

# Staying Found (map & compass) by June Fleming (1982)

Topo maps show contour lines: gentle slopes (lines far apart); steep slopes (lines close together); peaks (circular lines with higher elevation); lakes (connecting lines with lower el.); ridges (U-lines pointing downhill); creeks (V-lines cutting into a hill); magnetic declination (difference between true & magnetic north [Yosemite is 14d E]). 15-minute maps are common (1" = 1 mile) & section lines are shown in 1-mile squares.

Practice looking at landmarks & finding them on the map. Orient the map to true north & take a bearing to two landmarks. This triangulation will pin-point exactly where you are. Or one bearing crossing your trail will do the same. Create a base line by taking a bearing from camp to a landmark. If you hike away from the landmark, you can return to camp by aiming for the landmark. After a side trip, look for that bearing to find camp. Use the road as a base line by walking south-west of your car, returning north to road & then east to car. To walk around an obstacle, take 100 steps 90d to the right, turn left 90d for 50 steps, the turn left & return 100 steps back to original bearing.

Magnetic north is slowly moving & is about 950 south of the north pole. USGS has a magnetic declination map of the US (AL & IL are at 0d). The magnetic declination shown on maps has true north with a star & magnetic north shown how many degrees off of that. Adjust compass to true north by lining up long side of compass with longitudinal lines on map & turn compass housing 14d east [for Yosemite] (or 346d). The magnetic needle should line up with the orienting arrow. You may need to turn yourself, map & compass to line up.

By placing the side of the compass on the map between two points, will give you a bearing. Roads, creeks & landmark bearing can all create a base line. Sun dials don't use daylight savings time & they use true north.  $360D/24$  time zones = 15d each. A watch [set on std time] with hands can tell where south is by pointing the hour hand at the sun & picking the halfway point & noon [ $360d/12$  hrs = 30d or 2x as fast as the sun]. Take a true bearing of the spot on earth directly under the sun. Let's say it is 160d.  $180-160=20d$ .  $20/15=1.33$  hrs before noon or 10:40. This assumes you are in the middle of your time zone. It will be 30 minutes different at the edges of the time zone.

Fully extend your left arm in front of you with your thumb up, fingers horizontally together & palm facing you. Locate the setting sun at the corner of your thumb & palm. Count 15-minutes per finger to the horizon when the sun will set. To estimate where the sun will rise, take a bearing where it sets, let's say 284d.  $360-284=76$ . At 40d N latitude Jun & Aug, the sun rises at 67d & sets at 293d.

Because of the earth's rotation, all stars seem to revolve around the North Star [Polaris], which is at the end of the handle of the little dipper. You can locate it by extending a line from front of the big dipper's bucket. Snow packs last longer on the north-facing slopes. Visit the local Forest Service or BLM office for maps, permits, trail logs & info about your trip.

Cross swamps & creeks in the mornings if possible (less bugs & run-off). Know where dependable water is & always keep enough on hand (consult guide books & ask Rangers).

Take it easy the first few days of a long trip. Going around a hill might be easier than going over it. Leave your itinerary with a friend back home.

Signs of a trail are: worn path, trail markers, trimmed tree branches. At trail junctions, turn around to see what it will look like on the return trip. Fog & winter conditions can make navigating difficult (be careful). Keep entire group within ear-shot on a trail [eye-sight off trail]. If you feel disoriented, stop & think: when was the last time you were confident? Look for landmarks. Never abandon your survival gear.

Teach kids 2 rules: let others know where you are & stay within camp boundaries. Teach them how to use a compass & basic map-reading. Pin clanky bell to a toddler & whistle to other kids. Play games: who can spot the next trail blaze? What's around you? [then close your eyes & describe]. Give them progress reports & point out landmarks along the trail. Make a sun dial.