Gleim Private Pilot FAA Knowledge Test
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NOTE: Deleted text is displayed with a line through it. New text is shown with a blue background.

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Study Unit 1 – Airplanes and Aerodynamics

Page 22, Subunit 1.6, item 6.: This material was added to our outline to clarify information in Question 29.

5. Ground effect may cause an airplane to float on landings or permit it to become airborne with insufficient airspeed to stay in flight above the area of ground effect.
   a. An airplane may settle back to the surface abruptly after flying through the ground effect if the pilot has not attained recommended takeoff airspeed.

6. Ground effect must be considered during takeoffs and landings.
   a. If a pilot fails to understand the relationship between the aircraft and ground effect during takeoff, a hazardous situation is possible because the recommended takeoff speed may not be achieved.
   b. Due to the reduced drag in ground effect, the aircraft may seem capable of takeoff well below the recommended speed. As the aircraft rises out of ground effect with a deficiency of speed, the greater induced drag may result in marginal initial ground performance.
   c. In extreme conditions, the aircraft may be airborne initially with a deficiency of speed and then settle back to the runway.
Page 30, Subunit 1.6, Question 29: This question was edited to correct the answer choices and answer explanations. Additional information was added to the outline for clarification.

29. An aircraft leaving ground effect during takeoff will

A. experience a reduction in ground friction and require a slight power reduction.

B. experience an increase in induced drag and a decrease in performance angle of attack to maintain the same lift coefficient.

C. require a lower angle of attack to maintain the same lift coefficient.

Answer (C B) is correct. (PHAK Chap 4)

DISCUSSION: The reduction of the wingtip vortices due to ground effect alters the span-wise lift distribution and reduces the induced angle of attack and induced drag. Therefore, when leaving ground effect, the wing will require a lower angle of attack to maintain the same lift coefficient. During the takeoff phase of flight, ground effect produces some important relationships. The airplane leaving ground effect after takeoff encounters just the reverse of the airplane entering ground effect during landing; i.e., the airplane leaving ground effect will (1) require an increase in angle of attack to maintain the same lift coefficient, (2) experience an increase in induced drag and thrust required, (3) experience a decrease in stability and a nose-up change in moment, (4) produce a reduction in static source pressure and an increase in indicated airspeed.

Answer (A) is incorrect. There is an increase in the ground friction, not a reduction. While the aerodynamic characteristics of the tail surfaces and the fuselage are altered by ground effects, the principal effects due to proximity of the ground are the changes in the aerodynamic characteristics of the wing, not a reduction in ground friction. As the wing encounters ground effect and is maintained at a constant lift coefficient, there is a consequent reduction in the upwash, downwash, and the wingtip vortices. Answer (B C) is incorrect. There is a reduction in induced drag in ground effect, not an increase of induced drag. The aircraft will require a higher angle of attack to maintain the same lift coefficient as when it was in ground effect.

Study Unit 2 – Airplane Instruments, Engines, and Systems

Page 38, Subunit 2.1, item 5.: This material was added to our outline as a result of an FAA question release.

4. In the Northern Hemisphere, compass turning error occurs when turning from a north or south heading.

   a. A magnetic compass will lag (and, at the start of a turn, indicate a turn in the opposite direction) when turning from a north heading.

      1) If turning to the east (right), the compass will initially indicate a turn to the west and then lag behind the actual heading until your airplane is headed east (at which point there is no error).

      2) If turning to the west (left), the compass will initially indicate a turn to the east and then lag behind the actual heading until your airplane is headed west (at which point there is no error).

   b. A magnetic compass will lead or precede the turn when turning from a south heading.

   c. Turning errors do not occur when turning from an east or west heading.

   d. These errors diminish as the acceleration/deceleration or turns are completed.

5. The magnets in a compass align with any magnetic field:

   a. Local magnetic fields in an aircraft caused by electrical current flowing in the structure, nearby wiring, certain metals, or any magnetized part of the structure conflict with the earth’s magnetic field and cause compass deviation error.

   b. Deviation, unlike variation, changes with heading rather than with geographic location.
Page 46, Subunit 2.1, New Question 10: This question was added to our database as a result of an FAA release. All subsequent questions were renumbered accordingly.

10. Deviation error of the magnetic compass is caused by

A. northerly turning error.
B. certain metals and electrical systems within the aircraft.
C. the difference in location of true north and magnetic north.

Answer (B) is correct. (PHAK Chap 7)

DISCUSSION: The magnets in a compass align with any magnetic field. Local magnetic fields in an aircraft caused by electrical current flowing in the structure, nearby wiring, certain metals, or any magnetized part of the structure conflict with the earth’s magnetic field and cause compass deviation error. Deviation, unlike variation, changes with heading rather than with geographic location.

Answer (A) is incorrect. The pull of the vertical component of the earth’s magnetic field causes northerly turning error, which is apparent on a heading of north or south. Answer (C) is incorrect. Deviation error is not caused by the difference in a location but by aircraft items located inside the airplane that affect the compass.

Page 47, Subunit 2.2, Questions 11 and 13: These questions were edited to clarify answer choices.

11. Which instrument will become inoperative if the pitot tube becomes clogged?

A. Altimeter.
B. Vertical speed indicator.
C. Airspeed indicator.

Answer (C) is correct. (PHAK Chap 7)

DISCUSSION: The pitot-static system is a source of pressure for the altimeter, vertical-speed indicator, and airspeed indicator. The pitot tube is connected directly to the airspeed indicator and provides impact pressure for it alone. Thus, if the pitot tube becomes clogged, only the airspeed indicator will become inoperative.

Answer (A) is incorrect. The altimeter operates off the static system and is not affected by a clogged pitot tube. Answer (B) is incorrect. The vertical speed indicator operates off the static system and is not affected by a clogged pitot tube.

13. Which instrument(s) will become inoperative if the static vents become clogged?

A. Airspeed indicator only.
B. Altimeter only.
C. Airspeed indicator, altimeter, and vertical speed indicator.

Answer (C) is correct. (PHAK Chap 7)

DISCUSSION: The pitot-static system is a source of air pressure for the operation of the altimeter, airspeed indicator, and vertical speed indicator. Thus, if the static vents become clogged, all three instruments will become inoperative.

Answer (A) is incorrect. Not only will the airspeed indicator become inoperative, but also the altimeter and vertical speed indicator. Answer (B) is incorrect. Not only will the altimeter become inoperative, but also the airspeed and vertical speed indicators.

Page 49, Subunit 2.3, Question 22: This question was edited as a result of an FAA question release.

22. (Refer to Figure 4 on page 48.) Which color identifies the normal flap operating range?

A. The lower limit of the white arc to the upper limit of the green yellow arc.
B. The green arc.
C. The white arc.

Answer (C) is correct. (PHAK Chap 7)

DISCUSSION: The normal flap operating range is indicated by the white arc. The power-off stall speed with flaps extended is at the lower limit of the arc, and the maximum speed at which flaps can be extended without damage to them is the upper limit of the arc.

Answer (A) is incorrect. The upper limit of the green yellow arc well exceeds the upper limit of the white arc, which is the maximum flap extended speed. Answer (B) is incorrect. The green arc represents the normal operating range.
Study Unit 3 – Airports, Air Traffic Control, and Airspace

Page 85, Subunit 3.2, Question 15: This question was edited to correct a reference to a runway location sign in the answer explanation.

15. (Refer to Figure 66 below.) (Refer to F.) This sign confirms your position on

A. runway 22.
B. routing to runway 22.
C. taxiway 22.

Answer (A) is correct. (AIM Chap 2)

DISCUSSION: A runway position location sign has a black background with a yellow inscription and a yellow border. The inscription on the sign informs the pilot (s)he is located on Runway 22.

Answer (B) is incorrect. A direction sign with a yellow background and black inscription would be required to inform a pilot (s)he is routing to Runway 22. Answer (C) is incorrect. Only runways are numbered. Taxiways are always identified by a letter.

Page 98, Subunit 3.7, Question 68: This question was edited as a result of an FAA question release.

68. Pilots are encouraged The Aeronautical Information Manual (AIM) specifically encourages pilots to turn on their landing lights when operating below 10,000 feet, day or night, and especially when operating

A. within 5 miles of a controlled airport in Class B airspace.
B. in conditions of reduced visibility.
C. in Class B airspace within 15 miles of a towered airport.

Answer (B) is correct. (AIM Para 4-3-23)

DISCUSSION: The FAA has a voluntary pilot safety program, known as “Operation Lights On,” to enhance the see-and-avoid concept. Pilots are encouraged to turn on their landing lights during takeoff and when operating below 10,000 feet, day or night, especially when operating within 10 miles of any airport, or in conditions of reduced visibility and in areas where flocks of birds may be expected.

Answer (A) is incorrect. The AIM does not indicate any specific airspace. Pilots are encouraged to turn on their landing lights when operating within 10 miles of any airport, not specifically within 5 miles of a controlled airport in conditions of reduced visibility, regardless of the airspace in which they are operating.

Answer (C) is incorrect. Pilots are encouraged to turn on their landing lights during takeoff and when operating below 10,000 feet, day or night, especially when operating. 

Page 102, Subunit 3.12, Question 91: This question was edited as a result of an FAA question release.

91. When making routine transponder code changes, pilots should avoid inadvertent selection of which codes?

A. 0700, 1700, 7000, 7200
B. 1200, 1500, 7000
C. 7500, 7600, 7700

Answer (C) is correct. (AIM Para 4-1-19)

DISCUSSION: Some special codes set aside for emergencies should be avoided during routine VFR flights. They are 7500 for hijacking, 7600 for lost radio communications, and 7700 for a general emergency. Additionally, you should know that code 7777 is reserved for military interceptors.

Answer (A) is incorrect. Any of these Code 7200 may be assigned by ATC. Answer (B) is incorrect. The standard VFR code is 1200. Code 7000 may be assigned by ATC.
**Study Unit 4 – Federal Aviation Regulations**

Page 145, Subunit 4.6, Question 79: This question was edited as a result of an FAA question release.

79. Unless otherwise authorized, if flying a transponder-equipped aircraft, a recreational pilot should squawk which VFR code?

A. 1200
B. 7600
C. 7700

Answer (A) is correct. *(AIM Para 4-1-19)*

**DISCUSSION:** A recreational pilot flying a transponder-equipped aircraft should set that transponder on code (squawk) 1200, which is the VFR code.

Answer (B) is incorrect. VFR code 7600 is the lost communication code. Answer (C) is incorrect. VFR code 7700 is the general emergency code.

Page 166, Subunit 4.9, Question 181: This question was edited as a result of an FAA question release.

181. A 100-hour inspection was due at 3302.5 hours. The 100-hour inspection was actually done at 3309.5 hours. When is the next 100-hour inspection due?

A. 3312.5 hours.
B. 3402.5 hours.
C. 3409.5 hours.

Answer (B) is correct. *(FAR 91.409)*

**DISCUSSION:** Since the 100-hr. inspection was due at 3302.5 hr., the next 100-hr. inspection is due at 3402.5 (3302.5 + 100). The excess time used before the 100-hr. inspection was done must be included in computing the next 100 hr. of time in service.

Answer (A) is incorrect. This is the latest time on the tachometer the last 100-hr. inspection could have been completed, not when the next 100-hr. inspection is due. Answer (C) is incorrect. This is 100 hr. from the actual completion time of the last inspection, but the excess time is computed into the next 100 hr. of time in service, or 100 hr. from the last due time only 86 hours. There are still 14 hours left before the 100-hour inspection is to be done.
Study Unit 5 – Airplane Performance and Weight and Balance

Page 188, Subunit 5.2, Questions 11 and 12: These questions were edited as a result of an FAA question release.

11. (Refer to Figure 8 on page 189.) What is the effect of a temperature increase from 30 to 50 °F on the density altitude if the pressure altitude remains at 3,000 feet MSL?

A. 900 foot increase.
B. 1,100-foot decrease.
C. 1,300-foot increase.

Answer (C) is correct. (PHAK Chap 10)

DISCUSSION: Increasing the temperature from 30°F to 50°F, given a constant pressure altitude of 3,000 ft., requires you to find the 3,000-ft. line on the density altitude chart at the 30°F level. At this point, the density altitude is approximately 1,650 feet. Then move up the 3,000-ft. line to 50°F, where the density altitude is approximately 2,950 feet. There is an approximate 1,300-ft. increase (2,950 – 1,650 feet). Note that 50°F is just about standard and pressure altitude is very close to density altitude.

Answer (A) is incorrect. A 900-foot increase would be caused by a temperature increase of 14°F to 45°F (not 20°F). Answer (B) is incorrect. A decrease in density altitude would be caused by a decrease, not an increase, in temperature.

12. (Refer to Figure 8 on page 189.) What is the effect of a temperature increase from 35 to 50 °F on the density altitude if the pressure altitude remains at 3,000 feet MSL?

A. 1,000-foot increase.
B. 1,100-foot decrease.
C. 1,300-foot increase.

Answer (A) is correct. (PHAK Chap 10)

DISCUSSION: Increasing the temperature from 35°F to 50°F, given a constant pressure altitude of 3,000 ft., requires you to find the 3,000-ft. line on the density altitude chart at the 35°F level. At this point, the density altitude is approximately 1,950 feet. Then move up the 3,000-ft. line to 50°F, where the density altitude is approximately 2,950 feet. There is an approximate 1,000-foot increase (2,950 – 1,950 feet). Note that 50°F is just about standard, and pressure altitude is very close to density altitude.

Answer (B) is incorrect. An 1,100-foot decrease would require a temperature decrease of 18°F to 17°F, not a 15°F increase to 50°F to 54°F. Answer (C) is incorrect. An 1,300-foot increase would be caused by a temperature increase of 20°F (not 15°F) to 58°F.

Study Unit 6 – Aeromedical Factors and Aeronautical Decision Making (ADM)

Page 221, Subunit 6.1, item 2.: This update corrects one of the symptoms of hypoxia.

2. Symptoms of hypoxia include an initial feeling of euphoria but lead to more serious concerns such as headache, decreased delayed reaction time, visual impairment, and eventual unconsciousness.

Page 230, Subunit 6.6, New Question 37: This question was added to our database as a result of a release by the FAA. The subsequent questions were renumbered accordingly.

37. What antidotal phrase can help reverse the hazardous attitude of impulsivity?

A. Do it quickly to get it over with.
B. It could happen to me.
C. Not so fast, think first.

Answer (C) is correct. (PHAK Chap 17)

DISCUSSION: Impulsivity is the attitude of people who frequently feel the need to do something, anything, immediately. They do not stop to think about what they are about to do. They do not select the best alternative but instead do the first thing that comes to mind. They should recognize this attitude and state the antidote, "Not so fast. Think first," before taking action.

Answer (A) is incorrect. "Do it quickly to get it over with" is the hazardous attitude of impulsivity, not the antidote. Answer (B) is incorrect. "It could happen to me" is the antidote for the hazardous attitude of invulnerability.
Study Unit 8 – Aviation Weather Services

Page 263, Subunit 8.4, Question 28: This question was edited as a result of an FAA question release.

28. (Refer to Figure 16 on page 262.) What is the outlook for the southern half of Indiana after 0700Z?

A. VFR.
B. Scattered clouds at 3,000 feet AGL IFR.
C. Scattered clouds at 10,000 feet Marginal VFR.

Answer (A) is correct. (AWS Sect 7)

DISCUSSION: The question asks for the outlook for the southern half of Indiana after 0700Z. Indiana (IN) is covered by the Chicago area forecast (FA), which is the second of two FAs depicted in Fig. 16. There is a heading under “IN” labeled “SRN HALF,” meaning “southern half.” Under this heading is an entry, “OTLK...VFR,” meaning that the categorical outlook is for VFR conditions. Note in the communication and product header section that there is a note, “OTLK VALID 250800-251400,” meaning that the categorical outlook is valid from 0800Z to 1400Z on the 25th. Therefore, the outlook does not become valid until 1 hour after 0700Z. You should still select “VFR” as the answer for this question because it specifically asks for the outlook after 0700Z, not at 0700Z; 0800Z is after 0700Z.

Answer (B) is incorrect. Scattered clouds at 3,000 ft. AGL is a forecast sky condition from 0700Z to 0800Z (when the VFR CLDS/WX section becomes invalid); it is not an outlook, which would simply indicate whether VFR, MVFR, or IFR conditions are expected. IFR would be indicated under the heading as “OTLK...IFR.” Answer (C) is incorrect. Scattered clouds at 10,000 ft. is a forecast sky condition from 0700Z to 0800Z (when the VFR CLDS/WX section becomes invalid); it is not an outlook, which would simply indicate whether VFR, MVFR, or IFR conditions are expected. Marginal VFR would be indicated under the heading as “OTLK...MVFR.”

Study Unit 9 – Navigation: Charts and Publications

Page 358, Subunit 9.6, Question 92: This question was edited as a result of an FAA question release.

92. (Refer to Figure 64 below.) According to the Airport/Facility Directory, what times can a pilot obtain fuel and services in September at Toledo Express (TOL) Airport?

A. 1400 - 0600 hr. local time.
B. 1300 - 0500 hr. local time.
C. 1200-0900, 0100 hr. local time.

Answer (C) is correct. (A/FD)

DISCUSSION: In the Airport Remarks of the Toledo Express (TOL) section of the A/FD, you will see that fuel and services are available from 0300-1300 and 0500Z‡. The ‡ symbol in Legend 4 (area 6: Time Conversion) of the A/FD Legend specifies that the location observes daylight savings time and will be 1 hour earlier than shown. Daylight savings time is in effect from 0200 hr. local time the second Sunday in March to 0200 hr. local time the first Sunday in November. September is during daylight savings time.

Answer (A) is incorrect. It is an hour ahead instead of an hour behind for daylight savings time. Answer (B) is incorrect. This is the time of availability during standard time.

Page 364, Subunit 9.7, Question 98: This question was edited as a result of an FAA question release.

98. What information is contained in the Notices to Airmen Publication (NTAP)?

A. Current NOTAM (D) and FDC NOTAMs.
B. Military All current NOTAMs only.
C. Current NOTAM (D), Airport/Facility Directory information and FDC NOTAMs, and military NOTAMs.

Answer (A) is correct. (AIM Para 5-1-3)

DISCUSSION: The NTAP contains (D) NOTAMs that are expected to remain in effect for an extended period and FDC NOTAMs that are current at the time of publication.

Answer (B) is incorrect. Military NOTAMs are not published in the NTAP. Answer (C) is incorrect. While current NOTAM (D) and FDC NOTAMs are published in the NTAP, military NOTAMs are not. Current Airport/Facility Directory information is not.
7. Always check to see if the unit has Receiver Autonomous Integrity Monitoring (RAIM) capability.
   a. If no RAIM capability exists, be suspicious of a GPS-displayed position when any disagreement exists with the position derived from other radio navigation systems, pilotage, or dead reckoning.
   b. If RAIM is lost during flight, the pilot has no assurance of the accuracy of the GPS position.
   c. With three satellites, you narrow the possible location down to one of two points, meaning that you could be at only one of those points.
      1) Four satellites are required for navigation.
      2) At least one satellite, in addition to those required for navigation, must be in view for the receiver to perform the RAIM function. Thus, RAIM needs a minimum of five satellites in view, or four satellites and a barometric altimeter (baro-aiding), to detect an integrity anomaly.

Page 369, Subunit 10.1, Question 1: This question was updated to reflect changes released by the FAA and to clarify the answer explanations.

1. When the course deviation indicator (CDI) needle is centered during an omnireceiver check using a VOR test signal (VOT), the omnibearing selector (OBS) and the TO/FROM indicator should read
   A. 180° FROM, only if the pilot is due north of the VOT.
   B. 0° TO or 180° FROM, regardless of the pilot's position from the VOT.
   C. 0° FROM or 180° TO, regardless of the pilot's position from the VOT.

Answer (C) is correct. (AIM Para 1-1-4)

**DISCUSSION:** A VOT transmits a 360° (0°) radial in all directions. With the CDI centered, the OBS should indicate 0° with the TO/FROM indicator showing FROM, or 180° TO, regardless of your position from the VOT. A good way to remember the VOT rule is to associate it with the Cessna 182, i.e., 180° TO.

Answer (A) is incorrect. With the OBS set at 180°, CDI centered, you should have a TO (not FROM) indication, regardless of your position from the VOT. Answer (B) is incorrect. The VOT transmits a 360° radial in all directions; thus, with the CDI centered and the OBS on 0°, you should have a FROM (not TO) indication and 180° TO (not FROM).

**DISCUSSION:** To use the VOT service, tune in to the VOT frequency (108.0 - 117.95 MHz) on the VOR receiver. With the CDI centered, the OBS should read 0° with the TO/FROM indication showing FROM, or the OBS should read 180° with the TO/FROM indication showing TO.

Answer (A) is incorrect. Regardless of your heading, with the CDI centered, the OBS should read 0° with the TO/FROM indication showing FROM, or the OBS should read 180° with the TO/FROM indication showing TO. Answer (B) is incorrect. This answer selection is backwards. With the CDI centered, the OBS should read 0° with the TO/FROM indication showing FROM, or the OBS should read 180° with the TO/FROM indication showing TO.
Page 386, Subunit 10.4, New Question 38: This question was added to our database as a result of a release by the FAA.

38. If Receiver Autonomous Integrity Monitoring (RAIM) capability is lost in-flight,

A. the pilot may still rely on GPS derived altitude for vertical information.
B. the pilot has no assurance of the accuracy of the GPS position.
C. GPS position is reliable provided at least 3 GPS satellites are available.

Answer (B) is correct. \(\text{AIM Para 1-1-18, PHAK Chap 15}\)

**DISCUSSION:** Always check to see if the unit has RAIM capability. If no RAIM capability exists, be suspicious of a GPS displayed position when any disagreement exists with the position derived from other radio navigation systems, pilotage, or dead reckoning. If RAIM is lost during flight, the pilot has no assurance of the accuracy of the GPS position.

Answer (A) is incorrect. Without RAIM capability, the pilot has no assurance of the accuracy of the GPS position.

Answer (C) is incorrect. With three satellites, you narrow the possible location down to one of two points, meaning that you could be at only one of those points. Four satellites are required for navigation. At least one satellite, in addition to those required for navigation, must be in view for the receiver to perform the RAIM function. Thus, RAIM needs a minimum of five satellites in view, or four satellites and a barometric altimeter (baro-aiding), to detect an integrity anomaly.

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Study Unit 11 – Cross-Country Flight Planning

Page 402, Subunit 11.5, Question 24: This question was edited to correct magnetic course calculations and some verbiage in the answer explanations.

24. (Refer to Figure 21 below.) Determine the magnetic course from First Flight Airport (area 5) to Hampton Roads Airport (area 2).

A. 141°.
B. 321°.
C. 331°.

Answer (C) is correct. \(\text{PHAK Chap 15}\)

**DISCUSSION:** You are to find the magnetic course from First Flight Airport (lower right corner) to Hampton Roads Airport (above 2 on Fig. 21). True course is the degrees clockwise from true north. Determine the true course by placing the straight edge of your plotter along the given route with the grommet at the intersection of your route and a meridian (the north/south line with crosslines). Here, TC is 324°. To convert this to a magnetic course, add the 11° westerly variation (indicated by the slanted dashed line across the upper right of the sectional), and find the magnetic course of 331°. Remember to subtract easterly variation and add westerly variation.

Answer (A) is incorrect. This is the approximate true, not magnetic, course for a flight from Hampton Roads Airport to First Flight Airport, not for a flight from First Flight to Hampton Roads.

Answer (B) is incorrect. This is the approximate true, not magnetic, course.
Page 406, Subunit 11.6, Question 29: This question was edited to correct the true airspeed given in the answer explanation.

29. (Refer to Figure 25 on page 407.) Determine the magnetic heading for a flight from Majors Airport (area 1) to Winnsboro Airport (area 2). The wind is from 340° at 12 knots, the true airspeed is 136 knots, and the magnetic variation is 6° 30'E.

A. 091°.
B. 095°.
C. 099°.

Answer (A) is correct. (PHAK Chap 15)

DISCUSSION: On Fig. 25, begin by computing the true course (TC) from Majors Airport (area 1) to Winnsboro Airport (area 2) by drawing a line between the two airports. Next, determine the TC by placing the grommet on the plotter at the intersection on the course line and a meridian (vertical line with cross-hatchings) and the top of the plotter aligned with the course line. Note the TC of 101° TC on the edge of the protractor. Next, subtract the 6° east magnetic variation from the TC to obtain a magnetic course (MC) of 095°. Since the wind is given true, subtract the 6° magnetic variation to obtain a magnetic wind direction of 334° (340° – 6°). Now use the wind side of your computer to plot the wind direction and velocity. Place the magnetic wind direction of 334° on the inner scale on the true index. Mark 12 kt. up from the grommet with a pencil. Turn the inner scale to the magnetic course of 095°. Slide the grid up until the pencil mark lies over the line for true airspeed (TAS) of 136 kt. Correct for the 4° left wind angle by subtracting from the magnetic course of 095° to obtain a magnetic heading of 091°. This is intuitively correct because, given the magnetic course of 095° and a northwesterly wind, you must turn to the left (crab into the wind) to correct for it.

Answer (B) is incorrect. This is the heading you would get if you did not subtract the wind angle of 4° to the left. Answer (C) is incorrect. Correcting to the right for wind angle would result in a magnetic heading of 099°.

Page 414, Subunit 11.7, Question 38: This question was edited to correct calculations for the best available answer choice.

38. (Refer to Figure 59 below, and Figure 24 on page 415.) Determine the compass heading for a flight from Claxton-Evans County Airport (area 2) to Hampton Varnville Airport (area 1). The wind is from 280° at 8 knots, and the true airspeed is 85 knots.

A. 033°.
B. 042°.
C. 038°.

Answer (B) is correct. (PHAK Chap 15)

DISCUSSION:
1. This flight is from Claxton-Evans (left of 2) to Hampton Varnville (right of 1) on Fig. 24.
2. TC = 045°.
3. MC = 045° TC + 5° W variation = 050 051°.
5. Mark up 8 kt. with 285 286° under true index.
6. Place MC 050 051° under true index.
7. Move wind mark to 85 kt. TAS arc.
8. Note that the pencil mark is 4° left.
9. Subtract 4° from 050 051° MC for 046 047° MH.
10. Subtract 3° compass variation (obtained from Fig. 59) from 046 047° to find the compass heading of 042 043°.

After determining the answer of 043°, the correct answer of 042° is the best answer.

Answer (A) is incorrect. This would be the approximate compass heading if the wind were out of 295° at 22 kt., not 280° at 8 kt. Answer (C) is incorrect. This would be the approximate compass heading if the wind were out of 295° at 12 kt.
39. How far will an aircraft travel in 2-1/2 minutes with a groundspeed of 98 knots?

A. 2.45 NM.
B. 3.35 NM.
C. 4.08 NM.

Answer (C) is correct. (Fl Comp PH SU 9)

**DISCUSSION:** To determine the distance traveled in 2-1/2 min. at 98 kt., note that 98 kt. is 1.6 NM/min. (98 ÷ 60 = 1.633). Thus, in 2-1/2 min., you will have traveled a total of 4.08 NM (1.633 × 2.5 = 4.08). Alternatively, put 98 on the outer scale of your flight computer over the index on the inner scale. Find 2.5 min. on the inner scale, above which is 4.1 NM.

Answer (A) is incorrect. For 2.45 NM to be true, you would need a groundspeed of approximately 59 kt. Answer (B) is incorrect. For 3.35 NM to be true, you would need a groundspeed of approximately 80 kt.