

TOPOGRAPHICAL MAP DESCRIPTION:

- ◆ What defines a topographical map:
 - A) 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 minute can be further divided into 60 seconds. E-W & N-S lines on a map represent these subdivisions.
Example: a 15 minute map represents 1/4 of a degree ($15/60$), a 7.5 minute map represents 1/8 of a degree ($7.5/60$)
- ◆ What a topographical map defines:
 - A) 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.
 - B) Margin information:
 - Map "Scale": Examples: 7.5 minute quad scale is 1:24,000 (1" = 0.4 miles)
 15 minute quad scale is 1:62,500 (1" = 1.0 miles)
 - Linear scale: Example: Mileage, Feet, Kilometers
 - a) To determine the map scale measure 1 mile with a ruler: 1 mile/#inches = miles per inch
 - b) To determine route distance, scale route from the map and multiply by "miles per inch":
route (in inches) X miles per inch = route mileage
 - c) Multiply route mileage by 1.15 to compensate for map "smoothing" error.
 - "Contour Interval": Example: 40 feet, 80 feet, 50 meters
 - a) Contour intervals are represented by Contour Lines (brown)
 - b) Contour Lines trace the shape (contour) of the landscape at constant elevation intervals above sea level.
 - c) Index Contour Lines. Every 5th contour line is much darker than the other lines, and will have the actual elevation recorded periodically along the line.
 - d) To determine the contour interval:
 - Determine the elevation of 2 adjacent Index Contour Lines.
 - Subtract the smaller from the larger (Example: $8600' - 8400' = 200'$).
 - Divide by 5 (Example: $200/5 = 40$ foot contour intervals).
 - Contour intervals can be further subdivided by estimation.