



# Headquarters Air Cadets Examination

Senior Cadet  
32/3 Air Navigation  
Generated 17-Jul-00

Serial: 256

1. Use black or dark blue pen, NOT pencil.
2. Mark one answer per question with a cross.
3. If you wish to change an answer, cancel the original mark and mark another single answer.

A selected answer.

A cancelled answer.

Mark:

Name and Initials \_\_\_\_\_

Date of Exam \_\_\_\_\_

Date of Birth \_\_\_\_\_

Squadron/Unit \_\_\_\_\_

Wing \_\_\_\_\_

One degree of latitude is equal to:

- 1/10,000 part of the distance from the North Pole to the Equator
- 360nms
- 60nms
- 60km

In Germany, Kiel is due north of Warzburg. If Kiel's latitude is 54 20N and Warzburg's is 49 48N, how far are they apart:

- 272nm
- 2720nm
- 27.2nm
- 227nm

Rectified Air Speed (RAS) is:

- Pilot pressure minus static pressure
- IAS after correction for pressure error and instrument error
- Always less than IAS
- Always the same as IAS

How fast must an aircraft fly to cover 1200nm in 3 hours:

- 400mph
- 800kts
- 400kts
- 3600kts

What time is used as standard in military and commercial aviation:

- Greenwich mean time (Universal time)
- European daylight saving time
- The time of the country over which the aircraft is flying
- British summer time

A vector is a line, drawn to represent a velocity. This is achieved by:

- The bearing represents knots at all times
- The bearing represents speed and the length represents direction
- The length represents mph at all times
- The bearing of the line represents the direction and the length of the line representing the speed

In the Air Triangle, the heading vector includes 2 components. They are:-

- Heading and wind velocity
- Heading and Groundspeed
- Heading and drift
- Heading and true air speed

You are flying at 120knots groundspeed. How long will it take to fly 20nms:

- 60 minutes
- 10 minutes
- 2 minutes
- 6 minutes

An aircraft departs from base, but does not arrive at the destination, on its Estimated Time of Arrival. What action will Air Traffic Control take:

- Initiate overdue action
- No immediate action is required
- Close down
- Contact the departure base

An aircraft is flying from Point A to Point B. A pinpoint fix shows it to be off track. A line from the pinpoint fix, to point B would be known as:

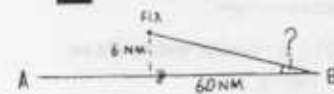
- Track made good
- Heading required
- Revised track
- Track required

An aircraft flies a track made good, 3 degrees in error from the required track. Using the 1 in 60 rule, how many miles will the aircraft be off track after 60 miles of flying:

- 3nms
- 6nms
- 2nms
- 1nm

An aircraft flying from A to B finds itself 6nms off track. It has a further 60nms to travel. What is the required closing angle:

- 2 degrees
- 3 degrees
- 6 degrees
- 10 degrees



- 13 An aircraft when flying from A to B is found to be off track at the pinpoint shown in the diagram. The pilot calculates the track error as 12 degrees and the closing angle of 8 degrees. By how much does the pilot need to turn to reach point B:

- a  12 degrees to the right  
 b  8 degrees to the right  
 c  20 degrees to the right  
 d  4 degrees to the right



- 14 An aircraft flying from A to B finds that after 40nms it is 6nms right of track. If it has a further 30nms to travel, by how much does the pilot need to turn, to regain the intended track at B:

- a  12 degrees left  
 b  21 degrees left  
 c  18 degrees left  
 d  24 degrees right

- 15 All RAF aircraft are equipped with a Direct Indicating Compass (DIC). Why is this:

- a  The DIC gives a reading of true heading  
 b  The DIC is the most accurate compass system available  
 c  The DIC is not affected by turns and accelerations  
 d  The DIC is reliable and needs no power supply

- 16 Which of the following statements, about the gyro-magnetic compass is true:

- a  When the aircraft climbs or descends, the flux valve takes over from the gyroscope  
 b  The gyroscope takes over from the flux valve, whenever the aircraft turns  
 c  The gyro-magnetic compass is less accurate than the Direct Indicating Compass  
 d  The flux-valve controls the speed of the gyroscope

- 17 A gyroscope cannot be perfect, and so over a period of time it becomes inaccurate, this is called:

- a  Gyro rigidity  
 b  Turn/acceleration error  
 c  Variation  
 d  Gyro wander

- 18 As a compass nears the Magnetic North Pole, the compass detector will try to point at the magnetic material inside the Earth. This tilting is called:

- a  Wander  
 b  Dip  
 c  Drop  
 d  Variation

- 19 What principle does an Inertial Navigation System use, to calculate the position of the aircraft:

- a  A gyroscope feeds position to the computer  
 b  The navigator must update the Inertial Navigation system all the time  
 c  It uses compass heading and doppler values to compute aircraft position  
 d  It is set accurately on the ground, and then measures the accelerations in the fore, aft and lateral

- 20 In order to fly in a Visual Circuit, a trainee pilot requires:

- a  No wind  
 b  Good visibility, and no cloud in the sky  
 c  Good visibility and no wind  
 d  Visibility and cloudbase conditions to meet the aerodrome controller's requirements

- 21 The wind is blowing directly down the length of a runway. What is the crosswind component:

- a  Zero crosswind component  
 b  Equal to half the winds speed  
 c  Equal to 3/4 of wind speed  
 d  Equal to the winds speed

- 22 The airfield has a covering of shallow fog. A pilot circling directly overhead, sees the runway lights clearly. However, on the approach to land, he may have great difficulty in seeing some lights. Why is this:

- a  Fog is more dense, closer to the ground  
 b  Fog will appear thicker when on the glide path, because the pilot is looking at a shallower angle  
 c  Runway lights are designed to be seen from high level only  
 d  The thickest fog always settles at the end of the runway

- 23 What problems can be caused by precipitation at freezing temperatures:

- a  Icing  
 b  Crosswinds  
 c  Fog  
 d  Thunderstorms

- 24 What can be the effects of heavy icing, on an aircraft's performance:

- a  Loss of aerodynamics and reduced engine performance  
 b  Loss of aerodynamics only  
 c  It will fly much slower  
 d  There is no adverse effect on the aircraft's performance

- 25 One minute of latitude on the Earth's surface is equal to:

- a  1 knot  
 b  1km  
 c  1 nautical mile  
 d  60 nautical miles