Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
		provider for aerodrome forecasts and briefing documents.								
(03)	X	Name the meteorological watch offices (MWOs) as the provider for SIGMET and AIRMET information.	X	X	X	X	X	X		
(04)	X	Name the aeronautical meteorological stations as the provider for METAR and MET reports.	X	X	X	X	X	X		
(05)	X	Name the volcanic ash advisory centres (VAACs) as the provider for forecasts of volcanic ash clouds.	X	X	X	X	X	X		
(06)	X	Name the tropical cyclone advisory centres (TCACs) as the provider for forecasts of tropical cyclones.	X		X	X				
050 10 04 02		International organisations								
(01)	X	Describe briefly the following organisations and their chief activities in relation to weather for aviation: — International Civil Aviation Organization (ICAO) (Refer to Subject 010 'Air Law'); — World Meteorological Organization (WMO).	X	X	X	X	X	X		

Subject 061 - Navigation - General Navigation

Mental dead reckoning (MDR)

Where the term 'mental dead reckoning' (MDR) is used within a Learning Objective (LO), the applicable technique which will be used for the United Kingdom Question Bank (UKQB) questions is based on the methods shown below.

Examination questions will state that an MDR technique is required to produce the solution. If other techniques (e.g. trigonometry) are used to determine the answer, then the determined answer may be incorrect.

MDR crosswind component (XWC)

The XWC can be calculated using a ‘clock code rule’, where each 15° of wind angle is represented by 1/4 of an hour — meaning 1/4 the wind strength.

The XWC can be estimated using the values from the table below:

Wind angle	15	30	45	60
% of wind speed	25	50	75	100

(Wind angle (WA) is the angle between the wind vector and the track/runway direction to the nearest 10°)

Example:

RWY 04 and surface wind from tower is 085°/20 kt. What is the XWC?

WA = 45°

XWC = (0.75) × 20

= 15 kt

MDR headwind component (HWC) / tailwind component (TWC)

The H/TWC can be estimated using the values from the following table:

90° wind angle	10°	20°	30°	40°	50°	60°
% of wind speed	0.2	0.3	0.5	0.6	0.8	0.9

To assist recall, an aid is shown below:

90° wind angle	10°	20°	30°	40°	50°	60°
Aid	1	1	2	2	3	3
% of wind speed	0.2	0.3	0.5	0.6	0.8	0.9

Example:

RWY 04 and surface wind from tower is 080°/20 kt. What is the HWC?

WA = 40°

90° – WA = 50°

HWC = (0.8) × 20

= 16 kt

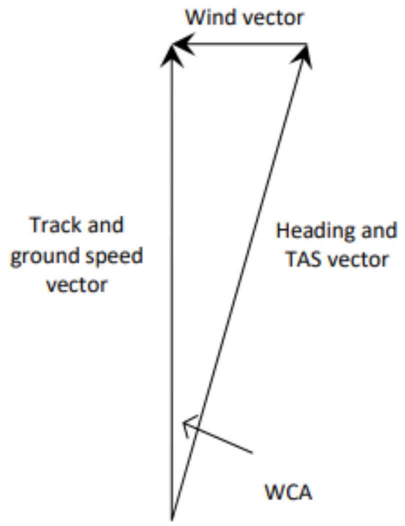
Alternately, for XWC and TWC/HWC MDR calculations, the values in the following table can be used, assuming XWC = wind velocity × sine WA and TWC/HWC = wind

velocity × cosine WA:

90° wind angle	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
Sine	0	0.2	0.3	0.5	0.6	0.8	0.9	0.9	1	1
Aid	0	1	1	2	2	3	3	2	2	1

MDR triangle of velocities (TOV)

Heading is determined by calculating the XWC as previously described, then applying the 1:60 rule to the TOV as follows:



This MDR technique works for the relatively small WCAs which are typical for medium to high TAS values (the ground speed (GS) therefore can be assumed to be equal to the TAS for application of the 1:60 rule).

Example 1:

Planned track = 070° (T)

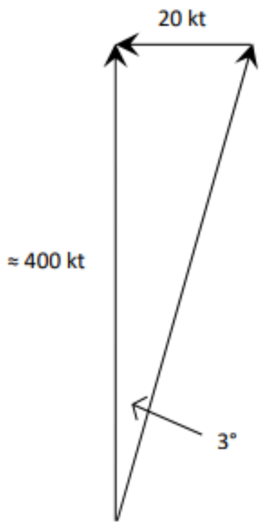
TAS = 400 kt

WV = 100° (T)/40 kt

WA = 30°

XWC = (0.5) × 40

= 20 kt



Heading required = 073° (T)

GS is determined by using the headwind/tailwind example previously explained.

WA = 30°

90° – 30° = 60°

HWC = (0.9) × 40

= 36 kt

GS = 400 – 36 = 364 kt

Example 2:

Planned track = 327° (T)

TAS = 240 kt

WV = 210° (T)/70 kt

WA = 60°

XWC = (0.9) × 7

= 63 kt

WCA = 16°

Heading required = 311° (T)

GS is determined by using the headwind/tailwind example previously explained.

WA = 60°

90° – 60° = 30°

TWC = (0.5) × 70

= 35 kt

GS = 240 + 35 = 275 kt

VFR navigation (061 02 00 00)

The techniques referred to within the LOs are based on the methods as described below.

Mental dead reckoning (MDR) off-track corrections

Based on the 1:60 rule

1 NM of cross-track error (XTE) for every 60 NM along track from waypoint = 1° of track error angle (TKE).

1 NM of XTE for every 60 NM along track to waypoint = 1° of closing angle (CA).

Change of heading required to regain track in same distance as covered from waypoint to position off track = 2 × TKE.

Change of heading required to reach next waypoint from position off track = TKE + CA.

Example 1:

Planned heading is 162° (T), and after 40 NM along track the aircraft position is fixed 2 NM right of planned track. What heading is required to regain track in

approximately the same time as has taken to the fix position?

TKE = 3°

Heading required = 156° (T)

Example 2:

Planned heading is 317° (T), and after 22 NM along track the aircraft position is fixed 3.5 NM left of planned track. What heading is required to fly direct to

the next waypoint which is another 45 NM down track?

TKE = 10°, CA = 5°

Heading required = 332° (T)

Mental dead reckoning (MDR) estimated time of arrival (ETA) calculations

Round the GS to the nearest NM/min, and then make the same percentage adjustment for the distance.

Example:

Distance to go = 42 NM

GS = 132 kt

GS rounded to 120 kt = 2 NM/min

Percentage change = 10 %

Distance = 42 – 10 % = 38 NM

Time = 38 / 2 = 19 min

Unsure-of-position procedure

As soon as the position of the aircraft is in doubt:

1. note the time;
2. communicate if in contact with an air traffic control (ATC) unit to request assistance;
3. consider using any radio-navigation aids that may be available to give position information (do not become distracted from flying the aircraft safely);

4. if short of fuel or near controlled airspace, and not in contact with ATC, set 121.5 MHz and make a PAN call;

5. if that is not necessary, check the directional indicator (DI) and compass are still synchronised and continue to fly straight and level and on route plan heading;

6. estimate the distance travelled since the last known position;

7. compare the ground with your estimated position on the map (look at the terrain for hills and valleys or line featuressuch as a motorway, railway, river or coastline);

8. once the position has been re-established, keep checking the heading (and look out for other aircraft) and continue the flight by updating the estimated position regularly while looking for unique features such as a lake, wood, built-up area, mast, or a combination of roads, rivers and railways.

Procedure when lost

If the unsure-of-position procedure does not resolve the problem:

1. inform someone — call first on the working frequency and state the word 'LOST';

2. if there is no contact on that frequency or there is no frequency selected, change to 121.5 MHz and make a PAN call; select 7700 with ALT on the transponder if fitted.

In all cases: maintain visual meteorological conditions (VMC), note the fuel state, and try to identify an area suitable for a precautionary landing.

Consider the 'HELP ME' mnemonic:

H. High ground/obstructions — are there any nearby?

E. Entering controlled airspace — is that a possibility?

L. Limited experience, low time or student pilot — let someone know.

P. PAN call in good time — don't leave it too late.

M. MET conditions — is the weather deteriorating?

E. Endurance — is fuel getting low?

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
061 00 00 00		GENERAL NAVIGATION								
061 01 00 00		BASICS OF NAVIGATION								
061 01 01		The Earth								

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
00										
061 01 01 01		Form								
(01)	X	State that the geoid is an irregular shape based on the surface of the oceans influenced only by gravity and centrifugal force.	X	X	X	X	X			
(02)	X	State that a number of different ellipsoids are used to describe the shape of the Earth for mapping but that WGS-84 is the reference ellipsoid required for geographical coordinates.	X	X	X	X	X			
(03)		State that the circumference of the Earth is approximately 40 000 km or approximately 21 600 NM.	X	X	X	X	X			
061 01 01 02		Earth rotation								
(01)	X	Describe the rotation of the Earth around its own spin axis and the plane of the ecliptic (including the relationship of the spin axis to the plane of the ecliptic).	X	X	X	X	X			
(02)		Explain the effect that the inclination of the Earth's spin axis has on insolation and duration of daylight.	X	X	X	X	X			
061 01 02 00		Position								
061 01 02 01		Position reference system								
(01)	X	State that geodetic latitude and longitude is used to define a position on the WGS-84 ellipsoid.	X	X	X	X	X			
(02)		Define geographic (geodetic) latitude and parallels of latitude.	X	X	X	X	X			
(03)		Calculate the difference in latitude between any two given positions.	X	X	X	X	X			
(04)		Define geographic (geodetic) longitude and meridians.	X	X	X	X	X			
(05)		Calculate the difference in longitude between any two given positions.	X	X	X	X	X			
061 01 03 00		Direction								

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
061 01 03 01		Datums								
(01)	X	Define 'true north' (TN).	X	X	X	X	X			
(02)		Measure a true direction on any given aeronautical chart.	X	X	X	X	X			
(03)	X	Define 'magnetic north' (MN).	X	X	X	X	X			
(04)		Define and apply variation.	X	X	X	X	X			
(05)		Explain changes of variation with time and position.	X	X	X	X	X			
(06)	X	Define 'compass north' (CN).	X	X	X	X	X			
(07)		Apply deviation.	X	X	X	X	X			
061 01 03 02		Track and heading								
(01)		Calculate XWC by: — trigonometry; and — MDR.								
(02)		Explain and apply the concepts of drift and WCA.	X	X	X	X	X			
(03)		Calculate the actual track with appropriate data of heading and drift.	X	X	X	X	X			
(04)		Calculate TKE with appropriate data of WCA and drift.	X	X	X	X	X			
(05)		Calculate the heading change at an off-course fix to directly reach the next waypoint using the 1:60 rule.	X	X	X	X	X			
(06)		Calculate the average drift angle based upon an off-course fix observation.	X	X	X	X	X			
061 01 04 00		Distance								
061 01 04 01		WGS-84 ellipsoid								
(01)	X	State that 1 NM is equal to 1 852 km, which is the average distance of 1' of latitude change on the WGS-84 ellipsoid.	X	X	X	X	X			
(02)		State that 1' of longitude change at the equator on the WGS-84 ellipsoid is approximately equal to 1 NM.	X	X	X	X	X			
061 01 04 02		Units								
(01)		Convert between units of distance (nautical mile (NM), kilometre (km), statute mile (SM), feet (ft), inches (in)).	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
061 01 04 03		Graticule distances								
(01)		Calculate the distance between positions on the same meridian, on opposite (antipodal) meridians, on the same parallel of latitude, and calculate new latitude/longitude when given distances north-south and east-west.	X	X	X	X	X			
061 01 04 04		Air mile								
(01)		Evaluate the effect of wind and altitude on air distance.	X	X	X	X	X			
(02)		Convert between ground distance (NM) and air distance (NAM) using the formula: NAM = NM × TAS/GS.	X	X	X	X	X			
061 01 05 00		Speed								
061 01 05 01		True airspeed (TAS)								
(01)		Calculate TAS from CAS, and CAS from TAS by: — mechanical computer; and — rule of thumb (2 % per 1 000 ft).	X	X	X	X	X			
061 01 05 02		Mach number (M)								
(01)		Calculate TAS from M, and M from TAS.	X	X						
061 01 05 03		CAS/TAS/M relationship								
(01)		Deduce the CAS, TAS and M relationship in climb/descent/cruise (flying at constant CAS or M).	X	X						
(02)		Deduce CAS and TAS in climb/descent/cruise (flying at constant CAS).			X	X	X			
061 01 05 04		Ground speed (GS)								
(01)		Calculate headwind component (HWC) and tailwind component (TWC) by: — trigonometry; and — MDR.	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(02)		Apply HWC and TWC to determine GS from TAS and vice versa.	X	X	X	X				
(03)	X	Explain the relationship between GS and TAS with increasing WCA.	X	X	X	X	X			
(04)		Calculate GS with: — mechanical computer (TOV solution); and — MDR (given track, TAS and WV).	X	X	X	X	X			
(05)		Perform GS, distance and time calculations.	X	X	X	X	X			
(06)		Calculate revised GS to reach a waypoint at a specific time.	X	X	X	X	X			
(07)		Calculate the average GS based on two observed fixes.	X	X	X	X	X			
061 01 05 05		Flight log								
(01)		Enter revised navigational en-route data, for the legs concerned, into the flight plan (e.g. updated wind and GS and correspondingly losses or gains in time and fuel consumption).	X	X	X	X	X			
061 01 05 06		Gradient versus rate of climb/descent								
(01)		Estimate average climb/descent gradient (%) or glide path degrees according to the following rule of thumb: — Gradient in degrees = (vertical distance (ft) / 100) / ground distance (NM)) — Gradient in % = (vertical distance (ft) / 60) / ground distance (NM)) — Gradient in degrees = arctan (altitude difference (ft) / ground distance (ft)). N.B. These rules of thumb approximate 1 NM to 6 000 ft and are based on the 1:60 rule.	X	X	X	X	X			
(02)		Calculate rate of descent (ROD) on a given glide-path angle or	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		gradient using the following rule of thumb formulae: — ROD (ft/min) = GP° × GS (NM/min) × 100 — ROD (ft/min) = GP% × GS (kt)								
(03)		Calculate climb/descent gradient (ft/NM, % and degrees), GS or vertical speed according to the following formula: — Vertical speed (ft/min) = (GS (kt) × gradient (ft/NM)) / 60.	X	X	X	X	X			
(04)	X	State that it is necessary to determine the position of the aircraft accurately before commencing descent in order to ensure safe ground clearance.	X	X	X	X	X			
061 01 06 00		Triangle of velocities (TOV)								
061 01 06 01		Construction								
(01)		Draw and correctly label the TOV.	X	X	X	X	X			
061 01 06 02		Solutions								
(01)		Resolve the TOV for: — heading and GS (with mechanical computer and MDR); — WV (with mechanical computer); and — track and GS (with mechanical computer and MDR.	X	X	X	X	X			
061 01 07 00		Dead reckoning (DR)								
061 01 07 01		Dead reckoning (DR) technique								
(01)		Determine a DR position.	X	X	X	X	X			
(02)		Evaluate the difference between a DR and a fix position.	X	X	X	X	X			
(03)		Define 'speed factor' (SF). Speed divided by 60, used for mental flight-path calculations.	X	X	X	X	X			
(04)		Calculate wind correction angle (WCA) using the formula:	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
		— WCA = XWC (crosswind component)/SF								
061 01 08 00		Navigation in climb and descent								
061 01 08 01		Average airspeed								
(01)		Average TAS used for climb problems is calculated at the altitude 2/3 of the cruising altitude.	X	X	X	X	X			
(02)		Average TAS used for descent problems is calculated at the altitude 1/2 of the descent altitude.	X	X	X	X	X			
061 01 08 02		Average wind velocity (WV)								
(01)		WV used for climb problems is the WV at the altitude 2/3 of the cruising altitude.	X	X	X	X	X			
(02)		WV used for descent problems is the WV at the altitude 1/2 of the descent altitude.	X	X	X	X	X			
(03)		Calculate the average climb/descent GS from given TAS at various altitudes, and WV at various altitudes and true track.	X	X	X	X	X			
061 01 08 03		Ground speed (GS)/distance covered during climb or descent								
(01)	X	State that most aircraft operating handbooks supply graphical material to calculate climb and descent problems.	X	X	X	X	X			
(02)		Calculate the flying time and distance during climb/descent from given average rate of climb/descent and using average GS using the following formulae valid for a 3°-glide path: — rate of descent = (GS × 10) / 2 — rate of descent = speed factor (SF) × glide-path angle × 100	X	X	X	X	X			
(03)		Given distance, speed and present altitude, calculate the rate of climb/descent in order to reach a certain position at a	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
		given altitude.								
(04)		Given speed, rate of climb/descent and altitude, calculate the distance required in order to reach a certain position at a given altitude.	X	X	X	X	X			
(05)		Given speed, distance to go and altitude to climb/descent, calculate the rate of climb/descent.	X	X	X	X	X			
061 02 00 00		Visual flight rule (VFR) NAVIGATION								
061 02 01 00		Ground features								
061 02 01 01		Ground features								
(01)		Recognise which elements would make a ground feature suitable for use for VFR navigation.	X	X	X	X	X			
061 02 01 02		Visual identification								
(01)		Describe the problems of VFR navigation at lower levels and the causes of reduced visibility.	X	X	X	X	X			
(02)		Describe the problems of VFR navigation at night.	X	X	X	X	X			
061 02 02 00		VFR navigation techniques								
061 02 02 01		Use of visual observations and application to in-flight navigation								
(01)	X	Describe what is meant by the term ‘map reading’.	X	X	X	X	X			
(02)	X	Define the term ‘visual checkpoint’.	X	X	X	X	X			
(03)		Discuss the general features of a visual checkpoint and give examples.	X	X	X	X	X			
(04)		State that the evaluation of the differences between DR positions and actual position can refine flight performance and navigation.	X	X	X	X	X			
(05)	X	Establish fixes on navigational charts by plotting visually derived intersecting lines of position.	X	X	X	X	X			
(06)	X	Describe the use of a single observed position line to check flight progress.	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(07)	X	Describe how to prepare and align a map/chart for use in visual navigation.	X	X	X	X	X			
(08)		Describe visual-navigation techniques including: — use of DR position to locate identifiable landmarks; — identification of charted features/landmarks; — factors affecting the selection of landmarks; — an understanding of seasonal and meteorological effects on the appearance and visibility of landmarks; — selection of suitable landmarks; — estimation of distance from landmarks from successive bearings; — estimation of the distance from a landmark using an approximation of the sighting angle and the flight altitude.	X	X	X	X	X			
(09)		Describe the action to be taken if there is no visual checkpoint available at a scheduled turning point.	X	X	X	X	X			
(10)		Understand the difficulties and limitations that may be encountered in map reading in some geographical areas due to the nature of terrain, lack of distinctive landmarks, or lack of detailed and accurate charted data.	X	X	X	X	X			
(11)	X	State the function of contour lines on a topographical chart.	X	X	X	X	X			
(12)	X	Indicate the role of 'layer tinting' (colour gradient) in relation to the depiction of topography on a chart.	X	X	X	X	X			
(13)		Using the contours shown on a chart, describe the appearance of a significant feature.	X	X	X	X	X			
(14)		Apply the techniques of DR, map reading, orientation, timing	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
		and revision of ETAs and headings.								
061 02 02 02		Unplanned events								
(01)		Explain what needs to be considered in case of diversion, when unsure of position and when lost.	X	X	X	X	X			
061 03 00 00		GREAT CIRCLES AND RHUMB LINES								
061 03 01 00		Great circles								
061 03 01 01		Properties								
(01)		Describe the geometric properties of a great circle (including the vertex) and a small circle.	X	X						
(02)		Describe the geometric properties of a great circle and a small circle, up to 30° difference of longitude.			X	X	X			
(03)	X	Explain why a great-circle route is the shortest distance between any two positions on the Earth.	X	X	X	X	X			
(04)		Name examples of great circles on the surface of the Earth.	X	X	X	X	X			
061 03 01 02		Convergence								
(01)	X	Explain why the track direction of a great-circle route (other than following a meridian or the equator) changes.	X	X	X	X	X			
(02)		State the formula used to approximate the value of Earth convergence as change of longitude × sine mean latitude.	X	X	X	X	X			
(03)		Calculate the approximate value of Earth convergence between any two positions, up to 30° difference of longitude.	X	X	X	X	X			
061 03 02 00		Rhumb lines								
061 03 02 01		Properties								
(01)	X	Describe the geometric properties of a rhumb line.	X	X	X	X	X			
(02)	X	State that a rhumb-line route is not the shortest distance between any two positions on	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
		the Earth (excluding meridians and equator).								
061 03 03 00		Relationship								
061 03 03 01		Distances								
(01)		Explain that the variation in distance of the great-circle route and rhumb-line route between any two positions increases with increasing latitude or change in longitude.	X	X	X	X	X			
061 03 03 02		Conversion angle								
(01)		Calculate and apply the conversion angle.	X	X						
061 04 00 00		CHARTS								
061 04 01 00		Chart requirements								
061 04 01 01		ICAO Annex 4 'Aeronautical Charts'								
(01)		State the requirement for conformality and for a straight line to approximate a great circle.	X	X	X	X	X			
061 04 01 02		Convergence								
(01)		Explain and calculate the constant of the cone (sine of parallel of origin).	X	X	X	X	X			
(02)		Explain the relationship between Earth and chart convergence with respect to the ICAO requirement for a straight line to approximate a great circle.	X	X	X	X	X			
061 04 01 03		Scale								
(01)		Recognise methods of representing scale on aeronautical charts.	X	X	X	X	X			
(02)		Perform scale calculations based on typical en-route chart scales.	X	X	X	X	X			
061 04 02 00		Projections								
061 04 02 01		Methods of projection								
(01)	X	Identify azimuthal, cylindrical	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
		and conical projections.								
061 04 02 02		Polar stereographic								
(01)		State the properties of a polar stereographic projection.	X	X	X	X	X			
(02)		Calculate straight line track changes on a polar stereographic chart.	X	X	X	X	X			
061 04 02 03		Direct Mercator								
(01)		State the properties of a direct Mercator projection.	X	X	X	X	X			
(02)		Given the scale at one latitude, calculate the scale at different latitudes.	X	X	X	X	X			
(03)		Given a chart length at one latitude, show that it represents a different Earth distance at other latitudes.	X	X	X	X	X			
061 04 02 04		Lambert								
(01)		State the properties of a Lambert projection.	X	X	X	X	X			
(02)		Calculate straight line track changes on a Lambert chart.	X	X	X	X	X			
(03)		Explain the scale variation throughout the charts as follows: — the scale indicated on the chart will be correct at the standard parallels; — the scale will increase away from the parallel of origin; — the scale within the standard parallels differs by less than 1 % from the scale stated on the chart.	X	X	X	X	X			
(04)		Given appropriate data, calculate initial, final or rhumb-line tracks between two positions (lat./long.).	X	X	X	X	X			
(05)		Given two positions (lat./long.) and information to determine convergency between the two positions, calculate the parallel of origin.	X	X	X	X	X			
(06)		Given a Lambert chart, determine the parallel of origin,	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane		Helicopter			IR	CB-IR (A) and EIR	Remarks
			ATPL	CPL	ATPL/IR	ATPL	CPL			
		or constant of cone.								
(07)		Given constant of cone or parallel of origin, great-circle track at one position and great-circle track at another position, calculate the difference of longitude between the two positions.	X	X	X	X	X			
061 04 03 00		Practical use								
061 04 03 01		Symbology								
(01)		Recognise ICAO Annex 4 symbology.	X	X	X	X	X			
061 04 03 02		Plotting								
(01)		Measure tracks and distances on VFR and IFR en-route charts. Fix the aircraft position on an en-route chart with information from VOR and DME equipment.	X	X	X	X	X			
(02)		Resolve bearings of an NDB station for plotting on an aeronautical chart.	X	X	X	X	X			
061 05 00 00		Time								
061 05 01 00		Local Mean Time (LMT)								
061 05 01 01		Mean solar day								
(01)	X	Explain the concepts of a mean solar day and LMT.	X	X	X	X	X			
061 05 01 02		Local Mean Time (LMT) and Universal Time Coordinated (UTC)								
(01)		Perform LMT and UTC calculations.	X	X	X	X	X			
061 05 02 00		Standard time								
061 05 02 01		Standard time and daylight saving time								
(01)		Explain and apply the concept of standard time and daylight saving time, and perform standard time and daylight saving time calculations.	X	X	X	X	X			
061 05 02 02		International Date Line								
(01)		State the changes when crossing the International Date	X	X	X	X	X			