O-0215

DETERMINE AZIMUTHS ON A MAP USING TWO POINTS

CONDITIONS

Given a protractor, pencil, straightedge, and a map. You are away from mission base, and must move to another location. You have plotted your position on the map, and the position you are to move to. Now you want to determine the direction to move. Or, you have shot a magnetic bearing to a landmark, and wish to plot this bearing on a map from your position in order to verify the landmark.

OBJECTIVES

Within 2 minutes, the team leader determines the azimuth from one point to another on the map and converts it to the magnetic azimuth. Within 2 minutes, the team member must convert a magnetic azimuth to a grid azimuth and plot it from a known point on a map.

TRAINING AND EVALUATION

Training Outline

1. This task is essential for using a compass and map together. In order to navigate, you must be able to convert a compass heading to a line on a map, and convert a line on a map to a compass heading. Before you train on this task, ensure you can perform task O-0213, Convert Between Map And Compass Azimuths.

2. To determine a magnetic azimuth between two points on a map

a. The objective (protractor) method:

1) Plot both points on a map.

2) Draw a line between the two points (and beyond the second point if necessary to ensure the line is longer than the radius of the protractor).

3) Position a protractor with the center point over the first point (your location), and ensure that the " 0° " mark on the protractor points is aligned with north on the map (called grid north)

4) Read the number off the protractor that is on the line. This is the map (either True or Grid, depending on the map) azimuth.

5) Convert the azimuth to a magnetic azimuth (see separate task O-0213).

b. Alternate method for measuring azimuths without a protractor. First draw the line between the points as described above, and then:

1) With an orienteering (Silva) compass:

(a) Place the compass on the map with one of the baseplate side edges on the line you drew.

(b) While keeping the baseplate still, rotate the compass dial until the "N" on the dial points to grid (or true) north on the map.

(c) Read the number on the compass dial that is in line with "Read Bearing Here" arrow on the baseplate. This is your grid (or true) azimuth).

2. With a lensatic compass (this is less accurate than using a protractor or orienteering compass):

(a) Orient the map to magnetic north (see separate task O-0217)

(b) Place the compass on the map so that the straightedge on the left side of the compass on the line you drew (if your compass does not have a straightedge, use the sighting wire. This is less accurate).

(c) Read the number on the compass dial under the fixed black index line on the glass. This is your magnetic azimuth. If you need a true or grid azimuth, convert as needed (see separate task O-0213).

4. To plot an azimuth on a map.

a. Using a protractor:

1) Ensure you are working with a grid azimuth. If not, convert it (see separate task O-0213).

2) Mark the location you wish to plot the azimuth from on the map.

3) Place the center hole of the protractor on that point, with the 0 degree mark aligned with grid north on the map.

4) Place a mark by the point on the protractor corresponding with the grid azimuth.

5) With a straightedge, connect the two marks.

b. Using an orienteering compass.

1) Ensure you are working with a grid azimuth. If not, convert it (see separate task O-0213).

2) Rotate the compass dial until the azimuth you want to plot is in line with the "Read Bearing Here" line on the base plate.

3) Mark the location you wish to plot the azimuth from on the map.

4) Without rotating the compass dial. Place the center of the compass dial over that point, with the 0 degree (North) mark on the compass dial, oriented with true north.

5) Place a mark on the map at the end of the "Read Bearing Here" line.

6) With a straightedge, connect the two marks.

c. Using a lensatic compass (less accurate):

1. Orient the map to magnetic north (see separate task O-0216)

2. Ensure you are working with a magnetic azimuth. If not, convert it

3) Mark the location you wish to plot the azimuth from on the map.

4). Place one end of the straight edge on the side of the compass on the mark you made on the map.

5) Keeping the straight edge of the compass on the mark, rotate the compass until the index mark lines up with the magnetic azimuth you wish to plot.

6) Draw a line along the compass straight edge. (If your compass does not have a straightedge, you can use the sighting wire, but this is not very accurate).

Additional Information

More detailed information on this topic is available in Chapter 5 of the Ground Team Member and Leader Reference Text.

Evaluation Preparation

Setup: Provide the individual with a protractor, a pencil, a straightedge, and a map with a two points marked on it. Show him which is the start point, and which is the point he wants to go to.

Brief Team Leader: Tell the ground team leader to tell you the magnetic azimuth from the start point to the finish point. Then give him a magnetic azimuth, and instruct him to plot that from the same start point on the map.

Evaluation

Performance Measures	Results	
NOTE: IF THE MAP IS A TRUE NORTH MAP, THE MEMBER SHOULD CONVERT TO AND FROM TRUE NORTH, OTHERWISE, THE MEMBER SHOULD CONVERT TO AND FROM GRID NORTH.		
The individual determines a Magnetic Azimuth:		
1. Determines the correct true (or grid) azimuth from the start to the finish point +/- 2 degrees.	P	F
2. Correctly converts it to a magnetic azimuth	P	F
3. Performs steps 1 and 2 within 2 minutes	P	F
The individual Plots a Magnetic Azimuth:		
4. Correctly converts it to a grid (or true) azimuth	P	F
5. Plots it from the start point +/- 2 degrees	P	F
6. Performs steps 4 and 5 within 2 minutes	P	F

Student must receives a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.