



# Headquarters Air Cadets Examination

Senior Cadet  
32/3 Air Navigation

Generated 12-Aug-03

www.134.org.uk

Serial: 556

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 \_\_\_\_\_

1 One degree of latitude is equal to:

- a ☐ 60km
- b ☐ 1/10,000 part of the distance from the North Pole to the Equator
- c ☐ 360nms
- d ☐ 60nms

2 Oslo Airport (Norway) is due north of Braunschweig airfield, near Hannover (Germany). If their latitudes are 59 53N and 52 20N respectively, how far are they apart:

- a ☐ 453nms
- b ☐ 554nms
- c ☐ 454nms
- d ☐ 445nms

3 In aviation, speed is measured in:

- a ☐ Knots (kts)
- b ☐ Miles per hour (mph)
- c ☐ Kilometres per hour (km/hr)
- d ☐ Metres per hour (m/hr)

4 A Nimrod flies on patrol for 9 hours, at a speed of 300kts. How far does it travel in this time:

- a ☐ 2400nms
- b ☐ 3000nms
- c ☐ 2700nms
- d ☐ 3900nms

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

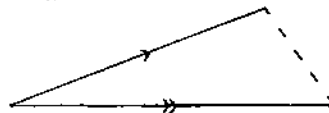
- a ☐ British summer time
- b ☐ European daylight saving time
- c ☐ The time of the country over which the aircraft is flying
- d ☐ Greenwich mean time (Universal time)

6 A Velocity consists of:

- a ☐ Several speed vectors together
- b ☐ Speed and direction together
- c ☐ Direction only
- d ☐ Speed only

7 In the Air Triangle shown here, name the components of the 3rd side, represented by a dotted line:

- a ☐ Drift
- b ☐ Wind direction and speed
- c ☐ Drift and groundspeed
- d ☐ Heading and true airspeed



8 You are flying in a Tornado at 420kts groundspeed. How many nms do you travel each minute:

- a ☐ 7nms
- b ☐ 6nms
- c ☐ 8nms
- d ☐ 42nms

9 Aircrew are always aware of their Estimated Time of Arrival (ETA). Why is this:

- a ☐ ETA is important for fuel calculations and air traffic control purposes
- b ☐ Fuel flow rate depends on ETA
- c ☐ A revised ETA tells them that the wind has changed
- d ☐ It is the Easiest calculation to do

10 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:

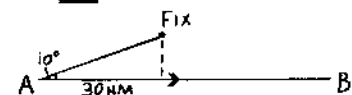
- a ☐ Heading required
- b ☐ Track required
- c ☐ Track made good
- d ☐ Revised track

11 Using the 1 in 60 rule, calculate how many miles off track an aircraft will be, if it flies 60nms with a track error of 2 degrees:

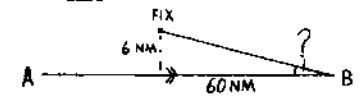
- a ☐ 6nms
- b ☐ 60nms
- c ☐ 4nms
- d ☐ 2nms

12 An aircraft flying from A to B. After flying 30nms, a fix shows the aircraft to have a track error of 10 degrees. How far is the aircraft off track at the time of the fix:

- a ☐ 3nms
- b ☐ 5nms
- c ☐ 2nms
- d ☐ 6nms



- 13 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:
- a ☐ 10 degrees
  - b ☐ 6 degrees
  - c ☐ 3 degrees
  - d ☐ 2 degrees



- 14 An aircraft is flying from A to B, a distance of 120nms. Halfway, a fix shows the aircraft to be 4nms right of track. What heading change does the pilot require to reach point B:
- a ☐ 4 degrees to the left
  - b ☐ 4 degrees to the right
  - c ☐ 8 degrees to the left
  - d ☐ 8 degrees to the right

- 15 An aircraft flying from A to B finds that after 40nms it is 4nms off track. If it has a further 60nms to travel by how much does the pilot need to turn to regain the intended track at B:
- a ☐ 4 degrees
  - b ☐ 6 degrees
  - c ☐ 10degrees
  - d ☐ 12 degrees

- 16 An aircraft flying from A to B finds that after 20nms, it is 2nms right of track. If it has a further 40nms to travel, by how much does the pilot need to turn, to regain the intended track at B:
- a ☐ 6 degrees left
  - b ☐ 6 degrees right
  - c ☐ 9 degrees left
  - d ☐ 12 degrees left

- 17 When would a Direct Indicating Compass be most accurate:
- a ☐ In a steady descent
  - b ☐ In unaccelerated flight
  - c ☐ In a turn
  - d ☐ In a steady climb

- 18 Which of the following, is not a component within a Gyro-magnetic system:
- a ☐ A flux valve magnetic detector
  - b ☐ A suspended magnet
  - c ☐ A turn/acceleration cut out switch
  - d ☐ A gyroscope

- 19 Where are variation values at their greatest:
- a ☐ In polar regions
  - b ☐ In the Northern hemisphere
  - c ☐ At the equator
  - d ☐ In the Southern hemisphere

- 20 Within an Inertial Navigation System, the movement of the aircraft is measured by sensors called:
- a ☐ Accelerometers
  - b ☐ Accelerators
  - c ☐ Inertials
  - d ☐ Axis

- 21 Beginners may only fly in good weather conditions. The conditions are called:
- a ☐ Runway Visual Range
  - b ☐ Instrument Meteorological Conditions
  - c ☐ Visual Circuits
  - d ☐ Visual Meteorological Conditions

- 22 During periods of poor visibility due to fog, Air Traffic Control will advise the pilot of the slant visibility along the runway. This visibility is measured carefully, and is called:
- a ☐ Glide Slope Visibility
  - b ☐ Runway Range
  - c ☐ Radar Visual Range
  - d ☐ Runway Visual Range

- 23 What problems can be caused by heavy rain:
- a ☐ Restricted visibility and flooded runway
  - b ☐ Heavy snow
  - c ☐ Thunderstorms
  - d ☐ Runway Visual Range

- 24 A flight briefing indicated icing conditions on route. The aircraft has no ice protection. What advice would you give to a novice pilot:
- a ☐ Fly above the cloud
  - b ☐ Go faster because the icing will have less effect
  - c ☐ Plan a near route avoiding icing conditions, or cancel the flight
  - d ☐ Go slower because the icing will have less effect

- 25 One minute of latitude on the Earth's surface is equal to:
- a ☐ 60 nautical miles
  - b ☐ 1km
  - c ☐ 1 nautical mile
  - d ☐ 1 knot