



# Headquarters Air Cadets Examination

GROUP 5

Staff Cadet

32/4 Pilot 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 \_\_\_\_\_

How does the met office pass information about airfield weather to aircrew:

- a ☐ By TEMPOs and BECMGs
- b ☐ By using TAFs and METARs
- c ☐ By RADAR
- d ☐ By TELEVISION

Why do we put timing (or distance) marks on a map to assist with map reading:

- a ☐ To calculate ETA
- b ☐ To monitor the ground speed
- c ☐ In case we lose our place
- d ☐ To check fuel consumption

How is drift shown in the triangle of velocities:

- a ☐ The angle between track and heading
- b ☐ The angle between heading and wind direction
- c ☐ The angle between track and wind direction
- d ☐ It is not shown at all

Flying at a typical airliner cruising level of 34000 feet, what would you expect the atmospheric pressure outside the a/c to be:

- a ☐ One half of sea level pressure
- b ☐ One tenth of sea level pressure
- c ☐ Three quarters of sea level pressure
- d ☐ One quarter of sea level pressure

If the wind indicated by the isobars on a weather chart is 200 degrees/20kts, what would you expect the surface wind to be:

- a ☐ 175/15
- b ☐ 175/25
- c ☐ 230/15
- d ☐ 200/20

The 4 main reasons that air moves vertically are known as the trigger actions. What are these:

- a ☐ Turbulence, convection, orographic and frontal uplift
- b ☐ Conduction, precipitation, thunderstorms, convection
- c ☐ Turbulence, conduction, orographic, fiscal
- d ☐ Market forces, radiation, x-rays, frontal uplift

What is the best defence against enemy detection of active navigation systems in fast jet a/c:

- a ☐ Use only astro navigation
- b ☐ Climb to service ceiling
- c ☐ Scramble/unscramble the signals
- d ☐ Use only passive systems

Both VOR/DME and TACAN give the same information, is it:

- a ☐ Magnetic track and groundspeed
- b ☐ True heading and range to the beacon
- c ☐ Airway centreline and distance
- d ☐ Magnetic bearing and range to beacon

In the early stages of training, students are made to concentrate on which method of navigation:

- a ☐ Astro navigation
- b ☐ Air plot
- c ☐ Map reading
- d ☐ Mechanical track plot

If the highest obstacle near your track is 1750ft, what is your safety altitude:

- a ☐ 2700ft
- b ☐ 3800ft
- c ☐ 2800ft
- d ☐ 1800ft

How many elements of the vector triangle are needed in order that the triangle may be solved:

- a ☐ 3
- b ☐ 4
- c ☐ half
- d ☐ 6

Most large a/c have cabin pressurization systems to maintain air pressure inside the a/c fairly close to sea level pressure. Why is this:

- a ☐ It keeps the cabin warm
- b ☐ It maintains the oxygen level
- c ☐ It reduces the a/c fuel consumption
- d ☐ It helps the stewardesses keep the passengers calm

In the northern hemisphere, if you stand with your back to the wind, where is the higher pressure air:

- a ☐ On your left
- b ☐ In front of you
- c ☐ On your right
- d ☐ Above you

What is the main difference between map reading on the ground and in the air:

- a ☐ There is no time in the air to discuss where we are
- b ☐ You don't have to wear an oxygen mask on the ground
- c ☐ You do not need waterproof maps in the air
- d ☐ The scale of maps is so different

15 The radio compass works on the same principle as which of these equipments:

- a ☐ A radio sonar bouy
- b ☐ A gyro magnetic compass
- c ☐ A radio 1 transmitter
- d ☐ A small portable radio

16 Which of the following would you not expect to find on an air traffic control flight plan:

- a ☐ Windforecast
- b ☐ Callsign
- c ☐ Persons on board
- d ☐ Destination

17 In the triangle of velocities, which vector represents the wind velocity:

- a ☐ The vector with one arrowhead
- b ☐ The vector with two arrowheads
- c ☐ The angle between track and heading
- d ☐ The vector with three arrowheads

18 Why must you be very careful if using an OS map to work out safety altitudes:

- a ☐ The map does not cover a large enough area
- b ☐ The grid is based on kilometre squares
- c ☐ The map is out of date
- d ☐ The elevations are in metres

19 Which units are used to measure pressure in the atmosphere throughout Europe:

- a ☐ Inches of mercury
- b ☐ Millibars
- c ☐ Atmospheres
- d ☐ Hectonewtons

20 What causes the air pressure at sea level:

- a ☐ Depression
- b ☐ The weight of the air above it
- c ☐ All the aircraft flying around
- d ☐ The movement of highs and lows on the weather chart

21 What is the most important characteristic of a map reading feature:

- a ☐ It must be small enough
- b ☐ It must be tall enough
- c ☐ It should be unique
- d ☐ It must be large enough

22 What is the major disadvantage of radar in combat a/c:

- a ☐ It only works at night
- b ☐ You need a weapon systems operator to use it
- c ☐ It gives away your location
- d ☐ It only works at low level

23 In the early days of aviation what did pilots have to rely on for navigation:

- a ☐ Map reading
- b ☐ The navigator
- c ☐ The observer
- d ☐ The stars

24 What must a pilot do in order to complete the Pilot Navigation log card:

- a ☐ Extract the tower frequencies from the navigation handbook
- b ☐ Measure the tracks with a protractor and the distances with dividers
- c ☐ Measure the tracks with dividers and the distances with a protractor
- d ☐ Ensure the a/c has the correct equipment fitted

25 An aircraft is flying at 2000ft above sea level, towards a hill whose peak is 1000 metres above sea level. If the pilot takes no further action, will the a/c:

- a ☐ Hit the hill more than half way up the slope
- b ☐ Miss the hill by 1000 metres
- c ☐ Miss the hill by 1000ft
- d ☐ Hit the hill near the peak