

# Topographic Maps

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RRHS

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# Why?

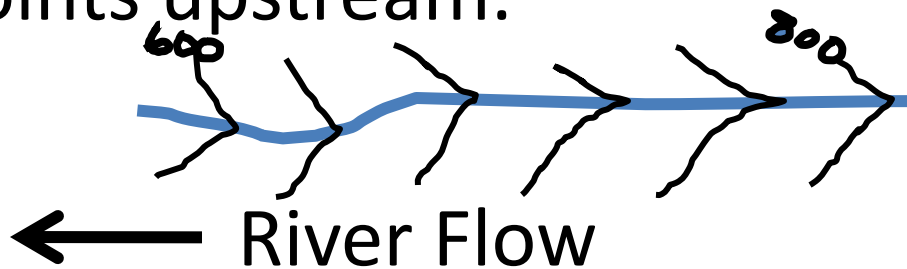
- A topographic map looks very much like a normal road map except it provides information about the elevation of the land
- Topographic maps are useful to many different people from the earth scientist, to the camper/hiker, to search and rescue personnel.
- GPS (global positioning satellite) units are helpful as they provide your location and the topographic information, but they are limited by the size of the screen you use.

# Contour Lines

- Contour lines are points of equal elevation on a topographic map
- The lines are generally colored brown (for land) and blue (for water).
- Index contours- every fifth line that is darkened (usually are numbered)
- Elevation- height above sea level (in feet)

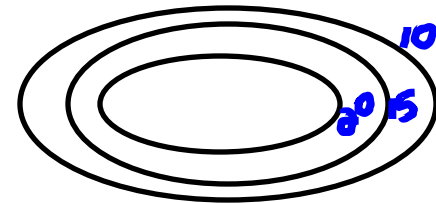
# Rules of Contour Lines

- 1) Where a contour line crosses a stream or valley, the contour bends to form a "V" that points upstream.



*RIVERS  
ALWAYS FLOW  
DOWNHILL*

- 2) Contours near the upper parts of hills form closures. The top of a hill is higher than the highest closed contour.

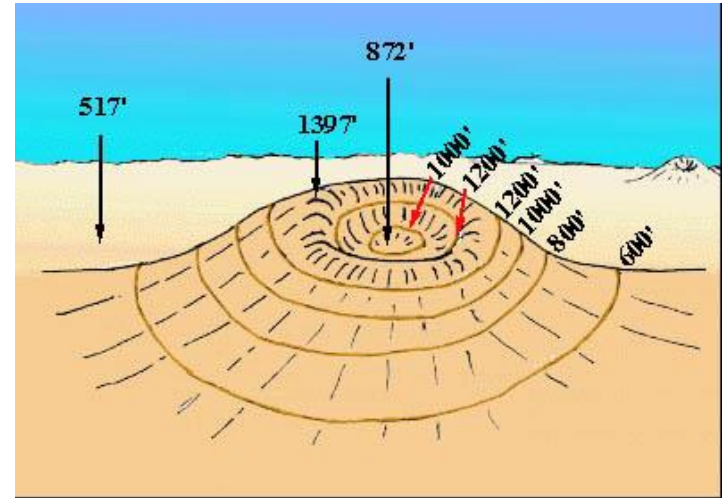
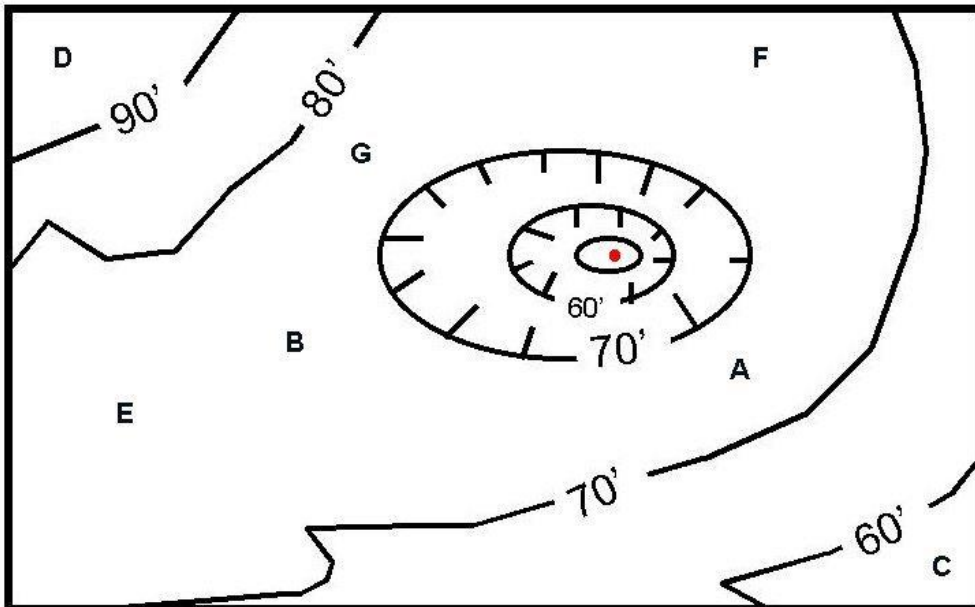


- 3) Hollows (depressions) without outlets are shown by closed, hachured contours (depression contours). Hachured contours are contours with short lines on the inside pointing down slope. The bottom of the hollow is lower than the lowest closed contour. The value of the first hachured contour is equal to the closest contour line.

# Depressions

Occur when a hole or pit is found in the middle of a relatively flat area

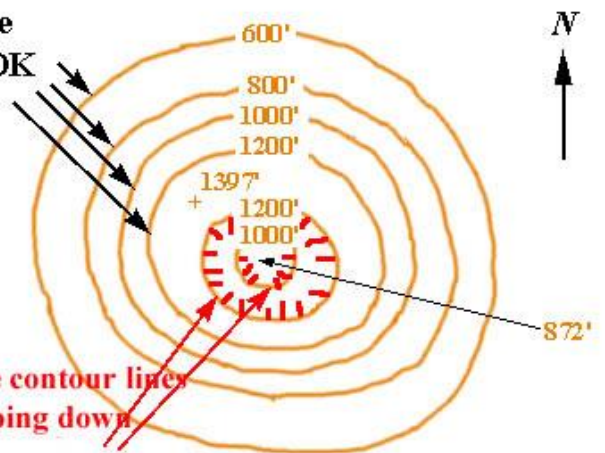
N ↑ contour interval = 10'



+ 517'

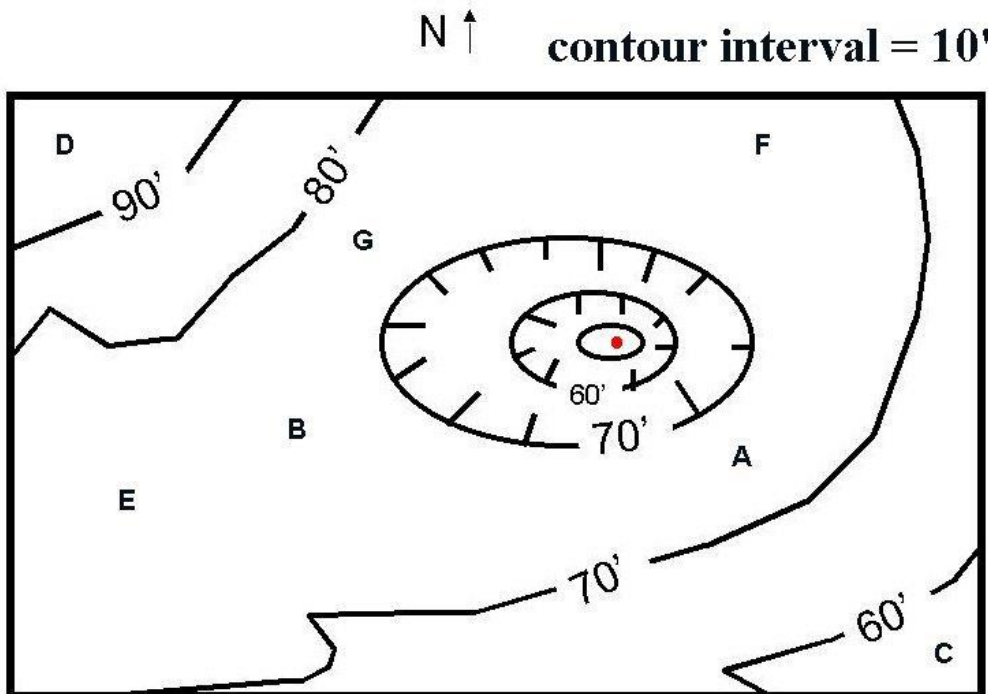
C.I. = 200'

These are OK



# Depressions

- Notice that the first hachured mark has the same elevation as the closest contour line. This mark shows the edge of the depression.

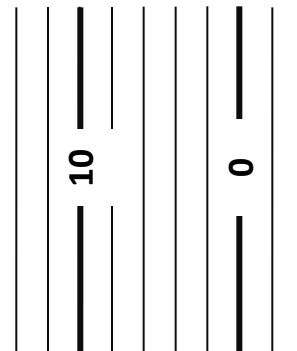
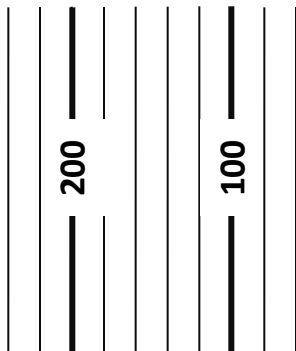


- 4) Contours are widely spaced on gentle slopes.
- 5) Contours are closely spaced on steep slopes.
- 6) Evenly spaced contours indicate a uniform slope.



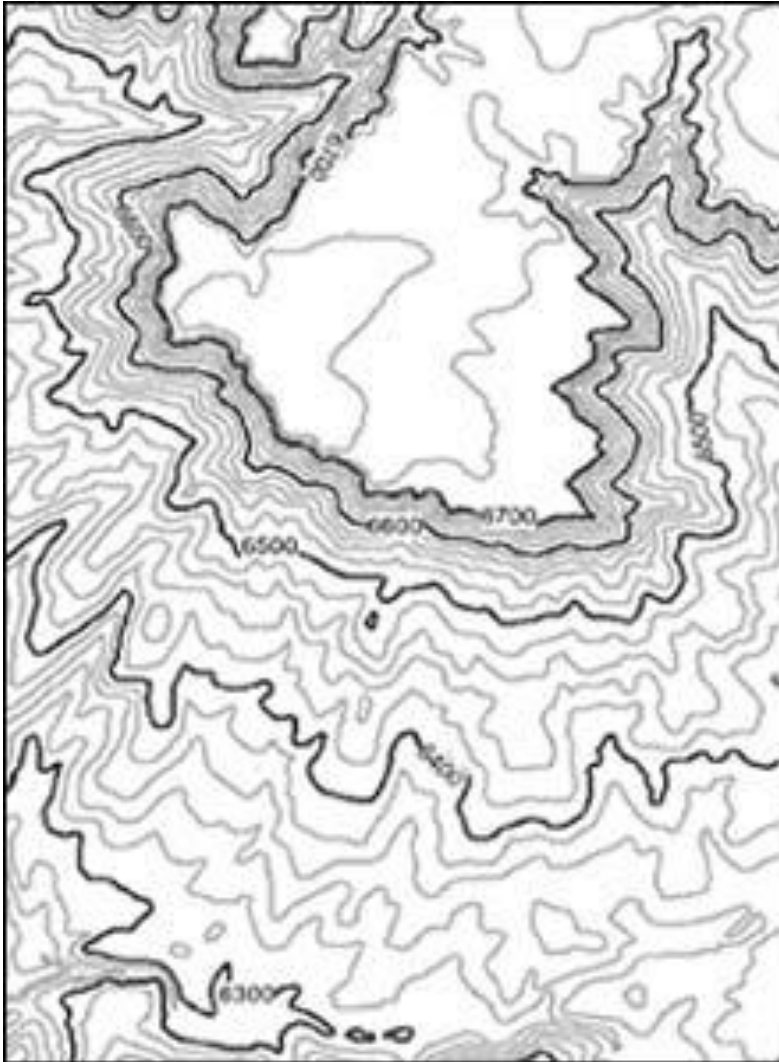
# Determining Elevation

- Only every fifth line on a topographic map has an elevation written on it. The other line values must be determined by using a contour interval.
- Contour Interval- the difference in elevation from one contour line to the next

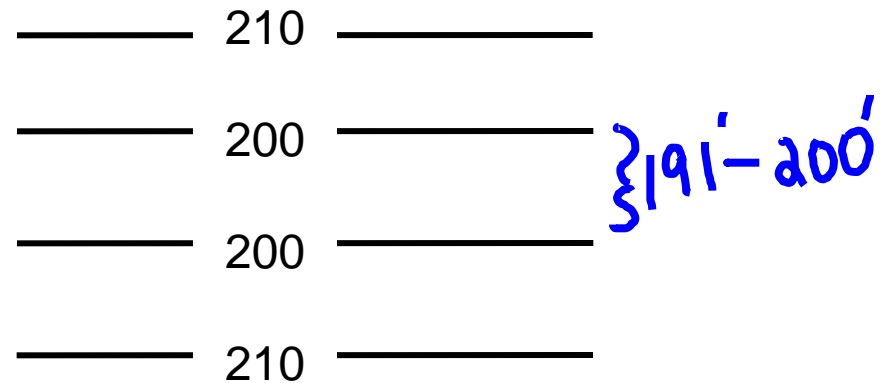
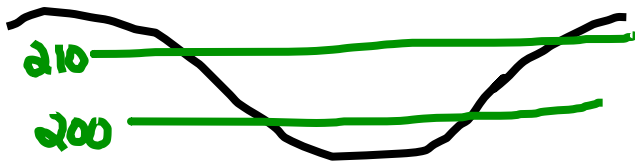


- 7) Contours do not cross or intersect each other, except in the rare case of an overhanging cliff.
- 8) All contours eventually close, either on a map or beyond its margins.

# Sample Topographic Map



- 9) A single higher elevation contour never occurs between two lower ones, and vice versa. A change in slope direction is always determined by the repetition of the same elevation either as two different contours of the same value or as the same contour crossed twice.



# Other Map Features

- Benchmark- a location where the elevation and location is precisely known.



X BM702 or  BM 702

Benchmarks are often used by surveyors so that they can determine property lines, locations of roads, etc. They also can be found on the top of mountain peaks.

# Map Scale

- The scale of a map is represented by either a fraction or a ratio. A map ratio of 1:100 means that 1 cm on a map is equal to 100 cm of length in “real life”. A “verbal scale” is where you provide a measurement and show it equal to another (i.e. one inch = 1 mile)
- Large Scale- if the size ratio is small, it is considered a “Large Scale” map. (1:24,000 (R.R.))
- Small Scale- if the size ratio is large, it is considered a “Small Scale” map.(1:41849600 (globe))

# Map Scale (continued)

- Think of map scales in terms of fractions.

$1/5^{\text{th}}$  of something is larger than  $1/10^{\text{th}}$  !