____ will turn the nose wheel through an arc of approximately _____ each side of center." This is unlike the cable-and-pushrod systems encountered on many lighter aircraft and also unlike the hydraulically boosted steering found on many larger ones. The device in the first blank above effectively absorbs small, quick, light or jerky pedal inputs, negating them and not transmitting them to the nosewheel at all. Also, when the nosewheel is not actually rolling it is very difficult (perhaps even almost impossible) to make it turn left or right.
(POH Sections 7-9 and 7-10)

The company asks that you use the following procedures to extend the life of the brakes:

- Try to use nosewheel steering rather than brakes for normal taxi turns.
- Use *patience* and *anticipation* while taxiing; apply pedal pressure *early* and then hold it *steadily* and *firmly* until the turn occurs. Don't "cheat" with the brakes.
- Try to avoid riding the brakes to control your taxi speed; use throttle alone for that.
- When it is time to come to a complete stop, reduce power to idle *before* applying the brakes.
- Try to use nosewheel steering rather than brakes for normal taxi turns.
- Land with the flaps set to 30° whenever possible.
- Enter ground effect no faster than best glide speed whenever possible.

39. While performing the engine runup prior to takeoff, what is the maximum allowable RPM drop on either magneto? (POH Section 4-7) _____

40. What is the maximum difference in RPM drop between the two magnetos? (POH Section 4-7) _____

41. Electrical power in the Cessna 210L is provided by an engine-driven alternator. (POH Section 7-31)
    How many volts can it produce? _____
    How many amps can it produce? _____

42. For starting the engine and for providing a short supply of backup electrical power if the alternator fails, the Cessna 210L has a battery. (POH Section 7-31)
    How many volts can it produce? _____
    For how long could it provide 17 amps of current? _____
    For how long could it provide 1 amp of current? _____

In the Flight Express fleet, there are at least *five* different alternator configurations you will see on the line. They are:

- The conventional single alternator system (the one described above in question #41)
- The standby alternator system (in TKS-equipped airplanes)
- The dual alternator system (in some booted, ice approved airplanes)
- The single 95-amp alternator system (in other booted, ice approved airplanes)
- A second, much smaller (20-amp) alternator. In this fifth setup, the secondary alternator's output will not be adequate to keep up with demand in the event of a primary alternator failure. A warning light in the cockpit will indicate if your usage exceeds the alternator's capacity. You should shed load until you can at least maintain the battery charge.

IMPORTANT! In *some* two-alternator configurations, both alternators may be left ON at all times; the system is designed for that. In others, however, the standby alternator must never be activated unless the primary alternator has been turned off first – running them both simultaneously can overload your electrical appliances and pop circuit breakers. The only way to know which type of arrangement you have is to READ the cockpit placards and the POH supplements for the airplane you are flying. Be careful!

43. The electrical system in the Cessna 210L includes a split bus bar. One side contains circuits for the general electrical system and the other side contains circuits for the avionics. Which statement is true? (POH Section 7-31)

A.) When the starter is engaged, a power contactor activates, isolating the avionics bus from the main bus. This protects the delicate avionics from damage which might be caused by the high energy of the starter.

B.) It is impossible to start the engine with the ALT and BAT sides of the master switch both in the ON position simultaneously.

C.) Unless the aircraft avionics are turned on, it will not be possible to engage the starter and start the engine.

44. The Cessna 210L is equipped with an automatic over-voltage protection system. In the event of an over-voltage condition (in other words, a power surge), what will happen? (POH Section 7-33)

A.) The over-voltage sensor will shut down all communication and navigation equipment.

B.) The over-voltage sensor will shut down the alternator.

C.) The over-voltage sensor will shut down all aircraft electrical systems.

45. How can the over-voltage sensor be reset in flight? (POH Section 7-33) _____

46. If the alternator fails or is taken off-line for any reason in the Cessna 210L, what two cockpit indications will be visible to the pilot? (POH Section 7-33) _____

_____

47. How should the engine be primed before starting? (POH Section 4-7)

A.) Pump the primer knob three times in warm weather or up to six times in cold weather.

B.) Briefly run the electric auxiliary fuel pump with the mixture set to full rich.

C.) Open the throttle with the master switch and magnetos off; pull the prop through about four times.

48. When the Cessna 210L's vacuum pump is in normal operation, where does air *enter* the system? (POH Section 7-40 and 7-41)

A.) Air enters at the vacuum pump.

B.) Air enters at the vacuum-driven gyro instruments.

C.) Air enters through a filter on the aft side of the firewall below the instrument panel.

49. When the Cessna 210L's vacuum pump is in normal operation, where does air *discharge* from the system? (POH Section 7-41)

A.) Air is dumped overboard through a vent line.

B.) Air is purged through vacuum relief valve.

C.) Air escapes through ducting inside the vacuum-driven gyro instruments.

50. What are the four flap position switch settings? (POH Section 7-10) _____

_____

_____

_____

51. What mechanism extends and retracts the landing gear in the Cessna 210L? (POH Section 7-10 and 7-11)
    A.) An electric motor raises and lowers the gear.
    B.) Hydraulic actuators raise and lower the gear, using fluid pressure produced by an electric hydraulic power pack.
    C.) Hydraulic pressure raises the gear but gravity lowers the gear and downlocks secure it in position.

52. How many landing gear position indicator lights are there in the Cessna 210L? (POH Section 7-12)
    A.) One; it can be either green, amber or red.
    B.) Four; three lights can be either green or amber and one warning light is red.
    C.) Two; one is amber and the other is green.

53. What prevents the pilot from accidentally retracting the landing gear on the ground? (POH Section 7-13)
    A.) A landing gear safety switch, located on the nose gear strut.
    B.) Three landing gear safety switches, one on each gear strut.
    C.) Two landing gear safety switches, one on each main gear strut.

54. What activates the landing gear warning horn? (POH Section 7-14)
    A.) Reducing power below approximately 12" MP when the gear is not down and locked.
    B.) Lowering the flaps past 10º when the gear is not down and locked.
    C.) Both A and B.

55. The electric auxiliary fuel pump is activated by a split rocker switch. The left (red) side is HIGH and the right (yellow) side is LOW. Which side is spring-loaded to the OFF position? (POH Section 7-28)

_____

56. If you turn on the left (red/HIGH) side of the electric auxiliary fuel pump split rocker switch, will the right side also come on automatically? (POH Section 7-28) _____

57. Will turning on right (yellow/LOW) side of the electric auxiliary fuel pump split rocker switch by itself produce enough fuel flow to keep the engine running at very high power settings? (POH Section 7-28)

_____

58. If you retract the landing gear but the electric hydraulic power pack continues to run after the gear is up and locked, what should you do to prevent the electric motor from overheating? (POH Section 3-19 and 3-20)

_____

59. The Cessna 210L has: (POH Section 7-8)
    A.) Manual in-flight elevator, rudder and aileron trim
    B.) Manual in-flight elevator and rudder trim
    C.) Manual in-flight elevator and aileron trim

60. How many fuel drain valves are installed (and must be checked prior to each flight and after being re-fueled) on the Cessna 210L? (POH Section 7-28) _____

61. How can the hydraulic fluid level be checked in the Cessna 210L? (POH Section 7-11)

_____

62. Where is the hydraulic fluid reservoir located? (POH Section 7-11) _____

63. What type of hydraulic fluid does the Cessna 210L use? (POH Section 7-11) _____

64. If a standby alternator is installed, where will it be located?
(POH supplement - STANDBY ALTERNATOR, page 2) _____

65. Is the standby alternator gear-driven or belt-driven?
(POH supplement - STANDBY ALTERNATOR, page 2) _____

66. Is it permissible to operate both the primary and standby alternators simultaneously?
(POH supplement - STANDBY ALTERNATOR, page 4) _____

67. How can the landing gear warning horn be tested on the ground? _____

68. With regard to the landing gear leg, where is the brake fluid line (the one that carries fluid from the master cylinder to the brake assembly) located? _____

69. Does the Cessna 210 have an area that is designated as an "approved baggage compartment"?
_____

70. How many trim wheels does the 210 have?
A.) 1
B.) 2
C.) 3
D.) 2 trim wheels plus 1 trim lever

71. Where are the switches for the following located?
The overhead cabin light – _____
The eyebrow map light – _____
The under-wing courtesy (cargo loading) lights – _____

72. In an ice-approved airplane equipped with pneumatic boots, what provides windshield ice protection?
(POH supplement - KNOWN ICING EQUIPMENT)
A.) a hot plate
B.) an alcohol spraybar
C.) a ducted hot-air vent with a temperature-control rheostat

73. In an ice-approved airplane equipped with pneumatic boots, what provides propeller ice protection?
(POH supplement - KNOWN ICING EQUIPMENT)
A.) electrically heated boots on the leading-edge blade roots
B.) pneumatic boots on the leading-edge blade roots
C.) an alcohol slinger ring

74. In an ice-approved airplane equipped with pneumatic boots, the propeller anti-ice, windshield anti-ice and pitot heat should all be turned on before _____ is encountered below approximately _____ degrees F. (POH supplement - KNOWN ICING EQUIPMENT)

75. Are de-icing boots intended to prevent the formation of ice or to remove ice which has already formed? (POH supplement - KNOWN ICING EQUIPMENT) _____

76. According to the manual, a 1/2-inch accumulation of ice on the leading edges can cause: (POH supplement - KNOWN ICING EQUIPMENT)

a loss of climb rate of up to _____
a cruise speed reduction of up to _____
a stall speed increase of up to _____

77. When the DE-ICE PRESS switch is pushed to the ON position and released, it will activate one de-icing cycle. The entire cycle lasts approximately _____ seconds. (POH supplement - KNOWN ICING EQUIPMENT)

78. During the de-icing cycle, which three sections inflate (in sequence)? (POH supplement - KNOWN ICING EQUIPMENT) _____
_____
_____

79. What is flush-mounted on the left side of the cowl deck to facilitate the detection of wing ice at night or during reduced visibility? (POH supplement - KNOWN ICING EQUIPMENT) _____

80. If the proper optional equipment is installed and operational and the correct placards are visible on the instrument panel, is a Cessna 210 approved for flight into known icing conditions? (POH supplement - KNOWN ICING EQUIPMENT) _____

AIRCRAFT CONFIGURATION:	pilot seat only installed
PILOT WEIGHT:	200 lbs.
FUEL:	full
CARGO AREA "A":	320 lbs.
CARGO AREA "B":	390 lbs.
CARGO AREA "C":	nothing / zero
CARGO AREA "D":	120 lbs.

81. (Refer to the table above and the attached weight and balance information.) Is *each* of the airplane's areas (pilot, fuel, A, B, C and D) legally loaded within its individual maximum structural capacity? _____

82. (Refer to the table above and the attached weight and balance information.) Is the airplane legally loaded within its maximum gross takeoff weight? _____

83. (Refer to the table above and the attached weight and balance information.) Is the airplane legally loaded overall according to the CENTER OF GRAVITY MOMENT ENVELOPE in section 6 of the POH?

A.) Yes.
B.) No; it's too nose-heavy. Weight needs to be shifted to the rear.
C.) No; it's too tail-heavy. Weight needs to be shifted to the front.

"Glen Haven Springs Municipal Airport information tango, zero six five zero Zulu. Sky clear. Wind two seven zero at one five, temperature two zero, dew point one four altimeter two niner niner two. ILS runway two seven approach in use, landing and departing runway two seven. Notice to Airmen: Use caution for unlit towers and construction cranes one mile west of the field. Advise on initial contact you have information tango."

Airport elevation – 2,000 feet

84. (Refer to the table on the previous page, the conditions above and the attached takeoff distance chart.) At this takeoff weight, how much runway will this pilot need for his *ground roll*? _____

85. (Refer to the table on the previous page, the conditions above and the attached takeoff distance chart.) Glen Haven Springs Municipal Airport sits in a valley surrounded by wooded hills. There is a cluster of trees and warehouses on rising terrain just off the departure end of the runway. At this takeoff weight, how much distance will this pilot need *to clear a 50-foot obstacle*? _____

86. (Refer to the attached landing distance chart.) If the weather conditions and runway configuration at East Haverbrook Regional are exactly the same as they are at Glen Haven Springs Municipal and the airport elevation is 1,000 feet, what is the POH figure for required landing distance (ground roll) there?

_____

87. According to page 6 of the Flight Express Winter Operations Manual, "icing conditions are considered to exist when the indicated outside air temperature is below _____° C and any kind of _____ is present."

88. According to page 6 of the Flight Express Winter Operations Manual, "accumulation of ice on unprotected lower surfaces is minimized by maintaining a ***minimum*** airspeed of _____ KIAS until a lower airspeed is required for final approach and landing."

89. According to page 8 of the Flight Express Winter Operations Manual, the TKS fluid tank has a total capacity of _____ gallons.

90. According to page 8 of the Flight Express Winter Operations Manual, a full tank yields a *maximum* of _____ hour(s) and _____ minutes of *continuous* anti-ice protection in the NORMAL flow rate mode.

91. According to page 8 of the Flight Express Winter Operations Manual, a full tank yields a *maximum* of _____ hour(s) and _____ minutes of *continuous* anti-ice protection in the HIGH flow rate mode.

92. According to page 15 of the Flight Express Winter Operations Manual, when the aircraft has encountered icing conditions, flap deflection is limited to a *maximum* of _____.

93. According to page 15 of the Flight Express Winter Operations Manual, when the aircraft has encountered icing conditions and you are landing with the flaps set at 20°, increase FULL FLAP landing data from section 5 of the POH by _____% and use the approach speed listed for a FULL FLAP landing plus _____ knots.

If you have ice on your horizontal stabilizer, you may wish to land with no flaps. The use of flaps with an ice-contaminated horizontal stabilizer leading edge can potentially result in uncontrolled elevator oscillations and loss of pitch authority.

94. According to page 16 of the Flight Express Winter Operations Manual, the ice detection light should be turned on for a maximum of _____ to observe ice accumulation or for functional checks. For night operations, the light should be used once every _____ in IMC and non-icing conditions or once every _____ in icing conditions.

95. According to page 9 of the Flight Express Winter Operations Manual, for best protection
    A.) The TKS system should be left on all the time, regardless of the conditions.
    B.) The TKS system should be turned on after icing conditions have been encountered.
    C.) The TKS system should be turned on just prior to encountering icing conditions.

96. According to page 9 of the Flight Express Winter Operations Manual, the on-demand spraybar for the windshield cycles for approximately _____ seconds each time it is activated. The windshield will then take approximately _____ seconds to clear.

97. According to page 14 of the Flight Express Winter Operations Manual, residual ice on the unprotected surfaces of the airplane (such as wingtips, antennae, the prop spinner etc.) can cause a loss of climb performance of up to _____ FPM.

98. During the preflight check, you turn on the TKS system. What should you observe in the propeller area?
    A.) TKS fluid will be spraying over each propeller blade.
    B.) TKS fluid will be dribbling from the slinger ring behind the propeller.
    C.) No TKS fluid will be evident because fluid is not delivered unless the prop is turning.

99. If low pressure occurs in the TKS system, both LEDs on the TKS control panel will
    A.) Flash red.
    B.) Glow steady yellow.
    C.) Go out.

100. According to the NTSB's statistics, most fatal accidents in Part 135 IFR operations using Cessna 210s are caused by
    A.) Mechanical failures.
    B.) Adverse weather conditions.
    C.) Avoidable pilot errors.

WEIGHT & BALANCE CONFIGURATION SHEET

AIRCRAFT – **N74584**   MAKE/MODEL – **Cessna 210L**   S/N – **21063360**

MAX. GROSS T.O. WEIGHT – **3800 LBS**.   DATE – **12 / 23 / 02**

- -

CONFIGURATION 1: PILOT SEAT ONLY

EMPTY WEIGHT	C.G.	MOM/100
2193.1	**39.4**	**862.9**

CONFIGURATION 2: PILOT + COPILOT SEAT INSTALLED

EMPTY WEIGHT	C.G.	MOM/100
2212.4	**39.4**	**871.4**

CONFIGURATION 3: PILOT + COPILOT + ONE SECOND ROW SEAT INSTALLED

EMPTY WEIGHT	C.G.	MOM/100
2230.1	**39.7**	**884.3**

CONFIGURATION 4: ALL SEATS INSTALLED

EMPTY WEIGHT	C.G.	MOM/100
2270.3	**40.6**	**920.1**

TAKEOFF DISTANCE

CONDITIONS:

Flaps 10°
2850 RPM and Full Throttle Prior to Brake Release
Mixture Set at Placard Fuel Flow
Cowl Flaps Open
Paved, Level, Dry Runway
Zero Wind

NOTES:

1. Maximum performance technique as specified in Section 4.
2. Landing gear extended until takeoff obstacle is cleared.
3. Where distance value has been deleted, climb performance after liftoff is less than 150 FPM. Rate of climb is based on landing gear extended and flaps 10° at takeoff speed.
4. Decrease distances 10% for each 10 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2.5 knots.
5. For operation on a dry grass runway, increase distances by 15% of the "ground roll" figure.

MIXTURE SETTING

PRESS ALT	PPH
S.L.	144
2000	138
4000	132
6000	126
8000	120

WEIGHT LBS	TAKEOFF SPEED KIAS LIFT OFF	AT 50 FT	PRESS ALT FT	0° C TOTAL GRND ROLL	0° C **TO CLEAR 50 FT OBS**	10° C TOTAL GRND ROLL	10° C **TO CLEAR 50 FT OBS**	20° C TOTAL GRND ROLL	20° C **TO CLEAR 50 FT OBS**	30° C TOTAL GRND ROLL	30° C **TO CLEAR 50 FT OBS**	40° C TOTAL GRND ROLL	40° C **TO CLEAR 50 FT OBS**
3800	66	72	S.L.	1120	**1820**	1205	**1960**	1295	**2105**	1390	**2265**	1495	**2440**
			1000	1225	**2005**	1320	**2155**	1420	**2320**	1525	**2505**	1640	**2705**
			2000	1345	**2210**	1445	**2380**	1555	**2570**	1675	**2785**	1800	**3020**
			3000	1475	**2450**	1585	**2645**	1710	**2865**	1840	**3110**	1980	**3390**
			4000	1620	**2725**	1745	**2955**	1880	**3210**	2025	**3505**	2180	**3840**
			5000	1785	**3055**	1925	**3325**	2075	**3630**	2235	**3990**	2410	**4415**
			6000	1970	**3455**	2125	**3780**	2290	**4160**	2470	**4615**	2665	**5185**
			7000	2180	**3950**	2350	**4365**	2540	**4860**	2740	**5485**		
			8000	2415	**4595**	2010	**5155**						
3500	63	69	S.L.	925	**1495**	990	**1605**	1065	**1720**	1145	**1845**	1225	**1980**
			1000	1010	**1640**	1085	**1760**	1165	**1885**	1250	**2030**	1340	**2180**
			2000	1105	**1800**	1185	**1930**	1275	**2080**	1370	**2235**	1470	**2410**
			3000	1210	**1980**	1300	**2130**	1400	**2295**	1505	**2475**	1615	**2680**
			4000	1325	**2190**	1425	**2360**	1535	**2550**	1650	**2755**	1775	**2990**
			5000	1460	**2430**	1570	**2625**	1690	**2845**	1820	**3090**	1960	**3365**
			6000	1605	**2715**	1730	**2940**	1865	**3195**	2005	**3490**	2160	**3825**
			7000	1770	**3050**	1910	**3320**	2060	**3630**	2220	**3990**	2395	**4415**
			8000	1960	**3460**	2115	**3790**	2280	**4175**	2460	**4640**	2655	**5215**
3200	60	66	S.L.	755	**1220**	810	**1305**	865	**1395**	930	**1490**	995	**1595**
			1000	820	**1330**	880	**1425**	945	**1525**	1015	**1635**	1090	**1750**
			2000	895	**1455**	965	**1560**	1035	**1670**	110	**1790**	1190	**1925**
			3000	980	**1595**	1055	**1710**	1135	**1835**	1215	**1970**	1305	**2120**
			4000	1075	**1755**	1155	**1880**	1240	**2025**	1335	**2180**	1435	**2350**
			5000	1180	**1935**	1270	**2080**	1365	**2240**	1470	**2415**	1580	**2610**
			6000	1300	**2140**	1395	**2305**	1500	**2490**	1615	**2695**	1740	**2920**
			7000	1430	**2380**	1540	**2575**	1655	**2785**	1785	**3025**	1920	**3295**
			8000	1575	**2665**	1700	**2885**	1830	**3140**	1970	**3425**	2125	**3755**

LANDING DISTANCE

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

NOTES:
1. Maximum performance technique as specified in Section 4.
2. Decrease distances 10% for each 10 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2.5 knots.
3. For operation on a dry, grass runway, increase distances by 40% of the "ground roll" figure.

WEIGHT LBS	SPEED AT 50FT KIAS	PRESS ALT FT	0° C		10° C		20° C		30° C		40° C	
			TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
			GRND ROLL	**TO CLEAR 50 FT OBS**	GRND ROLL	**TO CLEAR 50 FT OBS**	GRND ROLL	**TO CLEAR 50 FT OBS**	GRND ROLL	**TO CLEAR 50 FT OBS**	GRND ROLL	**TO CLEAR 50 FT OBS**
3800	71	S.L.	725	**1440**	750	**1480**	780	**1520**	805	**1560**	830	**1600**
		1000	750	**1480**	780	**1520**	805	**1560**	835	**1605**	860	**1645**
		2000	780	**1525**	810	**1565**	835	**1605**	865	**1650**	895	**1695**
		3000	810	**1565**	840	**1610**	870	**1660**	900	**1705**	930	**1750**
		4000	840	**1615**	870	**660**	900	**1705**	930	**1750**	965	**1800**
		5000	870	**1660**	905	**1710**	935	**1755**	965	**1805**	1000	**1855**
		6000	905	**1710**	940	**1765**	970	**1810**	1005	**1860**	1035	**1910**
		7000	940	**1765**	975	**1815**	1010	**1870**	1045	**1920**	1075	**1970**
		8000	975	**1815**	1010	**1870**	1050	**1930**	1085	**1980**	1120	**2035**

IMPORTANT NOTE:

The answers for this take-home self-test apply ONLY to the airplane we use as our "base model" for training and testing: the 1976 L model 210. There are many differences out there in our fleet!

Likewise, the answers for this take-home self-test apply ONLY to that POH and to the three POH supplements given out in initial ground school. There are many other equipment configurations and each has its own set of operating procedures.

DO NOT take this test as the final authority for *all* versions and variations of the venerable Centurion that you will encounter on the line. Instead, take it only as an example of one particular – albeit fairly typical – arrangement.

For complete and detailed information on the airplane that you are flying on any given day, always refer to the POH or AFM and the applicable supplements for that airplane.

For general information on differences between models and other amplifications and explanations regarding systems and equipment in our highly diverse fleet of 210s, consult Austin's Condensed Centurion Reference. If you have lost yours or want a newer copy, you may download it as a .pdf file (an Adobe Acrobat document) from the Flight Express Pilot Information page at www.austincollins.com. If you do not have access to the Internet or a printer, contact me at ext. 618 and I will mail you a copy. Thank you.