

Map and Compass (declination in W. Washington is ~15.5 degrees East)

Definitions, Compass:

Base Plate - the clear plastic base that the needle housing is attached to; clear so map can be seen through it; has ruler along at least one side

Magnetic Needle - red or red/white end always points toward magnetic north

Bearing/Azimuth - a navigationally precise way to describe a direction, in degrees (e.g. a bearing of 90° is due east). Bearings are always relative to/from a specific location. The “back bearing”, or “back azimuth” is just the bearing 180° opposite to the bearing.

Orienting Arrow - used to orient the bezel, it has a red outline shaped exactly to fit the end of the magnetized end of the Magnetic Needle

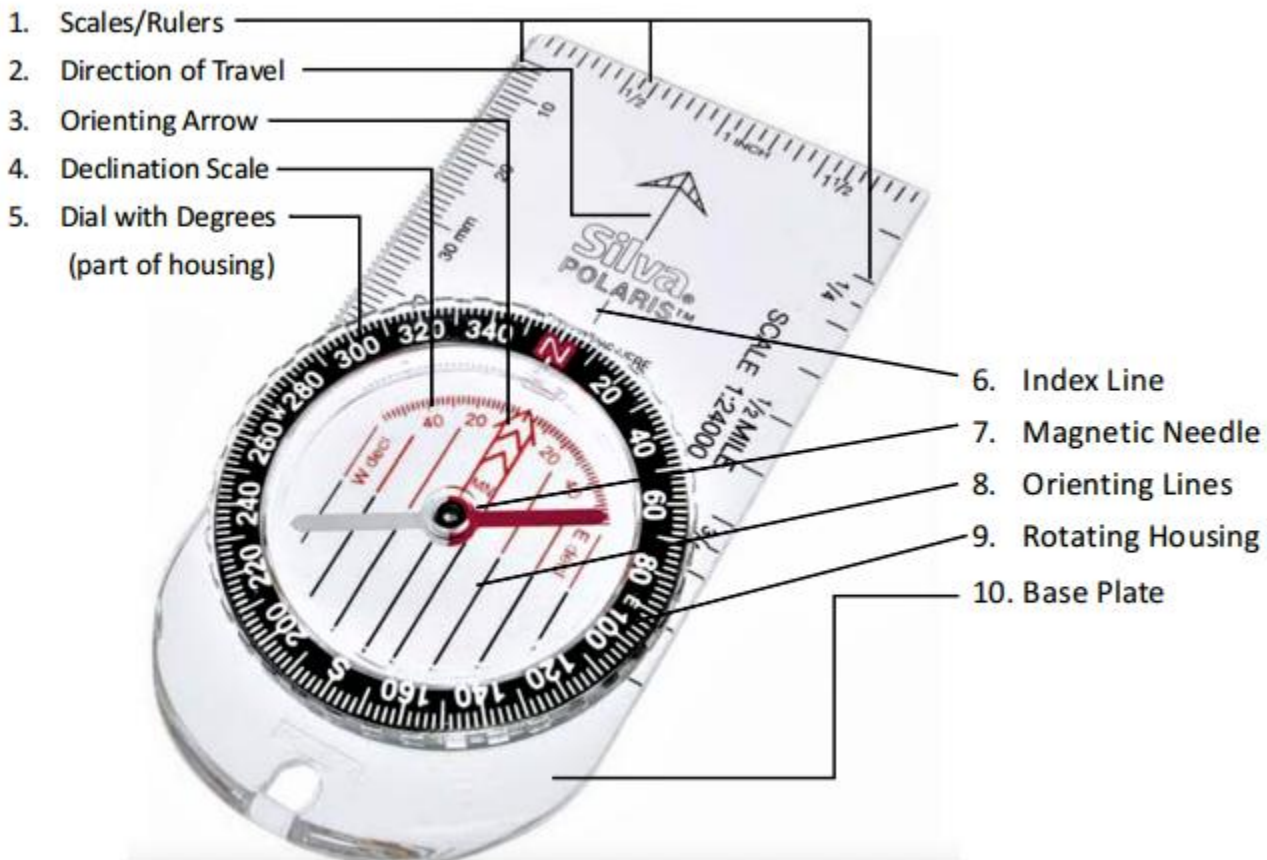
Compass Dial/Rotating Bezel/Azimuth Ring - rotating portion of the compass, with directional notations and 360° markings around the circumference

Direction of Travel Arrow - (usually) red arrow at front edge of compass; shows you which way to point the compass when you're traveling or taking a bearing

Orienting Lines - parallel lines, usually red, that rotate with the bezel; correctly aligning these with the north-south lines on the map aligns your orienting arrow with north

Index Line - located directly adjacent to/above dial towards direction-of-travel end of baseplate

Declination - this refers to the difference in degrees between true north/geographic north (top of map) and magnetic north (where the needle points); adjusting the declination on your compass allows you to more easily find true north without having to make additional calculations; most compasses have a tiny tool to allow setting of the declination; in Western Washington, the declination is appx. 15.5° east



Definitions, Maps:

Legend - and explanation of, or key to, the cartographic symbols used on a map

Contour Lines - Imaginary lines connecting points on a map which are at the same elevation above (or below) sea level. Most commonly they are spaced at 40' intervals... meaning 40' of vertical distance.

UTM Coordinates (Universal Transverse Mercator) - a coordinate system alternate to using Latitude and Longitude. Places a grid on the map, with marginal numbers representing meters east-west ("Easting") or north-south ("Northing") of a defined location, and within a designated **Grid Zone**.

Cartouche (this one's just to impress your friends) - "A feature of a map or chart, often a decorative inset, containing the title, legend, or scale, or all of these items".

Graticule (for trivia night) - a network of lines representing the earth's parallels of latitude and meridians of longitude.

How to Orient the Map:

1. Place the compass on the map with the direction of travel arrow pointing directly to the top of the map. If there are no north-south grid lines on the map, align one edge of the base plate with the edge of the map to assure it's pointing perfectly to true north.
2. Rotate the dial until the north marker ("N") is lined up with the direction of travel arrow.
3. Now, while holding map and compass steady (in same relation) in front of you, rotate your body until the magnetic needle is perfectly within the outline of the orienting arrow ("red in the shed").
4. Now the map is correctly oriented and you can identify landmarks on it, and in the direction you are facing.

Taking a Bearing on a Map (for this, you must know where you are on the map):

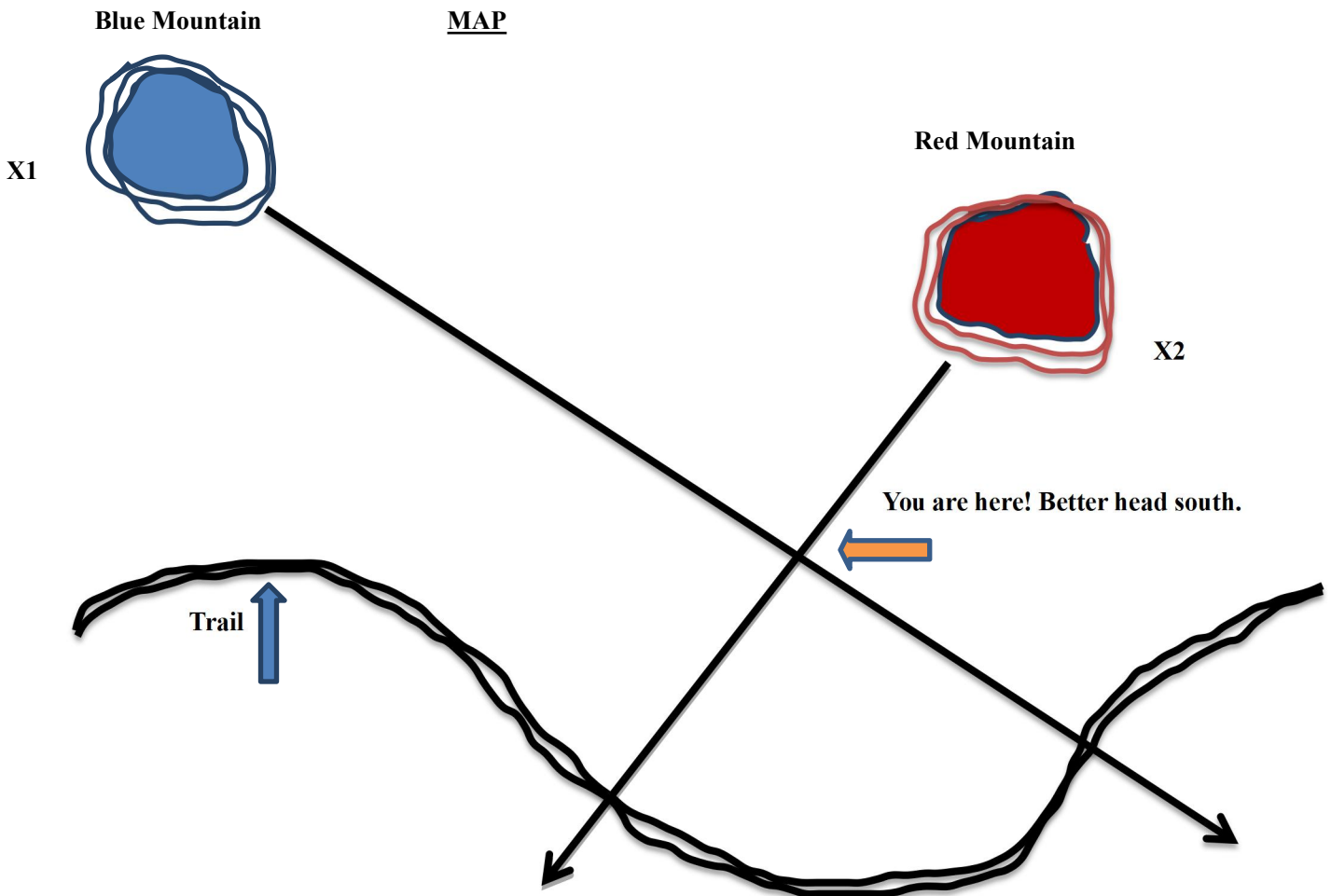
1. Set the compass on the map and align the base plate edge between your current position and your destination (e.g. a campsite noted on the map). Make sure the direction of travel arrow is pointing the general direction of your destination (i.e. you don't have it backwards).
2. Rotate the bezel so the compass orienting lines are aligned with/parallel to the map's north-south grid lines or to the map edge. Make sure the north marker on the bezel is pointing toward the top of the map (true north on the map).
3. Note what degree mark is lined up with the index line (or direction of travel arrow) on the compass... this is your bearing from your current location to your destination.
4. Now you can follow that bearing to your destination. Keeping the bezel where it is, hold the compass flat in front of you with the direction of travel arrow pointing forward, and rotate your body until the magnetic arrow is within the orienting arrow outline ("red in the shed"). Keep the magnetic arrow within the orienting arrow as you follow that bearing to your destination. It's best to break the journey up to smaller segments. Sight a landmark in line with your bearing (e.g. a particular tree, rock, structure), walk straight to it, then use the compass again to sight the next landmark, continuing in this manner until you reach your destination.

Taking a Bearing in the Field/ Find your Direction of Travel:

1. Locate a landmark in the distance to which you want to travel, or for which you want the bearing (e.g. a mountain peak).
2. While holding the compass flat in front of you, with the direction of travel arrow pointing toward the landmark, rotate the bezel until the magnetized needle is within the orienting arrow.
3. Now read the bearing off the bezel... the degree mark that lines up with the index line or direction of travel arrow.
4. You can use this bearing to guide yourself to your landmark destination (for instance, fog rolls in and you can't always see your destination), and you can also transfer the bearing to your map.

Find your current location or exact position on the map (or how to transfer known bearing to your map). See diagram below.

1. This is often referred to as “triangulation”.
2. Choose (by sight) 2 or 3 visible landmarks that you can also identify on the map, preferably 45-90 degrees apart. If you’re on a known trail, only 1 landmark may be necessary to find your location.
3. Mark them on the map, e.g. X1, X2, X3
4. Holding the compass in the proper position in front of you, turn so the direction of travel arrow is pointing at the first location (X1).
5. While facing the landmark, rotate the compass bezel/dial until the magnetic needle is within the orienting arrow (“red in the shed”)
6. Index line will show you the bearing to X1
7. Place the compass on your map with the base plate edge (toward one corner of the base plate) touching X1. Make sure direction of travel arrow is still pointing the general direction of your destination.
8. Using X1 as a pivot point, rotate the base plate until the orienting lines in your compass are running north-south, and north on the bezel is pointing north on the map.
9. Draw a line on your map along the straight base plate edge of your compass (along the edge that was abutting X1). This line intersects your position.
10. Repeat this process for X2 (and X3 if available). Where the drawn lines intersect on the map is your exact location.



You find yourself lost off trail. All your GPS units have failed, but luckily you have a printed paper map and your trusty compass! Using the above steps, you can “triangulate” your position on your map and find your way back to the trail.