



# Headquarters Air Cadets Examination

GROUP 1

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 \_\_\_\_\_

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

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

2 When the temperature drops to the dew point, but is still above freezing, what kind of weather can you expect:

- a ☐ Fog
- b ☐ Rain
- c ☐ Thunderstorms
- d ☐ Sleet

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

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

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

6 What is the best thing for an aviator to do about thunderstorms:

- a ☐ Stay on the ground
- b ☐ Pass downwind of them
- c ☐ Avoid them by a wide margin
- d ☐ Use the radar to go through the centre

7 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

8 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 ☐ Use look down, shoot down missiles
- c ☐ Avoid carrying paper maps
- d ☐ Spot the golf courses he/she would like to play

9 What is the name of the first worldwide fixing aid:

- a ☐ Sputnik
- b ☐ GPS
- c ☐ Omega
- d ☐ Loran

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

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

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

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

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

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

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

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



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 radio 1 transmitter
- c ☐ A radio sonar bouy
- d ☐ A small portable radio

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

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

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

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

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

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

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

20 What causes the air pressure at sea level:

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

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 The best passive navigation system is:

- a ☐ Twin inertial with omega
- b ☐ Loran with astro
- c ☐ Astro alone
- d ☐ Triple inertial with GPS

23 The civilian equivalent of TACAN is known as:

- a ☐ VOR/DME
- b ☐ OMEGA
- c ☐ ADF
- d ☐ LORAN

24 What is the purpose of the Pilot Navigation log card:

- a ☐ It records the instrument readings every 6 minutes
- b ☐ It tells the pilot where the a/c is
- c ☐ It enables the pilot to plan the flight
- d ☐ It is an accurate record of the flight for squadron statistics

25 If the fuel tanker has its fuel delivery guages calibrated in different units from the receiver aircraft fuel guages, what method of conversion would the crew use:

- a ☐ A DR computer
- b ☐ A calculator
- c ☐ A fuel weight and volume conversion chart
- d ☐ Any of the other three answer methods