



# Headquarters Air Cadets Examination

Leading Cadet  
32/2 Basic Navigation  
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Serial: 411

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 The difference between grid north and true north in the UK:

- a  Always equals zero degrees
- b  Is at least 2 degrees in most places
- c  Is not more than 2 degrees in most places
- d  Changes a little each year

2 Turning a map so that identifiable features are in their relative position is called:

- a  Setting
- b  Clocking
- c  Turning
- d  Mapping

3 Correctly orientating your map will help you to:

- a  Measure distances more accurately
- b  Read place names more easily
- c  Determine your approximate location more easily
- d  Read the numbers on contour lines more easily

4 From the diagram of the star constellation The Plough, which letter indicates the correct position of the pole star?

- a  W
- b  Z
- c  X
- d  Y



5 A freely-suspended magnetic needle will point:

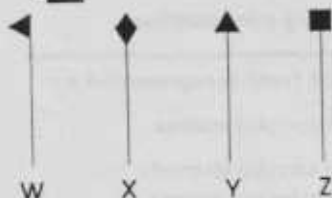
- a  To grid north
- b  To the magnetic north pole
- c  To the geographical north pole
- d  Straight down to the ground

6 The Earth's magnetic pole is located:

- a  In the same place as the grid north pole
- b  Slightly north of Hudson Bay in Canada
- c  In the same place as the true north pole
- d  In northern Siberia

7 Which of these symbols represents true north?

- a  Z
- b  W
- c  Y
- d  X



8 What is the angular difference between true north and magnetic north called?

- a  Compass error
- b  Magnetic deviation
- c  Magnetic differential
- d  Magnetic variation

9 The angular difference between grid north and magnetic north is:

- a  Magnetic difference angle
- b  Magnetic variation
- c  Grid variation
- d  Grid magnetic angle

10 When using a magnetic compass, why is it particularly important to hold it horizontal when taking a reading?

- a  To ensure that the needle floats freely
- b  To eliminate compass errors
- c  To improve damping
- d  To minimise the effect of local magnetic attraction (eg. from wire fences, electric cables, etc)

11 What is compass deviation?

- a  The difference between magnetic north and grid north
- b  The effects of nearby ferrous metals or magnetic materials on a compass needle
- c  The effects of non-magnetic and non-ferrous metals on a compass needle
- d  The difference between magnetic north and true north

12 The final step in setting a map with a compass is to:

- a  Turn the map and compass together until the needle is inside the orientating arrow
- b  Turn the map and compass together until the needle is pointing south
- c  Turn the compass only until it is pointing at north
- d  Turn the map only until it is pointing north

13 To take a bearing between 2 features on a map you would first place the compass on the map so that its longest edge runs through both features and its direction of travel arrow points in your intended direction of travel. You would then:

- a  Turn the capsule on the compass to deduct the grid magnetic angle
- b  Turn the map and compass together until the needle falls into the orienting arrow
- c  Turn the capsule on the compass so that its orienting lines are parallel to the north-south grid line
- d  Turn the capsule on the compass until the needle falls into the orienting arrow

14 The direction of a line drawn between two places on a map is measured against the grid lines and found to be 110 degrees (Grid). If magnetic north is 6 degrees west of grid north what is the magnetic bearing of the line?

- a  104 degrees (M)
- b  116 degrees (M)
- c  108 degrees (M)
- d  110 degrees (M)

15 The 6 figure GR shown would be:

- a  064 375
  - b  385 056
  - c  056 385
  - d  375 064
- 37      38



16 You are at a point where variation is 1 degree W, and Grid Magnetic Angle is 6 degrees W. If the compass bearing of a trig point is 150 degrees what is its Grid bearing?

- a  144 degrees
- b  143 degrees
- c  156 degrees
- d  157 degrees

17 How much time should be added to a journey for every 200 metres of steep descent, using Naismith's rules?

- a  10 minutes
- b  20 minutes
- c  15 minutes
- d  5 minutes

18 When navigating, in order to reduce the area of uncertainty to a minimum, you should:

- a  Always follow paths
- b  Measure distances and bearings as accurately as possible
- c  Walk as quickly as possible to your destination
- d  Never follow contours

19 Following linear features to guide you close to your destination is known as:

- a  Handrailing
- b  Contouring
- c  Using attack points
- d  Aiming off

20 Which of these types of air mass brings cold dry weather with little or no cloud to the British Isles in winter?

- a  Polar continental via the long sea route
- b  Polar maritime
- c  Polar continental via the short sea-track
- d  Returning polar maritime

21 An occluded front is represented by:

- a  A line carrying squares
- b  A line carrying alternate semicircles and squares
- c  A line carrying semicircles
- d  A line carrying alternate semicircles and triangles

22 Generally, an area of high pressure will tend to bring:

- a  Long periods of poor weather
- b  Long periods of fine weather
- c  Fast moving wet weather systems
- d  Fast moving fine weather systems

23 Isobars are lines drawn on a weather map joining points of equal:

- a  Windspeed
- b  Temperature
- c  Pressure
- d  Humidity

24 Upper winds are generally responsible for:

- a  Poor weather
- b  Fine weather
- c  The strength of the surface wind
- d  Movement of a depression

25 When alto is used as a prefix in a name of a type of cloud, that cloud may be found at:

- a  Any level
- b  Low level
- c  Medium level
- d  High level