

1. You are flying near your favorite VOR. You experience 15° of bearing change in 11 minutes 36 seconds. How far are you from the station?
 - A. 49 minutes 20 seconds
 - B. 54 minutes 40 seconds
 - C. 46 minutes 24 seconds
 - D. 57 minutes 10 seconds

2. You and two classmates are flying in the school's practice area. Jess's MH is 130° and is drifting 5° right. Bob's MH is 205° and is drifting 8° left. You have a MH of 270° and are drifting 9° left. You all have a TAS of 110 kts and variation is 5E. What are the true winds aloft?
 - A. 342° @ 20 kts
 - B. 337° @ 19 kts
 - C. 355° @ 18 kts
 - D. 331° @ 19 kts

3. You just traveled 19.2 NM while flying counterclockwise on a DME arc. You intercepted the arc at the 030° radial and left it upon reaching the 340° radial. How far from the VOR were you while on the arc?
 - A. 18 NM
 - B. 22 NM
 - C. 69 NM
 - D. 43 NM

4. Refer to the previous question. What was the aircraft's MH when you had traveled 10 NM on the arc? Assume calm wind.
 - A. 004°
 - B. 094°
 - C. 184°
 - D. 274°

5. You are planning a flight from airport ABC to airport XYZ, 177 NM away. True course is 253° . Winds are 290° @ 17 knots with an OAT of 5°C above standard. If your TAS will be 115 knots, how far from XYZ will you be when the time to continue equals the time to return?
 - A. 69 NM
 - B. 78 NM
 - C. 84 NM
 - D. 99 NM

6. You are cruising at an altitude of 12,500 ft. where the OAT is -10°F and the altimeter setting is 30.32. If the CAS is 104 nautical miles per hour, what is the TAS?
 - A. 122 knots
 - B. 125 knots
 - C. 127 knots
 - D. 129 knots

7. Pertaining to the previous problem, if the calibrated altitude is 12,500 ft. what is true altitude?
 - A. 11,800 ft.
 - B. 13,200 ft.
 - C. 12,400 ft.
 - D. 12,900 ft.

8. An aircraft has a TAS of 430 knots. What temperature rise is the temp probe experiencing? The probe's recovery coefficient is .8.
- A. 17 C°
 - B. 24 C°
 - C. 19 C°
 - D. 21 C°
9. Given: TC: 212° TAS: 185 knots Wind: 040° @ 28 mph
- Find: Groundspeed
- A. 240 knots
 - B. 222 knots
 - C. 213 knots
 - D. 209 knots
10. Given: TC: 100° TH: 078° GS: 138 kph TAS: 130 kph
- Find: Wind velocity
- A. 348° @ 17 mph
 - B. 172° @ 26 kts
 - C. 350° @ 32 mph
 - D. 350° @ 52 kts
11. Given: TC: 350° WCA: 5°L Wind: 305° @ 23 kts
- Find: Groundspeed
- A. 157 kts
 - B. 171 kts
 - C. 196 kts
 - D. 201 kts
12. Pertaining to the previous question, what is the TAS?
- A. 178 mph
 - B. 195 mph
 - C. 216 mph
 - D. 258 mph
13. Given: TAS: 110 kts TH: 335° Wind: 195° @ 13 kts
- Find: TC
- A. 339°
 - B. 150°
 - C. 330°
 - D. 159°
14. Given: TAS: 98 kts GS: 107 kts TC: 323° TH: 330°
- Find: Wind velocity
- A. 199° @ 16 mph
 - B. 022° @ 17 mph
 - C. 089° @ 16 mph
 - D. 092° @ 18 mph

15. You are 136 NM due east of the EDY VORTAC. You want to fly over Uncle Buck's house which is 83 km from EDY on the 270° radial. If you want to burn off exactly 28 liters of fuel enroute and your aircraft burns 5.6 Imperial gallons per hour, at what indicated airspeed should you fly?
Winds are 120° @ 17 kts (magnetic), OAT is 68°F and pressure altitude is 6700 ft.
- A. 132 knots
 - B. 107 knots
 - C. 161 knots
 - D. 169 knots
16. In the previous problem, what is your crosswind component?
- A. 4 knots
 - B. 6 knots
 - C. 8 knots
 - D. 11 knots
17. You have an indicated temperature of -30°C. The temp probe's C_T is 1.0, pressure altitude is 25,000 ft. and the Mach meter indicates you are at Mach .58. What should your airspeed indicator be indicating?
- A. 138 knots
 - B. 185 knots
 - C. 234 knots
 - D. 240 knots
18. In the previous problem, what is your TAS?
- A. 226 knots
 - B. 340 knots
 - C. 351 knots
 - D. 167 knots
19. You and your buddy Roy are each taking an airplane for a trip to get some lunch at an airport 230 NM away. What a perfect opportunity to test the range of your new pocket-size emergency transceiver. You have a TAS of 108 knots and Roy's TAS is 161 knots. The useable range for your transceiver is listed at 35 NM. Assuming you both leave the airport at the same time, how far will you fly before you should exceed the transceiver's range? (Assume calm wind)
- A. 106 NM
 - B. 71 NM
 - C. 40 NM
 - D. 19 NM
20. (Refer to previous problem) It turns out that you and Roy were actually 40 NM apart before contact was lost. How far was Roy from the destination when you actually lost contact with him?
- A. 108 NM
 - B. 121 NM
 - C. 82 NM
 - D. 148 NM

28. You just traveled 48 SM in 11 minutes 18 seconds. OAT is -5°C . Your cruise altitude is 6500 ft. MSL and you are maintaining a magnetic heading of 215° . Winds are 170° @ 28 kts. Variation is 8W. If the altimeter setting is 30.75, what is your true course?
- A. 203°
 - B. 211°
 - C. 214°
 - D. 216°
29. In the previous problem, what would your Mach meter indicate?
- A. Mach .38
 - B. Mach .37
 - C. Mach .34
 - D. Mach .39
30. Pertaining to problem #28, what is your calibrated airspeed?
- A. 186 knots
 - B. 219 knots
 - C. 227 knots
 - D. 261 knots
31. An airplane has a current weight of 2750 lbs with a CG of 20% MAC. How much weight must be shifted from aft baggage to forward baggage to bring the CG exactly to the forward CG limit?
- Forward baggage – station 28
 Aft baggage – station 154
 MAC – station 58 to station 88
 Forward CG limit – 12% MAC
- A. 52 lbs
 - B. 88 lbs
 - C. 36 lbs
 - D. 101 lbs
32. After flying for 37 minutes on a compass heading of 115° you find yourself 13 km off course to the right. If your groundspeed is 138 knots, what CH must you fly to parallel your intended course?
- A. 106°
 - B. 124°
 - C. 120°
 - D. 110°
33. Aircraft Alpha is trying to catch up to and pass aircraft Bravo. Alpha is flying at Mach 1.63 while Bravo is flying at Mach .78. OAT is -38°C . When the chase begins the airplanes are 65 NM apart. How long would it take for Alpha to be 37 SM ahead of Bravo?
- A. 7 minutes 48 seconds
 - B. 11 minutes 33 seconds
 - C. 12 minutes 2 seconds
 - D. 41 minutes 24 seconds

34. You are planning your climb profile. From the airport (elevation 1300 ft.) you fly out on a TC of 040°. You fly 105 KTAS & 1800 fpm to 11,000 ft. Then you fly 125 KTAS & 1100 fpm to FL180. Upon reaching FL180 you turn to a TC of 120° and continue to climb at 140 KTAS & 600 fpm to FL270. Average winds are 060° @ 18 knots. How long will it take to reach FL270?
- A. 24.1 minutes
 - B. 26.8 minutes
 - C. 28.4 minutes
 - D. 32.7 minutes
35. (Refer to previous problem) You departed with 73 gal of fuel on board. If average fuel burn was 1.6 liters per minute (lpm), how much fuel should be on board upon reaching FL270?
- A. 289 lbs
 - B. 68 lbs
 - C. 369 lbs
 - D. 125 lbs
36. You are maintaining a descent gradient of 230 fpm. True course is 238°. As you pass through 7500' MSL the following conditions exist: Winds are 209° @ 19 kts, CAS is 131 knots, VSI is holding 510 fpm & OAT is 10°C. At the moment you passed through 7500' MSL what was your pressure altitude?
- A. 5000 feet
 - B. 6000 feet
 - C. 7000 feet
 - D. 8000 feet
37. Up at your cruising altitude of 7500 ft. the OAT is -20°C. If the altimeter setting is 1038.6 hPa, what is the density altitude?
- A. 4100 ft.
 - B. 5000 ft.
 - C. 5900 ft.
 - D. 6300 ft.
38. An aircraft burns 10.4 gph. If it takes 17 seconds to travel .9 NM, then how much fuel would be consumed while flying 146 NM?
- A. 4.6 gal
 - B. 6.8 gal
 - C. 7.6 gal
 - D. 8.0 gal

THE FOLLOWING QUESTIONS REQUIRE FILL-IN ANSWERS. BE SURE TO WRITE YOUR ANSWERS ON THE ANSWER SHEET. CONCERNING DECIMAL PLACES, JUST BE AS ACCURATE AS YOUR COMPUTER WILL LET YOU BE.

39. It takes 2 hours 38 minutes to fly 380 SM. What is your speed in mph?
40. Convert -15°C to Fahrenheit.
41. How many pounds does 41.3 Imp. Gal of oil weigh?
42. What is the square root of 178?
43. You are descending at 4300 fpm. What is this in knots?
44. How much does 240 lbs of Avgas weigh in kilograms?
45. Each box contains a dozen quarts of oil. How much do three boxes weigh in pounds?