WCFC Piper PA28 Warrior Quiz

Review before : 2025-09-24

Quiz ID : **15734**

Instructor :		Date :
Pilot :	Member # :	Score :

Instructor : Please note the final score (subtract 3.0 points from 100 for each wrong answer) on the checkout form and file the quiz in the Pilot Records folder.

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1 : According to the Warrior AFM/POH, engine fires during starting are usually caused by...

A : cranking the starter excessively, thus flooding the engine

B : priming with the auxiliary boost pump

C : attempting to start the engine with the magnetos energized

D : over-priming

E : allowing fuel to vaporize on a hot day

2 : The engine in a PA-28-161 is a

A : Continental O-300

B : Lycoming O-320

C : Lycoming O-235

D : Lycoming O-540

3 : Best rate of climb speed for the PA-28-161 at gross weight at sea level is

A : 52 KIAS

B : 73 KIAS

C : 79 KIAS

D : 85 KIAS

4 : At what minimum speed may the GFC500 autopilot be engaged, according to its limitations?

A : 80 KIAS

B : 53 IAS

C : 60 IAS

D : 65 IAS

E : 80 MPH

5 : The correct type of fuel for the PA-28-161 (excepting any special STC) is

A : Aviation 80, 100LL, or 100/130 fuel

B : Automotive high test

C : Aviation 100LL or 100/130 fuel (100LL preferred)

D : Aviation 100LL (light blue) fuel only

6 : The presentation labeled #14 indicates what information?

A : airspeed

B : selected vertical speed

C : vertical speed bug

D : true airspeed

E : Ground speed

7 : When the ESP system that is an integral part of the G5 and the GFC 500 AFCS has been engaged for more than 10 seconds (cumulative; not necessarily consecutive seconds) of a 20-second interval, what happens?

A : A warning alert "Pitch down" is heard.

B : Flight controls are locked for five seconds to prevent further excursions in pitch and bank

C : The autopilot is immediately disengaged, returning control to the pilot for safety.

D : The autopilot engages in Level (LVL) mode

E : The ESP system disengages to prevent over-driving the pitch and roll servos.

8 : In the combination G5 and G500 autopilot installed in the WCFC PA28.161 Warriors, once engaged, the torque applied by ESP is at its maximum when bank angle ...

A : exceeds a prudent bank angle for more than 5 seconds

B : exceeds a roll rate of 45 degrees per second

C : is accompanied by a loss or gain of more than 175 feet of altitude

D : is 15 degrees more than the configured bank limit.

E : the trim malfunctions and produces a runaway condition requiring immediate disabling of the electric trim

9 : According to this representation of the G5 is Electronic Stability Protection enabled or disabled?

A : Disengaged

B : Enabled

C : Disabled

D : Standby

10 : The rated power of the engine as installed in a PA-28-161 is

A : 100 BHP

B : 125 BHP

C : 150 BHP

D : 160 BHP

11 : What does STC SA00397NY, installed in some of the WCFC Warrior fleet, change about a PA28-161.

A : This STC approves the Garmin G5 electronic instrument to serve as the primary attitude indicator and fully replace the original vacuum-powered instrument.

B : The STC allows the installation of a smaller-diameter nose wheel to reduce the angle of attack on the takeoff roll and reduce the tendency to lift off prematurely in ground effect.

C : The STC grants permission to operate that serial number airplane at a maximum gross weight of 2440 pounds rather than the original 2325 pounds.

D : The STC allows the relocation of the battery from the firewall to an alternate location beneath the rear seat, which moves the CG aft (but within limits) to reduce drag and improve speed, fuel efficiency, and range.

12 : Do not overpower the GFC 500 Autopilot because ...

A : The autopilot will trim against your control input since it is unable to distinguish your control input from aerodynamic forces.

B : The autopilot will not respond to your control input

C : You will damage the autopilot servos

D : The autopilot will recognize your control input and will attempt to assist by trimming in the direction of your input. This function is designed to recognize and assist in an emergency.

E : The autopilot will immediately turn off and return the airplane to manual control.

13 : Assuming that the configured bank limit of the ESP system is set at 45 degrees of bank, at what bank angle is the maximum torque reached?

A : it depends on whether the GPSS is engaged

B : maximum torque is whatever force required to counteract the pilot's effort

C : 60 degrees of bank

D : 30 degrees of bank

E : 15 degrees beyond the minimum torque setting

14 : Calculate the weight, CG, and total moment of N8080A using the data below. Choose the correct answer.

item	weight (pounds)	CG (arm)	Moment (/1000)
Airplane (80A)	1521.5	86.99	132.36
Front seat	220	80.5	17.71
Rear Seat	340	118.1	40.15
Fuel (pounds)	204	95.0	19.38
Baggage	100	142.8	14.28
Totals	---------	------	----------

A : Totals | 2385.5 | 90.23 | 223.88 |
B : Totals | 2385.5 | 92.86 | 221.51 |
C : Totals | 2585.5 | 93.86 | 242.67 |
D : Totals | 2385.5 | 93.86 | 223.88 |

15 : The following numbers refer to the various sources of information in the standard G5 PFD presentation as installed in the Club Warriors and integrated with the G500 Garmin autopilot. Consult the diagram and refer to the numbered items. Please fill in the blanks. #15 is the _____. #17 is the _____. #14 is the _____. #19 is the _____ #20 is the _____.

16 : Using the Performance Charts of the AFM/POH for N8080A, serial number 18-8016051, the true airspeed in cruise will be _____ under the following conditions ... (Use the original maximum gross weight of 2325 pounds.)

Condition	Data
Cruise Pressure Altitude	8,000 feet
OAT at cruise altitude	15 Celsius
Cruise Power	65% best power
Wheel fairings	not installed
Gross weight	2325 pounds

17 : How is a total loss of alternator output detected in the PA28-161?

A : A total loss of alternator output is detected through a zero reading on the voltmeter.

B : A total loss of alternator output is detected through a zero reading on the ammeter.

C : A total loss of alternator output is detected through a warning displayed on the SYSTEMS page of the GNS 650

D : A total loss of alternator output is detected by loss of the turn coordinator and the G5 attitude indicator and/or HSI if installed.

E : A total loss of alternator output is detected the popping of the ALT circuit breaker.

18 : When effecting a start with an external power source, the master switch should normally be ... and the electronics should normally ...

A : master on ... electronics on

B : off... electronics on

C : off...electronics off

D : on until engine start...electronics off

E : off unless battery voltage is at least 12.5 volts...electronics off

19 : The type of oil normally in the engine should be ...

A : SAE rated SE (severe environment) multi-viscosity

B : Aviation grade ashless dispersant (AD) of appropriate viscosity

C : High quality automotive type high detergent (HD) motor oil

D : Aviation grade "straight mineral oil"

E : Aviation grade multi-viscosity synthetic oil

20 :

- To achieve 65% power at 10,000 feet pressure altitude with an OAT of 20F requires what RPM setting? Assume best power mixture, leaned as indicated, and indicated fuel flow.
- Note that due to the inherent imprecision of these charts, choose the closest answer to your conclusion.

A : 2620 RPM

B : 2400 RPM

C : 2720 RPM

D : 2580 RPM

E : 2320 RPM

21 : This G5 is configured with a ...

A : sky pointer

B : ground pointer

22 : What is the longest VFR flight (hours and minutes) that the WCFC SOPs allow to be planned for a PA-28-161 with fuel to the tabs under VFR?

- For private pilots?
- For student pilots?
- NOTE
- Fueled to tabs, the PA28-161 Warrior II carries 34 gallons of usable fuel
- Use Figure 5-16 from page 5-22 for fuel consumption.
- Assume Best Power mixture and fuel flow at 65%

A : 3.86 private pilot, 1:93 student pilot

B : 2:51 private pilot, 1:08 student pilot

C : 2:86 private pilot, 1:19 student pilot

D : 3:00 private pilot, 1:19 student pilot

23 : What would be the calculated cruise speed (True Airspeed) using the parameters below? (Use N8080A for performance calculations.)

- NOTE:
- Fuel to tabs (34 gallons usable)
- Wheel fairings not installed
- Max Gross Weight 2325 pounds
- Best power mixture setting
- 65% power
- 8000 foot pressure altitude
- OAT (at altitude) 40F

A : 122 knots TAS

B : 111 knots TAS

C : 113 knots TAS

D : 106 knots TAS

24 : Using the Performance Charts of the AFM/POH for N8080A, serial number 18-8016051, the true airspeed in cruise will be _____ under the following conditions ... (Use the original maximum gross weight of 2325 pounds.)

Condition	Data
Cruise Pressure Altitude	8,000 feet
OAT at cruise altitude	15 Celsius
Cruise Power	65% best power
Wheel fairings	not installed
Gross weight	2325 pounds

25 : Best angle-of-climb speed for the PA-28-161 at gross weight at sea level is:

A : 52 KIAS

B : 63 KIAS

C : 79 KIAS

D : Both (a) and (b) with and without flaps respectively

26 : The maximum gross takeoff weight for the CHFC PA-28-161 aircraft is

A : 2000 pounds

B : 2325 pounds

C : 2350 pounds

D : 2440 pounds

27 : Calculate the fuel (gph), time (??:??), and distance (NM) to climb the PA28 from a departure airport to a cruise altitude based on the following pressure altitudes, temperatures, and fuel burn. Climb will be full throttle at 79 KIAS.

- Departure airport: 2,000 feet pressure altitude, OAT 80F
- Cruise altitude: 10,000 feet pressure altitude, OAT 40F
- As always with these charts, there is some imprecision, so choose the closest answer to your result

A : 4 gallons, 25 minutes, 15 NM

B : 5 gallons, 45 minutes, 50 NM

C : 10 gallons, 45 minutes, 50 NM

D : 4 gallons, 23 minutes, 36 NM

28 : *What would Vref in KIAS be for the Warrior in the clean, flaps retracted, no-flap, approach configuration?* Use the original PA28-161 max gross weight of 2325 for your calculations
Notes and Hints:

- Vref is usually defined as the landing speed of an airplane in a given configuration at 50 feet AGL on approach. In a light airplane (<6,000 pounds) this is often calculated as 1.3 Vso (or the stall speed in the landing configuration) at maximum gross weight.
- 1.3 Vso KCAS (calibrated stall speed) at maximum gross weight in the specific configuration.

Piper recommends in the NORMAL PROCEDURES (POH Section p. 4-6 "Approach and Landing") a final approach speed of 63 KIAS with full (40 degrees) flaps. This is in fact 1.3 Vso KCAS with 40 degrees (full flaps) flaps deployed. We can confirm this using the "Airspeed System Calibration" graph (p. 5.11)How can we determine a reasonable landing speed (Vref) for a different landing configuration of our airplane? A reasonable Vref would be at or above 1.3 the calibrated stall speed (KCAS) in that configuration.To calculate an approximate Vref for a specific configuration we follow these steps:

- Determine stall speed in that configuration in KIAS
- Convert KIAS to KCAS
- Calculate 1.3 KCAS
- Convert 1.3 KCAS to KIAS

Determine the Vso in KCAS (calibrated airspeed) for a specific configurationConvert KCAS to KIAS

- Determine Vso in KCAS. (See "Limitations POH 2.5) The bottom of the white arc in
- limitations is 44 KIAS.
- Use Chart 5-1 to convert 44 KIAS to 50 KCAS (Vso in KCAS)
- 1.3 x 50 KCAS = 65 KCAS
- 65 KCAS = 63 KIAS (chart) (The recommended KIAS Vref for normal landings).

A : 53 KIAS
B : 70 KIAS
C : 55 KIAS
D : 80 KIAS

29 : Given the following loadings, are the Normal category weight and balance limitations met for a typical CHFC Warrior? Use the N8080A AFM/POH Weight and Balance charts.

- For this calculation, please use these numbers for N8080A c. February 2001.
- Basic empty weight = 1521.5 pounds. CG = 86.99)
- Front seats: 150 lb pilot and 70 lb child passenger
- Rear seats: two 170 lb passengers
- Fuel: fueled to tabs
- Baggage: 100 lbs

This information in tabular format:

item	weight	CG (arm)	Moment (/1000)
Airplane (80A)	1521.5	86.99	132.36
Front seat	220	80.5	17.71
Rear Seat	340	118.1	40.15
Fuel (pounds)	204	95.0	19.38
Baggage	100	142.8	14.28
Totals	------	------	----------

A : The weight is within STC limits, but the CG is too far aft.

B : No. The weight is within STC limits, but the CG is too far forward.

C : Yes. Both weight and CG are within STC limits.

D : No. This airplane is over the STC maximum gross weight.

E : Yes. But the CG is near the front limit.

30 : The active and armed modes, lateral and vertical, of the autopilot are displayed where?

A : Active modes are displayed on the HSI function of the installed G5

B : There is no separate display. The modes are recognized from the GFC 507 mode buttons, which turn red when engaged.

C : Adjacent to the GFC 507 AFCS in the GFC 500 screen

D : Autopilot (AP) status is displayed in the middle of the G5 Autopilot Status Box.

E : The autopilot (AP) modes may be displayed externally on an Ipad linked via Bluetooth to the GFC 500 AFCS system.