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Lab Exercise 2

Directions and Compass Readings

Lab Exercise and Activities

SECTION 1

Compass Points

1. Label 16 compass points on Figure 2.1, using color pencils on the compass rose itself to distinguish the categories of division (include a legend for your color scheme). In each division the points are listed clockwise.

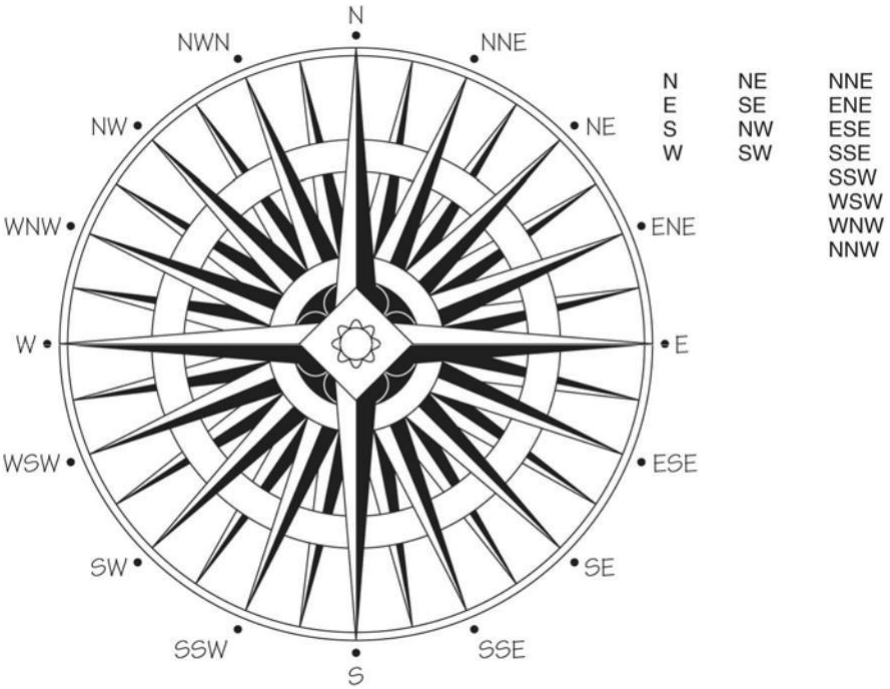

Figure 2.1

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✳ SECTION 2

Azimuths

1. Figure 2.2 has a few azimuths drawn and labeled as examples. Using your protractor, determine the azimuth readings for *A* and *B*, labeling the value for each on the diagram.
2. Measure, draw, and label the following azimuths on the diagram: 230°, 78°, 145°.

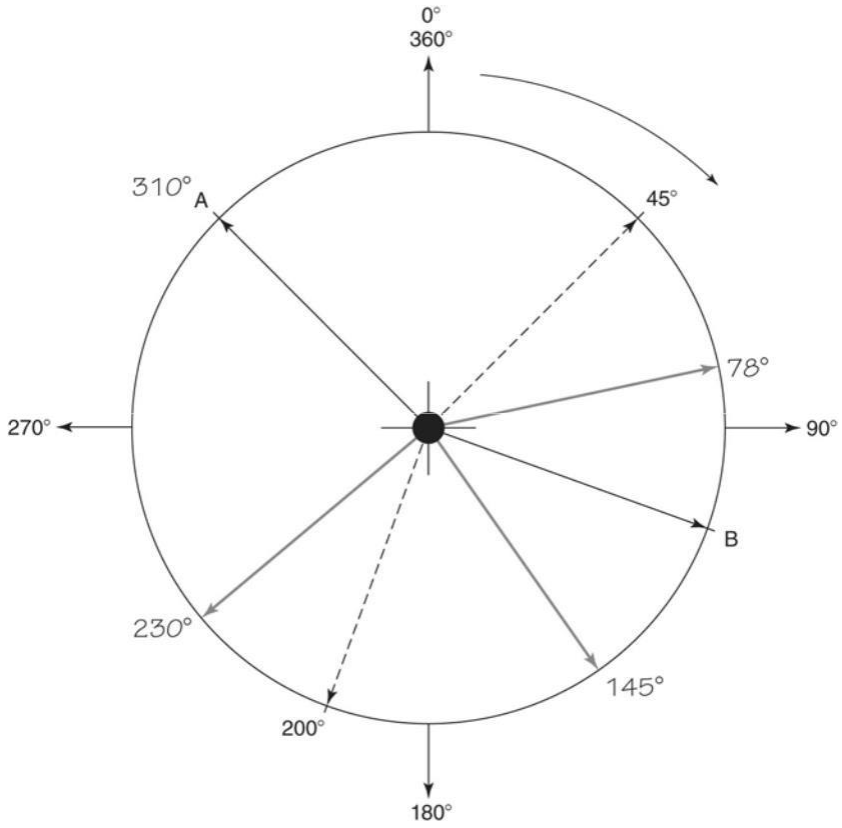

Figure 2.2
Azimuths

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SECTION 3

Quadrant Compass Bearings

1. Figure 2.3 has two bearings drawn and labeled as examples for you. The north bearing is 35° east from north; the south bearing is 85° east from south.

a) Using your protractor, determine the bearings for **A** and **B**, labeling the values on the diagram.

b) Measure, draw, and label the following bearings on the diagram: N 67° E, N 60° W, S 55° W, S 10° E.

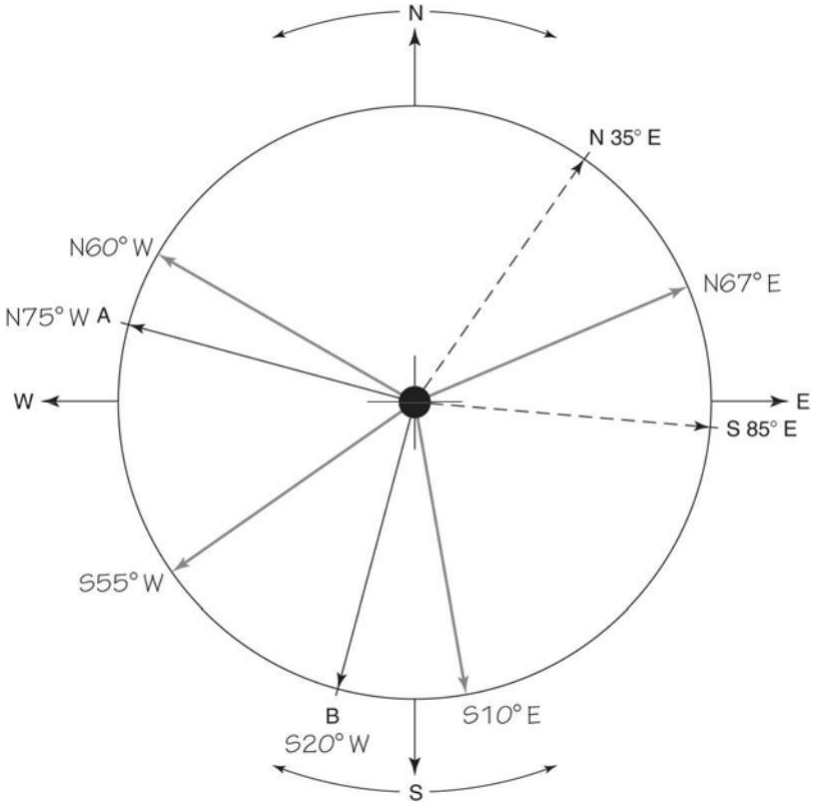

Figure 2.3
Quadrant compass bearings

2. Convert the azimuths values listed below to quadrant bearings:

127° [*S 53° E*] 24° ***N24° E*** 305° ***N55° W*** 197° ***S17° W*** 85° ***S50° W*** Convert the quadrant bearings listed below to azimuths values:

S 71° W [*251°*] N 10° W ***251°*** N 43° E ***43°*** S 30° E ***150°*** S 10° W ***190°***

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✳ SECTION 4

Compass Declination

1. Using the isogonal map, (Figure 2.4) and your atlas, in what city would you have to stand during 2012 to get a compass reading with zero magnetic declination (where magnetic north aligns with true north, or an agonic line). Mark the city with a dot and a label on the map.
2. Using your atlas, turn to the pages featuring the polar regions and find the latitude/longitude coordinates for the:
   a) Magnetic North Pole ***81.3° N 110.8°W***
   b) Magnetic South Pole ***79.74° S, 108.22° E***
3. Find the linear distance in km and miles between the latitude of the:
   a) Magnetic North Pole and true North ***815.41 km, 506.10 mi***
   b) Magnetic South Pole and true South ***1146.04 km, 716.27mi***
4. According to Figure 2.5, what is the magnetic declination between
   a) True north and magnetic north (MN)? ***9.5°***
   b) True north and grid north (GN)? ***1° 24'***
5. Look for the declination arrow in the margin of the topographic map provided by your instructor. What is the magnetic declination between true north and magnetic north on the topographic map provided by your instructor? What is the magnetic declination between true north and magnetic north shown for this location in Figure 2.4? Any discrepancies you find relate to the migrating magnetic pole and the dates of the topo map and the isogonal map (2012). (Keep this topo map handy for the next sections.) ***personal answer***

✳ SECTION 5

Compass Bearing

Using the local topographic map from the last section, complete the following. For questions 1-4 students' answers will vary depending upon the topographic map provided by the instructor.

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