# Ottawa Flying Club

## PPL Navigation & Radio Aids

Reference Material: - From The Ground Up
- The Flight Training Manual
- AIM
- Supplemental references can be used at your discretion.

Questions:

1. What is meant by the term “dead reckoning” ?

2. What is meant by the term “pilotage” as it relates to navigation?

3. Define “longitude” and “latitude”.

4. What is the “prime meridian” ?

5. What units are positions of latitude and longitude expressed in ?

6. If an airport’s position in latitude and longitude are: 49 46' N, 77 48' W, what does this mean in laymen terms?

7. Different areas have different time zones, is this change in time affected by changes in latitude, changes in longitude, or both?

8. Longitude is measured from 0 to 90 degrees, (true or false).

9. Latitude is measured from 0 to 180 degrees, (true or false).

10. Define the term “equator”.

11. What is a “great circle”, and what is meant by a “great circle route”?

12. What are the advantages and disadvantages of flying “great circle routes”?

13. What is a “rhumb line” and a “rhumb line route”?

14. What are the advantages and disadvantages of flying “rhumb line routes”?

15. Are most long-distance flights rhumb line or great circle routes?

16. Is variation an ever changing phenomenon?

17. What are “isogonic lines” and why are they referred to as being either east or west?

18. Define aircraft heading and track. What are the differences between the two?

19. Define aircraft true airspeed, and groundspeed.

20. If your aircraft is flying at a TAS of 100 knots in no wind, what is your groundspeed?

21. If your aircraft is flying at 100 kts and have a 20 knot direct headwind, what is your groundspeed?

22. Define “drift” and what causes it.

23. What are the two principle types of chart projections used in Air Navigation Charts? Briefly describe the two different projections upon which these charts are based.

24 A straight line drawn between any 2 points on a Lambert Conic Projection is:

A) a Rhumb line.

or

B) a Great Circle.

25. Explain why on very long legs it is mandatory to correct or change heading to stay on course when using this type of chart.

26. How can this problem be avoided on short flights of less than 300 Nautical miles?

27. What types of Charts use this type of projection?

28. Repeat question 24 & 27 with reference to a Transverse Mercator Projection.

29. What are the respective scales of the T.M.P. & L.C.P. ?

30. What is “relief” as it relates to map construction?

31. What is “layer tinting”?

32. What are contour lines and why are they drawn on a map?

33. What are spot heights?

34. How does longitude affect time zones?

35. How many time zones are there in the world? How many degree's of longitude (avg) are in each time zone?

36. Define Coordinated Universal Time (UTC)?

37. During Daylight Savings Time in Canada, if the local time in Ottawa is 0800 AM, what UTC time is it?

38. Define a) indicated airspeed
    b) calibrated airspeed
    c) density altitude
    d) true altitude

39. Discuss some of the considerations involved in selecting a route for cross country purposes.

40. How much fuel is required for a VFR flight according to the air regulations?

41. What are NOTAM's and why is it important to check them?

42. List the 3 types of departure procedures that can be used. What are the advantages and disadvantages of each type?

43. Discuss and highlight the differences between the 3 types of flight plans available when flying?

44. List the designation and the frequency ranges for radio signals.

45. What is the difference between skywaves and ground waves and what types of frequency bands use each?

46. Why is VHF radio range better with increased altitude?

47. What is the typical VHF radio range of an aircraft at 1000 ft AGL? At 5000ft?

48. Define the term VOR.

49. Why is it important to ensure radio's are turned off during engine start?

50. What frequency band does the VOR operate in?

51. What is a VOR radial? How many useable VOR radials are there?

52. Is a VOR radial True or Magnetic?

53. Why is it important to properly tune and identify the selected VOR frequency?

54. With reference to VOR test facilities, what is a VOT test? Explain how to perform a VOT test? What are the tolerances?

55. What other VOR tests are available?

56. Briefly describe how you track towards a VOR station? How would you track away from a VOR station?

57. With reference to F.G.U. page 189 (fig.#7). What VOR radial is the aircraft on and is the aircraft going “TO” or “From” the VOR?

58. What are Non-Directional Beacons(NDB)?

59. What is the advantage of ADF navigation over VOR?

60. a) What position should the ADF switch be positioned for tuning and identifying?
b) After station identification, what position must the ADF switch be in for navigation?

61. a) Define “Relative Bearing”
b) Define “Magnetic Bearing to Station”

62. List and discuss the inaccuracies of the ADF.

63. Briefly describe what is meant by homing to an NDB using an ADF?

64. Define G.P.S.

65. Briefly describe the theory of operation of GPS.

66. Explain the basic use and operation of a transponder.

67. What is an ELT and how does it work?

68. Does an aircraft always have to have an ELT on board?

69. How do you test an ELT prior to flight?

70. What is “VDF” and how do you as a pilot use this service if required?

71. Briefly explain how radar works.

72. What is the difference between Primary and Secondary Radar?