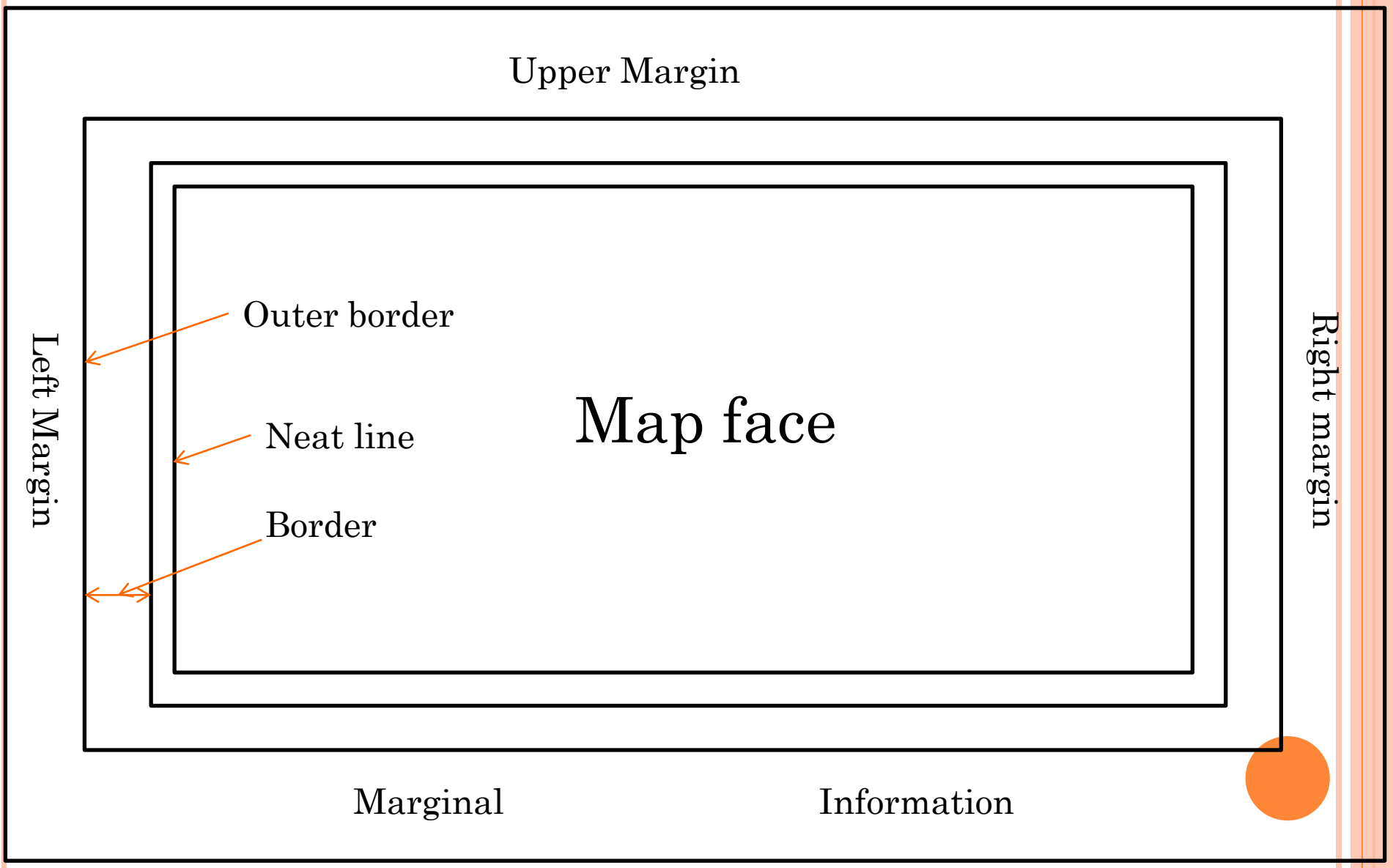
# Cartography I

## Lecture 4

# Map layout

- Map layout is the conceptual and graphic process of spatial arrangement of the map components on an output medium for a specific purpose.
- Objective: clarity, order and balance


Upper Margin
Outer border
Neat line
Border
Map face
Left Margin
Right margin
Marginal
Information

# Map layout

- A **grid** is a series of horizontal and vertical lines on which a map is drawn
- **Graticule**-the grid of intersecting lines, esp of latitude and longitude on which a map is drawn
- **Margin, Border, Neat line**
- **Title**: Informs user about the topic being visualised represented on the map
- **Legend**: keys explaining symbols used by the cartographer
- **Map projection** used- round earth to flat paper.
- **Bibliographic information:**

# Map layout

- **Bibliographic information: quality of map**
- When map was created,
- Age of data
- Who created the map/tools used
- -Aka. Metadata-
- Of Spatial data: ownership, format, resolution, date production, use, accuracy etc….

# Marginal information

- Sheet number and identification- easy location
- Series designation- a number of maps of an area
- Edition designation- edition of printed map
- Contour interval
- Index to adjoining sheets- diagram showing sheets next to this map
- Sheet history- publishing agency, date of publication and type of survey
- Copyright restrictions- unauthorized copying of map

# Map layout- space next to neat line

- Grid Numbers
- Geographical coordinates of corner points
- Destination of roads or railways which run off the map
- Portion of names which fall outside the map

# Maps & cartographic enhancements

- Readable- Symbols/Legend
- Measurable
  - Scale
  - Coordinate System
  - Orientation
  - Height information
- Understandable
  - Colors have meaning

# Good MAPS not fast maps- six elements

- Descriptive title
- The Map
- Map Legend
- Map Scale
- Map Projection
- North Arrow
- Bibliographic Information or Source statement

# Before you make a map

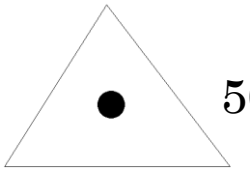
- Audience- Maps communicate to audience a message to their audience
- Data-
  - projection, scale
  - when was data captured, and who?
  - Cryptic names in attribute table (data are organised in tables-> databases in map making(GIS) software)
- Tools- Software,
  - What are they? AutoCAD, Mapinfo, MacroStation, Windows Map Point, ArcGIS
  - How long?
  - Which is Best ?

# Relief representation

- Depiction of Height and shape of the surface of the land on map – relief representation
- Spot Height- .630. Accurate survey instruments used.
- Merits
  - - easy to copy/interpret
  - Height of specific point above msl
  - Together with contours precise
- Demerits
  - Used alone, fails to give general idea of relief

# Relief representation

- Trigonometric Points/Stations
- Position and height fixed during the survey of a country
- Triangle with a dot in the middle and a figure written against it
- Merits and Demerits = spot heights




# Relief representation

- Bench Marks- **BM 30** more accurate than spot height- usually appears on large scale maps

<u>Merits and demerits similar to spot heights</u>

- Hill shading- use of imaginary light to show relief

  light can come from vertical/oblique direction- NW light cast **shadow** on SE

**Merits:**

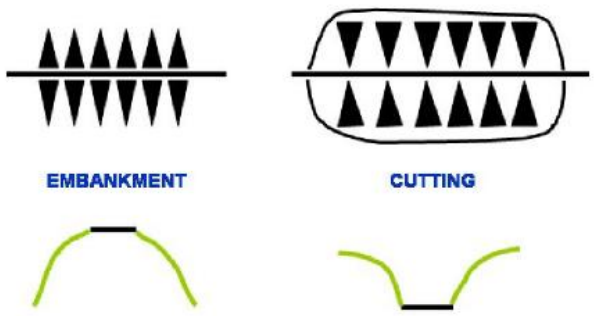
Immediate impression of relief/Good for hilly districts

Demerits: Fails to show absolute heights/Apart from slope other features of relief?/unscientific- uses sun

# Relief representation

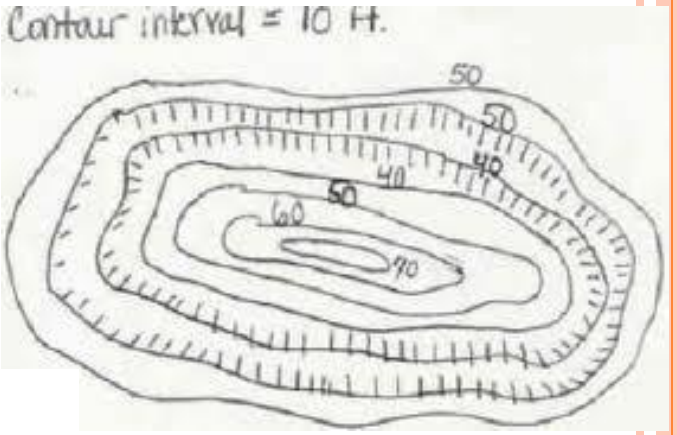
- Hill shading
- Use of imaginary light
- Vertical or oblique orienatation of this light
- Tops of Hills/Slopes

- Hachures
- Short lines known as hachures
- Thick and shorter on steep/Longer, thinner and far apart on gentle slopes


EMBANKMENT
CUTTING

# Relief representation

- Contours-
- Heights joining points of equal height above or below sea level
- Extensively used because
- Shows the height and shape of the land surface
- Brown curved lines not crossing each other
- selection of contour interval depends on:
  - Scale
  - Purpose
  - Available info
  - Nature of terrain
  - Survey process
  - economics

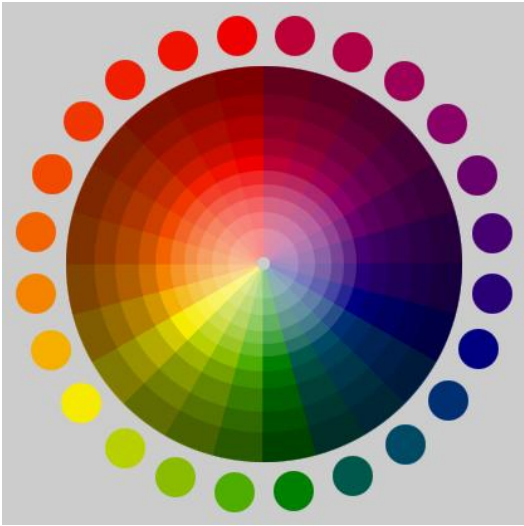

Contour interval = 10 Ft.
50
50
40
40
50
60
90


Steep Slope
Saddle between two summits
Summit
Ridge
Gulley
Valley
Water
River
Gentle Slope

# Relief representation

- Direct contouring(Level instrument is used to mark the position of contour)
- Indirect contouring(Use of spot heights and interpolate to obtain contours). Grid level by taking levels at the intersection of a series of equally spaced perpendicular lines over the AOI.

# Relief representation



- Hypsometry depicts the

distribution of the earth's mass

With elevation

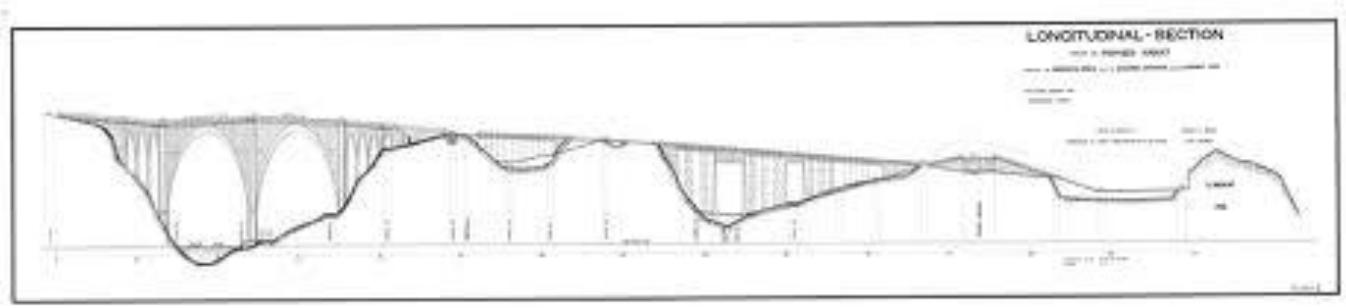
- Hypsometric tinting
- Elevation zones are

coloured. colour tints()

- Progression of elevation can be shown on small scale maps
- Either you choose a series of colours (green yellow, brown, purple white) or a single colour but different tints
- In **color** theory, a **tint** is the mixture of a **color** with white

# Relief representation - Longitudinal/Cross sections

- Longitudinal sections
- In Engineering surveying
- Formation level or existing ground level can be obtained by levelling
- Field work:1 Centre line set out(peg it)- 20m regular intervals- theodolite; 2 Commence levelling



# Relief representation - Longitudinal sections

- Points to take longitudinal sections
  - 1. top and ground level of centre line peg
  - 2. Ground slope changes
  - 3. Features cross centre line
  - 4. inverted levels to bridge underpass(a pedestrian tunnel)/bridge soffits(the underside of an architectural feature, as a beam, arch, ceiling,vault, or cornice.)
- Longitudinal sections relate- Works which are of a narrow extent- centre line through proposed project

# Relief representation -Cross sections

- Roads and railways- sections @ right angle to longitudinal section
- For best possible accuracy = a cross-section should be taken at every point leveled on the long. section
- Longitudinal and cross section are done in the same operation
- 10m, 20m,… intervals but really at every change of slope.
- Leveling should close! else>Repeat!

# Rest of notes

- **Chapter 10** – Introduction to survey drawings
- Text size, Orientation, Bold text, Bertin's semiotic resources as applied to text- font, weight of text.
- San serif/Serif.
- Point/line/area features
- Size of lettering – point size –relates to purpose of map
- Avoid overcrowding the map!
- **Chapter 11**- Map ReadingX
- **Chapter 12-** Practical