



# Headquarters Air Cadets Examination

Staff Cadet  
32/4 Pilot Navigation

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Serial: 365

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 RADAR
- c ☐ By using TAFs and METARs
- d ☐ By TELEVISION

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

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

Why do you need to know the outside air temperature at operating altitude in order to complete your flight planning:

- a ☐ To ensure that the passengers meals stay frozen
- b ☐ To ensure that the engines will work
- c ☐ To calculate IAS from mach No
- d ☐ To calculate TAS from RAS

If an a/c fuel tank was filled with water, it would contain 5000 pounds of water. If this water is now replaced by fuel at an SG of 0.80, how heavy would the fuel be:

- a ☐ 8000 pounds
- b ☐ 400 gallons
- c ☐ 5000 pounds
- d ☐ 4000 pounds

In which 2 countries would you expect to be told by air traffic control to fly at a height of 300 metres instead of 1000 feet:

- a ☐ USA and Mexico
- b ☐ Russia and China
- c ☐ UK and Ireland
- d ☐ Australia and New Zealand

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

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

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

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

In the tornado GR variants, a computer generated low level map can be superimposed over the radar picture. What does this enable the Navigator to do:

- a ☐ Take quick, accurate fixes
- b ☐ Avoid carrying paper maps
- c ☐ Spot the golf courses he/she would like to play
- d ☐ Use look down, shoot down missiles

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

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

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

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

As well as solving the triangle of velocities, what other information is logged on the Pilot Navigation log card:

- a ☐ Met forecast of icing and thunderstorms
- b ☐ Amount of fuel received from tanker
- c ☐ Time for each leg and fuel required
- d ☐ Time for each leg and a/c registration

Why do we use units of volume for a/c fuel, even though it would be more correct to measure its mass:

- a ☐ The Americans don't like doing it that way
- b ☐ It is impossible to weigh the fuel in the air
- c ☐ The fuel is affected by outside air temperatures
- d ☐ The mass of the fuel depends on its type

What is the major difficulty with map reading from an a/c at high level:

- a ☐ The weather
- b ☐ Everything looks so small
- c ☐ The maps are not accurate enough
- d ☐ Vertical features cannot be seen

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

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

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

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

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

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

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

If you saw the term CAVOK in weather report, what would it mean to you:

- a ☐ Visibility 5km, cloud base 10,000ft
- b ☐ Combat all-terrain vehicles ok
- c ☐ Visibility better than 5km, no cloud below 10,000ft
- d ☐ Visibility better than 10km, no cloud below 5,000ft

20 What are clouds made of:

- a ☐ Visible droplets of water
- b ☐ Water vapour
- c ☐ Scotch mist
- d ☐ Steam

21 What is the major variable in the atmosphere which affects weather:

- a ☐ Water in all its forms
- b ☐ Cigarette smoke
- c ☐ Temperature
- d ☐ Pressure

22 The first long range Navigation System to give world wide coverage was Omega. This is now being replaced by what system:

- a ☐ TCAS
- b ☐ ILS
- c ☐ LORAN
- d ☐ GPS

23 The name of a fix that you get from reading a map is known as a:

- a ☐ DR position
- b ☐ Pinprick
- c ☐ Pinpoint
- d ☐ Air position

24 What is the quickest and most accurate way of solving the vector triangle:

- a ☐ Mentally
- b ☐ Using a sheet of graph paper
- c ☐ Using the Dalton DR computer
- d ☐ Using a word processor

25 Outside the USA, what units are used to measure atmospheric pressure:

- a ☐ Millimetres of mercury
- b ☐ Millibars
- c ☐ Pounds per square inch
- d ☐ Inches of mercury