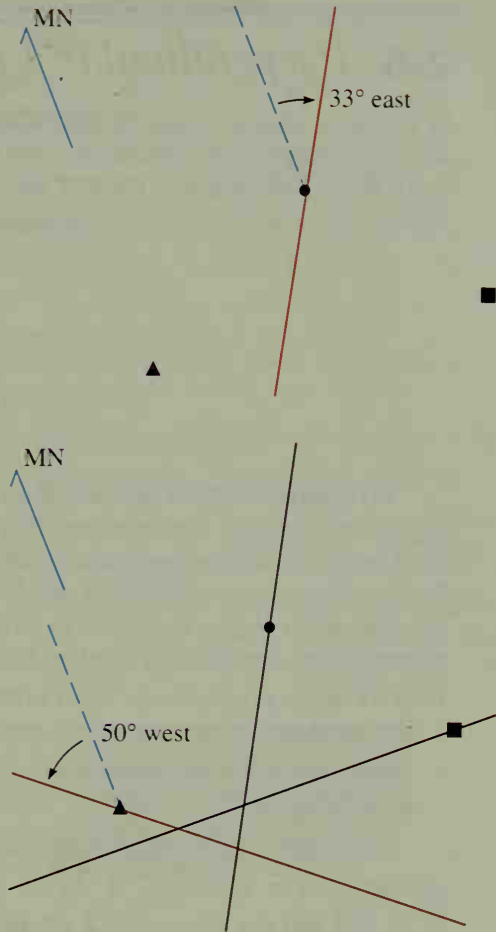


You sight across your compass and discover the tower is 33° east of magnetic north (MN). On your map you draw a line through the tower at a 33° angle to magnetic north. Be sure to use magnetic north rather than true north, for they may differ by as much as 20° . Hiking maps and nautical charts usually give both. All compass readings here are given in terms of magnetic north.

You are somewhere on the line you have drawn. If there is a feature near you (a trail, stream or pond), then your position is where the line crosses the feature on the map. Otherwise, you will need to take a second sighting, on the peak of Lily Bay Mountain (at \blacktriangle on the map). It is 50° west of north. Draw a line on your map through the peak at a 50° angle with magnetic north. You are close to the point where the lines cross.

Since a third landmark is visible, the summit of Bluff Mountain (\blacksquare on the map), you can check your position with a third sighting. The three lines might cross at a single point. However, there is usually some error in sighting and drawing the angles, so instead of meeting exactly at a point, the three lines drawn often form a triangle. If the triangle is small, it gives you a good idea of your true position.



Exercises

1. Another orienteering party sights on Lily Bay Mountain and the lookout tower and finds the following angles: mountain, 58° west of north; tower, 40° east of north. Are they north or south of you?
2. If you head due east from Lily Bay Mountain (90° east of magnetic north), will you pass Bluff Mountain on your right or on your left?
3. Lillian and Ray both sight Lily Bay Mountain at 70° west of north, but Lillian sees the lookout tower at 40° east of north, while Ray sees it at 20° east of north. Which person is closer to Bluff Mountain?
4. Sailors use this method of finding their position when they are navigating near shore, sighting on lighthouses, smokestacks, and other landmarks shown on their charts. They call the small triangle formed by the three sighting lines a "cocked hat," and usually mark their position at the corner closest to the nearest hazard. Why is this a sensible rule?