Topographic map

Topographic map: Is a map (often called "topo map shows the shape of the land's surface.

Uses of topographic map:

Topographic maps in addition shows the shape of the land's surface also show a number of cultural features (land survey system, roads, houses, schools, etc.). Topographic maps are extensively used in the Earth sciences to evaluate locations, landform types, elevations, characteristics of stream-flow, and other physical data.

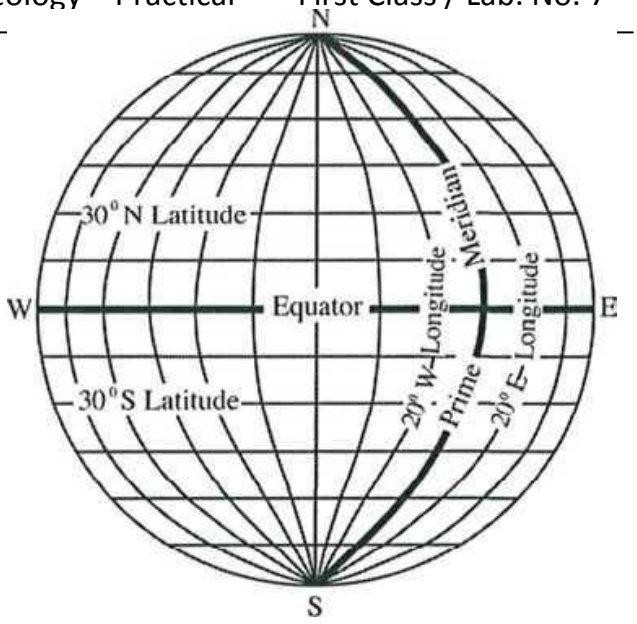
Topography is the elevation of the earth's surface and is represented on a topo map by contour lines.

Contour lines: Are lines of equal elevation. The properties of **Contour lines** are:

1. A contour line connects points of equal elevation.
2. A contour line never branches or splits.
3. Steep slopes are shown by closely spaced contours, flat areas are shown with widely spaced contours (a completely flat area would not have any contours).
4. Contour lines never cross, except to show an overhanging cliff, where hidden contours are dashed. Contour lines merge only to show a vertical cliff.
5. Hills are represented by a concentric series of closed contour lines.
6. A closed depression (basin) is shown by concentric contour lines with hachures on the downhill side.
7. Where contour lines cross a **stream or a dry stream channel**, they form a "V" that points upstream and mean Valley.

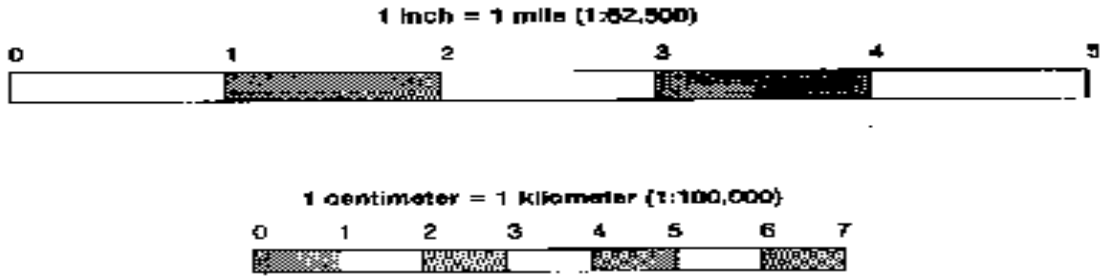
Contour interval is the vertical difference in elevation between adjacent contour lines.

North direction and latitude & longitude:
North direction represents the arrow which refers to the north pole of earth. Latitude and longitude are expressed in degrees (°), minutes (') and seconds (")
- there are 60 minutes per degree and 60 seconds per minute.



Map Scale: A map scale defines the relationship between distance on a map and the corresponding distance on the ground.

There are two main types of scale on the map; these are:
- numerical ratios: such as 1:20000, 1:1000000
- graphically by bar scales marked in meters and kilometers or feet and miles: such as



Elevation is the height of the land above mean sea level (0 meter) (depths below sea level are labeled with a negative sign in front of number (-200) to indicate the depth below sea level).
The arithmetic difference in elevation between any two elevations on a topographic map is called **relief**.

Relief can be expressed as ***total/maximum relief***, the difference in elevation between the highest and lowest elevations on the map, or ***as local relief***, the difference in elevation between a hilltop and its adjacent valley.

Topographic Profile

A topographic profile (Fig. L1) is a cross-sectional representation of the lay of the land as if hills and valleys are seen from a distance. To draw a topographic profile, the artist" must first contour the map, then select a desired cross section, such as A-A'. After a cross section has been chosen, the elevation of each contour line that crosses the A-A' line are transferred to the vertical scale of the cross section determined by the maximum and minimum elevations that cross the A-A' line. To transfer the points, take a piece of blank paper and line it up with the cross-section line on the contour map.

Make marks on the blank paper template where the contours cross the A-A' line and at each end of the section line. Record the representative elevations at the marks. Now move your paper template down to the cross section. Using the same spacing, make a dot on the cross section in accordance with the elevations on the vertical scale. Once all the points are marked, connect the dots with a "smooth" (not jerky) line. Be on the "lookout" for typical topographic features such as hills, valleys, depressions, and so on.

Draw the hills with an arch shape to indicate that it is a hill. A distinct notch can be used to indicate the position of a stream.

Topographic Cross-sections: Constructing a topographic cross-section gives us a side view of the landscape along a line.

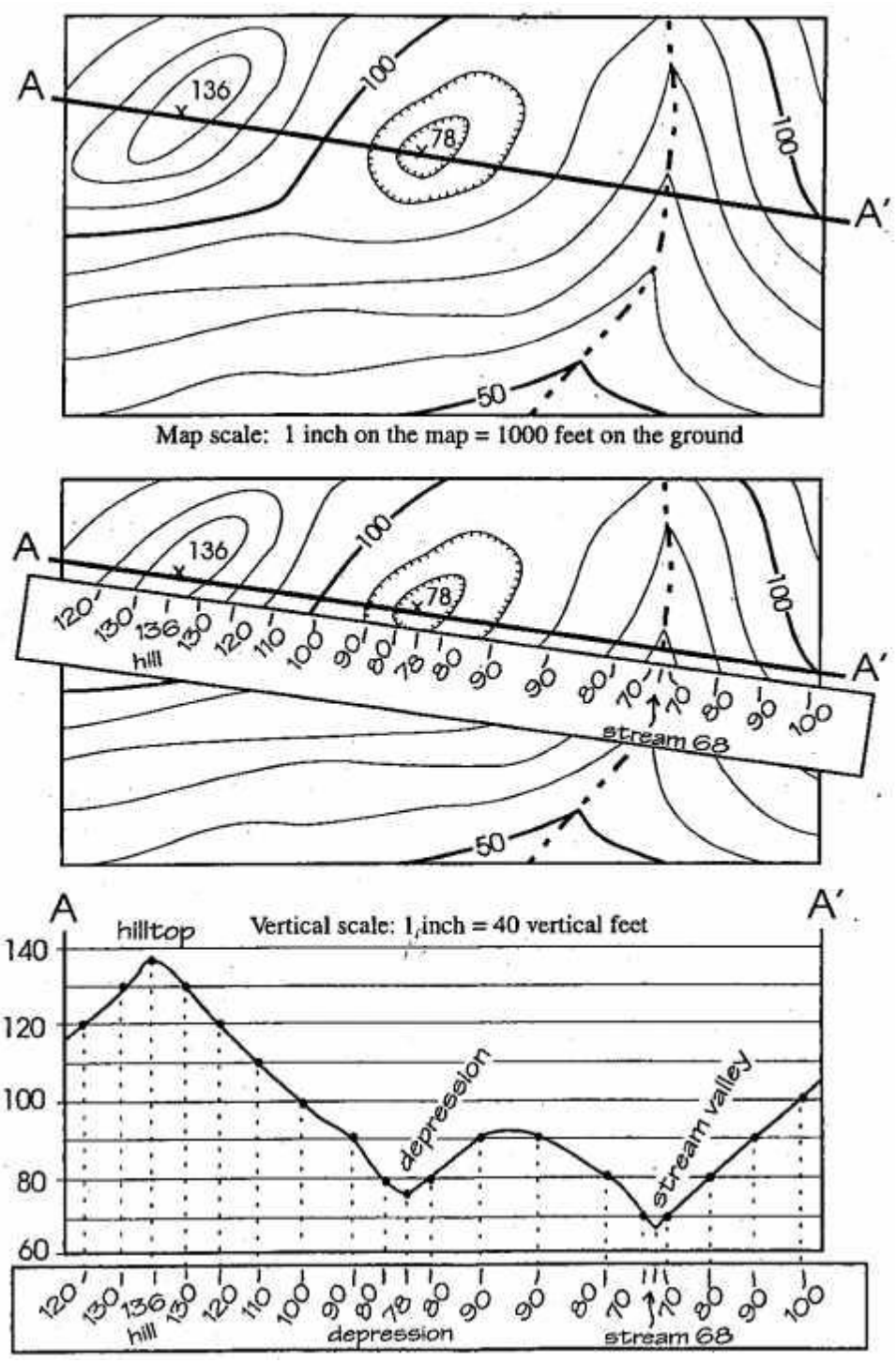


FIGURE L1: Topographic Profile. The topographic profile (A-A') illustrates repetition of contours at hills and depressions. This is a profile of a vocano. Note the contour lines "V" (point) in the uphill direction as they cross the rivers.

Exercise: Draw contour lines and complete this topographic map by determines the valley, highest and lowest elevation points.

Determine the elevation of point A

What type of scale is used? covert the scale to other type ?..

Draw the topographic-cross section along X-Y traverse.

Discuss the shape which is covered by this map.