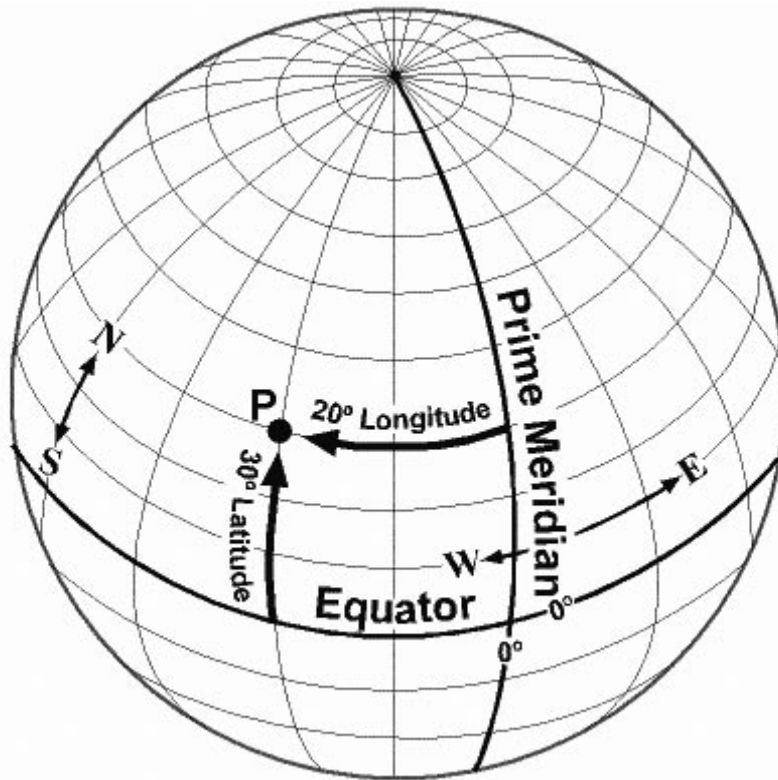


TOPOGRAPHIC MAP DESCRIPTION

I. What defines a topographic map:

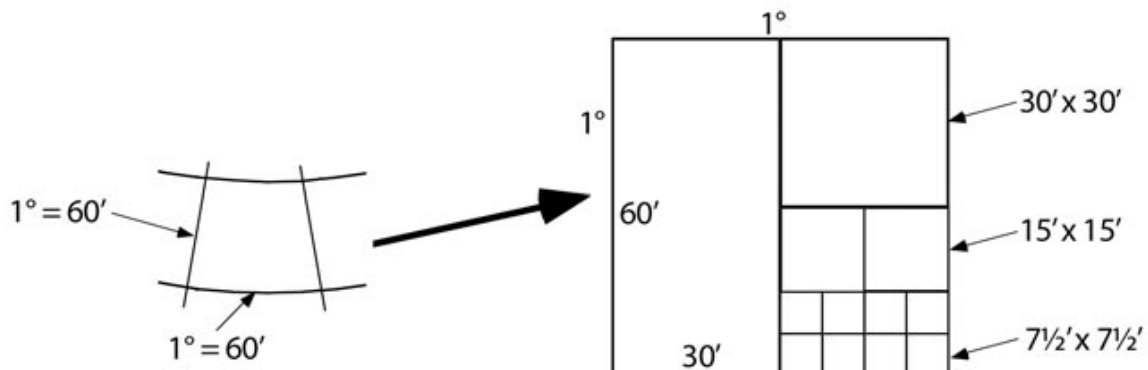
The earth is divided into 360 equal units both vertically (N-S) and horizontally (E-W).

- N-S “**longitude**” lines are measured in degrees E or W from Greenwich, England.
- E-W “**latitude**” lines are measured in degrees N or S from the equator.
- Each degree can be further divided into 60 minutes, and each minutes can be further divided into 60 seconds



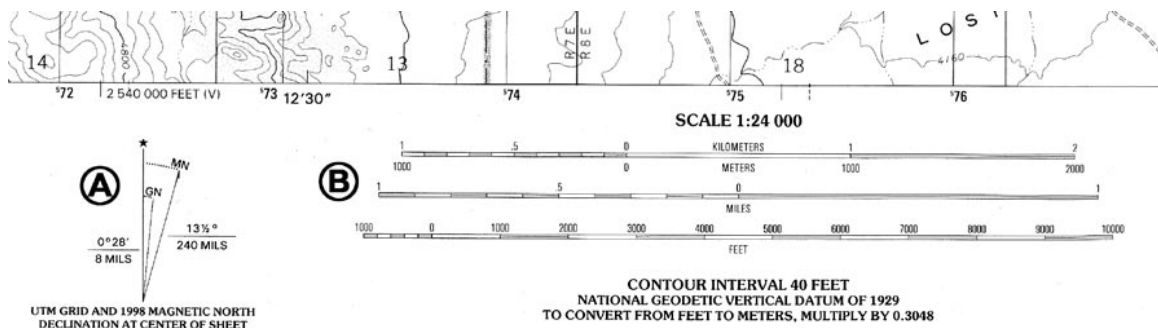
Note:

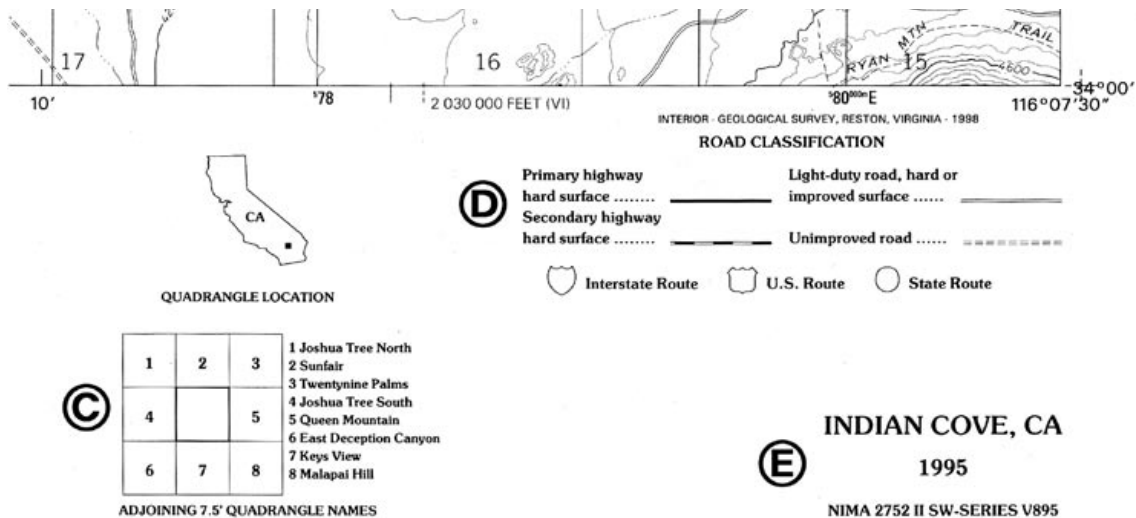
- 15 minutes map represents $\frac{1}{4}$ of a degree ($15/60$)
- 7.5 minutes map represents $\frac{1}{8}$ of a degree ($7.5/60$)



II. What a topographical map defines:

- A Topo map is a 2D representation of our 3D world within a defined Longitude and Latitude (quadrangle).
 - The horizontal terrain features and spacing are visually represented to a defined scale.
 - The third(vertical) axis is represented by contour lines at defined elevation intervals.
- **Map margin:**
 - **Map scale:**
 - 7.5 minute quad scale is 1:24,000 (1 inch = .4 mile)
 - 15 minute quad scale is 1:62,500 (1 inch = 1 mile)
 - **Linear scale:** Mileage, Feet or Kilometers
 - **Declination:** To understand declination you must first realize that there are two North Poles. There is a True Geographic North Pole at the top of the world, and a Magnetic North Pole which is over 1,250 miles from the True North Pole:
 - A magnetic compass always points toward the Magnetic North Pole.
 - Maps are oriented to the True North Pole.
 - The angular difference between True North Pole and Magnetic North is called declination. Declination varies from 0 to 30 degrees in most populated regions of the world. These declination values usually change slightly over time, as the earth's plates shift.





- **Contour Line:** A line joining points of equal and consistent elevation. Contour lines always close on themselves (Sometimes on other maps) and never cross.
- Essential feature is that they are the means used to represent the three-dimensional ground on a two dimensional map.
 - Brown lines represent contour lines.
 - The difference between contour lines are called **contour intervals**. Not all topo maps have the same intervals. Can also be different from map to map.
 - The interval can be found at the bottom center of most topo maps under the scale dimensions.
 - Every fifth contour line is called the **Index contour**, which is darker and shows the elevation. You may have to follow it to find the elevation.

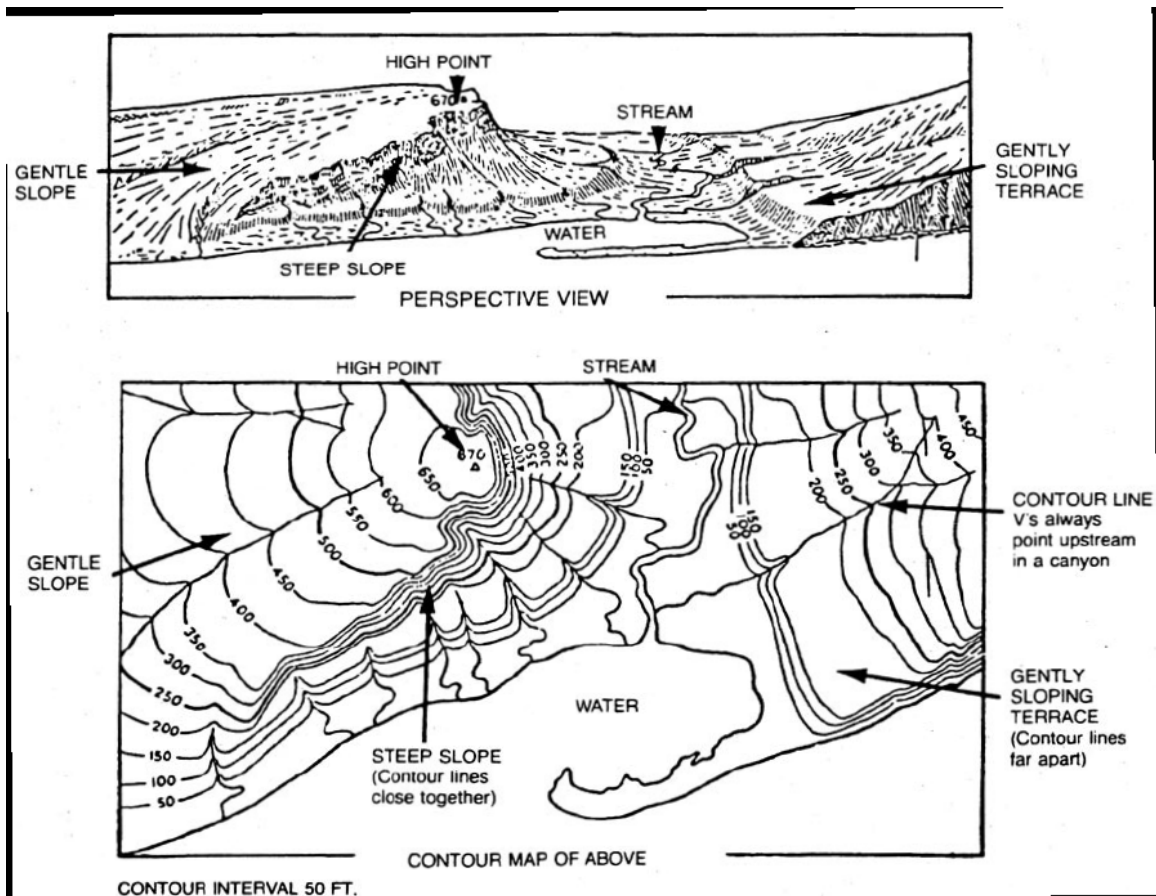
NOTE: Some Index contours are in feet and some in meters.

What do contour lines tell us?

1. Elevation
2. Ascending or descending points of travel-Slope of terrain.
3. Steep terrain/slopes –Contours are closer
4. Gentle slope-Contours wider apart
5. Shows high points/peaks-Generally smaller/fully closed circular contour line.
6. Shows gullies, canyons and ridges
7. Saddles between peaks

➤ **Law of the V's**

- Contours across streams. gullies have the V intersection pointing “uphill”
- Contours across ridgelines have the V intersection pointing “downhill”



III. DRAWING MERIDIAN LINES

- The right and left edges of the map are true north-south lines (Meridians of Longitude).
- Each quadrangle map has two or more Longitude tick marks along both top and bottom edges; they are identified by 1/16 inch long black lines extending from the edge into the mapped area. These tick marks (circled below) can be matched with four 1/4 inch black crosses in the middle of the map. Using the above tick marks, two more highly accurate meridian lines can be drawn.
- Construct three or more additional meridian lines parallel to the first four. The lines should be between 3/4-inch and 1 inch apart.
- Red section lines that appear on many maps may sometimes be used as true north-south meridians. But they often vary from true north. If section lines are inaccurate or don't exist, draw your own meridian lines. UTM grid lines typically vary 1° to 3° from true north and are no substitute for meridian lines.

