

SCOTT AFB AERO CLUB / FLIGHT TRAINING CENTER
PIPER WARRIOR WRITTEN EXAM
Revised 1 June 2010

1. N 8479F (PA-28) is equipped with a normally aspirated, direct drive, air-cooled, horizontally opposed, carburetor equipped, four cylinder engine. The maximum rated horsepower is:
 - a. 180 rated BHP at 2700 RPM for 5 minutes, then 170 BHP at 2650 RPM
 - b. 160 rated BHP at 2700 RPM for 5 minutes, then 150 BHP at 2650 RPM
 - c. 150 rated BHP at 2700 RPM for 5 minutes, then 140 BHP at 2650 RPM
 - d. 140 rated BHP at 2700 RPM for 5 minutes, then 130 BHP at 2650 RPM

2. The maximum oil capacity of the engine sump on the Lycoming O-320 series engine is _____ quarts. The minimum safe quantity to operate the engine is listed as _____ quarts by the manufacturer. The aero club does not operate the engine with less than 6 quarts.
 - a. 7 and 4 quarts
 - b. 7 and 5 quarts
 - c. 8 and 2 quarts
 - d. 8 and 6 quarts

3. The total usable fuel capacity is
 - a. 50 gallons
 - b. 48 gallons
 - c. 44 gallons
 - d. 40 gallons

4. The total useable fuel when fueled to the tabs is
 - a. 40 gallons
 - b. 38 gallons
 - c. 36 gallons
 - d. 34 gallons

5. The PA-28 is certified in both the Normal and Utility categories. The maximum certificate normal category weights are
 - a. Takeoff 1950 lbs, Landing 1950 lbs
 - b. Takeoff 2325 lbs, Landing 2325 lbs
 - c. Takeoff 2200 lbs, Landing 2200 lbs
 - d. Takeoff 2440 lbs, Landing 2440 lbs

6. As a utility category aircraft, which of the following maneuvers may be accomplished when exceeding 60 degrees of bank?
 - a. Chandelles
 - b. Steep turns
 - c. Lazy Eights
 - d. All of the above

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7. The maximum authorized weight in the baggage compartment is
- a. Normal category 0 lbs, Utility category 200 lbs.
 - b. Normal category 100 lbs, Utility category 150 lbs.
 - c. Normal category 150 lbs, Utility category 100 lbs.
 - d. Normal category 200 lbs, Utility category 0 lbs.
8. When should the electric fuel pump be in operation?
- a. Take off.
 - b. Landing.
 - c. Switching tanks.
 - d. All the above.
9. Spins are authorized in this aircraft in which category?
- a. Normal.
 - b. Utility.
 - c. Both.
 - d. Neither.
10. The maximum demonstrated cross-wind component of the PA-28 is:
- a. 15.
 - b. 17.
 - c. 19.
 - d. 21.
11. The proper procedure for checking the fuel sumps in the PA-28 is to
- a. Check the wing tank fuel sump's first, then the fuel strainer twice - once with each tank selected.
 - b. Check the wing tank fuel sumps first, then the fuel strainer.
 - c. Check the fuel strainer first, then the wing tanks.
 - d. Check the wing tanks only.
12. If the engine is flooded,
- a. Stop the procedure and wait 15 minutes for the carburetor to clear.
 - b. Continue cranking the engine with the mixture at idle cutoff.
 - c. Continue cranking the engine with the throttle 1/2 inch.
 - d. Continue cranking the engine with the throttle full open and the mixture at idle cutoff.
13. The PA-28 starter duty limits are:
- a. 15 seconds on, 1 minute off.
 - b. 30 seconds on, 2 minutes off.
 - c. 45 seconds on, 2 minutes off.
 - d. 60 seconds on, 5 minutes off.

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14. The PA-28 engine is warmed enough for takeoff when
- a. The oil temperature is in the operating range.
 - b. The engine idles smoothly.
 - c. The throttle can be opened fully without backfiring.
 - d. All of the above.
15. Which combination of procedures is proper for the takeoff and climb procedures?
- a. Normal takeoff: No flaps; rotate at 45-55 KIAS, climb at 63, 75, or 87 KIAS as appropriate.
 - b. Short field with obstacle: Flaps at 25 degrees; rotate at 52 KIAS, maintain 52 KIAS until clear of obstacle, then accelerate to 75 KIAS and retract flaps.
 - c. Short field with no obstacle: Flaps at 25 degrees; rotate at 50 KIAS, accelerate and climb at 75 KIAS.
 - d. All the above are correct procedures.
16. When flying the PA-28, lean the mixture.
- a. When the outside air temperature is above 75 degrees Fahrenheit.
 - b. At or below 75% power.
 - c. During cruise operations.
 - d. Only b and c apply.
17. When conducting the pre-flight inspection, the pilot should be aware that the static port is located
- a. On the left side of the fuselage, just behind the cowling.
 - b. Inside the pitot head.
 - c. At the base of the vertical stabilizer.
 - d. Adjacent to the stall warning vane.
18. When extending the flap handle, the pilot should be aware:
- a. The flap handle is notched at 10, 25 and 40 degrees of extension.
 - b. The flap handle operation is manual and not electric.
 - c. The right flap is designed to support weight only when retracted.
 - d. All of the above are correct.
19. When moving the fuel selector control, the pilot should be aware:
- a. A locking button must be depressed to turn the fuel selector OFF.
 - b. The fuel pump must be turned on prior to switching between tanks.
 - c. The fuel system should normally be operated in the "Both" position.
 - d. Answers "a" and "b" is correct.
20. When viewing the ammeter, the pilot should be aware:
- a. The meter does not indicate battery discharge.
 - b. A negative indication shows battery discharge.
 - c. A positive indication shows battery charge.
 - d. Proper operation is indicated by the meter being approximately centered.

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21. Should an engine fire occur during starting, continue cranking, move the mixture to idle cut-off, and
- a. Open the throttle.
 - b. Set the fuel selector to OFF.
 - c. Turn the electric fuel pump to OFF.
 - d. All of the above are correct.
22. Loss of alternator output is detected through zero reading on the ammeter and illumination of the ALT light in the annunciator panel. Before taking any emergency action, ensure the reading is actually zero, and not simply low, by actuating an electrical device such as the landing light. Then:
- a. Decrease the electrical load as much as possible and check the alternator circuit breakers for popped circuit.
 - b. Attempt to reset the over voltage relay.
 - c. Land as soon as practical if the alternator can be returned to service.
 - d. All the above is correct.
23. What is the approximate takeoff performance in feet for the PA-28 under the following conditions and with perfect technique for a normal takeoff?
- | | |
|-------------------|------------------|
| Outside Ambient | 90 degrees |
| Air Temperature | Fahrenheit |
| Pressure Altitude | 500 feet |
| Wind | 5 knot tailwind |
| Runway | Dry surface |
| Weight | 2325 lbs |
| Speed | 52 KIAS |
| Other | 50 foot obstacle |
- a. 1500.
 - b. 1900.
 - c. 2500.
 - d. 2800.

24. What is the approximate landing distance in feet for the PA-28 given the following conditions with perfect technique over an obstacle?

Outside Ambient Air	90°
Temperature:	Fahrenheit
Pressure altitude:	3000 ft
Wind	Calm
Runway	Dry Surface
Weight	2325 lbs
Speed	65 KIAS
Other	None

- a. 600.
- b. 700.
- c. 1200.
- d. 1450.

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25. Given the following conditions, what is the PA-28 's maximum useable fuel load gallons that you can legally carry for takeoff in the normal category, and what is the CG?

Item	Weight in lbs	Moments
Basic Empty Weight	1380	116238
Pilot	190	
Passenger	125	
Rear Passenger	135	
Rear Passenger	160	
Baggage	80	

- a. 45.5 gallons, CG is 89.6 inches.
- b. 45.5 gallons, CG is 90.3 inches.
- c. 42.5 gallons, CG is 91.2 inches.
- d. 42.5 gallons, CG is 92.1 inches.

This is the end of the open book portion of the written test. The closed book questions are on the back of the answer sheet cover emergency procedures. Proceed to that portion of the test at your instructor's direction.

When you have completed the test, have your instructor grade the test, and review any questions that you answered incorrectly. Also be sure both you and your instructor sign your test answer sheet, place it in your folder, and update your Currency Card (Form 654a).

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EMERGENCY QUESTIONS - CLOSED BOOK

Engine Fire During Start

1. _____
2. _____
3. _____
4. _____
5. _____

Engine Fire In Flight

1. _____
2. _____
3. _____
4. _____
5. _____

Engine Failure In Flight (Cruise)

1. _____
2. _____
3. _____
4. _____
5. _____

Emergency Approach and Landing

1. _____
2. _____
3. _____
4. _____
5. _____

Fill in all the applicable blanks.

1. V_A _____ Lbs
2. V_A _____ Lbs
3. V_A _____ Lbs
4. V_{FE} _____ (First Extension Increment)
5. V_{LO} _____ Retraction (Retractable Gear Aircraft Only)
6. V_{LO} _____ Extension (Retractable Gear Aircraft Only)
7. Best Glide Speed @ Maximum Gross Weight _____

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