

# Wilderness navigation

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## Types of maps:

1. Relief maps.
2. Land management and recreational maps.
3. Sketch maps.
4. Guidebook maps.
5. Topographical maps.

## How to read a map:

"It's a language lesson"-----

USGS topographical maps, it is also called a quadrangle, or "quad"

It covers an area bound on the North and South by "latitude lines".

It's east and west bound by "longitude lines".

Each quadrangle is given a name, by man-made feature of the area.

## What the colors mean:

1. **Red** - major roads and survey information.
2. **Blue** - water, rivers, lakes, springs.
3. **Black** - minor roads, trails, buildings, railroad, benchmarks, latitude longitude lines. And other things not part of the natural environment.
4. **Green** - areas of heavy forest. Dark green to light green or scrub vegetation.
5. **White** - color of paper, also white and blue are glaciers and permanent snowfields.
6. **Brown** - contour lines and elevation. Every fifth line is a little thicker.
7. **Purple** - parts and revision of an existing map.

## Also on maps:

1. **Symbols:**
2. **Legends:** This tells what the symbols are.
3. **North arrow:** True North, magnetic North, and UTM.

4. **Date:** When the map was printed.

**Where to get a topo maps:**

1. Outdoor recreational stores.
2. Bookstores.
3. Order from USGS, or by calling 1 888) ask USGS.
4. Their address is: USGS  
509 National Ctr.  
Reston, VA 20192
5. The Internet: [www.USGS.gov](http://www.USGS.gov)

The heart of a topo map is this overlay of contour lines. The lines indicate a constant elevation as it follows the shape of the landscape. A maps contour interval is a difference in elevation between two adjacent contour lines every fifth contour line is printed darker than the other lines and marked with the elevation.

One of the most important bits of information a topographic map reveals is whether you will be traveling uphill or downhill if the route crosses lines of increasingly higher elevations, you will be going uphill if it crosses lines of decreasing elevation the route is downhill. Flat or side hill travel is indicated by a route that crosses no lines remaining within a single contour interval.

Topographic maps also show cliffs, passes, summits, on other features.

**Main features depicted by contour lines:**

1. **Flat areas:** no contour lines at all.
2. **Gentle slopes:** widely spaced contour lines.
3. **Steep slopes:** closely spaced contour lines.
4. **Cliffs:** contour lines extremely close together or touching.
5. **Valleys, ravines, gullies, and couloirs;** contour lines in a pattern of **Us** for a general, round Valley or gullies; **Vs** for sharp valleys and gullies. The **Us** and **Vs** point uphill, in the direction of higher elevations.
6. **Ridges or Spurs:** contour lines and a pattern of **Us** for gentle, rounded ridge; **Vs** for sharp ridges. The **Us** and **Vs** point downhill, in the direction of lower elevations.
7. **Peaks or summits:** a concentric header of contour lines, with the sum of BN the innermost and highest ring. Peaks are also often indicated by **Xs**, elevations, benchmarks, or triangle symbols.
8. **Cirques or bowls:** patterns of contour lines forming a semi circle (or as much as three quarters of the circle), rising

from a low spot in the center to form a natural amphitheater at the head of a Valley.

9. **Saddles, passes, or cols:** an hourglass shape, with higher contour lines on two sides, indicates a low point in a rich.

When you travel in the wilderness, you should frequently observe terrain and its depictions on the map. Another words, know where you are on the map. Note all the topographical features, such as ridges, gullies, streams, and summits, as you go why them. This will help you maintain a close estimate of exactly where you are and will help you become an expert map reader. You will get better and better at interpreting these lines by comparing the actual terrain with its representation on a map. Your goal is to someday class had a topographical map and had a sharp mental image or just what the place will look like. (I spend a lot of time looking at maps to see what kind of an area that I am going into.) This comes with experience, and a lot of practice.

#### **Distance measurements on a map:**

To measure distance on a map by using this scale at the bottom to measure a straight line distance, simply measure the length of the line on the map using the inch or millimeter scale of your compass. Then transfer this distance to one of the scales at the bottom of the map and read off the numbers of feet, meters, or miles. If you're route is not a straight line, then you can use the lanyard attached to the compass? Putting the free end of the lanyard on one point on the map, then placing the string on the route to be measured, curving it along the trail, ridge, or other features, until it reaches the other point on the map. Strain out the string and layette next to the desired scale at the bottom of the map. This sometimes is not very accurate, because the string is too thick to go around the tiny curves, but it will give you an idea of the distance.

#### **Direction of slope:**

Traveling along a contour line means traveling on a level route with no slope. The distance perpendicular (at a right angle) to a contour line gives the distance of the slope-the distance directly uphill or downhill, sometimes called the "fall line." It is easy to find this direction on a map or in the field for any point on sloping terrain. Remember every fifth contour line has an elevation in it and is darker, when you are going downhill the next contour line is a lesser number. And opposite when you are going uphill, the numbers greater. The closer the contour lines are together the steeper the terrain, and the further apart the more gentle slope. Using the distance of the slope cannot prove that you are at a particular place, but it can't disprove it, and this can sometimes be a big help in trying to figure out where you are. Example, suppose you start at a peak 6547 and have descended a few hundred feet. You want to know where you are; you think you are heading in a Southwest direction. However, when

standing on the slope and facing downhill you see the midday sun on your right, so you know that you are facing roughly east. This proves that you cannot be going to the Southwest. You could be going off on the opposite side of peak. So your natural ability to know what direction you're going in, or have a compass or use the sun helps you keep going in the right direction. You also need to have a watch, or know the time a day, so you know where the sun should be in the sky. If you don't have a watch, and you know the sun is going down you can hold your hand up, with your fingers between the bottom of the sun and the horizon and for every finger, the sun moves, it takes about 15 min. So if you have four fingers between the bottom of the sun on the horizon the sun will set within our. If the sun is coming up, and you have four fingers between the bottom of the sun and the horizon, it's an hour after sunrise.

### **Limitations of maps:**

Keep in mind as you study a topographical map. The map will not show all the terrain features you actually see on your trip because there is a limit to what a map maker can jam into a map without reducing it to an unreadable thing. If a feature is not as high as contour intervals, it may not be shown, so a 30 foot cliff they come as surprise when you are navigating with a map that has a 40 foot contour interval. (I hate when that happens when you're on a horse, it's challenging to find a way around it). Also check the date on your map because they're not updated very often, and information on forests and on the roads and other works of the human hand could be outdated the forest may have been logged or a road extended or closed since last updating.

### **The power of the map:**

With the exception of your brain, the topographical map is your most important navigational tool. No one should venture into the wilderness without one. The map gives you information about directions, the distance between any two points, the shape of the terrain, human and natural features, and the amount of vegetation, the location of the water features, the direction and grade of the slope, and more. But as useful as maps are by themselves they become even more powerful when you use a compass. More on that in our next class.