1. An aircraft departs from position A (04°10' S 178°22'W) and flies northward following the meridian for 2950 NM. It then flies westward along the parallel of latitude for 382 NM to position B.
The coordinates of position B are?
45°00'N 172°38'E

2. The angle between the true great-circle track and the true rhumb-line track joining the following points: A (60° S 165° W) B (60° S 177° E), at the place of departure A, is:
7.8°

3. What is the time required to travel along the parallel of latitude 60° N between meridians 010° E and 030° W at a groundspeed of 480 kt?
2 HR 30 MIN

4. The duration of civil twilight is the time:
Between sunset and when the centre of the sun is 6° below the true horizon

5. On the 27th of February, at 52°S and 040°E, the sunrise is at 0243 UTC.
On the same day, at 52°S and 035°W, the sunrise is at:
0743 UTC

6. The rhumb-line distances between points A (60°00'N 002°30'E) and B (60°00'N 007°30'W) is:
300 NM

7. Given:
TAS = 485 kt,
OAT = ISA +10°C,
FL 410.
Calculate the Mach Number:
0.825

8. Given:
Value for the ellipticity of the Earth is 1/297.
Earth's semi-major axis, as measured at the equator, equals 6378.4 km.
What is the semi-minor axis (km) of the earth at the axis of the Poles?
6 356.9

9. Position A is located on the equator at longitude 130°00E.
Position B is located 100 NM from A on a bearing of 225°(T).
The coordinates of position B are:
01°11'S 128°49'E

10. In order to fly from position A (10°00'N, 030°00'W) to position B (30°00'N, 050°00'W), maintaining a constant true course, it is necessary to fly:
A rhumb line track

11. The rhumb line track between positions A (45°00'N, 010°00'W) and position B (48°30'N, 015°00'W) is approximately:
315

12. The diameter of the Earth is approximately:
12 700 km

13. The maximum difference between geocentric and geodetic latitude occurs at about:
45° North and South

14. The nominal scale of a Lambert conformal conic chart is the:
Scale at the standard parallels

15. A Mercator chart has a scale at the equator = 1: 3 704 000.
What is the scale at latitude 60° S?
1: 1 852 000

16. The distance measured between two points on a navigation map is 42 mm (millimetres). The scale of the chart is 1:1 600 000.
The actual distance between these two point is approximately:
36.30 NM

17. The standard parallels of a Lambert's conical orthomorphic projection are 07°40'N and 38°20' N.
The constant of the cone for this chart is:
0.39

18. On a Lambert conformal conic chart the convergence of the meridians:
Is the same as earth convergences at the parallel of origin

19. A straight line drawn on a chart measures 4.63 cm and represents 150 NM.
The chart scale is:
1: 6 000 000

20. On a Direct Mercator chart, a rhumb line appears as a:
Straight line

21. The great circle distance between position A (59°34.1'N 008°08.4'E) and B (30°25.9'N 171°51.6'W) is:
5 400 NM

22. On a Lambert Conformal Conic chart great circles that are not meridians are:
Curves concave to the parallel of origin

23. On a direct Mercator projection, at latitude 45° North, a certain length represents 70 NM.
At latitude 30° North, the same length represents approximately:
86 NM

24. Given:
Position A 45°N,?°E
Position B 45°N, 45°15'E
Distance A-B = 280 NM
B is to the East of A
Required: longitude of position A?
38°39'E

25. On a direct Mercator projection, the distance measured between two meridians spaced 5° apart at latitude 60°N is 8 cm. The scale of this chart at latitude 60°N is approximately:
1: 3 500 000

26. On a Mercator chart, the scale:
Varies as 1/cosine of latitude (1/cosine= secant)

27. Given:
Magnetic heading 311°
Drift angle 10° left
Relative bearing of NDB 270°
What is the magnetic bearing of the NDB measured from the aircraft?
221°

28. Given the following:
True track: 192°
Magnetic variation: 7°E
Drift angle: 5° left
What is the magnetic heading required to maintain the given track?
190°

29. Given the following:
Magnetic heading: 060°
Magnetic variation: 8°W
Drift angle: 4° right
What is the true track?
056°

30. An aircraft is following a true track of 048° at a constant TAS of 210 kt.
The wind velocity is 350° / 30 kt.
The GS and drift angle are:
192 kt, 7° right

31. Given:
FL 350,
Mach 0.80,
OAT -55°C.
Calculate the values for TAS and local speed of sound (LSS):
461 kt, LSS 576 kt

32. Given:
Magnetic heading = 255°
VAR = 40°W
GS = 375 kt
W/V = 235°(T) / 120 kt
Calculate the drift angle?
7° left

33. Given:
True Heading = 180°
TAS = 500 kt
W/V 225° / 100 kt
Calculate the GS?
435 kt

34. If an aeroplane was to circle around the Earth following parallel 60°N at a ground speed of 480 kt. In order to circle around the Earth along the equator in the same amount of time, it should fly at a ground speed of:
960 kt

35. Given:
True Heading = 090°
TAS = 180 kt
GS = 180 kt
Drift 5° right
Calculate the W/V?
360° / 15 kt

36. The reported surface wind from the Control Tower is 240°/35 kt. Runway 30 (300°).
What is the cross-wind component?
30 kt

37. An aircraft passes position A (60°00'N 120°00'W) on route to position B (60°00'N 140°30'W).
What is the great circle track on departure from A?
279°

38. A great circle track joins position A (59°S 141°W) and B (61°S 148°W).
What is the difference between the great circle track at A and B?
It increases by 6°

39. What is the longitude of a position 6 NM to the east of 58°42'N 094°00'W?
093°48.5'W

40. A pilot receives the following signals from a VOR DME station:
Radial 180°+/- 1°, distance = 200 NM.
What is the approximate error?
+/- 3.5 NM

41. An aircraft is maintaining a 5.2% gradient is at 7 NM from the runway, on a flat terrain; its height is approximately:
2210 FT

42. An aircraft is descending down a 12% slope whilst maintaining a GS of 540 kt.
The rate of descent of the aircraft is approximately:
6500 FT/MIN

43. The angle between the plane of the ecliptic and the plane of equator is approximately:
23.5°

44. For this question use chart AT (H/L) 1:
1215 UTC LAJES VORTAC (38°46'N 027°05'W) RMI reads 178°, range 135 NM.
Calculate the aircraft position at 1215 UTC?
40°55'N 027°55'W

45. For this question use chart AT (H/L) 2:
1300 UTC DR position 37°30'N 021°30'W alter heading
PORT SANTO NDB (33°03'N 016°23'W)
TAS 450 kt,
Forecast W/V 360°/30kt.
Calculate the ETA at PORT SANTO NDB?
1348

46. A ground feature appears 30° to the left of the centre line of the CRT of an airborne weather radar. If the heading of the aircraft is 355° (M) and the magnetic variation is 15° East, the true bearing of the aircraft from the feature is:
160°

47. Which is the highest latitude listed below at which the sun will rise above the horizon and set every day?
62°

48. The UTC of sunrise on 6 December at WINNIPEG (Canada) (49°50'N 097°30'W) is:

1411

SUNRISE

Lat	November								December																								Jan	
	19		22		25		28		1		4		7		10		13		16		19		22		25		28		31		3	
°	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m
N72	▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬	
70	10	14	10	40	11	19	▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬		▬	
68	09	30	09	45	10	00	10	16	10	33	10	52	11	14	▬		▬		▬		▬		▬		▬		▬		▬		▬		▬	
66	09	01	09	12	09	23	09	34	09	45	09	55	10	05	10	14	10	22	10	28	10	32	10	35	10	35	10	33	10	30	10	25		
64	08	39	08	48	08	57	09	06	09	15	09	23	09	30	09	36	09	42	09	47	09	50	09	52	09	53	09	52	09	51	09	48		
62		21		29		37	08	45	08	52	08	59	09	05	09	10	09	15	09	19		22		24		24		24		23		22		
N60	08	07	08	14	08	21	08	28	08	34	08	40	08	45	08	50	08	54	08	58	09	00	09	02	09	03	09	03	09	03	09	01		
58	07	54	08	01	08	07		13		19		24		29		33		37		40	08	43	08	45	08	46	08	46	08	46	08	45		
56		43	07	49	07	55	08	01	08	06	08	11		15		19		23		26		28		30		31		32		32		31		
54		34		40		45	07	50	07	55	07	59	08	03	08	07	08	10		13		15		17		19		19		19		19		
52		26		31		36		40		45		49	07	53	07	56	07	59	08	02	08	04	08	06	08	07	08	08	08	08	08	08		
N50	07	18	07	23	07	28	07	32	07	36	07	40	07	43	07	47	07	50	07	52	07	54	07	56	07	57	07	58	07	59	07	58		
45	07	02	07	06	07	10	07	14		17		21		24		27		29		32		34		35		37		38		38		38		
40	06	49	06	53	06	56	06	59	07	02	07	05	07	08	07	10	07	13		15		17		18		20		21		22		22		
35		38		41		44		46	06	49	06	52	06	54	06	57	06	59	07	01	07	03	07	04	07	06	07	07	07	08	07	08		
30		28		30		33		35		38		40		43		45		47	06	49	06	50	06	52	06	53	06	54	06	55	06	56		
N20	06	11	06	13	06	15	06	16	06	18	06	20	06	22	06	24	06	26	06	28	06	29	06	31	06	32	06	33	06	35	06	36		
N10	05	56	05	57	05	58	06	00	06	01	06	03	06	04	06	06	06	07	06	09	06	10	06	12	06	13	06	15	06	16		17		
0		42		42		43	05	44	05	45	05	46	05	48	05	49	05	50	05	52	05	53	05	55	05	56	05	58	05	59	06	01		
S10		28		28		28		28		29		30		31		32		33		34		35		37		39		40		42	05	43		
20	05	12	05	12	05	11	05	11	05	12	05	12	05	13	05	13	05	14	05	15	05	17	05	18	05	20	05	21		23		25		
S30	04	54	04	53	04	52	04	52	04	51	04	51	04	52	04	52	04	52	04	53	04	55	04	56	04	58	04	59	05	01	05	03		
35		44		42		41		40		39		39		39		39		40		41		42		43		45		46	04	48	04	51		
40		32		30		28		27		26		25		25		25		25		26		27		28		29		31		34		36		
45		18	04	15	04	13	04	11	04	09	04	08	04	07	04	07	04	07	04	08	04	08	04	10	04	11	04	13	04	16	04	19		
50	04	00	03	57	03	54	03	51	03	49	03	47	03	45	03	45	03	45	03	45	03	46	03	47	03	49	03	51	03	54	03	57		
52	03	52	03	48	03	45	03	42	03	39	03	37	03	35	03	35	03	34	03	34	03	35	03	36	03	38	03	40	03	43	03	46		
54		43		39		35		31		29		26		23		23		22		22		23		24		26		28		31		34		
56		32		28		23		19		16	03	13	03	09	03	09	03	09	03	08	03	09	03	10	03	12	03	14		17		21		
58		21		15	03	10	03	06	03	02	02	58	02	53	02	53	02	52	02	52	02	52	02	53	02	55	02	57	03	01	03	05		
60	03	06	03	00	02	54	02	49	02	44	02	40	02	34	02	34	02	32	02	31	02	31	02	32	02	34	02	37	02	41	02	45		

49. Refer to the table: When it is 1000 Standard Time in Kuwait, the Standard Time in Algeria is:
0800

A20 STANDARD TIMES (Corrected to November 1999)

LIST 1 — PLACES FAST ON UTC (mainly those EAST OF GREENWICH)

The times given below should be *added* to UTC to give Standard Time / *subtracted* from Standard Time to give UTC.

	h	m
Admiralty Islands	10	
Afghanistan	04	30
Albania*	01	
Algeria	01	
Amirante Islands	04	
Andaman Islands	05	30
Angola	01	
Armenia*	04	
Australia		
Australian Capital Territory*	10	
New South Wales[1]*	10	
Northern Territory	09	30
Queensland	10	
South Australia*	09	30
Tasmania*	10	
Victoria*	10	
Western Australia	08	
Whitsunday Islands	10	
Austria*†	01	
Azerbaijan*	04	
Bahrain	03	
Balearic Islands*	01	
Bangladesh	06	
Belarus*	02	
Belgium*†	01	
Benin	01	
Bosnia and Herzegovina*	01	
Botswana, Republic of	02	
Brunei	08	
Bulgaria*	02	
Burma (Myanmar)	06	30
Burundi	02	
Cambodia	07	
Cameroon Republic	01	
Caroline Islands[2]	10	
Central African Republic	01	
Chad	01	
Chagos Archipelago,	05	
Chatham Islands*	12	45
China, People's Republic of	08	
Christmas Island, Indian Ocean	07	
Cocos (Keeling) Islands	06	30
Comoro Islands (Comoros)	03	
Congo, Democratic Republic		
Kinshasa, Mbandaka	01	
Haut-Zaire, Kasai, Kivu, Shaba	02	
Congo Republic	01	
Corsica*	01	
Crete*	02	
Croatia*	01	
Cyprus: Ercan*, Larnaca*	02	
Czech Republic*	01	
Denmark*†	01	
Djibouti	03	
Egypt, Arab Republic of*	02	
Equatorial Guinea, Republic of	01	
Eritrea	03	
Estonia*	02	
Ethiopia	03	
Fiji*	12	
Finland*†	02	
France*†	01	
Gabon	01	
Georgia*	04	
Germany*†	01	
Gibraltar*	01	
Greece*†	02	
Guam	10	
Hong Kong	08	
Hungary*	01	
India	05	30
Indonesia, Republic of		
Bangka, Billiton, Java, West and Central Kalimantan, Madura, Sumatra	07	
Bali, Flores, South and East Kalimantan, Lombok, Sulawesi, Sumba, Sumbawa, Timor	08	
Aru, Irian Jaya, Kai, Moluccas, Tanimbar	09	
Iran*	03	30
Iraq*	03	
Israel*	02	
Italy*†	01	
Jan Mayen Island[3]	01	
Japan	09	
Jordan*	02	
Kazakhstan*		
Western, Aktau, Uralsk, Atyrau	04	
Central, Aktyubinsk, Kzyl-Orda	05	
Eastern	06	
Kenya	03	
Kiribati Republic		
Gilbert Islands	12	
Phoenix Islands	13	
Line Islands[3]	14	
Korea, North,	09	
Republic of (South)	09	
Kuril Islands	11	
Kuwait	03	
Kyrgyzstan*	05	
Laccadive Islands	05	30
Laos	07	
Latvia*	02	

* Summer time may be kept in these places. † For Summer time dates see List II footnotes.
[1] Except Broken Hill Area which keeps 09h 30m.
[2] Except Pohnpei, Pingelap and Kosrae which keep 11h.
[3] The Line Islands that are not part of the Kiribati Republic keep 10h slow on UTC.

LIST I — (*continued*)

	h	m
Lebanon*	02	
Lesotho	02	
Libya	02	
Liechtenstein*	01	
Lithuania*	02	
Lord Howe Island*	10	30
Luxembourg*†	01	
Macau	08	
Macedonia*, former Yugoslav Republic	01	
Macias Nguema (Fernando Póo)	01	
Madagascar, Democratic Republic of	03	
Malawi	02	
Malaysia, Malaya, Sabah, Sarawak	08	
Maldives, Republic of The	05	
Malta*	01	
Mariana Islands	10	
Marshall Islands[1]	12	
Mauritius	04	
Moldova*	02	
Monaco*	01	
Mongolia	08	
Mozambique	02	
Namibia*	01	
Nauru	12	
Nepal	05	45
Netherlands, The*†	01	
New Caledonia	11	
New Zealand*	12	
Nicobar Islands	05	30
Niger	01	
Nigeria, Republic of	01	
Norfolk Island	11	30
Norway*	01	
Novaya Zemlya	03	
Okinawa	09	
Oman	04	
Pagalu (Annobon Islands)	01	
Pakistan	05	
Palau Islands	09	
Papua New Guinea	10	
Pescadores Islands	08	
Philippine Republic	08	
Poland*	01	
Qatar	03	
Reunión	04	
Romania*	02	
Russia[2]*		
Zone 1 Kaliningrad	02	
Zone 2 Moscow, St Petersburg, Arkhangelsk, Astrakhan	03	
Zone 3 Samara, Izhevsk	04	
Zone 4 Perm, Amderma, Novyy Port	05	
Zone 5 Omsk, Novosibirsk	06	
Zone 6 Norilsk, Kyzyl, Dikson	07	
Russia (*continued*)		
Zone 7 Bratsk, Irkutsk, Ulan-Ude	08	
Zone 8 Yakutsk, Chita, Tiksi	09	
Zone 9 Vladivostok, Khabarovsk, Okhotsk	10	
Zone 10 Magadan, Yuzhno	11	
Zone 11 Petropavlovsk, Pevek	12	
Rwanda	02	
Ryukyu Islands	09	
Sakhalin Island*	10	
Santa Cruz Islands	11	
Sardinia*	01	
Saudi Arabia	03	
Schouten Islands	10	
Serbia*	01	
Seychelles	04	
Sicily*	01	
Singapore	08	
Slovakia*	01	
Slovenia*	01	
Socotra	03	
Solomon Islands	11	
Somalia Republic	03	
South Africa, Republic of	02	
Spain*†	01	
Spanish Possessions in North Africa*	01	
Spitsbergen (Svalbard)*	01	
Sri Lanka	06	
Sudan, Republic of	02	
Swaziland	02	
Sweden*†	01	
Switzerland*	01	
Syria (Syrian Arab Republic)*	02	
Taiwan	08	
Tajikistan	05	
Tanzania	03	
Thailand	07	
Tonga*	13	
Tunisia	01	
Turkey*	02	
Turkmenistan	05	
Tuvalu	12	
Uganda	03	
Ukraine*	02	
United Arab Emirates	04	
Uzbekistan	05	
Vanuatu, Republic of	11	
Vietnam, Socialist Republic of	07	
Yemen	03	
Yugoslavia*, Federal Republic of	01	
Zambia, Republic of	02	
Zimbabwe	02	

* Summer time may be kept in these places. † For Summer time dates see List II footnotes.
[1] Except the Ebon Atol which keeps time 24[h] slow on that of the rest of the islands.
[2] The boundaries between the zones are irregular; listed are chief towns in each zone.

STANDARD TIMES (Corrected to November 1999)

LIST II — PLACES NORMALLY KEEPING UTC

Ascension Island	Ghana	Irish Republic*†	Morocco	Sierra Leone
Burkina-Faso	Great Britain†	Ivory Coast	Portugal*†	Togo Republic
Canary Islands*	Guinea-Bissau	Liberia	Principe	Tristan da Cunha
Channel Islands†	Guinea Republic	Madeira*	St. Helena	
Faeroes*, The	Iceland	Mali	São Tomé	
Gambia, The	Ireland, Northern†	Mauritania	Senegal	

* Summer time may be kept in these places.
† The European Union directive states that Summer Time, one hour in advance of UTC, is kept from 2001 March 25[d] 01[h] to October 28[d] 01[h] UTC.

LIST III — PLACES SLOW ON UTC (WEST OF GREENWICH)

The times given below should be *subtracted* from UTC to give Standard Time / *added* to Standard Time to give UTC.

	h	m
Argentina	03	
Austral (Tubuai) Islands[1]	10	
Azores*	01	
Bahamas*	05	
Barbados	04	
Belize	06	
Bermuda*	04	
Bolivia	04	
Brazil		
S and E coastal states, Bahia, Goiás, Brasilia*	03	
N and NE coastal states, Eastern Para	03	
Mato Grosso, Mato Grosso do Sul*	04	
Central states, western Para, E and Central Amazonas	04	
Territory of Acre, western Amazonas	05	
British Antarctic Territory[2]	03	
Canada		
Alberta*	07	
British Columbia[3]*	08	
Labrador[3]*	04	
Manitoba*	06	
New Brunswick*	04	
Newfoundland*	03	30
Northwest Territories[3]*		
east of long. W. 85°	05	
long. W. 85° to W. 102°	06	
west of long. W. 102°	07	
Nova Scotia*	04	
Ontario, east of long. W. 90°*	05	
west of long. W. 90°*	06	
Prince Edward Island*	04	

	h	m
Canada (*continued*)		
Quebec, east of long. W. 63°[3]	04	
west of long. W. 63°*	05	
Saskatchewan[3]	06	
Yukon*	08	
Cape Verde Islands	01	
Cayman Islands	05	
Chile*	04	
Colombia	05	
Cook Islands	10	
Costa Rica	06	
Cuba*	05	
Curaçao Island	04	
Dominican Republic	04	
Easter Island (I. de Pascua)*	06	
Ecuador	05	
El Salvador	06	
Falkland Islands*	04	
Fanning Island	10	
Fernando de Noronha Island	02	
French Guiana	03	
Galápagos Islands	06	
Greenland[4]		
General*	03	
Scoresby Sound*	01	
Thule area*	04	
Grenada	04	
Guadeloupe	04	
Guatemala	06	
Guyana, Republic of	04	
Haiti	05	
Honduras	06	

* Summer time may be kept in these places.
[1] This is the legal standard time, but local mean time is generally used.
[2] Most stations use UTC.
[3] Some areas may keep another time zone.
[4] Mesters Vig and Danmarkshavn keep UTC.

* Summer time may be kept in these places.
[1] This is the legal standard time, but local mean time is generally used.
[2] Most stations use UTC.
[3] Some areas may keep another time zone.
[4] Mesters Vig and Danmarkshavn keep UTC.

LIST III — *(continued)*

	h m
Jamaica	05
Johnston Island	10
Juan Fernandez Islands*	04
Leeward Islands	04
Marquesas Islands	09 30
Martinique	04
Mexico*[1]	06
Midway Islands	11
Nicaragua	06
Niue	11
Panama, Republic of	05
Paraguay*	04
Peru	05
Puerto Rico	04
St. Pierre and Miquelon*	03
Samoa	11
Society Islands	10
South Georgia	02
Suriname	03
Trindade Island, South Atlantic	02
Trinidad and Tobago	04
Tuamotu Archipelago	10
Tubuai (Austral) Islands	10
Turks and Caicos Islands*	05
United States of America[2]	
Alabama	06
Alaska	09
Aleutian Islands, east of W. 169° 30′	09
Aleutian Islands, west of W. 169° 30′	10
Arizona[3]	07
Arkansas	06
California	08
Colorado	07
Connecticut	05
Delaware	05
District of Columbia	05
Florida[4]	05
Georgia	05
Hawaii[3]	10
Idaho[4]	07
Illinois	06
Indiana[3,4]	05
United States of America[2] *(continued)*	
Iowa	06
Kansas[4]	06
Kentucky, eastern part	05
western part	06
Louisiana	06
Maine	05
Maryland	05
Massachusetts	05
Michigan[4]	05
Minnesota	06
Mississippi	06
Missouri	06
Montana	07
Nebraska, eastern part	06
western part	07
Nevada	08
New Hampshire	05
New Jersey	05
New Mexico	07
New York	05
North Carolina	05
North Dakota[4]	06
Ohio	05
Oklahoma	06
Oregon[4]	08
Pennsylvania	05
Rhode Island	05
South Carolina	05
South Dakota, eastern part	06
western part	07
Tennessee, eastern part	05
western part	06
Texas[4]	06
Utah	07
Vermont	05
Virginia	05
Washington D.C.	05
Washington	08
West Virginia	05
Wisconsin	06
Wyoming	07
Uruguay	03
Venezuela	04
Virgin Islands	04
Windward Islands	04

* Summer time may be kept in these places.
[1] Except the states of Sonora, Sinaloa*, Nayarit* and the Southern District of Lower California* which keep 07h, and the Northern District of Lower California* which keeps 08h.
[2] Daylight-saving (Summer) time, one hour fast on the time given, is kept from the first Sunday in April to the last Sunday in October, changing at 02h 00m local clock time.
[3] Exempt from keeping daylight-saving time.
[4] A small portion of the state is in another time zone.

50. The value of magnetic variation:
Has a maximum of 180°

51. When decelerating on a westerly heading in the Northern hemisphere, the compass card of a direct reading magnetic compass will turn:
Clockwise giving an apparent turn toward the south

52. In a remote indicating compass system the amount of deviation caused by aircraft magnetism and electrical circuits may be minimised by:
Mounting the detector unit in the wingtip

53. The constant of cone of a Lambert conformal conic chart is quoted as 0.3955.
At what latitude on the chart is earth convergences correctly represented?
23°18'

54. On a Lambert Conformal chart the distance between meridians 5° apart along latitude 37° North is 9 cm. The scale of the chart at that parallel approximates:
1: 5 000 000

55. In a navigation chart a distance of 49 NM is equal to 7 cm. The scale of the chart is approximately:
1: 1 300 000

56. At 60° N the scale of a direct Mercator chart is 1: 3 000 000.
What is the scale at the equator?
1: 6 000 000

57. What is the chart distance between longitudes 179°E and 175°W on a direct Mercator chart with a scale of 1 : 5 000 000 at the equator?
133 mm

58. The total length of the 53°N parallel of latitude on a direct Mercator chart is 133 cm. What is the approximate scale of the chart at latitude 30°S?
1: 26 000 000

59. A Lambert conformal conic projection, with two standard parallels:
The scale is only correct along the standard parallels

60. Isogonals converge at the:
North and South geographic and magnetic poles

61. A line drawn on a chart which joins all points where the value of magnetic variation is zero is called an:
Agonic line

62. The horizontal component of the earth's magnetic field:
Is approximately the same at magnetic latitudes 50°N and 50°S

63. An aircraft in the northern hemisphere makes an accurate rate one turn to the right/starboard. If the initial heading was 330°, after 30 seconds of the turn the direct reading magnetic compass should read:
Less than 060°

64. When turning right from 330°(C) to 040°(C) in the northern hemisphere, the reading of a direct reading magnetic compass will:
Under-indicate the turn and liquid swirl will increase the effect

65. When accelerating on an easterly heading in the Northern hemisphere, the compass card of a direct reading magnetic compass will turn :
Clockwise giving an apparent turn toward the north

66. Refer to the table: An aircraft takes off from Guam at 2300 Standard Time on 30 April local date. After a flight of 11 HR 15 MIN it lands at Los Angeles (California).
What is the Standard Time and local date of arrival (assume summer time rules apply)?
1715 on 30 April

A20 STANDARD TIMES (Corrected to November 1999)

LIST I — PLACES FAST ON UTC (mainly those EAST OF GREENWICH)

The times given below should be *added* to UTC to give Standard Time / *subtracted* from Standard Time to give UTC.

	h	m
Admiralty Islands	10	
Afghanistan	04	30
Albania*	01	
Algeria	01	
Amirante Islands	04	
Andaman Islands	05	30
Angola	01	
Armenia*	04	
Australia		
Australian Capital Territory*	10	
New South Wales[1]*	10	
Northern Territory	09	30
Queensland	10	
South Australia*	09	30
Tasmania*	10	
Victoria*	10	
Western Australia	08	
Whitsunday Islands	10	
Austria*†	01	
Azerbaijan*	04	
Bahrain	03	
Balearic Islands*	01	
Bangladesh	06	
Belarus*	02	
Belgium*†	01	
Benin	01	
Bosnia and Herzegovina*	01	
Botswana, Republic of	02	
Brunei	08	
Bulgaria*	02	
Burma (Myanmar)	06	30
Burundi	02	
Cambodia	07	
Cameroon Republic	01	
Caroline Islands[2]	10	
Central African Republic	01	
Chad	01	
Chagos Archipelago,	05	
Chatham Islands*	12	45
China, People's Republic of	08	
Christmas Island, Indian Ocean	07	
Cocos (Keeling) Islands	06	30
Comoro Islands (Comoros)	03	
Congo, Democratic Republic		
Kinshasa, Mbandaka	01	
Haut-Zaire, Kasai, Kivu, Shaba	02	
Congo Republic	01	
Corsica*	01	
Crete*	02	
Croatia*	01	
Cyprus: Ercan*, Larnaca*	02	
Czech Republic*	01	
Denmark*†	01	
Djibouti	03	
Egypt, Arab Republic of*	02	
Equatorial Guinea, Republic of	01	
Eritrea	03	
Estonia*	02	
Ethiopia	03	
Fiji*	12	
Finland*†	02	
France*†	01	
Gabon	01	
Georgia*	04	
Germany*†	01	
Gibraltar*	01	
Greece*†	02	
Guam	10	
Hong Kong	08	
Hungary*	01	
India	05	30
Indonesia, Republic of		
Bangka, Billiton, Java, West and Central Kalimantan, Madura, Sumatra	07	
Bali, Flores, South and East Kalimantan, Lombok, Sulawesi, Sumba, Sumbawa, Timor	08	
Aru, Irian Jaya, Kai, Moluccas, Tanimbar	09	
Iran*	03	30
Iraq*	03	
Israel*	02	
Italy*†	01	
Jan Mayen Island°	01	
Japan	09	
Jordan*	02	
Kazakhstan*		
Western, Aktau, Uralsk, Atyrau	04	
Central, Aktyubinsk, Kzyl-Orda	05	
Eastern	06	
Kenya	03	
Kiribati Republic		
Gilbert Islands	12	
Phoenix Islands	13	
Line Islands[3]	14	
Korea, North,	09	
Republic of (South)	09	
Kuril Islands	11	
Kuwait	03	
Kyrgyzstan*	05	
Laccadive Islands	05	30
Laos	07	
Latvia*	02	

* Summer time may be kept in these places. † For Summer time dates see List II footnotes.
[1] Except Broken Hill Area which keeps 09h 30m.
[2] Except Pohnpei, Pingelap and Kosrae which keep 11h.
[3] The Line Islands that are not part of the Kiribati Republic keep 10h slow on UTC.

LIST I — (*continued*)

	h	m
Lebanon*	02	
Lesotho	02	
Libya	02	
Liechtenstein*	01	
Lithuania*	02	
Lord Howe Island*	10	30
Luxembourg*†	01	
Macau	08	
Macedonia*, former Yugoslav Republic	01	
Macias Nguema (Fernando Póo)	01	
Madagascar, Democratic Republic of	03	
Malawi	02	
Malaysia, Malaya, Sabah, Sarawak	08	
Maldives, Republic of The	05	
Malta*	01	
Mariana Islands	10	
Marshall Islands[1]	12	
Mauritius	04	
Moldova*	02	
Monaco*	01	
Mongolia	08	
Mozambique	02	
Namibia*	01	
Nauru	12	
Nepal	05	45
Netherlands, The*†	01	
New Caledonia	11	
New Zealand*	12	
Nicobar Islands	05	30
Niger	01	
Nigeria, Republic of	01	
Norfolk Island	11	30
Norway*	01	
Novaya Zemlya	03	
Okinawa	09	
Oman	04	
Pagalu (Annobon Islands)	01	
Pakistan	05	
Palau Islands	09	
Papua New Guinea	10	
Pescadores Islands	08	
Philippine Republic	08	
Poland*	01	
Qatar	03	
Reunión	04	
Romania*	02	
Russia[2]*		
Zone 1 Kaliningrad	02	
Zone 2 Moscow, St Petersburg, Arkhangelsk, Astrakhan	03	
Zone 3 Samara, Izhevsk	04	
Zone 4 Perm, Amderma, Novyy Port	05	
Zone 5 Omsk, Novosibirsk	06	
Zone 6 Norilsk, Kyzyl, Dikson	07	
Zone 7 Bratsk, Irkutsk, Ulan-Ude	08	
Zone 8 Yakutsk, Chita, Tiksi	09	
Zone 9 Vladivostok, Khabarovsk, Okhotsk	10	
Zone 10 Magadan, Yuzhno	11	
Zone 11 Petropavlovsk, Pevek	12	
Rwanda	02	
Ryukyu Islands	09	
Sakhalin Island*	10	
Santa Cruz Islands	11	
Sardinia*	01	
Saudi Arabia	03	
Schouten Islands	10	
Serbia*	01	
Seychelles	04	
Sicily*	01	
Singapore	08	
Slovakia*	01	
Slovenia*	01	
Socotra	03	
Solomon Islands	11	
Somalia Republic	03	
South Africa, Republic of	02	
Spain*†	01	
Spanish Possessions in North Africa*	01	
Spitsbergen (Svalbard)*	01	
Sri Lanka	06	
Sudan, Republic of	02	
Swaziland	02	
Sweden*†	01	
Switzerland*	01	
Syria (Syrian Arab Republic)*	02	
Taiwan	08	
Tajikistan	05	
Tanzania	03	
Thailand	07	
Tonga*	13	
Tunisia	01	
Turkey*	02	
Turkmenistan	05	
Tuvalu	12	
Uganda	03	
Ukraine*	02	
United Arab Emirates	04	
Uzbekistan	05	
Vanuatu, Republic of	11	
Vietnam, Socialist Republic of	07	
Yemen	03	
Yugoslavia*, Federal Republic of	01	
Zambia, Republic of	02	
Zimbabwe	02	

* Summer time may be kept in these places. † For Summer time dates see List II footnotes.

[1] Except the Ebon Atol which keeps time 24[h] slow on that of the rest of the islands.

[2] The boundaries between the zones are irregular; listed are chief towns in each zone.

LIST II — PLACES NORMALLY KEEPING UTC

Ascension Island	Ghana	Irish Republic*†	Morocco	Sierra Leone
Burkina-Faso	Great Britain†	Ivory Coast	Portugal*†	Togo Republic
Canary Islands*	Guinea-Bissau	Liberia	Principe	Tristan da Cunha
Channel Islands†	Guinea Republic	Madeira*	St. Helena	
Faeroes*, The	Iceland	Mali	São Tomé	
Gambia, The	Ireland, Northern†	Mauritania	Senegal	

* Summer time may be kept in these places.

† The European Union directive states that Summer Time, one hour in advance of UTC, is kept from 2001 March 25^{d} 01^{h} to October 28^{d} 01^{h} UTC.

LIST III — PLACES SLOW ON UTC (WEST OF GREENWICH)

The times given below should be *subtracted* from UTC to give Standard Time / *added* to Standard Time to give UTC.

	h	m
Argentina	03	
Austral (Tubuai) Islands[1]	10	
Azores*	01	
Bahamas*	05	
Barbados	04	
Belize	06	
Bermuda*	04	
Bolivia	04	
Brazil		
S and E coastal states, Bahia, Goiás, Brasilia*	03	
N and NE coastal states, Eastern Para	03	
Mato Grosso, Mato Grosso do Sul*	04	
Central states, western Para, E and Central Amazonas	04	
Territory of Acre, western Amazonas	05	
British Antarctic Territory[2]	03	
Canada		
Alberta*	07	
British Columbia[3]*	08	
Labrador[3]*	04	
Manitoba*	06	
New Brunswick*	04	
Newfoundland*	03	30
Northwest Territories[3]*		
east of long. W. 85°	05	
long. W. 85° to W. 102°	06	
west of long. W. 102°	07	
Nova Scotia*	04	
Ontario, east of long. W. 90°*	05	
west of long. W. 90°*	06	
Prince Edward Island*	04	
Canada (*continued*)		
Quebec, east of long. W. 63°[3]	04	
west of long. W. 63°*	05	
Saskatchewan[3]	06	
Yukon*	08	
Cape Verde Islands	01	
Cayman Islands	05	
Chile*	04	
Colombia	05	
Cook Islands	10	
Costa Rica	06	
Cuba*	05	
Curaçao Island	04	
Dominican Republic	04	
Easter Island (I. de Pascua)*	06	
Ecuador	05	
El Salvador	06	
Falkland Islands*	04	
Fanning Island	10	
Fernando de Noronha Island	02	
French Guiana	03	
Galápagos Islands	06	
Greenland[4]		
General*	03	
Scoresby Sound*	01	
Thule area*	04	
Grenada	04	
Guadeloupe	04	
Guatemala	06	
Guyana, Republic of	04	
Haiti	05	
Honduras	06	

* Summer time may be kept in these places.

[1] This is the legal standard time, but local mean time is generally used.

[2] Most stations use UTC.

[3] Some areas may keep another time zone.

[4] Mesters Vig and Danmarkshavn keep UTC.

LIST III — *(continued)*

	h	m
Jamaica	05	
Johnston Island	10	
Juan Fernandez Islands*	04	
Leeward Islands	04	
Marquesas Islands	09	30
Martinique	04	
Mexico*[1]	06	
Midway Islands	11	
Nicaragua	06	
Niue	11	
Panama, Republic of	05	
Paraguay*	04	
Peru	05	
Puerto Rico	04	
St. Pierre and Miquelon*	03	
Samoa	11	
Society Islands	10	
South Georgia	02	
Suriname	03	
Trindade Island, South Atlantic	02	
Trinidad and Tobago	04	
Tuamotu Archipelago	10	
Tubuai (Austral) Islands	10	
Turks and Caicos Islands*	05	
United States of America[2]		
Alabama	06	
Alaska	09	
Aleutian Islands, east of W. 169° 30′	09	
Aleutian Islands, west of W. 169° 30′	10	
Arizona[3]	07	
Arkansas	06	
California	08	
Colorado	07	
Connecticut	05	
Delaware	05	
District of Columbia	05	
Florida[4]	05	
Georgia	05	
Hawaii[3]	10	
Idaho[4]	07	
Illinois	06	
Indiana[3,4]	05	
United States of America[2] *(continued)*		
Iowa	06	
Kansas[4]	06	
Kentucky, eastern part	05	
western part	06	
Louisiana	06	
Maine	05	
Maryland	05	
Massachusetts	05	
Michigan[4]	05	
Minnesota	06	
Mississippi	06	
Missouri	06	
Montana	07	
Nebraska, eastern part	06	
western part	07	
Nevada	08	
New Hampshire	05	
New Jersey	05	
New Mexico	07	
New York	05	
North Carolina	05	
North Dakota[4]	06	
Ohio	05	
Oklahoma	06	
Oregon[4]	08	
Pennsylvania	05	
Rhode Island	05	
South Carolina	05	
South Dakota, eastern part	06	
western part	07	
Tennessee, eastern part	05	
western part	06	
Texas[4]	06	
Utah	07	
Vermont	05	
Virginia	05	
Washington D.C.	05	
Washington	08	
West Virginia	05	
Wisconsin	06	
Wyoming	07	
Uruguay	03	
Venezuela	04	
Virgin Islands	04	
Windward Islands	04	

[1] Summer time may be kept in these places.
[2] Except the states of Sonora, Sinaloa*, Nayarit* and the Southern District of Lower California* which keep 07h, and the Northern District of Lower California* which keeps 08h.
[3] Daylight-saving (Summer) time, one hour fast on the time given, is kept from the first Sunday in April to the last Sunday in October, changing at 02h 00m local clock time.
[4] Exempt from keeping daylight-saving time.
[4] A small portion of the state is in another time zone.

67. The chart distance between meridians 10° apart at latitude 65° North is 3.75 inches. The chart scale at this latitude approximates:

1: 5 000 000

68. A direct reading compass should be swung when:
There is a large, and permanent, change in magnetic latitude

69. The direct reading magnetic compass is made aperiodic (dead beat) by:
Keeping the magnetic assembly mass close to the compass point and by using damping wires

70. The annunciator of a remote indicating compass system is used when:
Synchronising the magnetic and gyro compass elements

71. At 47° North the chart distance between meridians 10° apart is 5 inches.
The scale of the chart at 47° North approximates:
1: 6 000 000

72. On a Direct Mercator chart a great circle will be represented by a:
Curve concave to the equator

73. An aircraft in the northern hemisphere is making an accurate rate one turn to the right.
If the initial heading was 135°, after 30 seconds the direct reading magnetic compass should read:
More than 225°

74. When accelerating on a westerly heading in the northern hemisphere, the compass card of a direct reading magnetic compass will turn:
Anti-clockwise giving an apparent turn towards the north

75. On a Lambert Conformal Conic chart earth convergences is most accurately represented at the:
Parallel of origin

76. 265 US-GAL equals? (Specific gravity 0.80)
803 kg

77. 730 FT/MIN equals:
3.7 m/sec

78. How long will it take to fly 5 NM at a groundspeed of 269 Kt ?
1 MIN 07 SEC

79. An aircraft travels 2.4 statute miles in 47 seconds.
What is its groundspeed?
160 kt

80. An aircraft flies a great circle track from 56° N 070° W to 62° N 110° E.
The total distance travelled is?
3720 NM

81. What is the local mean time, position 65°25'N 123°45'W at 2200 UTC?
1345

82. When is the magnetic compass most effective?
About midway between the magnetic poles

83. When an aircraft on a westerly heading on the northern hemisphere accelerates, the effect of the acceleration error causes the magnetic compass to:
Indicate a turn towards the north

84. What is the ISA temperature value at FL 330?
-51°C

85. Given:
TAS 487kt,
FL 330,
Temperature ISA + 15.
Calculate the Mach Number:
0.81

86. Given:
Pressure Altitude 29000 FT,
OAT -55°C.
Calculate the Density Altitude:
27500 FT

87. Given:
Compass Heading 090°,
Deviation 2°W,
Variation 12°E,
TAS 160 kt.
Whilst maintaining a radial 070° from a VOR station,
the aircraft flies a ground distance of 14 NM in 6 MIN.
What is the W/V ° (T)?
160°/50 kt

88. How many NM would an aircraft travel in 1 MIN 45 SEC if GS is 135 kt?
3.94

89. Parallels of latitude on a Direct Mercator chart are :
Parallel straight lines unequally spaced

90. A chart has the scale 1: 1 000 000. From A to B on the chart measures 1.5 inches (one inch equals 2.54 centimetres), the distance from A to B in NM is:
20.6

91. Contour lines on aeronautical maps and charts connect points:
Having the same elevation above sea level

92. A Rhumb line is :
A line on the surface of the earth cutting all meridians at the same angle

93. A straight line on a Lambert Conformal Projection chart for normal flight planning purposes:
Is approximately a Great Circle

94. Fuel flow per HR is 22 US-GAL; total fuel on board is 83 IMP GAL.
What is the endurance?
4 HR 32 MIN
95. What is the ratio between the litre and the US-GAL?
1 US-GAL equals 3.78 litres

96. The circumference of the earth is approximately:
21600 NM

97. Isogonics lines connect positions that have:
The same variation

98. 5 HR 20 MIN 20 SEC corresponds to a longitude difference of:
80°05'

99. What is the value of the magnetic dip at the magnetic south pole ?
90°

100. Given:
TAS = 90 kt,
HDG (T) = 355°,
W/V = 120/20kt.
Calculate the Track (°T) and GS?
346 - 102 kt

101. Given:
TAS = 485 kt,
HDG (T) = 168°,
W/V = 130/75kt.
Calculate the Track (°T) and GS?
174 - 428 kt

102. Given:
TAS = 155 kt,
Track (T) = 305°,
W/V = 160/18kt.
Calculate the HDG (°T) and GS?
301 - 169 kt

103. Given:
TAS = 130 kt,
Track (T) = 003°,
W/V = 190/40kt.
Calculate the HDG (°T) and GS?
001 - 170 kt

104. Given:
TAS = 227 kt,
Track (T) = 316°,
W/V = 205/15kt.
Calculate the HDG (°T) and GS?
312 - 232 kt

105. Given:
TAS = 465 kt,
Track (T) = 007°,
W/V = 300/80kt.
Calculate the HDG (°T) and GS?
358 - 428 kt

106. Given:
TAS = 200 kt,
Track (T) = 073°,
W/V = 210/20kt.
Calculate the HDG (°T) and GS?
077 - 214 kt

107. Given:
TAS = 200 kt,
Track (T) = 110°,
W/V = 015/40kt.
Calculate the HDG (°T) and GS?
099 - 199 kt

108. Given:
TAS = 270 kt,
Track (T) = 260°,
W/V = 275/30kt.
Calculate the HDG (°T) and GS?
262 - 241 kt

109. Given:
True HDG = 307°,
TAS = 230 kt,
Track (T) = 313°,
GS = 210 kt.
Calculate the W/V?
260/30kt

110. Given:
For take-off an aircraft requires a headwind component of at least 10 kt and has a cross-wind limitation of 35 kt.
The angle between the wind direction and the runway is 60°,
Calculate the minimum and maximum allowable wind speeds?
20 kt and 40 kt

111. An aircraft at FL390 is required to descend to cross a DME facility at FL70. Maximum rate of descent is 2500 FT/MIN; mean GS during descent is 248 kt. What is the minimum range from the DME at which descent should commence?
53 NM

112. Given:
Runway direction 230°(T),
Surface W/V 280°(T)/40 kt.
Calculate the effective cross-wind component?
31 kt

113. A Lambert conformal conic chart has a constant of the cone of 0.75.
The initial course of a straight line track drawn on this chart from A (40°N 050°W) to B is 043°(T) at A; course at B is 055°(T).
What is the longitude of B?
34°W

114. Given:
Runway direction 210°(M),
Surface W/V 230°(M)/30kt.
Calculate the cross-wind component?
10 kt

115. An aircraft at FL330 is required to commence descent
When 65 NM from a VOR and to cross the VOR at FL100.
The mean GS during the descent is 330 kt.
What is the minimum rate of descent required?
1950 FT/MIN

116. An aircraft obtains a relative bearing of 315° from an NDB at 0830. At 0840 the relative bearing from the same position is 270°.
Assuming no drift and a GS of 240 kt, what is the approximate range from the NDB at 0840?
40 NM

117. The equivalent of 70 m/sec is approximately:
136 kt

118. An aircraft at FL290 is required to commence descent
When 50 NM from a VOR and to cross that VOR at FL80.
Mean GS during descent is 271kt.
What is the minimum rate of descent required?
1900 FT/MIN

119. A Lambert conformal conic chart has a constant of the cone of 0.80.
A straight line course drawn on this chart from A (53°N 004°W) to B is 080° at A; course at B is 092°(T).
What is the longitude of B?
011°E

120. Given:
Runway direction 305°(M),
Surface W/V 260°(M)/30 kt.
Calculate the cross-wind component?
21 kt

121. An aircraft at FL350 is required to commence descent
When 85 NM from a VOR and to cross the VOR at FL80.
The mean GS for the descent is 340 kt.
What is the minimum rate of descent required?
1800 FT/MIN

122. An island is observed by weather radar to be 15° to the left.
The aircraft heading is 120°(M) and the magnetic variation 17°W.
What is the true bearing of the aircraft from the island?
268°

123. Complete the following statement regarding magnetic variation.
The charted values of magnetic variation on earth normally change annually due to:
Magnetic pole movement causing numerical values at all locations to increase or decrease

124. Which one of the following is an advantage of a remote reading compass as compared with a standby compass?
It senses the magnetic meridian instead of seeking it, increasing compass sensitivity

125. Which of the following statements is correct concerning the effect of turning errors on a direct reading compass?
Turning errors are greatest on north/south headings, and are greatest at high latitudes

126. The main reason that day and night, throughout the year, have different duration, is due to the:
Inclination of the ecliptic to the equator

127. The lines on the earth's surface that join points of equal magnetic variation are called:
Isogonals

128. An aircraft departing A(N40º 00´ E080º 00´) flies a constant true track of 270º at a ground speed of 120 kt.
What are the coordinates of the position reached in 6 HR?
N40º 00´ E064º 20´

129. The parallels on a Lambert Conformal Conic chart are represented by:
Arcs of concentric circles

130. The ICAO definition of ETA is the:
Estimated time of arrival at destination

131. An aircraft travels 100 statute miles in 20 MIN, how long does it take to travel 215 NM?
50 MIN

132. Given:
TAS = 220 kt;
Magnetic course = 212 º,
W/V 160 º(M)/ 50kt,
Calculate the GS?
186 kt

133. Given:
FL250,
OAT -15 ºC,
TAS 250 kt.
Calculate the Mach number:
0.40

134. During a low level flight 2 parallel roads that are crossed at right angles by an aircraft. The time between these roads can be used to check the aircraft:
Groundspeed

135. Assuming zero wind, what distance will be covered by an aircraft descending 15000 FT with a TAS of 320 kt and maintaining a rate of descent of 3000 FT/MIN?
26.7 NM

136. Given:
Magnetic track = 315 º,
HDG = 301 º(M),
VAR = 5ºW,
TAS = 225 kt,
The aircraft flies 50 NM in 12 MIN.
Calculate the W/V(°T)?
190 º/63 kt

137. An island appears 30° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading of 276° with the magnetic variation 12°W?
054°

138. Compass deviation is defined as the angle between:
Magnetic North and Compass North

139. Given:
True course 300°
drift 8°R
variation 10°W
deviation -4°
Calculate the compass heading?
306°

140. Given:
true track 352°
variation 11° W
deviation is -5°
drift 10°R.
Calculate the compass heading?
358°

141. Given:
true track 070°
variation 30°W
deviation +1°
drift 10°R
Calculate the compass heading:
089°

142. The angle between True North and Magnetic North is called :
Variation

143. Deviation applied to magnetic heading gives:
Compass heading

144. At what approximate latitude is the length of one minute of arc along a meridian equal to one NM (1852 m) correct?
45°

145. An aircraft flies the following rhumb line tracks and distances from position 04°00'N 030°00'W :
600 NM South,
then 600 NM East,
then 600 NM North,
then 600 NM West.
The final position of the aircraft is:
04°00'N 029°58'W

146. Given:
TAS = 270 kt,
True HDG = 270°,
Actual wind 205°(T)/30kt,
Calculate the drift angle and GS?
6R - 259kt

147. Given:
TAS = 270 kt,
True HDG = 145°,
Actual wind = 205°(T)/30kt.
Calculate the drift angle and GS?
6°L - 256 kt

148. Given:
TAS = 470 kt,
True HDG = 317°
W/V = 045°(T)/45kt
Calculate the drift angle and GS?
5°L - 470 kt

149. Given:
TAS = 140 kt,
True HDG = 302°,
W/V = 045°(T)/45kt
Calculate the drift angle and GS?
16°L - 156 kt

150. Given:
TAS = 290 kt,
True HDG = 171°,
W/V = 310°(T)/30kt
Calculate the drift angle and GS?
4°L - 314 kt

151. Given:
TAS = 485 kt,
True HDG = 226°,
W/V = 110°(T)/95kt.
Calculate the drift angle and GS?
9°R - 533 kt

152. Given:
TAS = 472 kt,
True HDG = 005°,
W/V = 110°(T)/50kt.
Calculate the drift angle and GS?
6°L - 487 kt

153. Given:
TAS = 190 kt,
True HDG = 085°,
W/V = 110°(T)/50kt.
Calculate the drift angle and GS?
8°L - 146 kt

154. Given:
TAS = 132 kt,
True HDG = 257°
W/V = 095°(T)/35kt.
Calculate the drift angle and GS?
4°R - 165 kt

155. Given:
TAS = 370 kt,
True HDG = 181°,
W/V = 095°(T)/35kt.
Calculate the true track and GS?
186 - 370 kt

156. Given:
TAS = 375 kt,
True HDG = 124°,
W/V = 130°(T)/55kt.
Calculate the true track and GS?
123 - 320 kt

157. Given:
TAS = 125 kt,
True HDG = 355°,
W/V = 320°(T)/30kt.
Calculate the true track and GS?
005 - 102 kt

158. Given:
TAS = 198 kt,
HDG (°T) = 180,
W/V = 359/25.
Calculate the Track (°T) and GS?
180 - 223 kt

159. Given:
TAS = 135 kt,
HDG (°T) = 278,
W/V = 140/20kt
Calculate the Track (°T) and GS?
283 - 150 kt

160. Given:
TAS = 225 kt,
HDG (°T) = 123°,
W/V = 090/60kt.
Calculate the Track (°T) and GS?
134 - 178 kt

161. Given:
TAS = 480 kt,
HDG (°T) = 040°,
W/V = 090/60kt.
Calculate the Track (°T) and GS?
034 - 445 kt

162. Given:
TAS = 155 kt,
HDG (T) = 216°,
W/V = 090/60kt.
Calculate the Track (°T) and GS?
231 - 196 kt

163. Given:
TAS = 170 kt,
HDG (T) = 100°,
W/V = 350/30kt.
Calculate the Track (°T) and GS?
109 - 182 kt

164. Given:
TAS = 235 kt,
HDG (T) = 076°
W/V = 040/40kt.
Calculate the drift angle and GS?
7R - 204 kt

165. Given:
TAS = 440 kt,
HDG (T) = 349°
W/V = 040/40kt.
Calculate the drift and GS?
4L - 415 kt

166. Given:
TAS = 465 kt,
HDG (T) = 124°,
W/V = 170/80kt.
Calculate the drift and GS?
8L - 415 kt

167. Given:
TAS = 95 kt,
HDG (T) = 075°,
W/V = 310/20kt.
Calculate the drift and GS?
9R - 108 kt

168. Given:
TAS = 140 kt,
HDG (T) = 005°,
W/V = 265/25kt.
Calculate the drift and GS?
10R - 146 kt

169. Given:
TAS = 190 kt,
HDG (T) = 355°,
W/V = 165/25kt.
Calculate the drift and GS?
1L - 215 kt

170. Given:
TAS = 230 kt,
HDG (T) = 250°,
W/V = 205/10kt.
Calculate the drift and GS?
2R - 223 kt

171. Given:
TAS = 205 kt,
HDG (T) = 180°,
W/V = 240/25kt.
Calculate the drift and GS?
6L - 194 kt

172. Given:
TAS = 250 kt,
HDG (T) = 029°,
W/V = 035/45kt.
Calculate the drift and GS?
1L - 205 kt

173. Given:
TAS = 132 kt,
HDG (T) = 053°,
W/V = 205/15kt.
Calculate the Track (°T) and GS?
050 - 145 kt

174. Given:
True HDG = 233°,
TAS = 480 kt,
Track (T) = 240°,
GS = 523 kt.
Calculate the W/V?
110/75kt

175. Given:
True HDG = 133°,
TAS = 225 kt,
Track (T) = 144°,
GS = 206 kt.
Calculate the W/V?
075/45kt

176. Given:
True HDG = 074°,
TAS = 230 kt,
Track (T) = 066°,
GS = 242 kt.
Calculate the W/V?
180/35kt

177. Given:
True HDG = 206°,
TAS = 140 kt,
Track (T) = 207°,
GS = 135 kt.
Calculate the W/V?
180/05kt

178. Given:
True HDG = 054°,
TAS = 450 kt,
Track (T) = 059°,
GS = 416 kt.
Calculate the W/V?
010/50kt

179. Given:
True HDG = 145°,
TAS = 240 kt,
Track (T) = 150°,
GS = 210 kt.
Calculate the W/V?
115/35kt

180. Given:
True HDG = 002°,
TAS = 130 kt,
Track (T) = 353°,
GS = 132 kt.
Calculate the W/V?
093/20kt

181. Given:
True HDG = 035°,
TAS = 245 kt,
Track (T) = 046°,
GS = 220 kt.
Calculate the W/V?
340/50kt

182. Given:
Course required = 085° (T),
Forecast W/V 030/100kt,
TAS = 470 kt,
Distance = 265 NM.
Calculate the true HDG and flight time?
075°, 39 MIN

183. Given:
True course from A to B = 090°,
TAS = 460 kt,
W/V = 360/100kt,
Average variation = 10°E,
Deviation = -2°.
Calculate the compass heading and GS?
069° - 448 kt

184. For a landing on runway 23 (227° magnetic) surface
W/V reported by the ATIS is 180/30kt.
VAR is 13°E.
Calculate the cross wind component?
22 kt

185. Given:
Maximum allowable tailwind component for landing 10 kt.
Planned runway 05 (047° magnetic).
The direction of the surface wind reported by ATIS 210°.
Variation is 17°E.
Calculate the maximum allowable windspeed that can be accepted without exceeding the tailwind limit?
11 kt

186. Given:
Maximum allowable crosswind component is 20 kt.
Runway 06, RWY QDM 063°(M).
Wind direction 100°(M)
Calculate the maximum allowable windspeed?
33 kt

187. Given:
True course A to B = 250°
Distance A to B = 315 NM
TAS = 450 kt.
W/V = 200°/60kt.
ETD A = 0650 UTC.
What is the ETA at B?
0736 UTC

188. Given: GS = 510 kt.
Distance A to B = 43 NM
What is the time (MIN) from A to B?
5

189. Given: GS = 122 kt.
Distance from A to B = 985 NM.
What is the time from A to B?
8 HR 04 MIN

190. Given: GS = 236 kt.
Distance from A to B = 354 NM
What is the time from A to B?
1 HR 30 MIN

191. Given: GS = 435 kt.
Distance from A to B = 1920 NM.
What is the time from A to B?
4 HR 25 MIN

192. Given: GS = 345 kt.
Distance from A to B = 3560 NM.
What is the time from A to B?
10 HR 19 MIN

193. Given: GS = 480 kt.
Distance from A to B = 5360 NM.
What is the time from A to B?
11 HR 10 MIN

194. Given: GS = 95 kt.
Distance from A to B = 480 NM.
What is the time from A to B?
5 HR 03 MIN

195. Given: GS = 105 kt.
Distance from A to B = 103 NM.
What is the time from A to B?
00 HR 59 MIN

196. Given: GS = 120 kt.
Distance from A to B = 84 NM.
What is the time from A to B?
00 HR 42 MIN

197. Given: GS = 135 kt.
Distance from A to B = 433 NM.
What is the time from A to B?
3 HR 12 MIN

198. The angular difference, on a Lambert conformal conic chart, between the arrival and departure track is equal to:
Map convergence

199. An aircraft at FL370 is required to commence descent at 120 NM from a VOR and to cross the facility at FL130. If the mean GS for the descent is 288 kt, the minimum rate of descent required is:
960 FT/MIN

200. A ground feature was observed on a relative bearing of 325° and five minutes later on a relative bearing of 280°. The aircraft heading was 165°(M), variation 25°W, drift 10°Right and GS 360 kt. When the relative bearing was 280°, the distance and true bearing of the aircraft from the feature was:
30 NM and 240°

201. An aircraft at FL120, IAS 200kt, OAT -5° and wind component +30kt, is required to reduce speed in order to cross a reporting point 5 MIN later than planned.
Assuming flight conditions do not change, when 100 NM from the reporting point IAS should be reduced to:
159 kt

202. Given:
Runway direction 083°(M),
Surface W/V 035/35kt.
Calculate the effective headwind component?
24 kt

203. Approximately how many nautical miles correspond to 12 cm on a map with a scale of 1: 2 000 000?
130

204. Which of the following is an occasion for carrying out a compass swing on a Direct Reading Compass?
After an aircraft has passed through a severe electrical storm, or has been struck by lightning

205. The Earth can be considered as being a magnet with the:
Blue pole near the north pole of the earth and the direction of the magnetic force pointing straight down to the earth's surface

206. On a Direct Mercator chart at latitude 15°S, a certain length represents a distance of 120 NM on the earth. The same length on the chart will represent on the earth, at latitude 10°N, a distance of:
122.3 NM

207. On a Direct Mercator chart at latitude of 45°N, a certain length represents a distance of 90 NM on the earth. The same length on the chart will represent on the earth, at latitude 30°N, a distance of :
110 NM

208. In which two months of the year is the difference between the transit of the Apparent Sun and Mean Sun across the Greenwich Meridian the greatest?
February and November

209. What is the highest latitude listed below at which the sun will reach an altitude of 90° above the horizon at some time during the year?
23°

210. Assuming mid-latitudes (40° to 50°N/S).
At which time of year is the relationship between the length of day and night, as well as the rate of change of declination of the sun, changing at the greatest rate?
Spring equinox and autumn equinox

211. At what approximate date is the earth closest to the sun (perihelion)?
Beginning of January

212. At what approximate date is the earth furthest from the sun (aphelion)?
Beginning of July

213. A flight is to be made from 'A' 49°S 180°E/W to 'B' 58°S, 180°E/W.
The distance in kilometres from 'A' to 'B' is approximately:
1000

214. An aircraft at latitude 02°20'N tracks 180°(T) for 685 km.
On completion of the flight the latitude will be:
03°50'S

215. The main reason for mounting the detector unit of a remote reading compass in the wingtip of an aeroplane is:
To minimise the amount of deviation caused by aircraft magnetism and electrical circuits

216. Given:
Distance A to B = 120 NM,
After 30 NM aircraft is 3 NM to the left of course.
What heading alteration should be made in order to arrive at point 'B'?
8° right

217. A ground feature was observed on a relative bearing of 315° and 3 MIN later on a relative bearing of 270°.
The W/V is calm; aircraft GS 180 kt.
What is the minimum distance between the aircraft and the ground feature?
9 NM

218. An island is observed to be 15° to the left.
The aircraft heading is 120°(M), variation 17°(W).
The bearing °(T) from the aircraft to the island is:
088

219. An aircraft is planned to fly from position 'A' to position 'B', distance 320 NM, at an average GS of 180 kt. It departs 'A' at 1200 UTC.
After flying 70 NM along track from 'A', the aircraft is 3 MIN ahead of planned time.
Using the actual GS experienced, what is the revised ETA at 'B'?
1333 UTC

220. An aircraft is planned to fly from position 'A' to position 'B', distance 250 NM at an average GS of 115 kt. It departs 'A' at 0900 UTC.
After flying 75 NM along track from 'A', the aircraft is 1.5 MIN behind planned time.
Using the actual GS experienced, what is the revised ETA at 'B'?
1115 UTC

221. Given:
Magnetic track = 075°,
HDG = 066°(M),
VAR = 11°E,
TAS = 275 kt
Aircraft flies 48 NM in 10 MIN.
Calculate the true W/V °?
340°/45 kt

222. Given:
Magnetic track = 210°,
Magnetic HDG = 215°,
VAR = 15°E,
TAS = 360 kt,
Aircraft flies 64 NM in 12 MIN.
Calculate the true W/V?
265°/50 kt

223. Given:
Distance 'A' to 'B' is 475 NM,
Planned GS 315 kt,
ATD 1000 UTC,
1040 UTC - fix obtained 190 NM along track.
What GS must be maintained from the fix in order to achieve planned ETA at 'B'?
340 kt

224. Given:
Distance 'A' to 'B' is 100 NM,
Fix obtained 40 NM along and 6 NM to the left of course.
What heading alteration must be made to reach 'B'?
15° Right

225. Given:
Distance 'A' to 'B' is 90 NM,
Fix obtained 60 NM along and 4 NM to the right of course.
What heading alteration must be made to reach 'B'?
12° Left

226. Complete line 1 of the 'FLIGHT NAVIGATION LOG'; positions 'A' to 'B'.
What is the HDG°(M) and ETA?
268° - 1114 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	350 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

227. Complete line 2 of the 'FLIGHT NAVIGATION LOG', positions 'C' to 'D'.
What is the HDG°(M) and ETA?
HDG 193° - ETA 1239 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	350 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

228. Complete line 3 of the 'FLIGHT NAVIGATION LOG', positions 'E' to 'F'.
What is the HDG°(M) and ETA?
HDG 105° - ETA 1205 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	350 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

229. Complete line 4 of the 'FLIGHT NAVIGATION LOG', positions 'G' to 'H'.
What is the HDG°(M) and ETA?
HDG 344° - ETA 1336 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	350 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

230. Complete line 5 of the 'FLIGHT NAVIGATION LOG', positions 'J' to 'K'.
What is the HDG°(M) and ETA?
HDG 337° - ETA 1422 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	350 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

231. Complete line 6 of the 'FLIGHT NAVIGATION LOG', positions 'L' to 'M'.
What is the HDG°(M) and ETA?
HDG 075° - ETA 1502 UTC

FLIGHT NAVIGATION LOG

Line No.	Time	Course/ Track (T)	W/V	HDG (T)	VAR	HDG (M)	POSITION FROM	TO	CAS/ MACH	FL OAT	TAS	GS	DIST	TIME	ETA
1	1015	270	050/40		7E		A	B	210	180 -20			300		
2	1050	180	320/50		5W		C	D	175	160 -10			480		
3	1125	090	140/60		10W		E	F	M 0.82	360 -40			300		
4	1210	360	315/70		10E		G	H	M 0.78	310 -35			600		
5	1245	330	240/30		17W		J	K	150	100 -10			275		
6	1355	070	020/60		11W		L	M	M 0.84	390 -55			495		

232. Which of the following statements concerning the earth's magnetic field is completely correct?
The blue pole of the earth's magnetic field is situated in North Canada

233. What is the effect on the Mach number and TAS in an aircraft that is climbing with constant CAS?
Mach number increases; TAS increases

234. Given:
Half way between two reporting points the navigation log gives the following information:
TAS 360 kt,
W/V 330°/80kt,
Compass heading 237°,
Deviation on this heading -5°,
Variation 19°W.
What is the average ground speed for this leg?
403 kt

235. A negative (westerly) magnetic variation signifies that :
True North is East of Magnetic North

236. In northern hemisphere, during an acceleration in an easterly direction, the magnetic compass will indicate:
A decrease in heading

237. The purpose of compass check swing is to:
Measure the angle between Magnetic North and Compass North

238. Given:
The coordinates of the heliport at Issy les Moulineaux are:
N48°50' E002°16.5'
The coordinates of the antipodes are:
S48°50' W177°43.5'

239. Given:
Course 040°(T),
TAS is 120 kt,
Wind speed 30 kt.
Maximum drift angle will be obtained for a wind direction of:
130°

240. Given:
IAS 120 kt,
FL 80,
OAT +20°C.
What is the TAS?
141 kt

241. Isogonals are lines of equal:
Magnetic variation

242. At a specific location, the value of magnetic variation:
Varies slowly over time

243. Parallels of latitude, except the equator, are:
Rhumb lines

244. Given:
FL120,
OAT is ISA standard,
CAS is 200 kt,
Track is 222° (M),
Heading is 215°(M),
Variation is 15°W.
Time to fly 105 NM is 21 MIN.
What is the W/V?
050° (T) / 70 kt.

245. At latitude 60°N the scale of a Mercator projection is 1: 5 000 000. The length on the chart between 'C' N60° E008° and 'D' N60° W008° is:
17.8 cm

246. Given:
A is N55° 000°
B is N54° E010°
The average true course of the great circle is 100°.
The true course of the rhumbline at point A is:
100°

247. Given:
Position 'A' is N00° E100°,
Position 'B' is 240°(T), 200 NM from 'A'.
What is the position of 'B'?
S01°40' E097°07'

248. An island appears 60° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 276° with the magnetic variation (VAR) 10°E?
046°

249. An island appears 45° to the right of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 215° with the magnetic variation (VAR) 21°W?
059°

250. An island appears 30° to the right of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 355° with the magnetic variation (VAR) 15°E?
220°

251. An island appears 30° to the left of the centre line on an airborne weather radar display. What is the true bearing of the aircraft from the island if at the time of observation the aircraft was on a magnetic heading (MH) of 020° with the magnetic variation (VAR) 25°W?
145°

252. Permanent magnetism in aircraft arises chiefly from:
Hammering and the effect of the earth's magnetic field, whilst under construction

253. The main reason for usually mounting the detector unit of a remote indicating compass in the wingtip of an aeroplane is to:
Reduce the amount of deviation caused by aircraft magnetism and electrical circuits

254. The main advantage of a remote indicating compass over a direct reading compass is that it:
Senses, rather than seeks, the magnetic meridian

255. The angle between Magnetic North and Compass North is called:
Compass deviation

256. The north and south magnetic poles are the only positions on the earth's surface where:
A freely suspended compass needle will stand vertical

257. On a Direct Mercator chart, meridians are:
Parallel, equally spaced, vertical straight lines

258. Which one of the following, concerning great circles on a Direct Mercator chart, is correct?
With the exception of meridians and the equator, they are curves concave to the equator

259. At the magnetic equator, when accelerating after takeoff on heading West, a direct reading compass :
Indicates the correct heading

260. On a chart, the distance along a meridian between latitudes 45°N and 46°N is 6 cm. The scale of the chart is approximately:
1: 1 850 000

261. Given:
Chart scale is 1: 1 850 000.
The chart distance between two points is 4 centimetres.
Earth distance is approximately:
40 NM

262. The sensitivity of a direct reading compass varies:
Directly with the horizontal component of the earth's magnetic field

263. Given:
An aircraft is on final approach to runway 32R (322°);
The wind velocity reported by the tower is 350°/20 kt.;
TAS on approach is 95 kt.
In order to maintain the centre line, the aircraft's heading (°M) should be:
328°

264. On a Mercator chart, at latitude 60°N, the distance measured between W002° and E008° is 20 cm. The scale of this chart at latitude 60°N is approximately:
1: 2 780 000

265. Assume a Mercator chart.
The distance between positions A and B, located on the same parallel and 10° longitude apart, is 6 cm. The scale at the parallel is 1: 9 260 000.
What is the latitude of A and B?
60° N or S

266. On a Lambert chart (standard parallels 37°N and 65°N), with respect to the straight line drawn on the map the between A (N49° W030°) and B (N48° W040°), the:
Great circle and rhumb line are to the south

267. Given:
ETA to cross a meridian is 2100 UTC
GS is 441 kt
TAS is 491 kt
At 2010 UTC, ATC requests a speed reduction to cross the meridian at 2105 UTC.
The reduction to TAS will be approximately:
40 kt

268. The flight log gives the following data:
"True track, Drift, True heading, Magnetic variation, Magnetic heading, Compass deviation, Compass heading"
The right solution, in the same order, is:
119°, 3°L, 122°, 2°E, 120°, +4°, 116°

269. Concerning direct reading magnetic compasses, in the northern hemisphere, it can be said that :
On an Easterly heading, a longitudinal acceleration causes an apparent turn to the North

270. At 0020 UTC an aircraft is crossing the 310° radial at 40 NM of a VOR/DME station.
At 0035 UTC the radial is 040° and DME distance is 40 NM.
Magnetic variation is zero.
The true track and ground speed are:
085° - 226 kt

271. A straight line on a chart 4.89 cm long represents 185 NM.
The scale of this chart is approximately:
1: 7 000 000

272. Given:
Required course 045°(M);
Variation is 15°E;
W/V is 190° (T)/30 kt;
CAS is 120 kt at FL 55 in standard atmosphere.
What are the heading (°M) and GS?
055° and 147 kt

273. Given:
Airport elevation is 1000 ft.
QNH is 988 hPa.
What is the approximate airport pressure altitude?
(Assume 1 hPa = 27 FT)
1680 FT

274. The circumference of the parallel of latitude at 60°N is approximately:
10 800 NM

275. Begin of morning civil twilight and end of evening civil twilight are defined by :
Sun altitude is 6° below the celestial horizon

276. Seasons are due to the:
Inclination of the polar axis with the ecliptic plane

277. Given:
Position 'A' N60 W020,
Position 'B' N60 W021,
Position 'C' N59 W020.
What are, respectively, the distances from A to B and from A to C?
30 NM and 60 NM

278. Given:
Indicated altitude 9000 FT,
OAT -32°C,
CAS 200 kt.
QNH 1013.
What is the TAS?
217 kt

279. Given:
An aircraft is flying a track of 255°(M),
2254 UTC, it crosses radial 360° from a VOR station,
2300 UTC, it crosses radial 330° from the same station.
At 2300 UTC, the distance between the aircraft and the station is :
The same as it was at 2254 UTC

280. The distance between two waypoints is 200 NM,
To calculate compass heading, the pilot used 2°E magnetic variation instead of 2°W.
Assuming that the forecast W/V applied, what will the off track distance be at the second waypoint?
14 NM

281. The scale on a Lambert conformal conic chart:
Is constant along a parallel of latitude

282. A direct Mercator graticule is based on a projection that is:
Cylindrical

283. Given:
Aircraft at FL 150 overhead an airport
Elevation of airport 720 FT.
QNH is 1003 hPa.
OAT at FL150 -5°C.
What is the true altitude of the aircraft?
(Assume 1 hPa = 27 FT)
15 280 FT

284. An aircraft takes off from the aerodrome of BRIOUDE (altitude 1 483 FT, QFE = 963 hPa, temperature = 32°C).
Five minutes later, passing 5 000 FT on QFE, the second altimeter set on 1 013 hPa will indicate approximately:
6 400 FT

285. On a Lambert conformal conic chart, the distance between parallels of latitude spaced the same number of degrees apart:
Reduces between, and expands outside, the standard parallels

286. On a Direct Mercator, rhumb lines are:
Straight lines

287. A useful method of a pilot resolving, during a visual flight, any uncertainty in the aircraft's position is to maintain visual contact with the ground and:
Set heading towards a line feature such as a coastline, motorway, river or railway

288. A course of 120°(T) is drawn between 'X' (61°30'N) and 'Y' (58°30'N) on a Lambert Conformal conic chart with a scale of 1 : 1 000 000 at 60°N.
The chart distance between 'X' and 'Y' is:
66.7 cm

289. Route 'A' (44°N 026°E) to 'B' (46°N 024°E) forms an angle of 35° with longitude 026°E. Average magnetic variation between 'A' and 'B' is 3°E.
What is the average magnetic course from 'A' to 'B'?
322°

290. Given:
Direct Mercator chart with a scale of 1 : 200 000 at equator;
Chart length from 'A' to 'B', in the vicinity of the equator, 11 cm.
What is the approximate distance from 'A' to 'B'?
12 NM

291. For this question use chart E(LO)1:
What is the radial and DME distance from CRK VOR/DME (N5150.4 W00829.7) to position N5220 W00810?
030° - 33 NM

292. For this question use chart E(LO)1:
311° - 38 NM

293. For this question use chart E(LO)1:
What is the radial and DME distance from SHA VOR/DME (N5243.3 W00853.1) to position N5300 W00940?
309° - 33 NM

294. For this question use chart E(LO)1:
What is the radial and DME distance from SHA VOR/DME (N5243.3 W00853.1) to position N5310 W00830?
035° - 30 NM

295. For this question use chart E(LO)1:
What is the radial and DME distance from CON VOR/DME (N5354.8 W00849.1) to position N5430 W00900?
358° - 36 NM

296. For this question use chart E(LO)1:
What is the radial and DME distance from CON VOR/DME (N5354.8 W00849.1) to position N5400 W00800?
088° - 29 NM

297. For this question use chart E(LO)1:
What is the radial and DME distance from BEL VOR/DME (N5439.7 W00613.8) to position N5410 W00710?
236° - 44 NM

298. For this question use chart E(LO)1:
What is the radial and DME distance from BEL VOR/DME (N5439.7 W00613.8) to position N5440 W00730?
278° - 44 NM

299. For this question use chart E(LO)1:
What is the average track (°M) and distance between WTD NDB (N5211.3 W00705.0) and KER NDB (N5210.9 W00931.5)?
278° - 90 NM

300. For this question use chart E(LO)1:
What is the average track (°M) and distance between CRK VOR (N5150.4 W00829.7) and CRN NDB (N5318.1 W00856.5)?
357° - 89 NM

301. For this question use chart E(LO)1:
What is the average track (°M) and distance between CRN NDB (N5318.1 W00856.5) and WTD NDB (N5211.3 W00705.0)?
142° - 95 NM

302. For this question use chart E(LO)1:
What is the average track (°M) and distance between BAL VOR (N5318.0 W00626.9) and SLG NDB (N5416.7 W00836.0)?
316° - 96 NM

303. For this question use chart E(LO)1:
What is the average track (°M) and distance between CRN NDB (N5318.1 W00856.5) and BEL VOR (N5439.7 W00613.8)?
057° - 126 NM

304. For this question use chart E(LO)1:
What is the average track (°T) and distance between CON VOR (N5354.8 W00849.1) and BEL VOR (N5439.7 W00613.8)?
063° - 101 NM

305. For this question use chart E(LO)1:
What is the average track (°T) and distance between SLG NDB (N5416.7 W00836.0) and CFN NDB (N5502.6 W00820.4)?
011° - 47 NM

306. For this question use chart E(LO)1:
What is the average track (°T) and distance between WTD NDB (N5211.3 W00705.0) and FOY NDB (N5234.0 W00911.7)?
286° - 81 NM

307. For this question use chart E(LO)1:
What is the average track (°T) and distance between WTD NDB (N5211.3 W00705.0) and SLG NDB (N5416.7 W00836.0)?
336° - 137 NM

308. For this question use chart E(LO)1:
What is the average track (°T) and distance between SHA VOR (N5243.3 W00853.1) and CON VOR (N5354.8 W00849.1)?
002° - 72 NM

309. For this question use chart E(LO)1:
Given:
SHA VOR (N5243.3 W00853.1) radial 223°,
CRK VOR (N5150.4 W00829.7) radial 322°.
What is the aircraft position?
N5220 W00920

310. For this question use chart E(LO)1:
Given:
SHA VOR (N5243.3 W00853.1) radial 205°,
CRK VOR (N5150.4 W00829.7) radial 317°.
What is the aircraft position?
N5210 W00910

311. For this question use chart E(LO)1:
Given:
SHA VOR (N5243.3 W00853.1) radial 120°,
CRK VOR (N5150.4 W00829.7) radial 033°.
What is the aircraft position?
N5230 W00800

312. For this question use chart E(LO)1
Given:
SHA VOR (N5243.3 W00853.1) radial 129°,
CRK VOR (N5150.4 W00829.7) radial 047°.
What is the aircraft position?
N5220 W00750

313. For this question use chart E(LO)1
Given:
SHA VOR (N5243.3 W00853.1) radial 143°,
CRK VOR (N5150.4 W00829.7) radial 050°.
What is the aircraft position?
N5210 W00800

314. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1) radial 120°/35 NM.
What is the aircraft position?
N5230 W00800

315. For this question use chart E(LO)1
Given:
SHA VOR N5243.3 W00853.1
CRK VOR N5150.4 W00829.7
Aircraft position N5220 W00910
Which of the following lists two radials that are applicable to the aircraft position?
SHA 212°
CRK 328°

316. For this question use chart E(LO)1
Given:
SHA VOR N5243.3 W00853.1
CRK VOR N5150.4 W00829.7
Aircraft position N5230 W00820
Which of the following lists two radials that are applicable to the aircraft position?
SHA 131°
CRK 017°

317. For this question use chart E(LO)1
Given:
SHA VOR N5243.3 W00853.1
CRK VOR N5150.4 W00829.7
Aircraft position N5230 W00930
Which of the following lists two radials that are applicable to the aircraft position?
SHA 248°
CRK 325°

318. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1) DME 50 NM,
CRK VOR/DME (N5150.4 W00829.7) DME 41 NM,
Aircraft heading 270°(M),
Both DME distances increasing.
What is the aircraft position?
N5200 W00935

319. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1) DME 41 NM,
CRK VOR/DME (N5150.4 W00829.7) DME 30 NM,
Aircraft heading 270°(M),
Both DME distances decreasing.
What is the aircraft position?
N5215 W00805

320. For this question use chart E(LO)1
Given:
CRN DME (N5318.1 W00856.5) DME 18 NM,
SHA VOR/DME (N5243.3 W00853.1) DME 30 NM,
Aircraft heading 270°(M),
Both DME distances decreasing.
What is the aircraft position?
N5310 W00830

321. For this question use chart E(LO)1
Given:
CRK VOR/DME (N5150.4 W00829.7)
Kerry aerodrome (N5210.9 W00931.4)
What is the CRK radial and DME distance when overhead Kerry aerodrome?
307° - 43 NM

322. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1)
Birr aerodrome (N5304 W00754)
What is the SHA radial and DME distance when overhead Birr aerodrome?
068° - 41 NM

323. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1)
Connemara aerodrome (N5314 W00928)
What is the SHA radial and DME distance when overhead Connemara aerodrome?
333° - 37 NM

324. For this question use chart E(LO)1
What feature is shown on the chart at position N5211 W00931?
KERRY/Farranfore aerodrome

325. For this question use chart E(LO)1
What feature is shown on the chart at position N5212 W00612?
TUSKAR ROCK LT.H. NDB

326. For this question use chart E(LO)1
What feature is shown on the chart at position N5311 W00637?
Punchestown aerodrome

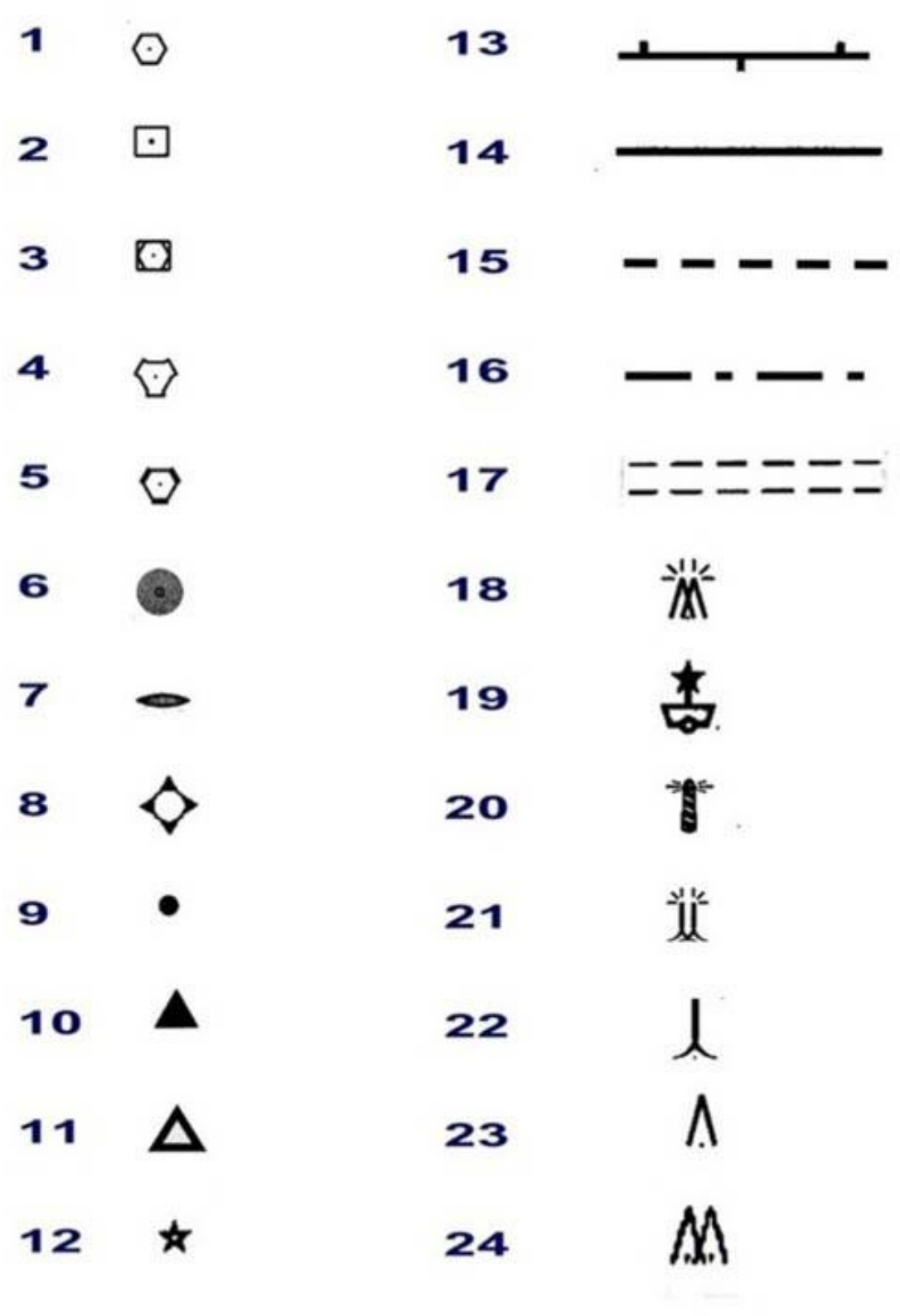
327. For this question use chart E(LO)1
Which of the following lists all the aeronautical chart symbols shown at position N5318.0 W00626.9?
Military airport: VOR: DME

328. For this question use chart E(LO)1
Which of the following lists all the aeronautical chart symbols shown at position N5318.1 W00856.5?
Civil airport: NDB: DME: non-compulsory reporting point

329. For this question use chart E(LO)1
Which of the following lists all the aeronautical chart symbols shown at position N5211 W00705?
Civil airport: NDB

330. Which of the aeronautical chart symbols indicates a VOR/DME?

3



331. Which of the aeronautical chart symbols indicates a DME?

2

332. Which of the aeronautical chart symbols indicates a VOR?

1

333. Which of the aeronautical chart symbols indicates an NDB?

6

334. Which of the aeronautical chart symbols indicates a TACAN?
4

335. Which of the aeronautical chart symbols indicates a VORTAC?
5

336. Which aeronautical chart symbol indicates a Flight Information Region (FIR) boundary?
13

337. Which aeronautical chart symbol indicates an uncontrolled route?
16

338. Which aeronautical chart symbol indicates the boundary of advisory airspace?
15

339. Which aeronautical chart symbol indicates a non-compulsory reporting point?
11

340. Which aeronautical chart symbol indicates a compulsory reporting point?
10

341. Which aeronautical chart symbol indicates a Way-point?
8

342. Which aeronautical chart symbol indicates an unlighted obstacle?
23

343. Which aeronautical chart symbol indicates a group of unlighted obstacles?
24

344. Which aeronautical chart symbol indicates a group of lighted obstacles?
18

345. Which aeronautical chart symbol indicates an exceptionally high unlighted obstacle?
22

346. What is the meaning of aeronautical chart symbol No. 12?
Aeronautical ground light

347. What is the meaning of aeronautical chart symbol No. 19?
Lightship

348. Which aeronautical chart symbol indicates an aeronautical ground light?
12

349. Which aeronautical chart symbol indicates a lightship?
19

350. The sun's declination is
The sun's position relative to the plane of the Equator

351. The planets move around the Sun
In elliptical orbits

352. The direction of the Earth's rotation on its axis is such that
Observed from the point above the North Pole, the rotation is counterclockwise.

353. In its path around the Sun, the axis of the Earth has an inclination
Of 66º 33' with the plane of the path

354. The inclination of the earth's axis of rotation with the plane of the ecliptic.
All 3 answers are correct
b) Is stable throughout the year
c) Is causing the seasons, summer and winter
d) Is causing the variation of length of the daylight during a year

355. When the sun's declination is northerly
The daylight period is shorter in the southern hemisphere than the northern

356. The term "Aphelion" is used to describe
The situation when the distance between the sun and the earth is at its longest

357. Consider the following statements on the shape of the earth
It is slightly flattened at the poles

358. The term "Ellipsoid" may be used to describe
The shape of the earth

359. The compression factor of the earth
a) Is so small that it may be ignored when making ordinary maps and charts
b) Is about 1:300
c) Makes the difference between the polar diameter and the equatorial diameter about 22 NM
All 3 answers are correct

360. The poles on the surface of the earth may be defined as
The points where the earth's axis of rotation cuts the surface of the earth

361. The equator is located
On the surface of the earth, being a circle whose plane is perpendicular to the axis of the earth and cutting through the centre of the earth.

362. A great circle is defined as
A circle on the surface of a sphere, whose plane is cutting through the centre of the sphere

363. Consider the following statements on the properties of a great circle:
The great circle running through two positions on the surface of the earth, is the shortest distance between these two positions

364. A small circle
Has a plane that does not pass through the centre of the earth

365. Latitude may be defined as
The angular distance measured along a meridian from the equator to a parallel of the latitude, measured in degrees, minutes, and seconds and named North or South

366. Position A is at latitude 33º45'N and position B is at latitude 14º25'N. What is the change in latitude between A and B?
19º20'

367. An arc of 1 minute of a meridian equals
1 nautical mile

368. The distance between the parallels of latitude 17º23'S and 23º59'N is
2482 NM

369. A correct definition of longitude is
The arc at equator between the Greenwich meridian and the meridian of the place, measured in degrees, minutes and seconds, named East or West

370. Consider the following statements on longitude
The largest value of longitude is 180º

371. The prime meridian is
The meridian running through Greenwich, England

372. What is the change of longitude between A(45º00'N 163º14'E) and B(31º33'N and 157º 02'E)
6º 12' W

373. The highest value of longitude is found
At Greenwich anti meridian

374. Consider the following statements on meridians:
The meridians are parallel only at equator

375. Consider the following statements on meridians:
All meridians run in true direction from South to North

376. If you want to follow a constant true track value
You must fly a rhumb line

377. Consider the following statements on rhumb lines:
Most rhumb lines will run as spirals from the one pole to another

378. The convergency of meridians
Is the angular difference between the meridians

379. An approximate equation for calculating the convergency between two meridians is
Convergency= dlong x sin mean lat.

380. The exact equation for calculating the convergency between two meridians running through two different positions is
Convergency=GCTTin-GCTTfin

381. What is the convergency at 5000N between the meridians 10500W and 14500W on the earth?
30.6°

382. Consider the following statements on the great circle and the rhumb line running through the same two positions
All statements are correct
a) The rhumb line will in most cases be located closer to the equator than the great circle
c) The great circle will in most cases run through an area of higher latitude than the rhumb line
d) The great circle will in most cases be shorter of the two

383. "Conversion angle" is
The angular difference between the rhumb line and the great circle between two positions, measured at any of the positions

384. Given: Great circle from P to Q measured at P=095°
Southern hemisphere
Conversion angle P - Q =7°
What is the rhumb line track P - Q?
088

385. The great circle track X - Y measured at x is 319°, and Y 325°
Consider the following statements:
Southern hemisphere, Rhumb line track is 322°

386. An approximate equation for calculation conversion angle is
CA=0.5 x dlong x sin [mean lat]

387. The term "departure" used in navigation also have the following meaning
Distance in direction East/West, given in nautical miles

388. Consider the following statements on "departure":
As the latitude increases, the departure between two meridians decreases

389. A is at 5500N 15100W and B at 4500 N 16253W
What is the departure?
458 NM

390. You start from P (7000N 01500E) and fly westward along the parallel of latitude for 2 hours at ground speed 220 Kt. What is your position after two hours flight?
00626W

391. The sun moves from East to West at a speed of 15° longitude an hour. What ground speed will give you the opportunity to observe the sun due south at all times at 6000N
450 Kt

392. You expect to have a GS of 300 Kt.. At what latitude will you be able to fly around the Earth in 20 hours?
7352N/S

393. Using latitude and longitude for a place
The location on the earth's surface of this place is defined

394. The term "sidereal" is used
To describe a situation or relationship concerning the stars

395. If the Mean Sun moves 121°30' along the Equator, that equals
8 hours 06 minutes

396. How much time does it take for the Mean Sun to move from meridian 14515E to meridian 02345W?
11 hours 16 minutes

397. A day at a place as measured in local mean time starts
When the mean sun transits the anti meridian of the place in question

398. A is at longitude 01230E and B is at longitude 04315E. LMT in B is 1749.
What is the LMT in A?
1546

399. UTC stands for
Universal Time Co-ordinated

400. Standard time is
The time enforced by the legal authority to be used in a country or an area

401. Daylight Saving Time (Summer Time)
All 3 answers are correct
b) Is used to extend the sunlight period in the evening
c) Is introduced by setting the standard time forward by one hour
d) Is used in some countries

402. The countries having a standard time slow on UTC
Will generally be located at western longitudes

403. The International Date Line is located
At the 180°E/W meridian, or in the vicinity of this meridian

404. Consider the following statements on sunset:
Sunset is the time when the observer at sea level sees the last part of the sun disappear below the horizon

405. Atmospheric refraction
Cause the Sunrise to occur earlier and the Sunset to occur later

406. Consider the following statements on Sunrise and Sunset
At equator sunrise and sunset occur at quite regular times throughout the year

407. What is the definition of "Morning Civil Twilight"?
Morning civil twilight is the period in the morning from the centre of the sun is 6° below the horizon until the upper limb of the sun appears at the horizon

408. "True North" is
The direction along any meridian toward the true north pole

409. Directions are stated
All 3 answers are correct
a) As a reference direction and a number of degrees
b) In degrees with reference to True North when plotted with reference to the latitude/longitude grid on a chart
c) In degrees in a 360 system, starting out clockwise from the reference direction

410. The magnetic meridian in a position is
The horizontal direction of the Earth's magnetic field in that position, toward the magnetic north pole

411. The angular difference between the geographical meridian and the magnetic meridian running through the same position is named
Variation

412. An isogonals
Is a line running through all positions having the same variation

413. A line running through positions where the magnetic and the true meridians are parallel, is called
An agonic line

414. Referring to the Earth's magnetic field,
The inclination is 90° at the magnetic poles

415. In the areas close to the magnetic poles compasses are not to any use in air navigation, mainly because
The horizontal component of the Earth's magnetic field is too weak

416. The forces acting upon the compass needle in a stand-by compass in an aircraft, are
The Earth's magnetic field, the aircraft magnetic field and the effects of attitude and movement of the aircraft

417. The deviation of a compass is described as +4. This means that
The compass heading will have a lower number in degrees than the magnetic heading

418. A Nautical mile is defined as
The average length of a 1 minute arc of a meridian

419. In international aviation the following units shall be used for horizontal distance:
Metres, Kilometres and Nautical miles

420. When dealing with heights and altitudes in international aviation, we use the following units:
Metre and Foot

421. "Kilometre" is defined as
A 1/10000 part of the meridian length from Equator to the pole

422. 1 nautical mile equals
6076 feet

423. How long is 25 Kilometres at 6000N?
13.5 Nautical mile

424. A simple magnet is surrounded by a magnetic field having the following properties:
The field's direction is from the magnets red pole to the magnets blue pole

425. The approximate location of the Magnetic North Pole is
8000N 11000W

426. The total Magnetic Force of the terrestrial magnetic field
Is strongest at the magnetic poles

427. The compass needle marked red
Is called "The North-seeking Pole"

428. In a particular position the total strength of the terrestrial magnetic field is 5 nanotesla.
The inclination is 55°. What is the strength of the horizontal component in this position?
2.87 nanotesla

429. In a particular position the horizontal and the total strength of the terrestrial magnetic field are the same. This position is
At the magnetic equator

430. As you move from a lower to a higher southern magnetic latitude, the characteristics of the terrestrial magnetic field will change:
The inclination will increase and the vertical component of the field will increase

431. Hard iron magnetism in aircraft
Is permanent of nature

432. Soft iron magnetism in aircraft
Is non-permanent of nature, and cannot be reduced by de-gaussing (de-magnetisation)

433. Hard iron magnetism in aircraft may be caused by
All 3 answers are correct
a) Steel components, mainly in engines and undercarriage
b) Magnetic qualities of the cargo or baggage
c) A strike of lightening

434. The directive force acting on a compass needle in an aircraft
Is the resultant magnetic force in the horizontal plane in the position where the compass is installed

435. The magnetic force causing compass deviation will be a force in direction
Perpendicular to the compass needle

436. When an aircraft is moved to a place of lower magnetic latitude
The deviation values will decrease because the horizontal component of the terrestrial field is becoming stronger

437. A direct reading compass is used. Accelerating an aircraft on heading 090 at South Magnetic Latitude will result in
An indication of a right turn on the compass

438. A direct reading compass is used at North Magnetic Latitude.
Starting a right hand turn from heading 300 will result in
All 3 answers are correct
a) At first a compass indication of a left hand turn
b) The turn has to be broken off before the compass indicate the desired end heading 080
c) The compass indication will lag during at least the first 90° of the turn

439. Which of the following will probably NOT result in a deviation change on a DRC?
Turning the ADF on in flight

440. In a typical remote reading compass, the gyro is kept aligned with the magnetic meridian by means of
A torque motor

441. A map is conformal when
The meridians and the parallels of latitude intersect at right angles and when the scale from any selected point is the same in all directions

442. In producing chart projections, the following projection surfaces may be used:
Plane, Cylinder, Cone

443. The term "oblique" in relation to map projections means that
The axis of the cylinder or cone is neither parallel to or perpendicular to the Earth's axis of rotation

444. On an aeronautical chart it is common that
The exact scale vary within the chart

445. On a Lambert conformal chart the scale is correct
At the standard parallels

446. Construct the triangle of velocities on a piece of paper, showing the following data:
TH 305, TAS 135 Kt, W/V 230/40, Period of time from 1130 to 1145.
What is the GS in this period of time?
130 Kt

447. Construct the triangle of velocities on a piece of paper, showing the following data:
TH 305, TAS 135 Kt, W/V 230/40, Period of time from 1130 to 1145.
What is the track in this period of time?
322°

448. The tank capacity of an aircraft is 310 US GAL. Fuel specific gravity is 0,78 kg/litre.
The tanks are now 3/4 full. You want to refuel so that total fuel will be 850 kg.
How much fuel will you have to refuel? Answer in pounds.
360 LB

449. What is the distance to touchdown when you are 670 ft QFE on a 3,2° glideslope approach?
1.96 NM

450. You want to fly 12000 ft above a frozen lake at elevation 930 ft AMSL. You have obtained QNH from an airfield in the area. Climbing, you observe that the air temperature at FL 80 is -20° C. What should your indicated altitude be when you are 12 000 ft above the frozen lake? Use the mechanical computer for the calculations
13950 ft

451. You are flying at FL 80 and the air temperature is ISA+15. What CAS is required to make TAS 240 Kt?
206 Kt

452. What do you understand by the term "white-out"?
When the terrain is covered with snow and the horizon blend with the sky, visual determination of height becoming difficult

453. You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes.
What is the required TAS when you expect WC-25 during the descent?
300 Kt

454. You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes.
What is the required Rate of Descent when you expect WC-25 during the descent?
2570 ft/min

455. You are required to descend from FL 230 to FL 50 over a distance of 32 NM in 7 minutes.
What will the glideslope be when you expect WC-25 during the descend?
5.29°

456. TT from A to B is 167°, and the distance is 140 NM. Variation is 12W at A and 14W at B
You flight-plan WCA 8L. When the remaining distance to B is 35 NM you find that your position is 5 NM right of the flight plan track. Since over A you have steered as flight planned. What change of heading is required at this time to bring you directly to B?
11° left

457. TT from A to B is 167°, and the distance is 140 NM. Variation is 12W at A and 14W at B
You flight-plan WCA 8L. When the remaining distance to B is 35 NM you notice that your position is 5 NM right of the flight plan track. Since over A you have steered as flight planned. What has the drift been since you were overhead A?
10.8 R

458. Fuel flow per HR is 31 US-GAL, total fuel on board is 260 Liter. What is the endurance?
2 HR 13 MIN

459. A fuel amount of 146 Imp Gal allows a endurance of 4 HR 26 Min. What is the corresponding fuel flow?
39.5 US Gal / HR

460. A fuel amount of 160 US Gal allows a endurance of 3 HR 10 Min with a light twin engine piston aircraft. What is the corresponding fuel flow per engine?
25.3 US Gal / HR

461. Given: Fuel flow 42 US Gal / HR, specific gravity 0.72, TAS 210 KT. What is the specific fuel consumption?
0.545 kg / NM air distance

462. Given: Fuel flow 28 Imp Gal / HR, specific gravity 0.72, TAS 154 MPH. What is the specific fuel consumption?
0.68 kg / NM air distance

463. Given: Fuel flow 28 Imp Gal / HR, specific gravity 0.72, TAS 154 MPH. What is the specific range?
1.46 NM air distance / kg

464. Which of the following formula is correct for the calculation of Maximum Range?
Maximum Range = Safe Fuel available x Specific Range

465. Given: fuel flow 6.5 t/HR, specific gravity 0.80, Mach number 0.68, OAT –30°C, headwind component 25 KT. What is the specific fuel consumption?
16.7 kg / NM ground distance

466. Given: CAS 140 kt, FL 80, OAT +20°C. What is the TAS?
164 kt

467. Given: CAS 230 kt, FL 120, OAT -10°C. What is the TAS?
273 kt

468. Given: CAS 324 kt, FL 290, OAT -46°C. What is the TAS?
487 kt

469. Given: TAS 140 kt, FL 80, OAT +20°C. What is the CAS?
120 kt

470. Given: TAS 168 kt, FL 85, OAT -10°C. What is the CAS?
150 kt

471. Given: CAS 140 kt, FL 130, TAS 174. What is the OAT?
0° C

472. Given: CAS 130 kt, PA 1000 ft, TAS 127 What is the OAT?
-8° C

473. Given: CAS 300 kt, M 0.76. What is the PA?
28000 ft

474. Given: CAS 268 kt, M 0.82. What is the PA?
37000 ft

475. Given: FL310, M 0.76. What is the CAS?
280 kt

476. Given: CAS 296 kt, M 0.72, FL 260. What is the OAT?
Is not defined

477. If the TAS exceeds the CAS by 20% at FL 100, the OAT should be
+15°C

478. What is the average TAS climbing from 2000 ft up to FL 120 at standard temperatures, given a CAS 185 KT and QNH 1013?
210 kt

479. What is the average TAS climbing from 1500 ft up to FL 180, given a temperature ISA +15°C, a CAS 230 KT and QNH 1032?
283kt

480. An aircraft is descending from FL 270 to FL 100 following MT 054° and maintaining CAS 250 KT. Given are variation 13°E, temperatures ISA-10°C, W/V 020/60What is your GS?
281 kt

481. An aircraft is following a descent profile of 4 degrees. What is the requested rate of descent at FL 200, assuming a CAS 280 KT, standard temperatures and 30 KT tailwinds?
2850 FT / MIN

482. Due to pressurization problems you are requested to descend with 1000 FT/MIN only from FL 120 down to FL 50 maintaining a CAS 200 KT. What descent profile will you follow at no wind conditions and standard temperature?
2.5°

483. A DR position is to be found
On the desired track

484. The DR position represents
The estimated position taking account of the estimated TAS and wind condition

485. The air position
Shows where the aircraft would be as a result if its TAS and true heading if there were no wind

486. Given an intended track 270°, W/V 040/40, TAS 180 MPH
The DR position is on the intended track

487. Given an intended track 270°, W/V 040/40, TAS 180 MPH
The air position is north of the intended track

488. You should follow a track due north taking account of a north westerly wind. The line connecting your last known position with the DR position represents
The estimated track

489. You should follow a track due north taking account of a north westerly wind. The line connecting your last known position with the air position
Shows a north westerly direction

490. You should follow a track due north taking account of a north westerly wind. You calculated a WCA –8°.
A track error of 2° (right) shows a drift of 10° right

491. The evaluation of your plotting work shows a WCA +3° and a drift 3° left
Your actual position is on the intended track

492. The track plot
Shows the path of the aircraft relative to the ground

493. To establish a track plot you need
At least two pinpoints or fixes

494. An aircraft follows a coastline during a particular time. This coast line is
A line of position

495. Given true heading 256°, VAR 13°E, relative bearing to a station is 333°. The true bearing to the station is
229°

496. Given magnetic heading 075°, variation 4°W, drift angle 12°R, relative bearing to the station 270°. What is the true bearing of the aircraft from the station?
161°

497. Given true heading 066°, variation 4°W, drift angle 12°R, relative bearing to the station 070°. What is the true bearing of the aircraft from the station?
316°

498. Transferring position lines
The lines of position are transferred along to the track line

499. Transferring position lines
The lines of position are transferred at ground speed

500. Transferring position lines
It is unnecessary to plot the lines of position in its original position before transferring them

501. Transferring position lines can be done with
Radials, DME, QDM/QDR

502. Transferring position lines (LOP):An aircraft should follow a true course 120°, given TAS 100 KT and W/V 360/50. It obtains position lines at 1400, 1403, 1406 hours.
1 LOP is transferred by 11.6 NM, 1 LOP by 5.8 NM, the third one is not transferred

503. Transferring range position lines, you should
Transfer the origin and plot the range position lines from the transferred origin

504. According the Kepler's First Law planets travel around the sun in an elliptical orbit. Consider the following statements:
The sun is at one of the 2 foci

505. According the Kepler's First Law planets travel around the sun in an elliptical orbit. Consider the following statements:
The sun is at one of the foci. Aphelion is the position in the elliptical orbit furthest to the sun

506. According Kepler's Second Law the radius vector of the earth's orbit...
Sweeps out equal areas in equal times

507. In the elliptical planetary orbit of the Earth, the orbital speed is fastest...
At perihelion

508. The irregular orbital speed of the Earth as described in the Kepler's Second Law...
Causes the different length of apparent solar days

509. The direction of True North for any observer is:
The direction of the observer's meridian to the North Pole

510. The main reason for the occurrence of seasons on the earth is:
The inclination of the earth axis with regard to the plane of the ecliptic

511. Which statement is true?
The declination of the sun and the latitude of the observer will affect the duration of civil twilight

512. In which statement is the "Mean Sun" best described?
The mean sun is a fictitious sun coinciding each year with the apparent sun at the Spring Equinox and travelling along the celestial equator at uniform speed

513. Which statement about the orbit of the earth is correct?
The orbit of the earth around the sun is an ellipse with the sun at one of the foci

514. The reason that the solar day lasts longer than the sidereal day is that
Both the direction of rotation of the earth around its axis and its orbital rotation around the sun are the same

515. Which definition describes best the notion "Poles"?
The Poles are the points of intersection between the earth's axis and the surface of the earth

516. The length of the apparent solar day varies continuously throughout the year. This is caused by:
The tilt of the earth's axis and the elliptical orbit of the earth around the sun

517. Which figure in the diagram represents the geocentric latitude of position P, which is situated above the surface of the ellipsoid?
Figure B

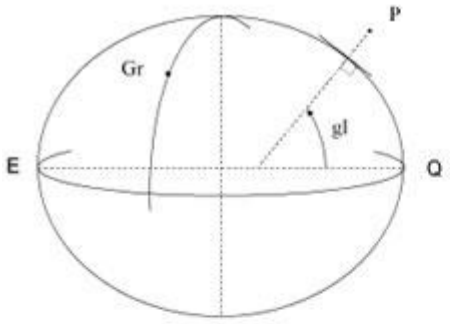


figure A

gl = geodetic latitude

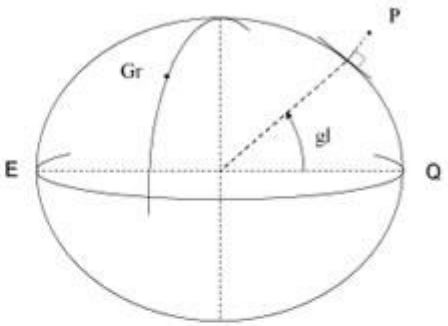


figure B

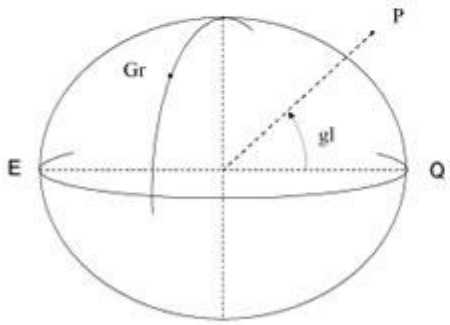


figure C

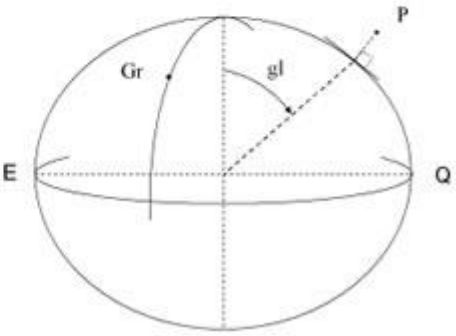


figure D

518. What is the correct definition of latitude of a position on the earth?
Latitude is the angle between the plane of the equator and the line from the centre of the earth to the position

519. Geodetic latitude and geocentric latitude coincide:
At the poles and on the equator

520. Which statement is correct about the apparent solar day?
The apparent solar day is the period between two successive transits of the true sun through the same meridian

521. The time interval between sunrise and sunset is dependent on:
The declination of the sun and the latitude of the observer

522. Which statement regarding the apparent sun and the mean sun is correct?
The apparent sun is the visible sun; the mean sun is a fictitious sun

523. The declination of the sun is defined as:
The angular distance of the sun north or south of the celestial equator

524. An observer is situated on the parallel of latitude of 23.5°S. Which statement about the passage of the apparent sun in relation to this position is correct?
It passes through the zenith once a year around December 22nd.

525. Kepler's second law states that:
The radius vector sun-earth sweeps out equal areas in equal time.

526. Which statement is correct?
The earth is one of the planets which are all moving in elliptical orbits around the sun.

527. Consider the positions (00°N/S, 000°E/W) and (00°N/S, 180°E/W) on the ellipsoid. Which statement about the distances between these positions is correct?
The route via the North Pole is shorter than the route along the equator.

528. On an oblate spheroid representing the earth's shape:
1 minute of arc along the equator measures a greater distance than 1 minute of arc along the meridian at latitude of
45°N/S

529. On the Earth's ellipsoid one degree of latitude near the equator is:
Less than 60 NM

530. A great circle on the earth running from the North Pole to the South Pole is called:
A meridian

531. In which occasions does the rhumb line track and the great circle track coincide on the surface of the earth?
On tracks directly north-south and on east-west tracks along the equator

532. The initial great circle track from A to B is 080° and the rhumb line track is 083°. What is the initial great circle track from B to A and in which hemisphere are the two positions located?
266° and in the northern hemisphere

533. If you are flying along a parallel of latitude, you are flying:
A rhumb line track

534. What is the length of one degree of longitude at latitude 60° South?
30 NM

535. When flying on a westerly great circle track in the southern hemisphere you will:
Experience an increase in the value of true track

536. An aircraft follows a great circle in the northern hemisphere. At a certain moment the aircraft is in the position on the great circle where the great circle direction is 270°(T). Continuing on the great circle the:
Track angle will decrease and the latitude will decrease

537. Two places on the parallel of 47°S lie 757.8 km apart. Calculate the difference in longitude:
10°00'

538. An aircraft is in the position 86°N 020°E. When following a rhumb line track of 085°(T) it will:
Fly via a spiral to the north pole

539. Which definition of the equator is correct?
The equator is a great circle with its plane perpendicular to the earth rotational axis

540. Given:
A (56°N 145°E)
B (57° N 165°W)
What is the difference in longitude between A and B?
050°

541. Which statement about meridians is correct?
A meridian and its anti-meridian form a complete great circle

542. Position A = (30°00.0'N 175°23.2'W)
Position B = (30°00.0'N 173°48.1'E)
For the route from A to B the:
Rhumb line distance is 561.8 NM

543. Position A is (31°00'S 176°17'W)
Rhumb line track (T) from A to B is 270°
Initial great circle track (T) from A to B is 266.2°
The approximate position of B is:
(31°00'S 168°58'E)

544. How many degrees has the mean sun moved along the celestial equator in 8 hours and 8 minutes?
122°

545. In a sunrise/sunset table given for the 28th of June at a certain latitude, sunrise is given as 0239 and sunset is given as 2127.
What is the latitude?
60°N

546. When proceeding, on a given date, along a parallel towards the east, the moment of sunrise will occur one hour earlier every 15° difference in longitude when it is expressed in:
UTC

547. When the time is 2000 UTC, it is:
1400 LMT at 90° West

548. When the time is 1400 LMT at 90° West, it is:
1200 LMT at 120° West

549. At 0000 Local Mean Time of an observer:
The mean sun is in transit with the observer's anti-meridian

550. An aircraft departs from Schiphol (GMT + 1) airport and flies to Santa Cruz in Bolivia (South America) via Miami in Florida. The departure time (off blocks) is 07:45 ST at the 10th of November, taxi time before take off at Schiphol is 25 minutes. The flight time to Miami over the Atlantic Ocean is 09h20m. The total taxi time in Miami to and from the gate is 25 minutes. The time spent at the gate is 02h40m. From Miami to Santa Cruz the airborne time is 06h30m.
Calculate the time and date of touch down in Santa Cruz in ST Bolivia if the difference between ST and UTC is 5 hours:
21:05 10th November

551. Which statement about ST is true?
Standard Time is determined by the government of the appropriate state and does not necessarily follow the borders of 15° wide longitude zones

552. Standard time for some areas is listed in the Air Almanac as UTC + 13 instead of UTC -11. The reason for this is:
Keeping the same date as the political and/or economical entity to which they belong

553. The time difference in Local Mean Time between sunrise at positions A (50°N 120°E) and B (50°S 120°E) on the 21st of November is:
Some hours and the sun rises earlier in B than in A

554. Which statement about the duration of daylight is true?
Close to the equinoxes the influence of latitude on the duration of daylight is at its smallest

555. The SR/SS table for the 23rd of February at latitude 40°N gives:
SR = 06:44
SS = 17:44
At 12:00 Central European Time (UTC + 1) at 40°N:
The sun rises at 64°W

556. Mu'a, Tonga Islands, is situated at (21°11'S 175°07'W). In the Air Almanac the Standard Time of Tonga Islands is listed as UTC + 13.
For August 21st the sunrise table in the Air Almanac shows:
20°S: 06:18
30°S: 06:28
What is the Standard Time of sunrise at Mu'a?
06:59 on August 22nd

557. Position "Elephant Point" is situated at (58°00'N 135°30'W). Standard Time for this location is listed in the Air Almanac as UTC -8.
If sunset occurs at 00:57 UTC on 21 January, what is the time of sunset in LMT?
15:55 on January 20th

558. Refer to the tables below:

The GMT of Morning Civil Twilight at (66°48'N 095°26'W) on 27th of January is?

14:36 GMT

SUNRISE

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	—		—		11	05	10	34	10	11	09	49
70	10	48	10	27	10	07	09	50	09	34	09	18
68	10	01	09	47	09	33		20	09	09	08	56
66	09	30		20	09	09	09	00	08	49		38
64	09	08	09	00	08	50	08	41		33		24
62	08	50	08	42		35		27		20		12
N60	08	34	08	28	08	22	08	15	08	09	08	01
58		22		17		11	08	05	07	59	07	52
56		11	08	06	08	01	07	56		50		44
54	08	01	07	57	07	53		48		42		37
52	07	53		49		45		41		36		31
N50	07	45	07	42	07	38	07	34	07	30	07	25
45		29		26		23		19		17		13
40		15		13		11		07	07	06	07	02
35	07	04	07	02	07	01	07	00	06	56	06	54
30	06	54	06	53	06	52	06	51		48		46
N20	06	37	06	36	06	36	06	36				
10		21		22		22						
0	06	07	06	08	06	08						

MORNING CIVIL TWILIGHT

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	09	21	09	08	08	55	08	42	08	28	08	15
70	08	54	08	44		33		22	08	11	08	00
68		34		26		17	08	07	07	58	07	47
66		18	08	11	08	03	07	55		46		37
64	08	05	07	58	07	52		44		37		29
62	07	54		48		42		35		28		21
N60	07	44	07	39	07	33	07	28				
58		35		31		26						
56		28		24								

559. Refer to the tables below:
The GMT of sunrise at (66°48'N 095°26'W) on 27th of January is?
15:49 GMT

SUNRISE

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	—		—		11	05	10	34	10	11	09	49
70	10	48	10	27	10	07	09	50	09	34	09	18
68	10	01	09	47	09	33		20	09	09	08	56
66	09	30		20	09	09	09	00	08	49		38
64	09	08	09	00	08	50	08	41		33		24
62	08	50	08	42		35		27		20		12
N60	08	34	08	28	08	22	08	15	08	09	08	01
58		22		17		11	08	05	07	59	07	52
56		11	08	06	08	01	07	56		50		44
54	08	01	07	57	07	53		48		42		37
52	07	53		49		45		41		36		31
N50	07	45	07	42	07	38	07	34	07	30	07	25
45		29		26		23		19		17		13
40		15		13		11		07	07	06	07	02
35	07	04	07	02	07	01	07	00	06	56	06	54
30	06	54	06	53	06	52	06	51		48		46
N20	06	37	06	36	06	36	06	36				
10		21		22		22						
0	06	07	06	08	06	08						

MORNING CIVIL TWILIGHT

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	09	21	09	08	08	55	08	42	08	28	08	15
70	08	54	08	44		33		22	08	11	08	00
68		34		26		17	08	07	07	58	07	47
66		18	08	11	08	03	07	55		46		37
64	08	05	07	58	07	52		44		37		29
62	07	54		48		42		35		28		21
N60	07	44	07	39	07	33	07	28				
58		35		31		26						
56		28		24								

560. Refer to the tables below:
What is the duration of morning Civil Twilight at (66°48'N 095°26'W) on 27th of January is?
01h 13 m

SUNRISE

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	—		—		11	05	10	34	10	11	09	49
70	10	48	10	27	10	07	09	50	09	34	09	18
68	10	01	09	47	09	33		20	09	09	08	56
66	09	30		20	09	09	09	00	08	49		38
64	09	08	09	00	08	50	08	41		33		24
62	08	50	08	42		35		27		20		12
N60	08	34	08	28	08	22	08	15	08	09	08	01
58		22		17		11	08	05	07	59	07	52
56		11	08	06	08	01	07	56		50		44
54	08	01	07	57	07	53		48		42		37
52	07	53		49		45		41		36		31
N50	07	45	07	42	07	38	07	34	07	30	07	25
45		29		26		23		19		17		13
40		15		13		11		07	07	06	07	02
35	07	04	07	02	07	01	07	00	06	56	06	54
30	06	54	06	53	06	52	06	51		48		46
N20	06	37	06	36	06	36	06	36				
10		21		22		22						
0	06	07	06	08	06	08						

MORNING CIVIL TWILIGHT

Lat.	January						February					
	23		26		29		1		4		7	
°	h	m	h	m	h	m	h	m	h	m	h	m
N72	09	21	09	08	08	55	08	42	08	28	08	15
70	08	54	08	44		33		22	08	11	08	00
68		34		26		17	08	07	07	58	07	47
66		18	08	11	08	03	07	55		46		37
64	08	05	07	58	07	52		44		37		29
62	07	54		48		42		35		28		21
N60	07	44	07	39	07	33	07	28				
58		35		31		26						
56		28		24								

561. The direction "magnetic north" at a position on the earth is:
The direction of the horizontal component of the earth's magnetic field at that position

562. The direction of magnetic north at a certain position coincides with the direction of:
The horizontal component of the earth's magnetic field

563. Near the magnetic pole:
The horizontal component of the earth's magnetic field is too small to permit the use of a magnetic compass

564. The long term periodic change in the earth's magnetic field:
Is reflected in the slow movement of the magnetic poles

565. The directive force:
Is the component of the earth's magnetic field which aligns the compass needle

566. With an increase in magnetic latitude there will be a decrease in the:
Directive force

567. Deviation on the standby compass is:
Dependent on the heading of the aircraft

568. Given:
Compass Heading = 233°
True Track = 256°
Drift Angle = 10°R
Deviation = -3°
What is the variation?
16°E

569. Which of the following variables affect deviation?
1) Magnetic latitude
2) Aircraft heading
3) Aircraft altitude
4) Aircraft electronic equipment
The combination that regroups all of the correct statements is:
1, 2, 4

570. A nautical mile is equivalent to:
1852 m

571. The maximum difference in distance when proceeding along the great circle between two positions, instead of the rhumb line, will occur:
On east-west tracks at high latitudes

572. On a Direct Mercator projection a particular chart length is measured at 30°N. What earth distance will the same chart length be if measured at 60°N?
A smaller distance

573. On a chart a straight line is drawn between two points and has a length of 4.63 cm. What is the chart scale if the line represents 150 NM?
1: 6 000 000

574. If the chart scale is 1: 500 000, what earth distance would be represented by 7 cm on the chart?
35 000 m

575. How does the scale vary in a Direct Mercator chart?
The scale increases with increasing distance from the equator

576. A straight line is drawn on a Lambert Conformal Conic chart between two positions of different longitude. The angular difference between the initial True Track and the final True Track of the line is equal to:
Chart convergency

577. Where on a Direct Mercator projection is the chart convergency correct compared to the earth convergency?
At the equator

578. An aeronautical chart is conformal when:
At any point the scale over a short distance in the direction of the parallel is equal to the scale in the direction of the meridian and the meridians are perpendicular to the parallels

579. On a Mercator projection the distance between (17°N 035°E) and (17°N 040°E) is 5 cm. The scale at 57°N is approximately;
1: 6 052 030

580. From Rakovnik (50°05.9'N 013°41.5'E) to Frankfurt FFM (50°05.9'N 008°38.3'E) the True Track of departure along the straight line is 272.0°.
The constant of the cone of this Lambert Conformal projection is:
0.79

581. The positions A (30°00'N 017°30'E) and B at longitude (30°00'N 023°30'E) are plotted on a Lambert chart with a constant of the cone of 0.5. A and B are connected by a straight line. The True Track measured at A is 088.5°.
What is the True Track measured at B?
091.5°

582. A straight line from A (53°N 155°W) to B (53°N 170°E) is drawn on a Lambert Conformal conical chart with standard parallels at 50°N and 56°N.
When passing the meridian 175°E, the True Track is:
260.0°

583. The standard parallels of a Lambert chart are 26°N and 48°N and the stated scale is 1 : 2 500 000.
Which statement is correct?
The scale at 28°N is smaller than the scale at 24°N

584. Which statement is correct about the scale of a Lambert projection?
The scale reaches its minimum value at the parallel of origin

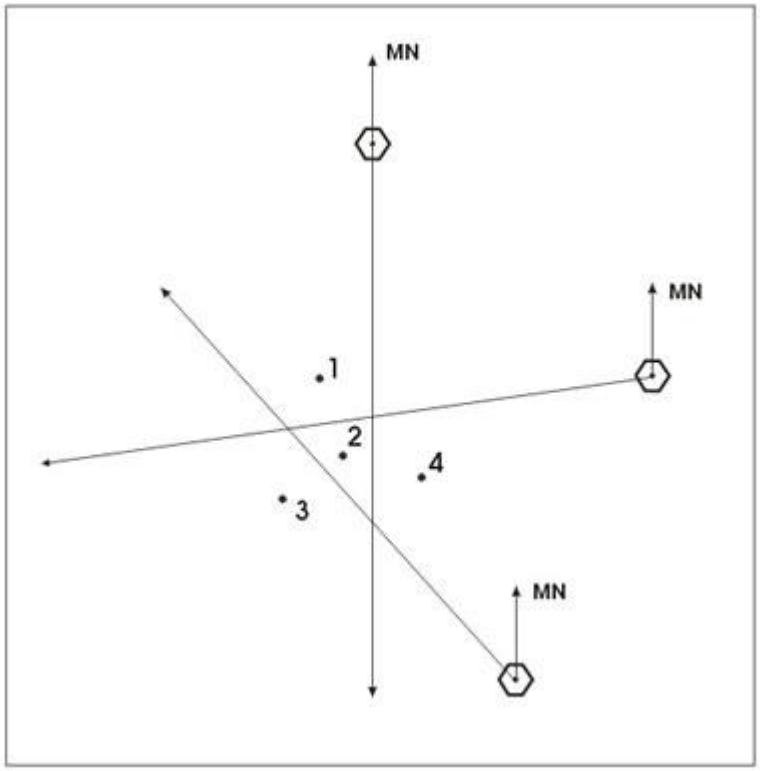
585. On a Mercator projection a straight line is drawn between A (40°N 050°W) and B (50°N 060°W). Calculate the angle between the straight line and the great circle in position A.
3.5°

586. Given:
Position NDB (55°10'N 012°55'E)
DR Position (54°53'N 009°58'E)
NDB on the RMI reads 090°
Magnetic variation = 10°W
The position line has to be plotted on a Lambert Conformal chart with standard parallels at 40°N and 48°N. Calculate the direction (T) of the bearing to be plotted from the NDB.
262°

587. A VOR is situated at position (N55°26' W005°42'). The variation at the VOR is 9°W. The position of the aircraft is (N60°00'N W010°00'). The variation at the aircraft position is 11°W. The initial TT angle of the great circle from the aircraft position to the VOR is 101.5°.
Which radial is the aircraft on?
294

588. An NDB is located at position (N55°26' W005°42'). The variation at the NDB is 9°W. The position of the aircraft is (N56°00' W010°00'). The variation at the aircraft position is 11°W. The initial TT of the great circle from the aircraft position to the NDB position is 101.5°.
What is the Magnetic Bearing of the NDB from the aircraft?
112.5°

589. The fix of the aircraft position is determined by radials from three VOR stations. The measurements contain small random errors, known systematic errors and unknown systematic errors. The measured radials are corrected for known systematic errors and are plotted on a navigation chart. The result is shown in the figure.
What is the most probable position of the aircraft?
1



590. For this question use Route Manual chart E(LO)2:
An aircraft is flying from SALCO (N49 44.2 W003 31.8) to BERRY HEAD BHD (N50 23.9 W003 29.6) on Magnetic Track 007°, TAS 445 kt. The wind is 050°/40 kt, variation 5°W, deviation + 2°
At 1000 UTC the RB of locator PY is 311°.
At 1003 UTC the RB of locator PY is 266°.
Calculate the True Bearing of locator PY at 1003 UTC from the aircraft.
272° (T)

591. The aircraft position is (55°30'N 012°00'E). An NDB is located in position (55°30'N 020°00'E). A conical chart with standard parallels at 40° N and 50°N is used.
What is the direction of the line of position in this chart from the NDB?
273°

592. Given:
True Track 245°
Drift 5° right
Variation 3°E
Compass heading 242°
Calculate the deviation:
5°W

593. Given:
TAS = 480 kt
OAT = ISA - 10°C
FL 300
Calculate the Mach number:
0.83

594. Given:
FL 390
TAS = 440 kt
OAT = ISA + 15°C
Calculate the Mach number:
0.74

595. Given:
FL 390
OAT = ISA + 15°C
CAS = 240 kt
Calculate the TAS, assuming a compressibility factor of 0.96:
468 kt

596. Given:
FL 390
OAT = ISA - 15°C
CAS = 280 kt
Calculate the TAS, assuming a compressibility factor of 0.93:
495 kt

597. An aircraft is flying at FL 390 at a speed of Mach 0.821. OAT = ISA - 4°C. The compressibility factor is 0.942.
Calculate the TAS:
467 kt

598. An aircraft is flying at FL 390 with CAS = 254 kt. OAT = ISA - 4°C. The compressibility factor is 0.942.
Calculate the TAS:
465 kt

599. An aircraft is flying at FL 350 with Mach 0.878. OAT = ISA + 4°C. The compressibility factor is 0.939.
Calculate the TAS:
510 kt

600. Refer to the extract from a flight plan on the table below.
Calculate the average TAS between AA and EE:
252.9 kt

Waypoint	Time Interval	Total Time	TAS
AA			
BB	19	19	252
CC	26	45	256
DD	08	53	259
EE	41	1:34	250

601. Given:
FL 400
OAT = - 65°C
M = 0.90
Calculate the TAS:
506 kt

602. Given:
FL 400
OAT = - 65°C
IAS = 260 kt
Instrument and position error to be neglected
Compressibility factor = 0.935
Calculate the True Air Speed taking compressibility into account:
479 kt

603. Given:
FL 300
OAT = - 45°C
IAS = 260 kt
Instrument and position error to be neglected
Compressibility factor = 0.96
Calculate the True Air Speed taking compressibility into account:
408 kt

604. Given:
FL 350
OAT = - 40°C
IAS = 280 kt
Instrument and position error to be neglected
Compressibility factor = 0.94
Calculate the True Air Speed taking compressibility into account:
487 kt

605. An aircraft is flying at FL 370 at a speed of Mach 0.915. OAT = ISA - 4°C. The compressibility factor is 0.942.
Calculate the TAS:
520 kt

606. An aircraft is flying at FL 370 with CAS = 300 kt. OAT = ISA - 4°C. The compressibility factor is 0.932.
Calculate the TAS:
515 kt

607. An aircraft is flying at FL 350 with CAS = 300 kt. OAT = ISA + 4°C. The compressibility factor is 0.939.
Calculate the TAS:
509 kt

608. Given:
Track = 355°
TAS = 190 kt
W/V 270°/25 kt
After 30 minutes of flying with the planned TAS and TH the aircraft is 3,5 NM right of track and 4.5 NM ahead of the dead reckoning position.
Calculate the actual wind:
254°/34 kt

609. Given:
Mach number .340
Pressure Altitude = 9000 ft
OAT = ISA -15
Calculate CAS:
191 kt

610. Given:
Mach number .340
Pressure Altitude = 9000 ft
OAT = ISA -15
Calculate TAS:
212 kt

611. Given:
TAS = 210 kt
CAS = 190 kt
Pressure Altitude = 9000 ft
Calculate Mach number:
0.34

612. Given:
CAS = 190 kt
Pressure Altitude = 9000 ft
OAT = ISA -15
Calculate Mach number:
0.34

613. Given:
CAS = 190 kt
Pressure Altitude = 9000 ft
OAT = ISA -15
Calculate TAS:
211 kt

614. Given:
True Track = 095°
TAS = 160 kt
True Heading = 087°
GS = 130 kt
Calculate W/V:
057°/36 kt

615. Given:
HDG 265°
TAS 290 kt
W/V 210°/35kt
Calculate Track and Groundspeed:
271° and 272 kt

616. Given:
True Track 239°
True Heading 229°
TAS 555 kt
GS 577 kt
Calculate the wind velocity;
130°/100 kt

617. Given:
HDG 080°T
Track 090°T
TAS = 250 kt
GS 280 kt
Calculate the cross wind component:
43 kt from the left

618. During an approach the Flight Management Display indicates the following values:
HDG = 270°T
GS = 220 kt
W/V = 240°/20 kt
What is the value of the cross wind component and track in this situation?
10 kt from the left and 273°

619. Before departure the ATIS at Buenos Aires airfield announces:
Take-off Runway 35
W/V 050°/20-30kt
Temperature + 20°C
QNH 1000 hPa
On the airport chart for Buenos Aires the direction of runway 35 is given as 347° and the magnetic variation is 5°W.
Calculate the maximum cross wind component for departure:
27 kt

620. An aircraft approaches runway 24 of Ryan airfield. The tower gives a wind of 260°/26 kt. The magnetic variation is 12°E. According to the airport chart the direction of runway 24 is 238°.
Calculate the head/tailwind component:
24 kt headwind

621. Given:
HDG 230°T
GS 340 kt
W/V 270°/40 kt
Calculate the Track and TAS:
Track = 226°, TAS = 370 kt

622. The main purpose of DR navigation is:
To obtain, with reasonable accuracy, the aircraft's position between fixes or in the absence of fixes

623. An aircraft is flying at FL 150, with an outside temperature of -30°, above an airport where the elevation is 1660 ft and the QNH is 993 hPa.
Calculate the true altitude:
13660 ft

624. An aircraft is flying at FL 200. The QNH, given by a meteorological station at an elevation of 1300 ft is 998.2 hPa. OAT = -40°C. The elevation of the highest obstacle along the route is 8000 ft.
Calculate the aircraft's approximate clearance above the highest obstacle on this route:
10500 ft

625. An aircraft is flying at FL 100, OAT = ISA -15°C. The QNH, given by a meteorological station with an elevation of 100 ft below MSL is 1032 hPa.
Calculate the approximate True Altitude of this aircraft (1 hPa = 27 ft):
9900 ft

626. An aircraft is flying at FL 250, OAT = -45°C. The QNH, given by a meteorological station at MSL is 993.2 hPa.
Calculate the approximate True Altitude of this aircraft:
23400 ft

627. An aircraft is flying at FL 100, OAT = ISA -15°C. The QNH, given by a meteorological station at an elevation of 3000 ft MSL is 1035 hPa.
Calculate the approximate True Altitude of this aircraft:
10200 ft

628. An island is observed to be 30° to the right of the nose of the aircraft. The aircraft heading is 290°(M), variation 10°(E).
The bearing °(T) from the aircraft to the island is:
330

629. An aircraft is at position (53°N 006°W) and has a landmark at position (52°47'N 004°45'W), with a relative bearing of 060°.
Given:
Compass Heading = 051°
Variation = 16°W
Deviation = 2°E
What is the true bearing of the position line to be plotted from the landmark to the aircraft on a Lambert Chart with standard parallels at 37°N and 65°N?
278°

630. When wanting to check flight progress by observation of a single visual position line (.e.g. a canal) the latter must be:
More or less perpendicular to the track

631. An aircraft is making a VFR flight under freezing conditions after recent heavy snow fall. Which of the following landmarks will provide the most reliable reference?
A high tension power line

632. Which of the factors named hereafter should be considered by the pilot when selecting landmarks as visual reference points?
1) Possibility of identification
2) Transmitted frequency
3) Visibility
4) Closeness to the track
The combination that regroups all of the correct statements is:
1, 3, 4

633. A visual check point:
Is a distinct point which is easily visually identifiable on the terrain as well as on the chart

634. An aircraft descends from FL 250 to FL 100. The rate of descent is 1000 ft/min, the groundspeed is 360 kt.
The flight path angle is:
1.6°

635. Given:
W/V at arrival aerodrome at 1000 ft AMSL is 230°/15kt, W/V at TOD at FL 130 is 280°/45kt. Average track after TOD is 220°. ISA conditions. Descent speed IAS = 170 kt.
Find the GS during the descent:
163 kt

636. Given:
W/V at arrival aerodrome at MSL is 200°/20kt, W/V at TOD at FL 100 is 260°/50kt. Average track after TOD is 190°. ISA conditions. Descent speed IAS = 150 kt.
Find the GS during the descent:
135 kt

637. The departure airfield is at 2000 ft elevation. Temperature at the field is +20°C, QNH 1013 hPa. The plan is to climb to FL 290, where outside air temperature is -40°C.
The average TAS in the climb should be calculated using what FL and temperature?
FL 200 with temperature -20°C

638. The departure is from an airfield at 2000 ft elevation. Temperature at the field is +20°C, QNH 1013 hPa. The plan is to climb to FL 290, where outside air temperature is -40°C. The CAS in the climb is 180 kt, compressibility negligible.
The average TAS in the climb is:
249 kt

639. An aircraft descends from flight level 180 to ground level. In the table the W/V at various flight levels in the area are given.
Which W/V should be used to solve descent problems, e.g. the calculation of the GS from TAS and the Track in descent?
270°/40 kt

FL	W/V
ground level	260°/ 25 kt
30	270°/ 30 kt
60	270°/ 35 kt
90	270°/ 40 kt
120	280°/ 50 kt
150	285°/ 55 kt
180	290°/ 55 kt

640. An aircraft climbs from ground level to a cruising flight level of 180. In the table the W/V at various flight levels in the area are given.
Which W/V should be used to solve climb problems, e.g. the calculation of the GS from TAS and the Track in climb?
280°/50 kt

FL	W/V
ground level	260°/ 25 kt
30	270°/ 30 kt
60	270°/ 35 kt
90	270°/ 40 kt
120	280°/ 50 kt
150	285°/ 55 kt
180	290°/ 55 kt

641. An aircraft descends from FL 220 to FL 40 for the final approach.
CAS = 220 kt
OAT = ISA +10°C
The average TAS in the descent is:
273 kt

642. An aircraft descends from FL 240 to FL 80 for the final approach.
Track = 070°
CAS = 220 kt
OAT = ISA -10°C
The average TAS in the descent is:
276 kt

643. An aircraft flies from waypoint 7 (63°00'N 073°00'W) to waypoint 8 (62°00'N 073°00'W). The aircraft position is (62°00'N 073°10'W). The cross track distance in relation to the planned track is:
4.7 NM R

644. An aircraft tracks radial 200 inbound to a VOR station with a Magnetic Heading (MH) of 010°. After being overhead the VOR station the aircraft tracks radial 090 outbound with a MH of 080°. The TAS is 240 kt and the magnetic variation in the area is 5°W.
What is the wind vector (T)?
320°/50 kt

645. At 10:15 the reading from a VOR/DME station is 211°/90 NM, at 10:20 the reading from the same VOR/DME station is 211°/120 NM.
Compass Heading = 200°
Variation in the area = 31°W
Deviation = +1°
TAS = 390 kt
The wind vector (T) is approximately:
110°/70 kt

646. For this question use Student Manual Chart E(LO) 1A
An aircraft is flying from Inverness VORDME (N57°32.6' W004°02.5') to Aberdeen VORDME (N57°18.6' W002°16.0').
At 1000 UTC the fix of the aircraft is determined by VORDME Inverness: Radial 114, DME distance 20.5 NM.
At 1006 UTC the fix of the aircraft is determined by VORDME Aberdeen: Radial 294, DME distance 10.5 NM.
What is the average GS of the aircraft between 1000 UTC and 1006 UTC?
280 kt

647. For this question use Student Manual Chart E(LO) 1A
Two consecutive waypoints of a flight plan are Stornoway VORDME (N58°12.4' W006°11.0') and Glasgow VORDME (N55°52.2' W004°26.7').
During the flight the Actual Time over Stornoway is 11:15 UTC and the Estimated Time Over Glasgow is 11:38 UTC.
At 11:21 UTC the fix of the aircraft is exactly over reporting point RONAR.
What is the Revised UTC over Glasgow, based on this last fix?
11:36

648. On a True Heading of 090° the aircraft experiences drift of 5°S. On a True Heading of 180° the aircraft experiences no drift. On both headings the TAS is 200 kt and it is assumed that the wind is the same.
What is the experienced wind speed and direction?
360°/17 kt

649. The True Course in the flight log is 270°, the forecast wind is 045°(T)/15 kt and the TAS is 120 kt.
After 15 minutes of flying with the planned TAS and TH the aircraft is 3 NM south of the intended track and 2.5 NM ahead of the dead reckoning position.
The track angle error (TAE) is:
5°L

650. Flight plan information: TT = 090°, GS = 150 kt, W/V =160°/30 kt.
After 12 minutes of flying the aircraft is 1.5 NM right of track.
The track angle error (TAE) is:
3°R

651. An aircraft descends from flight level 180 to ground level with a constant TAS of 220 kt. The TT in descent is 080°. In the table the W/V at various flight levels in the area are given.
Calculate the average GS in descent:
259 kt

FL	W/V
ground level	260°/ 25 kt
30	270°/ 30 kt
60	270°/ 35 kt
90	270°/ 40 kt
120	280°/ 50 kt
150	285°/ 55 kt
180	290°/ 55 kt

652. For this question use Student Manual Chart E(LO)1A
An aircraft is proceeding from WICK VOR (58°27.6'N 003°05.9'W) to SOLA VOR (58°52.5'N 005°38.4'E). Its ground speed is 218 kt. 27 minutes after having passed WICK the DR position is (58°30'N 000°00'E/W).
The heading correction to be applied to proceed straight to SOLA is:
9° to the left

653. How many NM would an aircraft travel in 1 HR 10 MIN if the GS were 147 kt?
171.5 NM

654. How many NM would an aircraft travel in 2 HR 7 MIN if the GS were 270 kt?
571.5 NM

655. Given: Waypoint 1. 60°S 030°W
Waypoint 2. 60°S 020°W
What will be the approximate latitude shown on the display unit of an inertial navigation system at longitude 025°W?
060°06'S

656. The chart that is generally used for navigation in polar areas is based on a:
Stereographical projection

657. On a Polar Stereographic chart, the initial great circle course from A 70°N 060°W to B 70°N 060°E is approximately:
030° (T)

658. On a polar stereographic projection chart showing the South Pole, a straight line joins position A (70°S 065°E) to position B (70°S 025°W).
The true course on departure from position A is approximately:
225°

659. Two positions plotted on a polar stereographic chart, A (80°N 000°) and B (70°N 102°W) are joined by a straight line whose highest latitude is reached at 035°W.
At point B, the true course is:
203°

660. The following information is displayed on an Inertial Navigation System:
GS 520 kt,
True HDG 090°,
Drift angle 5° right,
TAS 480 kt.
SAT (static air temperature) -51°C.
The W/V being experienced is:
320° / 60 kt

661. Given:
A North polar stereographic chart whose grid is aligned with the zero meridian.
Grid track 344°,
Longitude 115°00'W,
Calculate the true course?
229°

662. On a Transverse Mercator chart, scale is exactly correct along the:
Meridian of tangency

663. Isogrives are lines that connect positions that have:
The same grivation

664. Given:
M 0.80,
OAT -50°C,
FL 330,
GS 490 kt,
VAR 20°W,
Magnetic heading 140°,
Drift is 11° Right.
Calculate the true W/V?
020°/95 kt
True track 131°
TAS 464 KT
XWC from L 88 KT
TAS eff 455 KT
TWC 35 KT

665. On a transverse Mercator chart, the scale is exactly correct along the:
Meridians of tangency

666. On a transverse Mercator chart, with the exception of the Equator, parallels of latitude appear as:
Ellipses

667. An Oblique Mercator projection is used specifically to produce:
Charts of the great circle route between two points

668. Transverse Mercator projections are used for:
Maps of large north/south extent

669. Given:
ILS GP angle = 3.5 DEG,
GS = 150 kt.
What is the approximate rate of descent?
875 FT/MIN

670. Given:
Aircraft height 2500 FT,
ILS GP angle 3°.
At what approximate distance from THR can you expect to capture the GP?
8.3 NM

671. On which of the following chart projections is it NOT possible to represent the north or south poles?
Direct Mercator

672. Which one of the following statements is correct concerning the appearance of great circles, with the exception of meridians, on a Polar Stereographic chart whose tangency is at the pole?
The higher the latitude the closer they approximate to a straight line

673. Which one of the following describes the appearance of rhumb lines, except meridians, on a Polar Stereographic chart?
Curves concave to the Pole

674. What is the value of the convergence factor on a Polar Stereographic chart?
1.0

675. For this question use chart AT(H/L) 1:
What are the average magnetic course and distance between
INGO VOR (N6350 W01640) and Sumburg VOR (N5955 W 00115)?
131° - 494 NM

676. For this question use chart AT(H/L) 1:
What are the average magnetic course and distance between
position N6000 W02000 and Sumburg VOR (N5955 W 00115)?
105° - 562 NM

677. For this question use chart AT(H/L) 1:
An aircraft on radial 315° at a range of 150 NM from
MYGGENES NDB (N6206 W00732) is at position:
N6320 W01205

678. The mean sun
Moves with constant speed along the celestial equator

679. The sun's declination is on a particular day 12.00 S. Midnight sun may this day be observed
South of 7800S

680. As seen from an observer on the surface of the earth
The apparent sun is always in the plane of the ecliptic

681. Observed from a position on the surface of the Earth the heavenly bodies seems to
Move from East to West

682. By the term "transit" of a heavenly body it is understood that
The body is passing the meridian of the observer or another specified meridian

683. A "day" is by definition
The period elapsed between two successive transits of a heavenly body

684. When the length of the day is measured with reference to the passage of the apparent sun
The length of the day will vary in the course of the year

685. The length of a apparent solar day is not constant because
The Earth's speed of revolution in its orbit varies continuously, due to the orbit being elliptical

686. "Apparent Time" is
Based on the time of transit of the apparent Sun

687. The time it takes for the Earth to complete one orbit around the Sun is
365 days 5 hours 48 minutes 45 seconds

688. "Mean time" has been introduced in order to
Introduce a constant measurement of time, independent of the daily variations in the movement of the Sun as observed from the Earth

689. The "Equation of time"
States the difference in time of transit of the Mean sun and the Apparent sun any particular day

690. The relationship between the Mean Sun's movement along the Equator and Mean time is
a) 1° of arc equals 4 minutes of time
b) 180° of arc equals 12 hours of time
c) 5 hours of time equals 75° of arc
All 3 answers are correct

691. What is the difference between UTC and GMT?
UTC is slightly more accurate than GMT, but the difference between the two is so small that it has no importance in everyday navigation of aircraft

692. Some standard times may differ from UTC by other times than whole hours, because
All 3 answers are correct
b) The political authorities have emphasised the importance of the sunlight period in a particular position
c) It has been considered highly desirable that the sunlight period of the day is balanced around noon, standard time
d) Some areas have limited communication with neighbouring areas, which does not call for co-ordinated standard times

693. In the Air Almanac the highest time difference listed for difference between UTC and Standard time is maximum
13 hours

694. When approaching the International Date Line from the East, you
Should be prepared to increase your date by 1
... approaching from the east... What heading will you read on your compass ? Approximately 270°, irrespective of the position. This could be your home in London, Los Angeles or the date line. So you are flying from America direction to Japan and approaching the date line. You will increase the date by 1. Do not mistake the terms "approaching from the east" (with hdg 270°) and "approaching from the eastern hemisphere" (with hdg 090°)

695. Times of Sunrise and Sunset is in the Air Almanac only given for one particular time in every 24 hour period. These data are accurate
a) Enough to be used for all longitudes, when calculating light conditions
b) But may call for an adjustment if the observer is at a high altitude
c) Only for the places on the Greenwich meridian
All 3 answers are correct

696. The times given for Sunrise, Sunset, Morning and Evening twilight in the Air Almanac
Are given in LMT

697. G is in position 3500N 03445W. For a particular date sunrise at 3500N is in the Air Almanac listed as 0715. What is the time of sunrise at G, given in UTC?
0934 UTC

698. On 4 February the Air Almanac lists 1941 as the time of sunset at 5000S.
An observer register sunset at 2113 UTC this day. What is the observers position?
5000S 02300W

699. Twilight
Are the periods before sunrise and after sunset when the light is lower than when the sun is above the horizon

700. The "duration of twilight"
Is generally longer in positions at high latitudes that in positions at lower latitudes

701. For 1 February the Air Almanac lists the following data:
Latitude: 6600N
Morning civil twilight: 0756
Sunrise: 0900
Sunset: 1528
Evening civil twilight: 1632
The duration of morning twilight at 6600N is
1 hour 4 minutes and starts at 0756 LMT

702. "Grivation"
Is the sum of Grid convergence and variation

703. The following values are given:
Grid track: 192, Grid convergence: 48W, Variation: 10E, Deviation: 2W
Find: Magnetic heading when WCA is 9L
MH 221

704. Grid convergence
Is westerly for positions east of the grid datum meridian on the northern hemisphere

705. The purpose of establishing a grid is
To provide a system for directions where a great circle has a constant direction, even if its true direction varies

706. Grivation is 56W when
GH is 103° and MH is 159°

707. Assuming the Earth being a perfect sphere
A 1 minute arc measured on the surface of the Earth will be equally long wherever it is measured
In this question you are not asked about a particular number of minutes in east/west direction. If not otherwise stated, the arc always refers to a great circle. 1 NM remains 1 NM, 1 kilometre remains 1 kilometre. And on a perfect sphere 1 minute of arc (.. of a great circle) is equally long, wherever it is measured.

708. Consider the following statements:
The exact length of a 1' of arc varies a little from position to position because the Earth radius vary

709. Consider the following statements on a freely suspended magnetic needle in the terrestrial magnetic field:
The needle will align itself with the direction of the magnetic lines of force

710. The dip angle in the terrestrial magnetic field is given by the following equation:
Dip = cos-1 (H/T)

711. Consider the following statements on magnetic variation:
The variation is east when True North seems to be located west of Magnetic North

712. Coefficient B, as used in aircraft magnetism, presents
A value representing the deviation registered on headings East and West

713. Deviation on MH 180 is -5 and on MH 000 it is +3. Calculate coefficient C:
Coefficient C = +4

714. Consider the following statements on coefficient A, as used to describe deviation:
a) Coefficient A is the average deviation on all headings
b) Coefficient A will normally be calculated after coefficients B and C has been corrected for
c) Coefficient A may be calculated at any stage during a compass swing
All 3 answers are correct

715. Coefficient A is corrected for
Moving the compass housing around its vertical axis

716. An aircraft has hard iron magnetism only, and this hard iron magnetism is represented by a red pole in relative bearing 070 from the compass.
On what heading will the westerly deviation be maximum?
Heading 020

717. In the calculation of deviation, the following headings are recorded:
MH CH
358 356
091 087
182 186
273 271
Coefficient C is
+3

MH	CH	DEV
N 358	356	+2
E 091	087	+4
S 182	186	-4
W 273	271	+2

Coeff C = (Dev N - Dev S)/2 = (+2 - -4)/2 = 6/2 = +3

718. In the calculation of deviation, the following headings are recorded:
MH CH
358 356
091 087
182 186
273 271
Coefficient B is
+1

719. In the calculation of deviation, the following headings are recorded:
MH CH
358 356
091 087
182 186
273 271
Coefficient A is
+1

720. In discussing parameters P, Q and R of aircraft hard iron magnetism
-Q indicates a blue pole in the left wing

721. The deviation will change with a change in aircraft heading
Because the undesired magnetic pole then is moved relative to the direction of the Earth's magnetic field

722. A "Landing Compass"
Is used to establish aircraft magnetic heading during a compass swing

723. The Polar Stereographic projection is
A plane projection

724. Which map projection is described as follows
- Meridians are straight lines
- The scale vary with latitude
- Most rhumb lines are curved lines
A Lambert conformal or a Polar stereographic projection A plane projection

725. On a polar stereographic chart the scale at the pole is 1 : 5 mill. Calculate the scale of the chart at 6500N:
1 : 4,766 mill

726. If you want a chart where a particular great circle is an exact straight line, you should look for a chart using the
Oblique Mercator projection

727. On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM.
What is the scale of the chart, in the middle of the square described?
1 : 1 984 000
The scale of any chart represents the relation between chart length and earth distance. The chart length is 112 millimetres, the earth distance 2 degrees of latitude (120 NM). In this case the spacing of meridians is of no importance

728. On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM.
What is the latitude in the centre of the described square?
54°

729. On a Lambert conformal chart the distance between two parallels of latitude having a difference of latitude = 2° , is measured to be 112 millimetres. The distance between two meridians, spaced 2° longitude, is, according to the chart 70 NM. The parallel of origin (selected parallel) runs through the middle of the described square. What is the convergence for a dlong of 15° on this map?
12,18°

730. Using mental navigation, the local speed of sound may be found using the following equation:
LSS = 644 + 1,2 TATc

731. Determine the W/V by using the multi-drift method (multiple drift W/V) when the following observations have been made while TAS was 187 Kt:
MH 015: Drift 7R, MH 075: Drift 8R, MH 177: Drift 3L
W/V 328M/29
Determine the crosswind for the first leg (to be calculated from HDG and DA). Draw the crosswind line on your computer. Repeat this procedure for the second and third leg. The 3 lines meet in 1 point which represents the solution

732. Preparing a chart for use of grid means
Selecting a meridian on the chart and drawing lines on the chart, parallel to the meridian selected

733. "Grid convergence"
Is the difference in direction between Grid North and True North

734. Given: fuel flow 8.4 t/HR, specific gravity 0.80, mach number 0.76, OAT –36°C.What is the specific fuel consumption?
18.4 kg / NM air distance

735. How intersect meridians and parallels on a Transverse Mercator Charts with a meridian of tangency E/W000 and E/W180?
All meridians intersect the parallels at an angle of 90°

736. Given a Transverse Mercator chart with constant scale along the 180° meridian.
The scale along the meridian E090 increases from the pole to the equator

737. How are great circles and rhumb lines shown on a Transverse Mercator chart?
Great circles and rhumb lines are shown as curved lines in most cases

738. Given a Transverse Mercator chart of the South Pole with constant scale along the 90°E/W meridian. How can the equator been shown on this chart?
The equator is shown as a straight line

739. How are great circles shown on a Transverse Mercator chart?
Great circles are shown as curved lines with the exception of the equator, the meridian of tangency and the meridian perpendicular to the meridian of tangency

740. Given a Transverse Mercator chart with the prime meridian as meridian of tangency. The scale at the pole is 1 : 6'000'000.
At the 180E/W meridian the scale is constant

741. Circle of tangency on a Oblique Mercator chart
Any great circle can be chosen as circle of tangency with the exception of
- great circles running through the pole
- the equator

742. Scale of an Oblique Mercator chart
The scale is constant along the circle of tangency

743. Given an Oblique Mercator chart. Which statement is correct regarding scale?
The scale can be taken as constant for practical purposes because the chart is produced for navigation along the great circle route chosen as circle of tangency

744. Great circles on an Oblique Mercator chart:
The circle of tangency is shown as straight line

745. Use of an Oblique Mercator chart:
If the great circle between 2 points is chosen as circle of tangency this route is shown as straight line

746. A route is flown from (80°S 100°W) to (80°S 140°E). At 180°E/W the Grid Track (GT) and True Track (TT) on a Polar Stereographic chart, whose grid is aligned with the Greenwich meridian, are respectively:
110°(G) and 290°(T)

747. A route is flown from (85°S 100°E) to (85°S 140°W). At 180°E/W the Grid Track (GT) and True Track (TT) on a Polar Stereographic chart, whose grid is aligned with the Greenwich meridian, are respectively:
250°(G) and 070°(T)

748. A route is flown from (80°S 100°W) to (80°S 140°E). At 160°W the Grid Track (GT) and True Track (TT) on a Polar Stereographic chart with a grid orientated on the 180° meridian are respectively:
290°(G) and 270°(T)

749. A route is flown from (85°S 100°E) to (85°S 140°W). At 160°E the Grid Track (GT) and True Track (TT) on a Polar Stereographic chart with a grid orientated on the 180° meridian are respectively:
070°(G) and 090°(T)

750. Thule VOR is located at (76°32'N 68°15'W). A Polar Stereographic chart with the grid aligned with the Greenwich meridian is to be used. The local variation is 75°W. Which grid track must be maintained to track radial 210(M) inbound?
023°(G)

751. A route is drawn from (75°00'N 060°00'E) to (75°00'N 030°00'W) on a Polar Stereographic chart with the grid aligned with the Greenwich meridian. The Grid Track (GT) is:
255°(G)

752. Route A - B is drawn on a Polar Stereographic chart whose grid is aligned with the Greenwich meridian. The True Track of the straight line at A (75°N 010°W) is 080°. What is the Grid Track when passing the meridian 050°E?
090°(G)

753. Route A - B is drawn on a Polar Stereographic chart whose grid is aligned with the Greenwich meridian. The True Track of the straight line at A is 060°. When passing the meridian 100°E, the True Track is 090°. The Grid Track of this route on the chart is:
350°(G)

754. Route A - B is drawn on a Polar Stereographic chart whose grid is aligned with the Greenwich meridian. The True Track of the straight line at A (75°S 010°W) is 080°. What is the Grid Track when passing the meridian of 050°E?
070°(G)

755. Route A - B is drawn on a Southern Polar Stereographic chart whose grid is aligned with the Greenwich meridian. The True Track of the straight line at A is 120°. When passing the meridian of 100°E, the True Track is 090°. The Grid Track of this route on the chart is:
190°(G)

756. On which of the following chart projections it is not possible to represent the north or south poles?
Direct Mercator

757. Two places are situated on the same parallel in the southern hemisphere. The great circle, rhumb line and the straight line between these places are drawn on a Polar Stereographic Projection.
Which statement is correct?
The great circle is situated between the parallel and the straight line, because the concave side of the great circle is always pointed towards the pole

758. For navigation a Polar Stereographic chart is used. The aircraft position is (70°N 035°E). An NDB station is located in position (70°N 050°E). Variation at the aircraft's position is 32°E, variation at the NDB is 60°E. Deviation is + 2°.
The direction of the LOP in the chart from the NDB with reference TN is:
278°

759. For this question use chart E(LO)1
Given:
SHA VOR/DME (N5243.3 W00853.1) radial 048°/22 NM.
What is the aircraft position?
N5300 W0830

760. An aircraft is flying at FL 200, OAT = ISA +10°C. The QNH, given by a meteorological station with an elevation of 1000 ft is 1010 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
20700 ft

761. An aircraft is flying at FL 120, OAT = ISA -15°C. The QNH, given by a meteorological station with an elevation of 2500 ft is 995 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
11000 ft

762. The frequency of a VOR is 117.5 MHz. What is the corresponding wavelength?
2.55 m

763. Which statement is correct about the scale of a Polar Stereographic projection of the Northern polar area?
The scale reaches its minimum value at the north pole

764. Which statement about the Polar Stereographic Chart is true?
The closer to the pole, the more a great circle will coincide with the straight line on the chart

765. Refer to the deviation table of a Direct Reading Compass below.
The desired True Heanding is 155°. The variation in the area is 10°W. What should be the indication for the Direct Reading Compass?
164°

to fly	000	030	060	090	120	150	180	210	240	270	300	330
steer	359	030	061	092	121	150	178	209	242	272	298	331

766. When an aircraft flies into the vicinity of one of the magnetic poles, why does the magnetic compass becomes unreliable or even useless?
The horizontal component becomes so weak that the directive force is insufficient for a reliable compass indication

767. Position A: (50°00.0'N, 138°30.0'W). ST(a) = UTC - 9 hrs.
Position B: (50°00.0'N, 175°45.0'E). ST(b) = UTC + 12 hrs.
The ground distance between A and B is 1736 NM.
On 4 February at 08:00 ST(a) an aircraft is exactly above A. At the moment the aircraft arrives at position B the air distance between A and B is 1636 NM. The average tailwind component from A to B was 25 kt.
Calculate the time of arrival at B.
09:00 ST(b) 05/02

768. Departure A (25°N, 175°W) on 7 January at 1423 LMT. Difference UTC and ST(a) is 11 hours.
Destination B (15°N, 155°E). Difference UTC and ST(b) is 10 hours.
Distance along the great circle between A and B is 1790 NM. Average head wind component is 19 kt, average TAS is 400 kt.
Calculate time (Standard time) and date of arrival at B.
16:45 08/01

769. Route A (53°24'N, 015°54'E) to B (32°00'N, 052°51'W).
Distance flight plan is 3150 NM, average GS is 450 kt.
Difference between Standard Time A and UTC is 1 hour, difference between Standard Time B and UTC is 4 hours.
Estimated Time of Arrival (ETA) B is 10:00 ST(b) on 5 August.
Caluclate the Estimated Time of Departure (ETD) A, expressed in Standard Time A.
08:00 ST(a) 05/08

770. Estimated Time of Departure A (15°15.0'N, 072°06.0'W) on 12 March is 01:00 ST (ST = UTC - 5hrs).
Estimated Time of Arrival B (55°18.0'N, 005°45.0'E) 16:15 ST on the same date (ST = UTC + 1 hr).
According to the Jeppesen table sunset at B occurs at 18:20.
Calculate the flight time from A to B and the time between arrival and sunset at B.
09h15m and 02h42m

771. The sidereal day is:
Of constant duration

772. In a Polar Stereographic Chart the grid lines:
Run parallel to the reference meridian

773. Which statement is true about crossing the date line?
When approaching the date line from the east (on a westerly heading) one day is gained

774. Which statement is true about crossing the date line?
When approaching the date line from the west (on an easterly heading) one day is lost

775. What is the great circle distance between A (85N, 172°W) and B (85°N, 008°E)?
600 NM

776. Spring and autumn equinox are the moments at which the sun reaches:
A declination of 0°

777. The time of sunrise and sunset expressed in LMT:
Varies with the observer's latitude and the time of the year because of the earth axis' inclination with respect to the plane of its orbit

778. The difference between the initial true track of the great circle on the surface of the earth joining two positions A and B (of unequal northern latitude and eastern longitude) and the true track of arrival at B is equal to:
The earth convergency of the meridians at A and B

779. A good approximation of the shape of the earth is:
An ellipsoid

780. An aircraft is flying directly from A (55°N, 005°E) to B (45°N, 055°W). At a certain moment in time the True Track of the aircraft is 275°. The aircraft is on track and the track angle error is 0°.
Which statement about this situation is correct?
The aircraft is flying along the great circle from A to B and did not yet pass the vertex of this great circle

781. An aircraft is flying directly from A (30°S, 060°W) to B (25°S, 020°W). At a certain moment in time the True Track of the aircraft is 091°. The aircraft is on track and the track angle error is 0°.
Which statement about this situation is correct?
The aircraft is flying along the great circle from A to B and did not yet pass the vertex of this great circle

782. Given two positions: A (56°S, 010°W) B (56°S, 030°W)
Which statement is true?
The departure between A and B is more than the great circle distance between A and B

783. Which statement about the vertex of a great circle is true?
In the vertex the great circle reaches its highest latitude

784. Which statement about the vertex of a great circle is always true?
In the vertex the True Track is 090° or 270°

785. Which statement is true about small circles?
The centre of small circles does not coincide with the centre of the earth

786. Parallels of latitude are special cases of rhumb lines because of which property?
They intersect all meridians at the same angle of 90°

787. Given: A (50°N 070°W) and B (50°N 080°W), and the position of one of the vertices of the great circle between A and B as being equal to (50°06.4'N 075°00.0'W), what is the position of the other vertex of this great circle?
(50°06.4S, 105°00.0'E)

788. Summer and winter solstice are the moments at which the sun reaches:
Its highest/lowest declination

789. What is meant by the term 'polar circle'?
It is the parallel at the lowest latitude at which an observer can see the sun for 24 hours above the horizon

790. The polar circles are situated at:
66.5°N and S

791. The tropic of cancer is situated at:
23.5°N

792. The tropic of Capricorn is situated at:
23.5°S

793. By 'Ecliptic' is meant:
The apparent yearly path of the sun around the earth

794. Calculate the difference in LMT between Dublin (53°29'N, 006°15'W) and Bremen airport (53°09'N, 008°45'E):
01h 00m

795. Calculate the approximate distance from waypoint DBU (53°29.0'N, 000°28.6'W) to a waypoint 20 NM north of Bremen airport. The coordinates of Bremen airport are (53°09.0'N, 008°45.0'E):
329.4 NM

796. Calculate the approximate distance from Dublin (53°29.0'N, 006°15.3'W) to a waypoint 20 NM north of Bremen airport. The coordinates of Bremen airport are (53°09.0'N, 008°45.0'E):
535.7 NM

797. Sunrise in Dublin (53°29'N, 006°15'W) is 06:23 LMT. Calculate the sunrise at Bremen airport (53°09'N, 008°45'E) in LMT:
06:23

798. Which of the following alternatives is correct when you cross the international date line?
The date will increase if you are crossing on a westerly heading

799. The forces acting upon the compass needle in a stand-by compass in an aircraft, are
The Earth's magnetic field, the aircraft magnetic field and the effects of attitude and movement of the aircraft

800. What is the main function of a compass needle?
To determine the direction of the horizontal component of the earth's magnetic field

801. Refer to the deviation table of a Direct Reading Compass below.
The Direct Reading Compass indicates a heading 242°. The variation in the area is 22°E. What is the True Heading of the aircraft?
262°

to fly	000	030	060	090	120	150	180	210	240	270	300	330
steer	359	030	061	092	121	150	178	209	242	272	298	331

802. Refer to the deviation table of a Direct Reading Compass below.
The desired True Heading is 155°. The variation in the area is 10°W. What should be the indication for the Direct Reading Compass?
164°

803. When an aircraft flies into the vicinity of one of the magnetic poles, why does the magnetic compass becomes unreliable or even useless?
The horizontal component becomes so weak that the directive force is insufficient for a reliable compass indication

804. A Lambert conformal conic chart with standard parallels at 54°N and 59°N is used for navigation.
The straight line between A (55°00'.0N, 165°00'.0E) and B (58°00'.0N, 154°00'.0E) is drawn in this chart. The True Track angle along the straight line in A is 301°.
Calculate the direction (°T) of the straight line in position B.
292°

805. A Lambert conformal conic chart with standard parallels at 54°S and 59°S is used for navigation.
The straight line between A (55°00.0'S, 165°00.0'E) and B (58°00.0'S, 154°00.0'E) is drawn in this chart. The True Track angle along the straight line in A is 239°.
Calculate the direction (°T) of the straight line in position B.
248°

806. For navigation a Polar Stereographic chart is used.
The straight line between A (75°00'.0S, 166°00'.0E) and B (78°00'.0S, 154°00'.0E) is drawn in this chart. The True Track angle of the rhumbline is 223°.
Calculate the direction (°T) of the straight line in position B.
229°

807. For navigation a Polar Stereographic chart is used.
The straight line between A (75°00'.0N, 166°00'.0E) and B (78°00'.0N, 154°00'.0E) is drawn in this chart. The True Track angle of the rhumbline in B is 317°.
Calculate the direction (°T) of the straight line in position A:
323°

808. For navigation a Polar Stereographic chart is used.
The straight line between A (75°00'.0N, 166°00'.0E) and B (78°00'.0N, 154°00'.0E) is drawn in this chart. The True Track angle of the rhumbline in B is 317°.
Calculate the direction (°T) of the straight line in position B:
311°

809. A Lambert conformal conic chart with standard parallels at 54°N and 59°N is used for navigation.
The straight line between A (55°00.0'N, 165°00.0'E) and B (58°00.0'N, ??°??.?'E) is drawn in this chart. The True Track angle along the straight line at A is 301° and at B is 292°.
Calculate the longitude of position B:
154°12.4'E

810. A Lambert conformal conic chart with standard parallels at 54°N and 59°N is used for navigation.
The straight line between A (55°00.0'N, 165°00.0'E) and B (58°00.0'N, ??°??.?'E) is drawn in this chart. The True Track angle along the straight line at A is 301° and at B is 292°.
Calculate the difference in longitude from A to B:
010°47.6'W

811. What can be said about the area represented on a Lambert projection which lies between the two standard parallels of the chart?
In this area the scale of the chart differs less than 1% from the state scale of the chart

812. On a Lambert conformal projection the chart convergency between two positions depends on:
The difference in longitude of the two positions and the latitude of the parallel of origin

813. On a polar stereographic projection the chart convergency between two positions depends on the:
Difference in longitude of the two positions

814. On a Lambert conformal projection the scale at a point at 60°N in the direction of True North is 1:1.000.000. What is the scale at the same point in an easterly direction?
1:1.000.000

815. Which statement is true about the parallel of origin of a conformal chart?
The parallel of origin is the parallel at which the scale reaches its minimum value

816. Which statement is correct about the scale of a Polar Stereographic projection of the Northern polar area?
The scale reaches its minimum value at the North Pole

817. Which statement is true about the scale of a Lambert projection?
The scale reaches its minimum value at the parallel of origin

818. Given: Lambert conformal conical projection, scale 1:1 234 000. Standard parallels 36°N and 60°N. A (53°N, 010°W), B (53°N, 020°W).
The distance on the map between position A and position B measured along the rhumb line is:
Less than 54.19 cm

819. The constant of the cone in a Lambert chart is 0.8666500. The angle between the north direction of the meridian in position A (65°00'N, 018°00'W) and the meridian of position B (75°00'N, 023°00'W) on the chart is:
4.3°

820. Which statement about the Polar Stereographic Chart is true?
The closer to the pole, the more a great circle will coincide with the straight line on the chart

821. Given:
Waypoint X (53°N, 175°E)
Waypoint Y (53°N, 175°W)
Calculate the final great circle track at Y:
094°

822. The rhumb line track from A (53°50'N, 006°55'E) to B (53°00'N, 003°00'E) is 250°.
Calculate the initial great circle track:
252°

823. The rhumb line track from A (53°50'N, 006°55'E) to B (53°00'N, 015°40'E) is 099°.
Calculate the final True Track along the great circle:
103°

824. The rhumb line track from A (53°50'N, 006°55'E) to B (53°00'N, 015°40'E) is 099°.
Calculate the initial True Track along the great circle:
096°

825. An aircraft is flying at FL 100. The QNH, given by a meteorological station at an elevation of 1500 ft is 990 hPa. OAT = 0°C. The elevation of the highest obstacle along the route is 5000 ft. Use 1hPa = 30 ft.
Calculate the aircraft's clearance above the highest obstacle on this route (rounded off in hundreds of feet:
4500 ft

826. An aircraft is flying at FL 110. The QNH, given by a meteorological station at an elevation of 1500 ft is 1020 hPa. OAT = -10°C. The elevation of the highest obstacle along the route is 7000 ft. Use 1hPa = 30 ft.
Calculate the aircraft's clearance above the highest obstacle on this route (rounded off in hundreds of feet:
4100 ft

827. An aircraft is flying at FL 150. The QNH, given by a meteorological station at an elevation of 1500 ft is 1010 hPa. OAT = -25°C. The elevation of the highest obstacle along the route is 7000 ft. Use 1hPa = 30 ft.
Calculate the aircraft's clearance above the highest obstacle on this route (rounded off in hundreds of feet):
7400 ft

828. An aircraft is flying at FL 100, OAT = ISA -10°C. The QNH, given by a meteorological station with an elevation of 2000 ft is 1020 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
9900 ft

829. An aircraft is flying at FL 120, OAT = ISA -15°C. The QNH, given by a meteorological station with an elevation of 2500 ft is 995 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
11000 ft

830. An aircraft is flying at FL 250, OAT = ISA +5°C. The QNH, given by a meteorological station with an elevation of 3000 ft is 1000 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
25100 ft

831. An aircraft is flying at FL 200, OAT = ISA +10°C. The QNH, given by a meteorological station with an elevation of 1000 ft is 1010 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
20700 ft

832. An aircraft is flying at FL 300, OAT = ISA +15°C. The QNH, given by a meteorological station with an elevation of 3000 ft is 1020 hPa. Use 1hPa = 30 ft.
Calculate the True Altitude (rounded to 100 ft)
31900 ft

833. An aircraft is flying at FL 150. The QNH, given by a meteorological station at an elevation of 1500 ft is 1000 hPa. OAT = -40°C. The elevation of the highest obstacle along the route is 8000 ft. Use 1hPa = 30 ft.
Calculate the aircraft's clearance above the highest obstacle on this route (rounded off in hundreds of feet):
5300 ft

834. Consider the following factors that determine the accuracy of a DR position:
1) The flight time since the last postion update
2) The accuracy of the forecasted wind
3) The accuracy of the TAS
4) The accuracy of the steered heading
The combination that regroups all of the correct statements is:
1, 2, 3, 4

835. The accuracy of the manually calculated DR position of an aircraft is, among other things, affected by:
The flight time since the last position update

836. The accuracy of the manually calculated DR position of an aircraft is, among other things, affected by:
The accuracy of the forecasted wind

837. What may cause a difference between a DR position and a Fix?
The difference between the actual wind and the forecasted wind