

# How to Use a Lensatic Compass

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## Protractor

The normal method to transfer angles from your lensatic compass to your map and back is with a protractor and a pencil. From your known location on the map, you take your protractor, line it up to true north, find the angle to your next point, adjust for declination, and then shoot that angle with your compass. At that point you know what direction you need to head to get to your next stop, and if you pair that with an accurate distance you'll be on your way in no time.



The only problem is that this process takes time and tools. You need to write things down, draw lines, perform math, and make sure you do so with a reasonable degree of accuracy. There's a lot of room for error and mistakes, and it takes time, which is sometimes a very precious commodity.

There's a better way, I believe, from both a time and an accuracy standpoint.

Since the ultimate goal is to transfer the angle between the map and compass, why not do it directly? That way you skip the math, the protractor, the lines, and get it all done quicker.

So, take your map and lay it down on a flat surface (i.e. the ground). Take your lensatic compass and open it up all the way so it is one flat line. Lay the compass down on the map so its long side is parallel with the north/south axis of the map. I generally line it up with a north/south gridline.

Next, rotate the entire thing (map and compass) until your compass is telling you that it's pointing north. Now your map's true north is lined up to your local magnetic north, and you've just completely circumvented the whole problem of declination (also removing a potential source of error since declination changes with time).

From here it's simple. All you do is take your compass and line it up from your current point to your desired destination and look at the compass reading. That's the heading that you need to move along to reach your desired end (or way) point. Pick up your map and head out!

## Resection

Resection with a lensatic compass is a process whereby you can determine your own location from that of two known points in the distance. Typically these features are prominent, such as a hilltop, a man-made structure, or an intersection, but they can be more nebulous if you're in a tight spot.

The key to the whole operation is having a map and being able to locate these features on that map. Then, from where you are, shoot an azimuth to the feature as accurately as possible, and calculate the **back azimuth** from that reading. The back azimuth is nothing more than the opposite direction of the reading you're taking. That is, take the azimuth you recorded and subtract 180 degrees from it, or 1600 mills if using a military lensatic compass.

Next, do the same for the second point.

Now, take your map and draw lines (at the back azimuth angle you calculated) on the map through the features that you're using as reference points. Those lines will intersect at some point if you're done your resection properly. The point where those lines cross is your location, and the accuracy of that location is only as high as the readings and calculations that you've made.

To check your process, and even add a little more accuracy to it, find another feature and perform the same steps. That line should intersect reasonable close to where the other lines crossed. The more back azimuths you can draw, the more accurate your location will be.

This, in a nutshell, is how to perform a resection with a lensatic compass.