

Time: ____:____

Name: _____
School: _____
Contestant ID: _____

2013 NIFA Nationals Computer Accuracy Exam

The following test consists of 40 multiple choice questions. All questions are equally weighted. You will be given 60 minutes to complete the test. All answers must be recorded on the answer sheet within the allotted time or no credit will be given.

1. After trying your hand at dead reckoning, you peek at your GPS and notice that you are 6 nm off course. If you were flying for 32 minutes at an average groundspeed of 140 mph, how many degrees must you adjust your heading to parallel your original intended course?

A: 5.5 degrees
B: 55 degrees
C: 6.5 degrees
D: 65 degrees
2. Referring to the previous question, if you wish to rejoin your intended course in 24 nm from your current position, what must your total heading change be from your original heading?

A: 7.0 degrees
B: 8.0 degrees
C: 20.5 degrees
D: 70.0 degrees
3. Today is Metric Practice Area Call Day. Before you begin to “teach” your instructor chandelles, you determine what to say in your practice area call. You are currently 8.4 nm south of Triple W airport at 5,400’. What should you say in your practice area call?

A: You are 15.6 km north of Triple W at 1,650 meters altitude.
B: You are 9.6 km south of Triple W at 17,700 meters altitude.
C: You are 13.5 km north of Triple W at 17,600 meters altitude.
D: You are 15.6 km south of Triple W at 1,650 meters altitude.
4. After loading your Boeing 737-400 for its daily flight to Cuba, you realize that your CG is too far aft. If your current weight is 124,000 lbs. with your CG 1 foot behind the aft limit, how many 45 lb. bags must you move from the aft cargo bay located at Station 80.5 (feet) to the forward cargo bay located at Station 23 (feet)?

A: 5 bags
B: 22 bags
C: 24 bags
D: 48 bags

5. While descending through 18,000 feet into Atlanta-Hartsfield (elev. 1026 ft. MSL), you forget to set your altimeter to the local altimeter setting. If your altimeter is still set to the standard altimeter setting and barometric pressure is 30.24 in. Hg, what will your altimeter read when you pull into the gate?

A: 706 ft. MSL
B: 994 ft. MSL
C: 1026 ft. MSL
D: 1346 ft. MSL

6. You decide to live on the edge and fly a Cessna 172 from Palm Beach International, Florida to Grand Bahama International, Bahamas. Using the following information, how far from Grand Bahama will you be when it will take just as long to continue to Grand Bahama as it will to turn around and go back to Palm Beach?

Distance between airports: 76 nm
Pressure Altitude: 7,000' MSL
Indicated Airspeed: 116 KIAS
OAT: 6°C
True Course from Palm Beach: 095°
True Wind: 302° at 39 mph
Fuel On Board/Fuel Flow: 48 US gallons / 63 IB:/hr.

A: 29 nm
B: 29 sm
C: 47 nm
D: 47 sm

7. Referring to the previous question, what will your true heading be on the way to Grand Bahama International?

A: 082°
B: 088°
C: 102°
D: 108°

8. While flying around in your Piper Cub at a true airspeed of 78 KTAS, you decide to estimate the winds aloft. While flying a magnetic heading of 232°, you drift 6° to the right. Then while flying a magnetic heading of 127°, you drift 7 degrees to the left. What are your magnetic winds aloft?
- A: 005° at 8 knots
 - B: 010° at 11 knots
 - C: 185° at 8 knots
 - D: 190° at 11 knots
9. While descending at 2,400 fpm, your descent gradient is 318 ft./nm. What is your groundspeed?
- A: 79 knots
 - B: 91 knots
 - C: 452 mph
 - D: 521 mph
10. While cruising at FL340, your indicated airspeed is 264 KIAS. The outside air temperature is 8°C above standard. What is your Mach number?
- A: Mach 0.44
 - B: Mach 0.74
 - C: Mach 0.81
 - D: Mach 0.84

In the preflight briefing for your upcoming 328 statute mile cross country trip you learn that there will be a TFR directly under your true course of 332 degrees. The center of the TFR will be located 185 nautical miles along your route. The TFR is 5 nautical miles across, from the surface to 7,000 feet, and will be active from 1400Z to 1600Z. Use this information to answer the next 7 questions.

11. Assuming an average true airspeed of 108 knots from the beginning and average winds of 040@28 miles per hour, what time would you need to be underway in order to cross over the center of the TFR before it becomes active?
- A: 1206Z
 - B: 1224Z
 - C: 1248Z
 - D: 1302Z

12. External factors complicate your plans and you depart a few minutes later than you would have preferred. Crossing 50 nautical miles from your departure point, you realize that you're not going to get to the TFR before it becomes active, so you'll need to steer around it. How many degrees do you need to steer to miss the TFR by one nautical mile?
- A: 1.4 degrees left
 - B: 1.6 degrees left
 - C: 1.8 degrees left
 - D: 2.0 degrees left
13. Being a proactive pilot you also decide to calculate how much you will have to turn back to the right after crossing one nautical mile to the left of the TFR so that you can proceed directly to your destination. How many degrees will you need to turn after passing the TFR?
- A: 2.1 degrees
 - B: 2.6 degrees
 - C: 3.1 degrees
 - D: 3.7 degrees
14. Unfortunately, through a bit of bureaucratic kerfuffle, one of the enforcement agencies interprets the size of the TFR to be larger than originally briefed to you. When you pass just to the left of what you thought was the boundary, the alarm bells go off and they scramble two interceptors. The first interceptor is a fighter jet that will fly from his base directly to where he thinks you'll be at the point of intercept (since you are flying in a straight line). The second interceptor is a helicopter that will depart from a different base and do the same. The helicopter has a cruise speed of 85 knots and has to travel 70 statute miles on a course of 225 degrees to get to his intercept point. Wind at his altitude is 050@15 knots. How long will it take for him to reach his intercept point?
- A: 34.3 minutes
 - B: 0.59 hours
 - C: 36.8 minutes
 - D: 2,058 seconds
15. The fighter has an average speed of 582 knots and has to travel 304 nautical miles to his intercept point. He'll climb at 5,800 feet per minute from sea level to 17,000 feet. How long will that climb take?
- A: 93 seconds
 - B: 2 minutes 56 seconds
 - C: 0.4 hours
 - D: 204 seconds

16. If the fighter's average wind is 010@52 miles per hour and course to the intercept point is 046 degrees, using the information from the previous question and an average cost of \$13,500 per hour, what is the taxpayer expense for him to get to the intercept point?
- A: \$3340
B: \$5275
C: \$6448
D: \$7530
17. While you're on the ground with the escorts waiting for the police to arrive, you try to relax by working some flight computer questions. What was the density altitude at the top of the TFR if the OAT was 9 degrees Celsius and the altimeter setting was 29.42?
- A: 9000 feet
B: 8750 feet
C: 8500 feet
D: 7500 feet
18. Assume a constant groundspeed of 250kts. You are flying a STAR that requires you to cross SOMTO at 11,000'MSL and DYLAN at 8,000'MSL. The two fixes are 13NM apart. If you are cruising at FL380, at what distance from SOMTO and at what descent rate will you need to begin descending in order to achieve a constant descent angle and meet both crossing restrictions.
- A: 117NM; 1,068 feet/min.
B: 135SM; 293 meters/min.
C: 130NM; 962 feet/min
D: 150SM; 326 meters/min.
19. Your crazy Uncle Bernie is building his own aircraft. The fuel system is a bit complicated though. It is made of one 55 gallon drum, six 4.5L carboys, and a container that used to hold 17.8 imperial gallons of imported hot pepper relish. What is the estimated range in still air if the aircraft will burn 12.6 gph and cruise at 144 knots? Include the required FAA minimum 30 minute reserve.
- A: 954NM
B: 1,140NM
C: 882NM
D: 1,069NM

20. On a local flight, the winds aloft at 3000' are 096 at 32 kts and 6000' are 119 at 38 kts. If you are cruising at 3,500' with 1 hour and 55 minutes of fuel onboard on a TC of 013 and KTAS of 98 kts, what is your time to turn?
- A: 51 minutes
 - B: 55 minutes
 - C: 0.98 hours
 - D: 1.09 hours
21. Referencing the above question, what is your radius of action?
- A: 89.5 nm
 - B: 103.5 nm
 - C: 111 sm
 - D: 95.5 nm
22. During preflight, you notice a small oil leak. You estimate that it is leaking at 2.7pph. Before takeoff, you top off the oil at 6 quarts. The aircraft is fueled with 77 usable gallons of 100LL aviation gasoline. Your preflight planning indicates that you will burn 107.1pph for the flight. Will you run out of gas or oil first? How much of remaining fluid will be left once the other is exhausted?
- A: Gas; 2.6 qts. oil
 - B: Oil; .42 gallons av gas
 - C: Gas; qts. oil
 - D: Oil; 2.6 gallons av gas
23. A swimming pool 50 meters long and 25 meters wide has 2,022 pints of water in it. If a gallon of water weighs approximately 8.4 pounds, how much does the water in the swimming pool weigh?
- A: 2,123 lbs.
 - B: 2,528 lbs.
 - C: 4,246 lbs.
 - D: 1,062 lbs.
24. At FL350, 178 nm from HEVAN, you are told to descend at pilot's discretion to cross HEVAN at 17,000'. You plan to maintain a 3.5 degree descent angle at a ground speed of 410 knots. How long will you be descending?
- A: 26 minutes
 - B: 48.5 nm
 - C: 51.4 nm
 - D: 7.5 minutes

25. 524 knots is equivalent to how many meters per second?
- A: 204
 - B: 345
 - C: 970
 - D: 269
26. How much AVGAS (station 79) has an airplane burned off that had a gross takeoff weight of 4,784 lbs. if the CG was 75.1" on takeoff and 74.8" on landing?
- A: 432 pounds
 - B: 368 pounds
 - C: 63 gallons
 - D: 57 gallons
27. Larry and Harry are both flying their identical Mooney M-20 airplanes to a local fly-in and compare their headings and courses to find the actual winds aloft at 6,500' MSL. With the same OAT of -9°C and matching indicated airspeed of 135 mph, Larry is flying a magnetic heading 336° to maintain his magnetic course of 330° . Harry is flying a magnetic heading of 043° to maintain his magnetic course of 045° . What are the winds aloft? Altimeter setting is 29.62" Hg.
- A: 210° at 14 knots
 - B: 030° at 15 knots
 - C: 016° at 18 knots
 - D: 350° at 15 knots
28. If Harry's sister Mary happens to be flying to the same fly-in and gets the winds relayed to her from Larry, what is Mary's TAS in knots if she calculates that it took 30.5 seconds to cover the last section line or mile over the ground? She is flying a magnetic course of 190° .
- A: 77
 - B: 117
 - C: 89
 - D: 104
29. An aircraft flies east on a DME arc between two VOR radials, 330° and 065° , maintaining a constant 13 nm from the VOR. What is the total distance from starting the arc until crossing the VOR if the aircraft flies inbound on the 065° radial after the arc?
- A: 21.8 nm
 - B: 26.0 nm
 - C: 34.7 nm
 - D: 43.8 nm

30. A gas turbine engine burns 1600 pounds per hour of jet fuel. How many gallons have gone to the engine after 5 seconds? Assume one gallon equals 6.8 pounds.
- A: 0.33
 - B: 3.25
 - C: 0.65
 - D: 6.53
31. You are standing at the threshold of runway 16 as a 747 flies overhead. At an approach speed of 152 knots how long does it take the 231-ft long plane to pass by you?
- A: 0.59 seconds
 - B: 1.55 seconds
 - C: 2.22 seconds
 - D: 0.91 seconds
32. The AIM states that a microburst downdraft can be as strong as 6000 fpm. What is this velocity in mph?
- A: 43
 - B: 68
 - C: 91
 - D: 7
33. Delivering fish across the Bering Strait you first fly 54 sm west before turning and flying 197 km north west. If it took 3 hrs 17 min to fly, what was your average ground speed?
- A: 88 mph
 - B: 86.5 km/hr
 - C: 47 mph
 - D: 51 knots
34. Find KTAS for an airplane flying at Mach 0.234 at -12°C :
- A: 154
 - B: 373
 - C: 78
 - D: 147
35. Find WCA: Wind: 330° at 30 kts, TAS: 114 kts, TC: 015°
- A: 13L
 - B: 10L
 - C: 7R
 - D: 11R

36. What should your airspeed indicator read if your aircraft crosses 6 nm in 2.7 minutes while flying a true heading of 312° holding a wind correction angle of 10° right? Wind is $020@24$ kts. ISA at 4500' MSL.
- A: 140 kts
 - B: 119 kts
 - C: 131 kts
 - D: 99 kts
37. Not considering wind, if you flew between 2 radials in 4 minutes at 105 knots, how long would it take to fly 21 nm directly to the station?
- A: 12 min
 - B: 0.3 min
 - C: 23 min
 - D: 26 min
38. Find GS in kts. Wind: 210° at 22 kts, TAS: 97 kts, TC: 177°
- A: 116
 - B: 83
 - C: 78
 - D: 92
39. Find winds. TC: 200° , TAS: 105 kts, GS: 93 kts, TH: 185° , Variation 8W
- A: 128° at 29 kts
 - B: 260° at 21 kts
 - C: 136° at 19 kts
 - D: 115° at 31 kts
40. For every 4 hours of flying time, your old biplane burns a quart of oil. How many gallons must you add back to the engine after flying 272 nm at 97 KTAS. Wind Calm.
- A: 0.135
 - B: 0.155
 - C: 0.175
 - D: 0.195