



Headquarters Air Cadets Examination

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Air Navigation

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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. 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:

- a ☐ 227nm
- b ☐ 272nm
- c ☐ 27.2nm
- d ☐ 2720nm

2. In aviation, speed is measured in:

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

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

- a ☐ 400kts
- b ☐ 3600kts
- c ☐ 800kts
- d ☐ 400mph

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

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

5. A Velocity consists of:

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

6. In the Air Triangle of velocities, DRIFT is:

- a ☐ The angle between heading and track vectors
- b ☐ The bearing of the wind vector
- c ☐ The angle between the wind and track vectors
- d ☐ The angle between heading and wind vectors

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

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

8. 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:

- a ☐ No immediate action is required
- b ☐ Close down
- c ☐ Contact the departure base
- d ☐ Initiate overdue action

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

10. 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 ☐ 4nms
- b ☐ 2nms
- c ☐ 6nms
- d ☐ 60nms

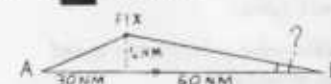
11. An aircraft flies from A to B. After flying 30nms, a fix shows the aircraft to have a track error of 10 degrees. How far is the aircraft off track at the time of the fix:

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



12. An aircraft flies from A to B finds that after 30nms, it is 4nm off track. It has a further 60nm to travel. What is the required closing angle:

- a ☐ 6 degrees
- b ☐ 4 degrees
- c ☐ 2 degrees
- d ☐ 3 degrees



13. An aircraft is flying from A to B, a distance of 120nms. Halfway, a fix shows the aircraft to be 4nm right off track. What heading change does the pilot require to reach point B:

- a ☐ 4 degrees to the right
- b ☐ 8 degrees to the left
- c ☐ 4 degrees to the left
- d ☐ 8 degrees to the right

14. An aircraft flying from A to B finds that after 40nm it is 4nm off track. If it has a further 60nm to travel by how much does the pilot need to turn to regain the intended track at B:

- a ☐ 4 degrees
- b ☐ 12 degrees
- c ☐ 10 degrees
- d ☐ 6 degrees

15. An aircraft flying from A to B finds that after 30nm it is 4nm left off track. If it has further 40nm to travel, by how much does the pilot need to turn, to regain the intended track at B:

- a ☐ 14 degrees to the right
- b ☐ 12 degrees to the left
- c ☐ 14 degrees to the left
- d ☐ 16 degrees to the right

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

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

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

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

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

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

19. 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 ☐ Variation
- c ☐ Dip
- d ☐ Drop

20. Beginners may only fly in good weather conditions. The conditions are called:

- a ☐ Instrument Meteorological Conditions
- b ☐ Runway Visual Range
- c ☐ Visual Circuits
- d ☐ Visual Meteorological Conditions

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

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

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

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 slower because the icing will have less effect
- c ☐ Go faster because the icing will have less effect
- d ☐ Plan a near route avoiding icing conditions, or cancel the flight

25. Which way does the Earth revolve on its axis:

- a ☐ West to East
- b ☐ East to West
- c ☐ South to North
- d ☐ North to South