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HURRICANE CONFERENCE

May 1 - 2, 2009

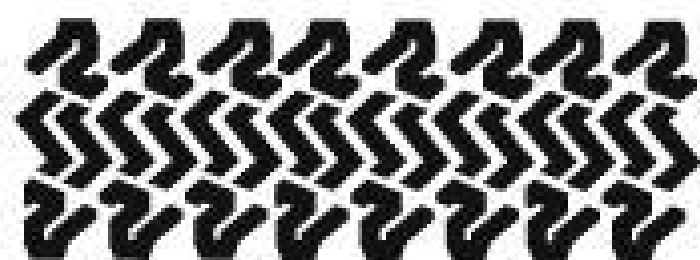
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Map Reading and Land Navigation

A Basic Introduction



Basic Overview

- The 3 main ideas that will be covered are:
 - Map Familiarization
 - Compass Familiarization
 - Land Navigation From a Map











Map Familiarization

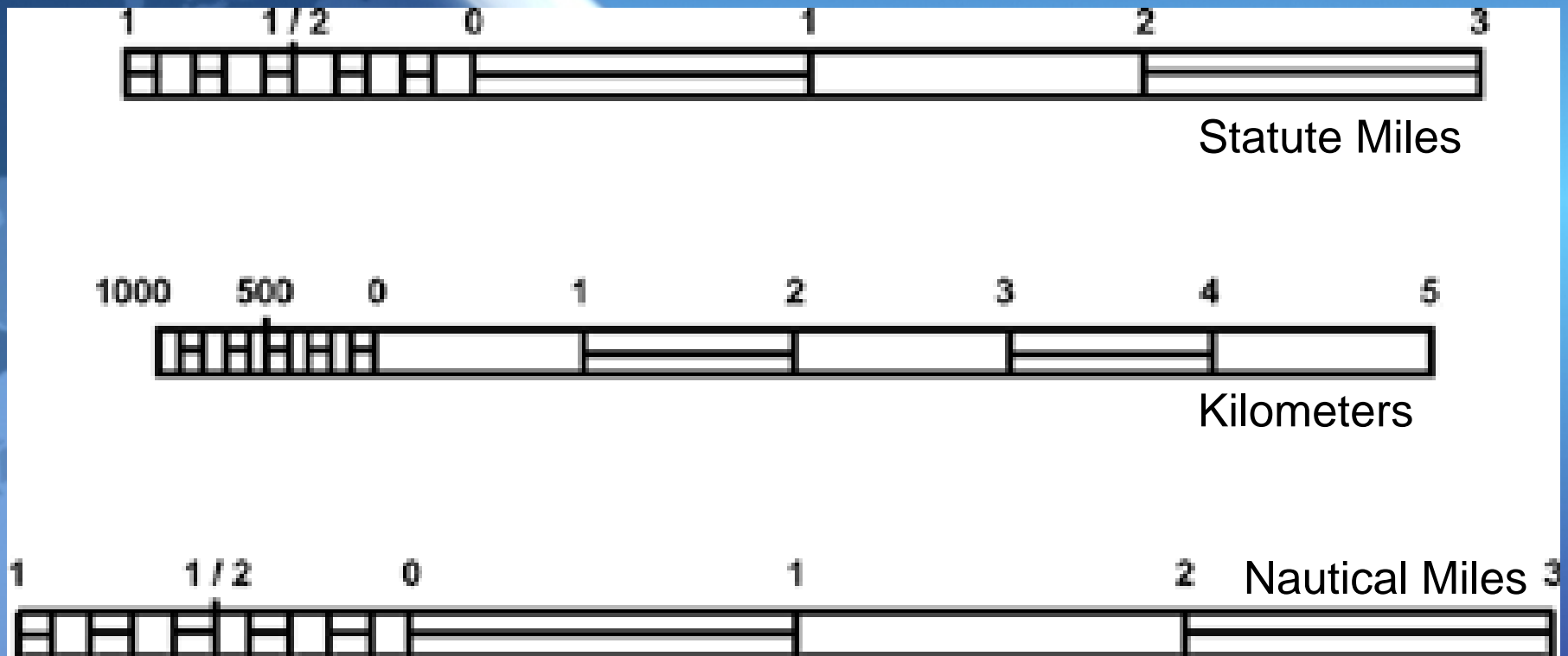
Legend

- Also displays roads, railroads, boundaries, etc.

Topographical Symbols

	CHURCH
	SCHOOL
	TANKS
BENCH MARKS:	
BM X231	MONUMENTED
X231	NON - MONUMENTED
	MINE OR QUARRY
	BUILDING OR STRUCTURES
·227	SPOT ELEVATION IN METERS
RAILROADS:	
	SINGLE TRACK
	MULTIPLE TRACK
	CEMETERY

Scale



- Place measuring tool to nearest thousand.
- Use broken scale to establish more accurate measurement.



Colors on a Map

BLUE ---- Water

GREEN ---- Vegetation

BROWN ---- Elevation and Relief

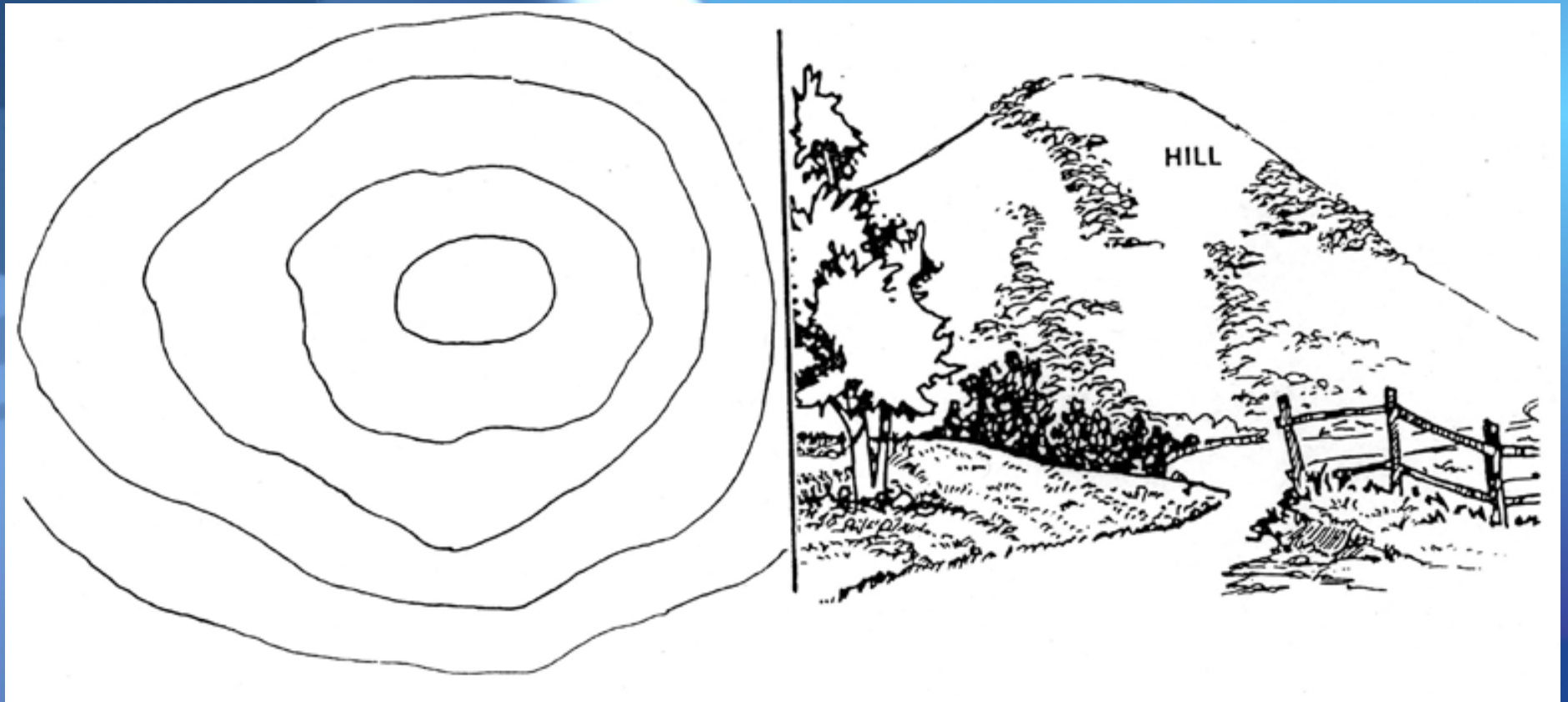
BLACK ---- Man Made Features Buildings, SE, Roads,
Symbols

RED ---- Main Roads

Terrain Features

- 5 MAJOR Terrain Features:
 - Hilltop
 - Valley
 - Saddle
 - Ridgeline
 - Depression
- 3 MINOR Terrain Features:
 - Draw
 - Spur
 - Cliff
- 2 SUPPLEMENTARY Terrain Features:
 - Cut
 - Fill

Hilltop



Valley



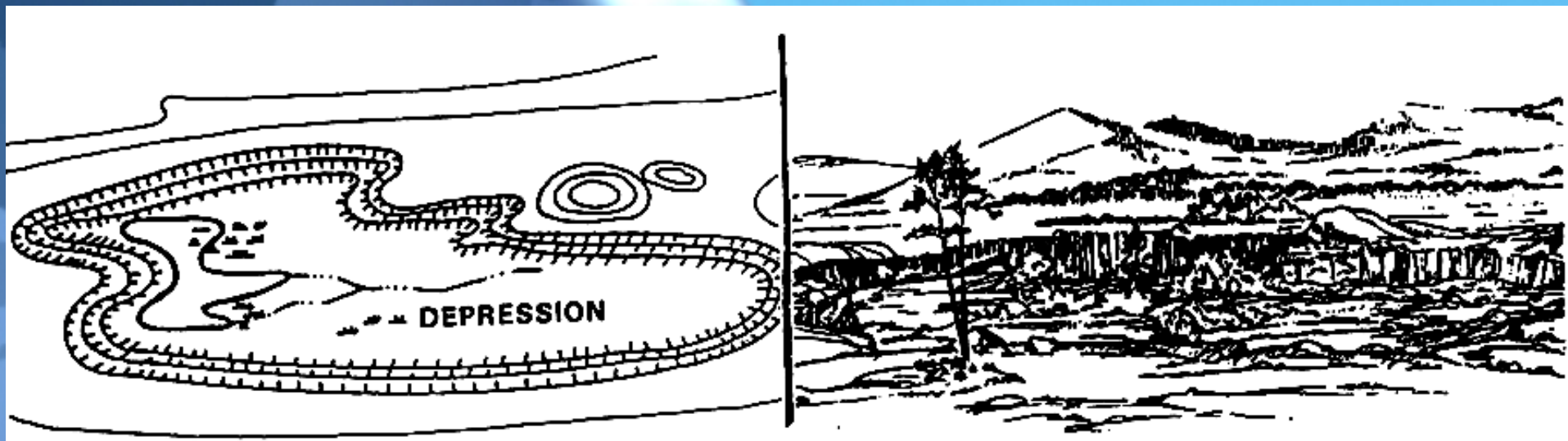
Saddle



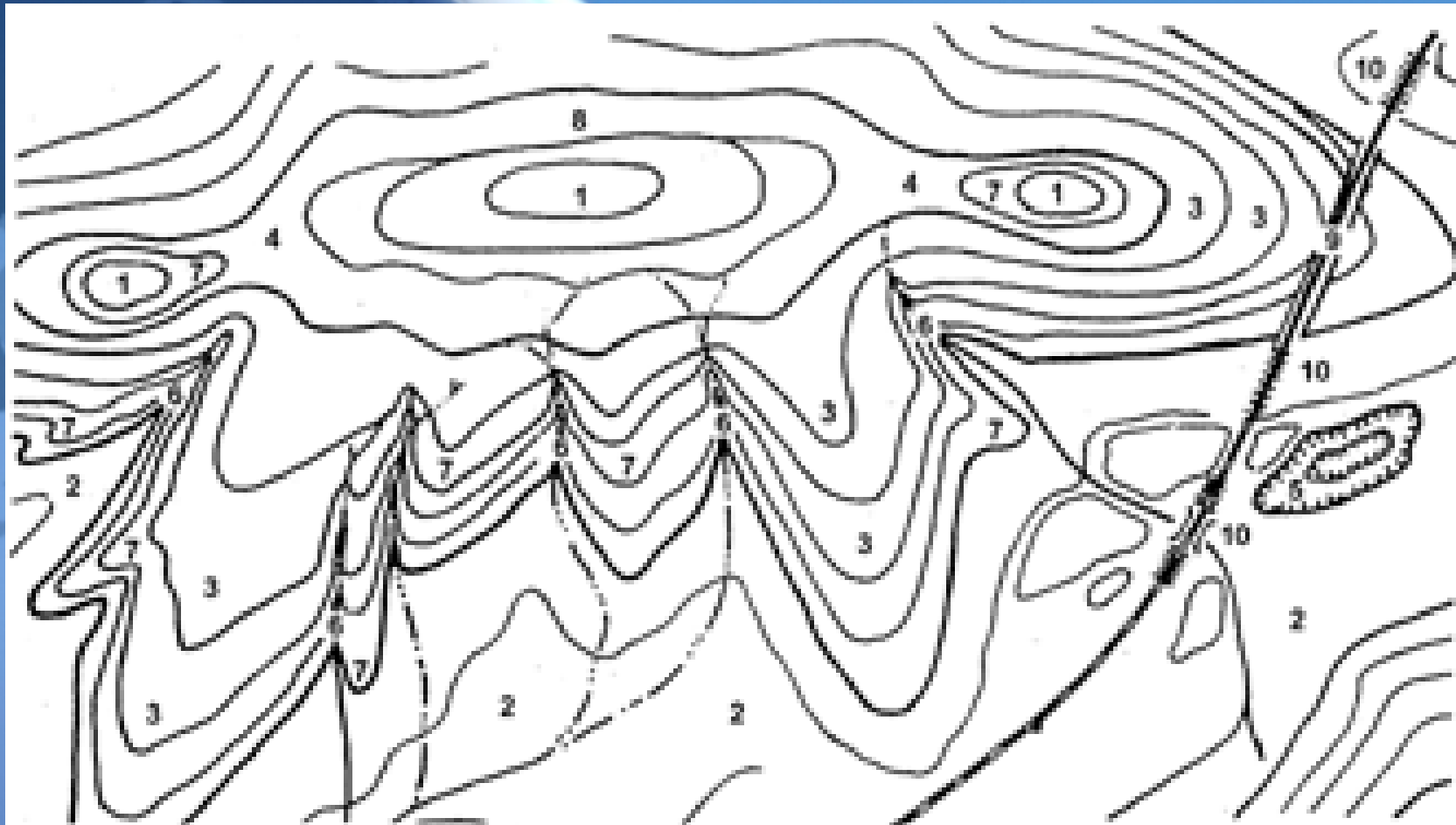
Ridgeline



Depression

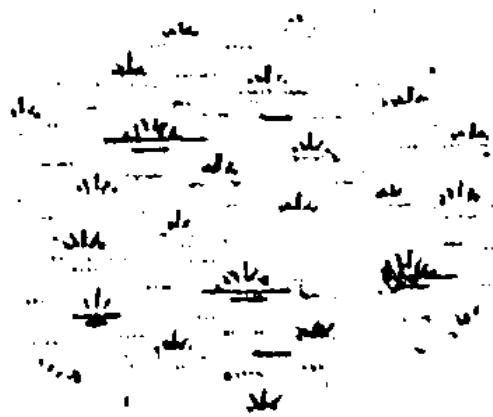


Terrain Features



- | | | | | |
|-----------|-----------|---------------|----------|----------|
| 1. HILL | 3. RIDGE | 5. DEPRESSION | 7. SPUR | 9. CUT |
| 2. VALLEY | 4. SADDLE | 6. DRAW | 8. CLIFF | 10. FILL |

TOPOGRAPHIC SYMBOLS DRAINAGE AND VEGETATION



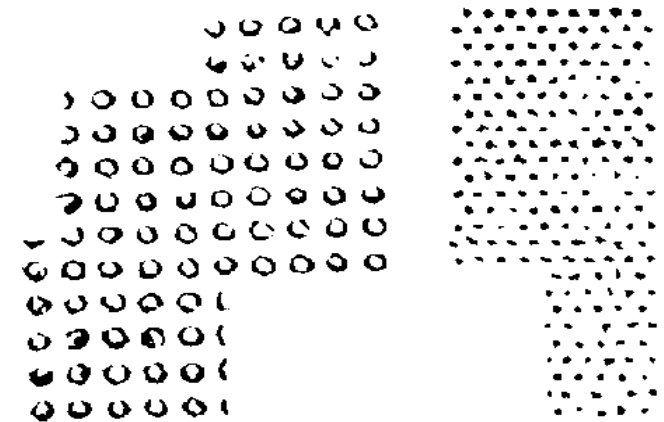
MARSH OR SWAMP



TROPICAL GRASS



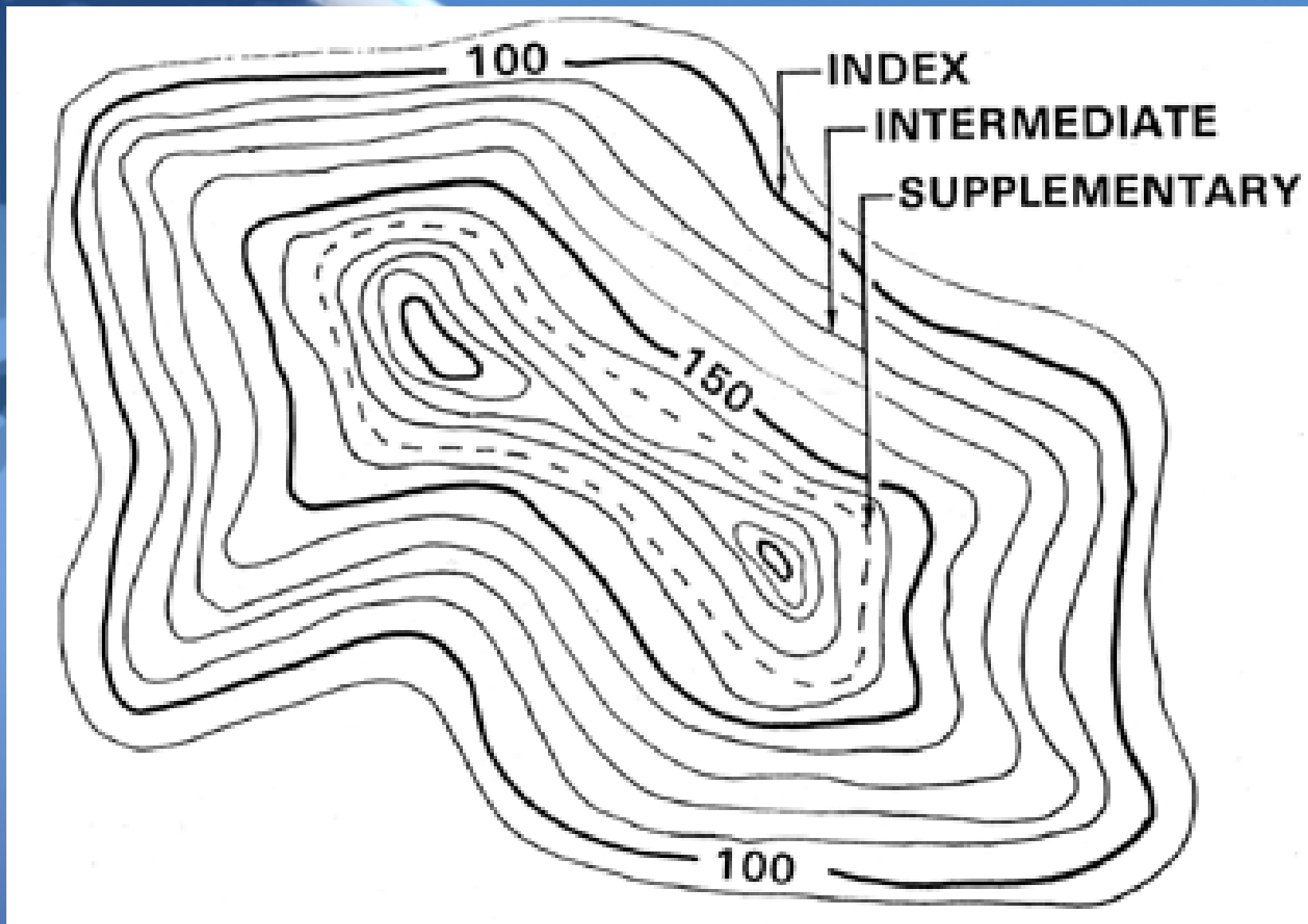
WOODS



VINEYARD/ORCHARD

**Can also be found in legend

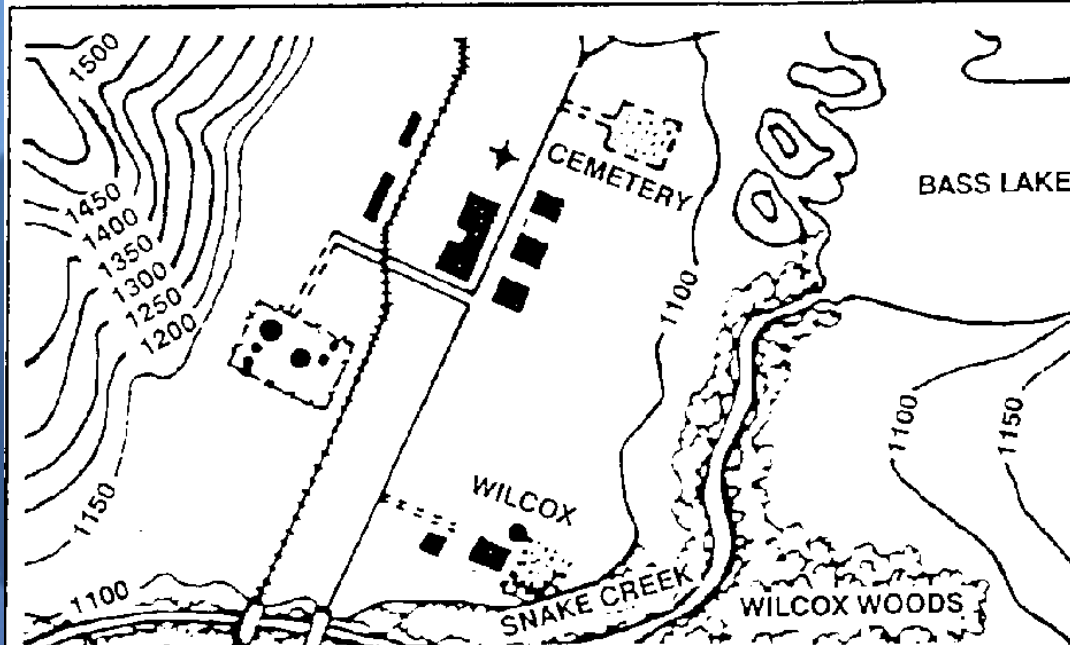
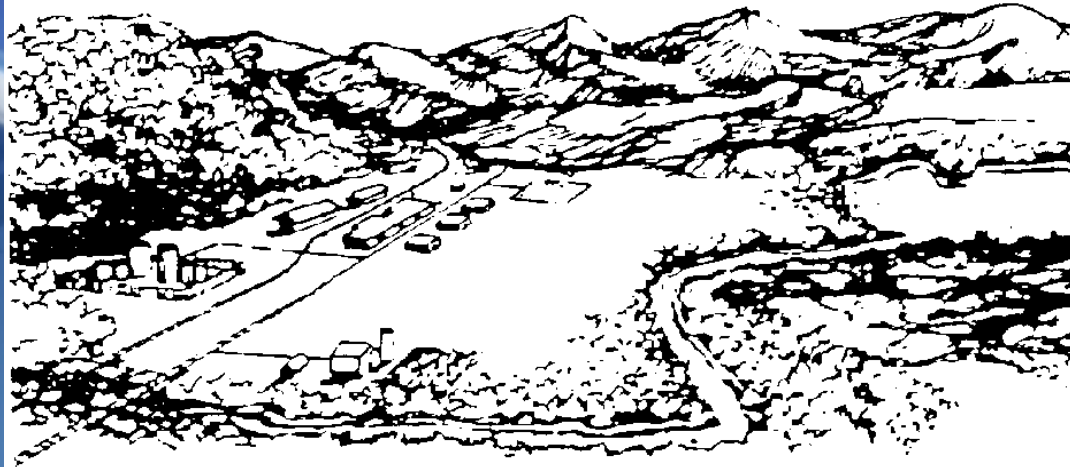
Contour Lines



Contour Lines

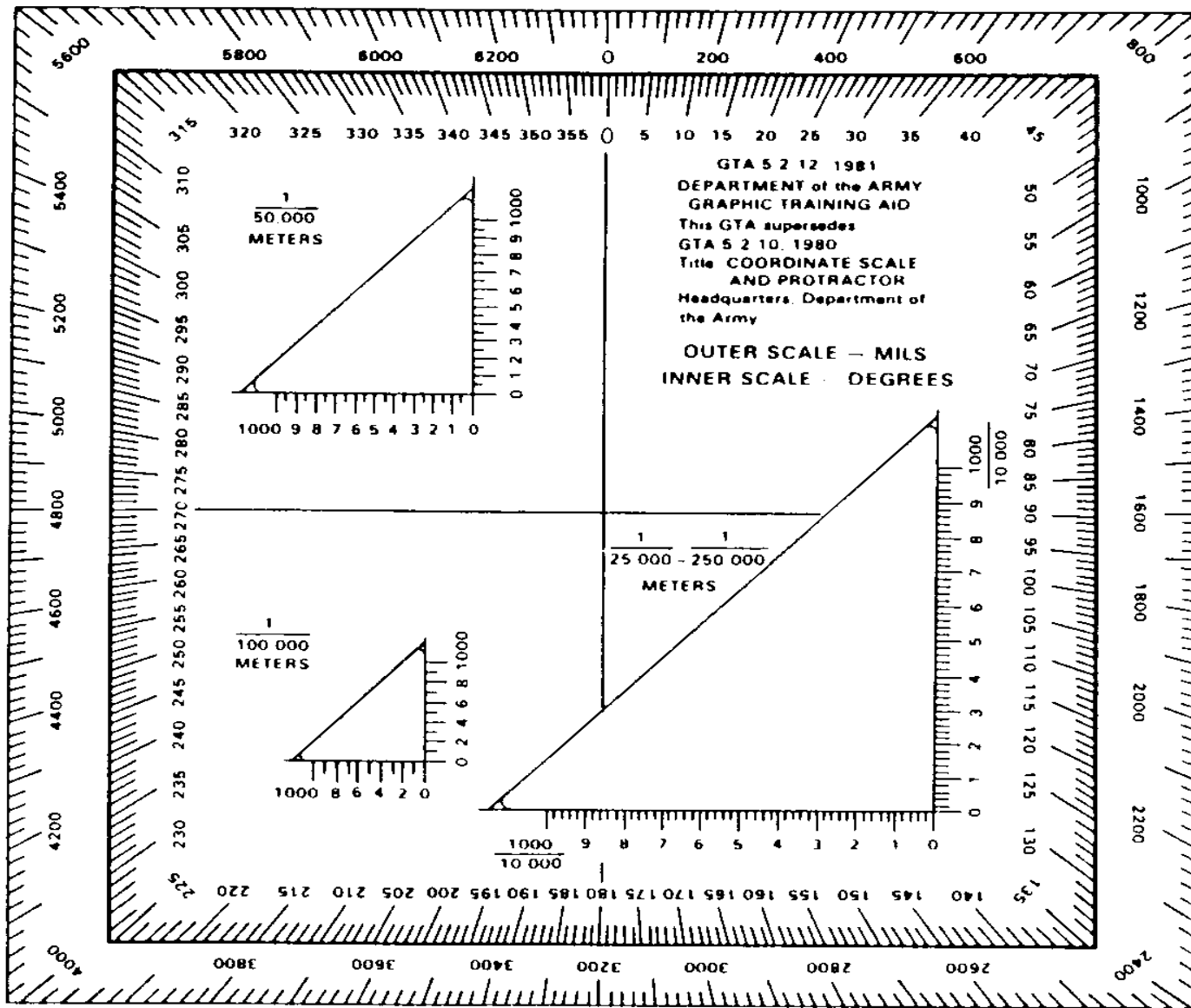
- Index - thick brown line
 - Intermediate - thin brown line
 - Supplementary - broken line
-
- Contour line interval will typically be located under the scale in the bottom center of the map.

AN AREA VIEWED FROM A GROUND POSITION

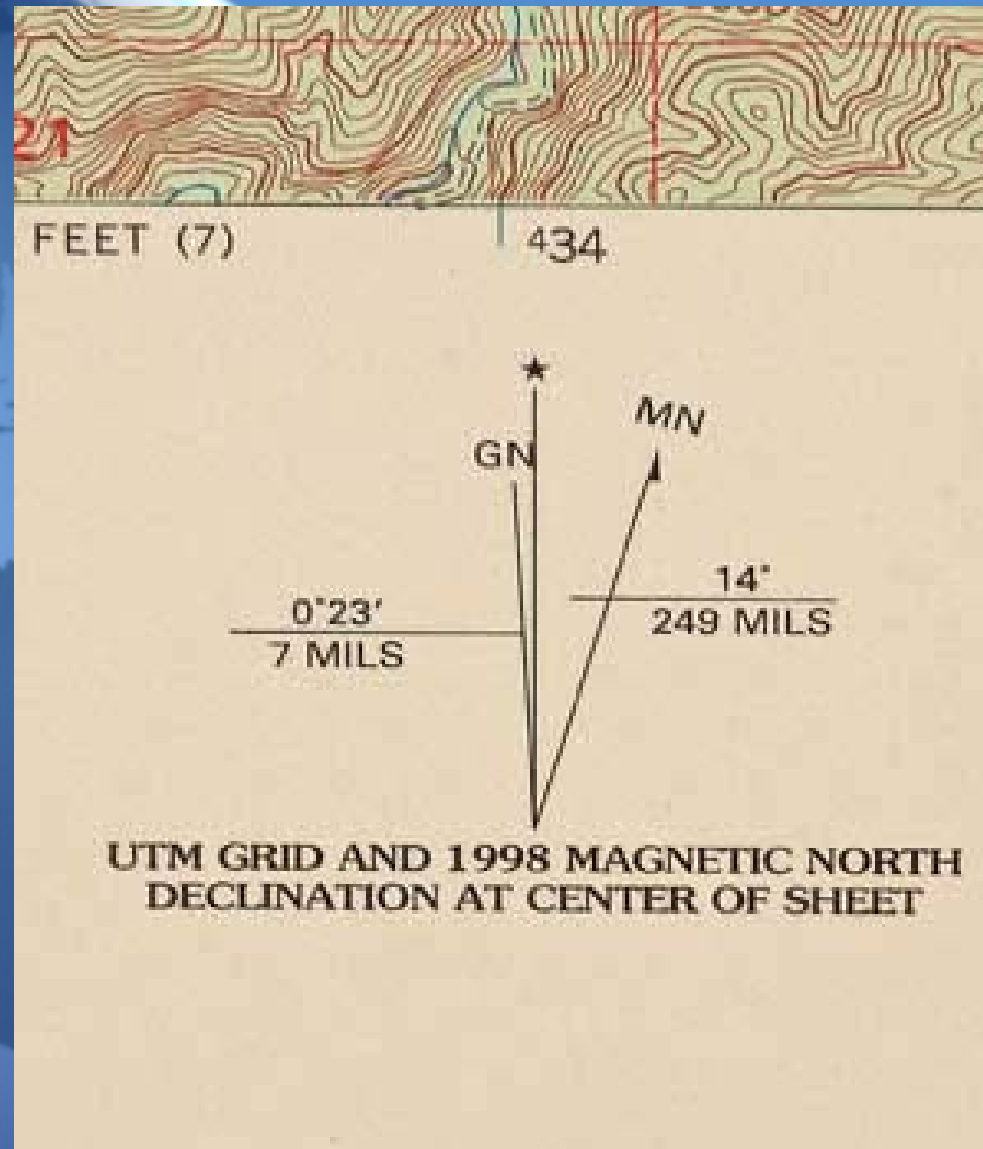


MAP OF THE SAME AREA

Protractor



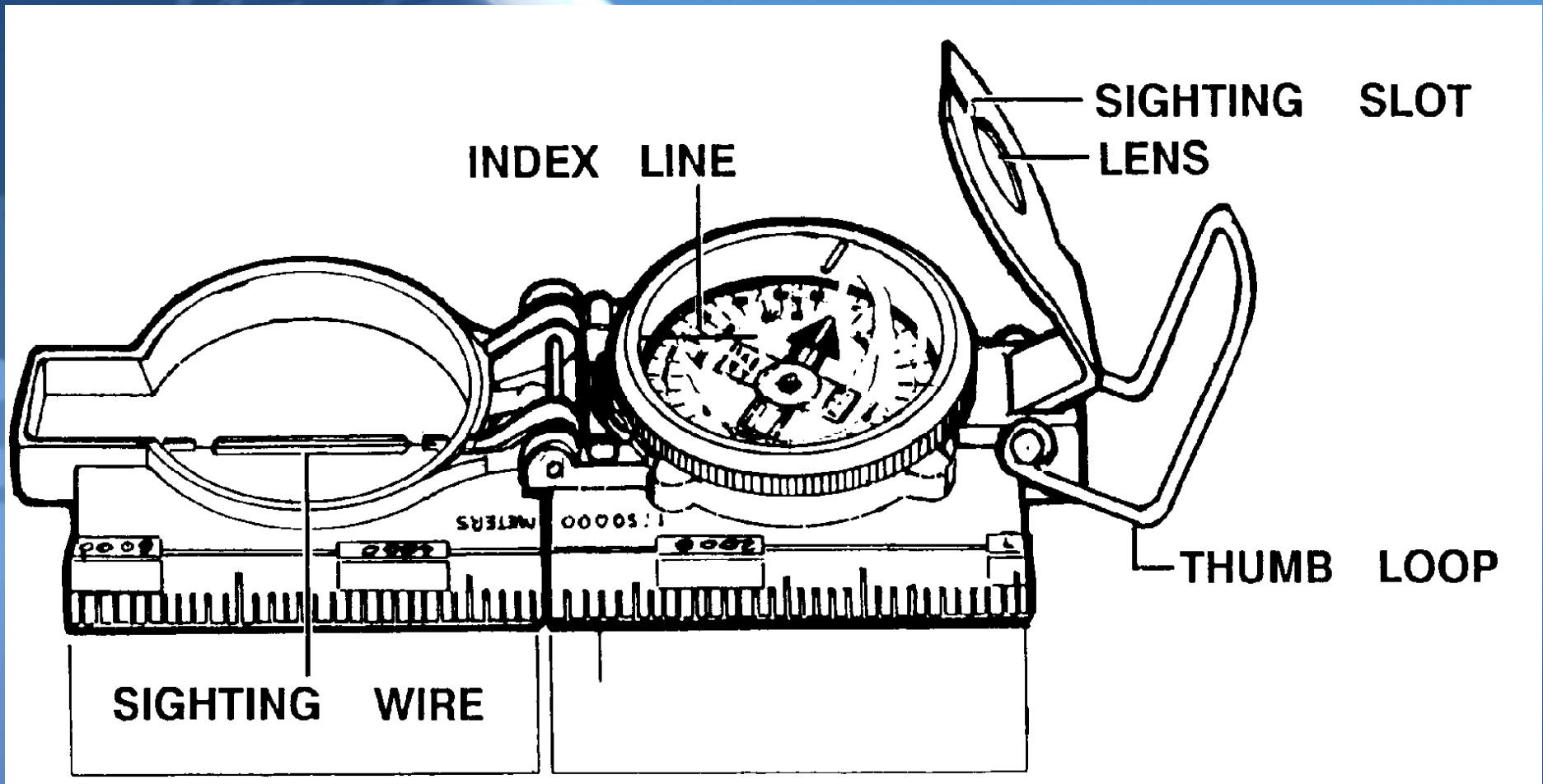
3 Norths





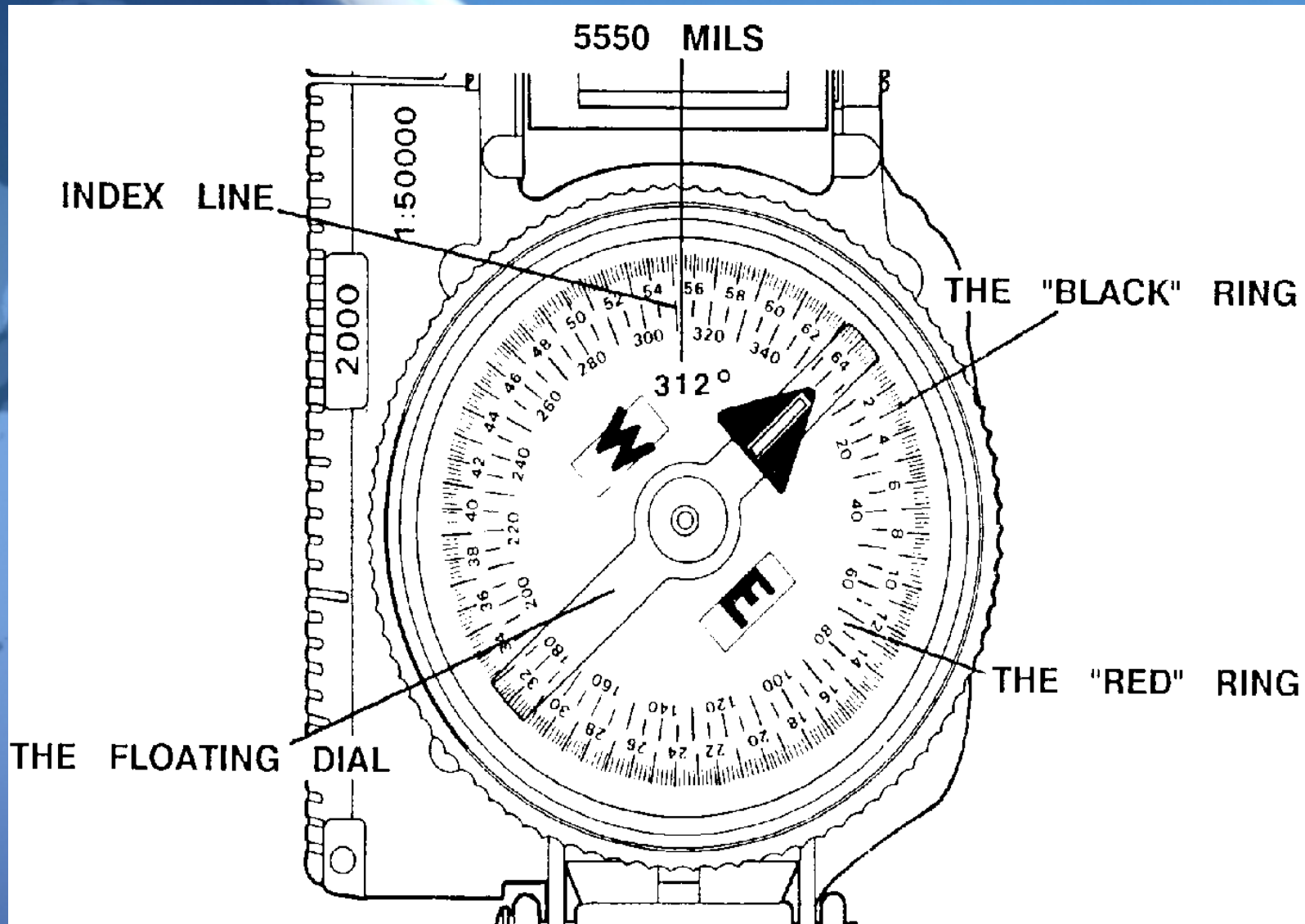
Compass Familiarization

Compass Familiarization



****Note: Do not attempt a compass measurement inside vehicle**

Compass Familiarization



Definition of Azimuth

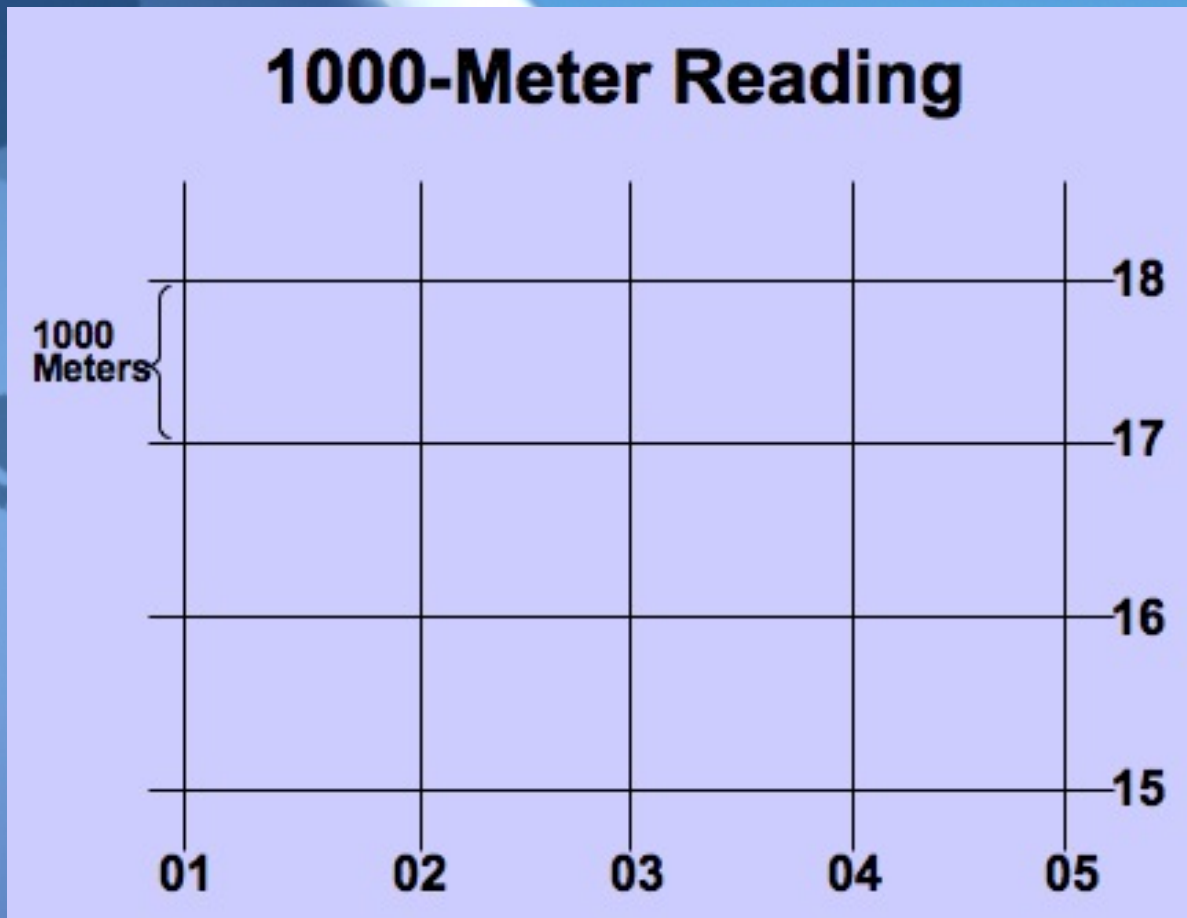
azimuth $['azəm\theta]$ noun

the direction of a celestial object from the observer, expressed as the angular distance from the north or south point of the horizon to the point at which a vertical circle passing through the object intersects the horizon. the horizontal angle or direction of a compass bearing.

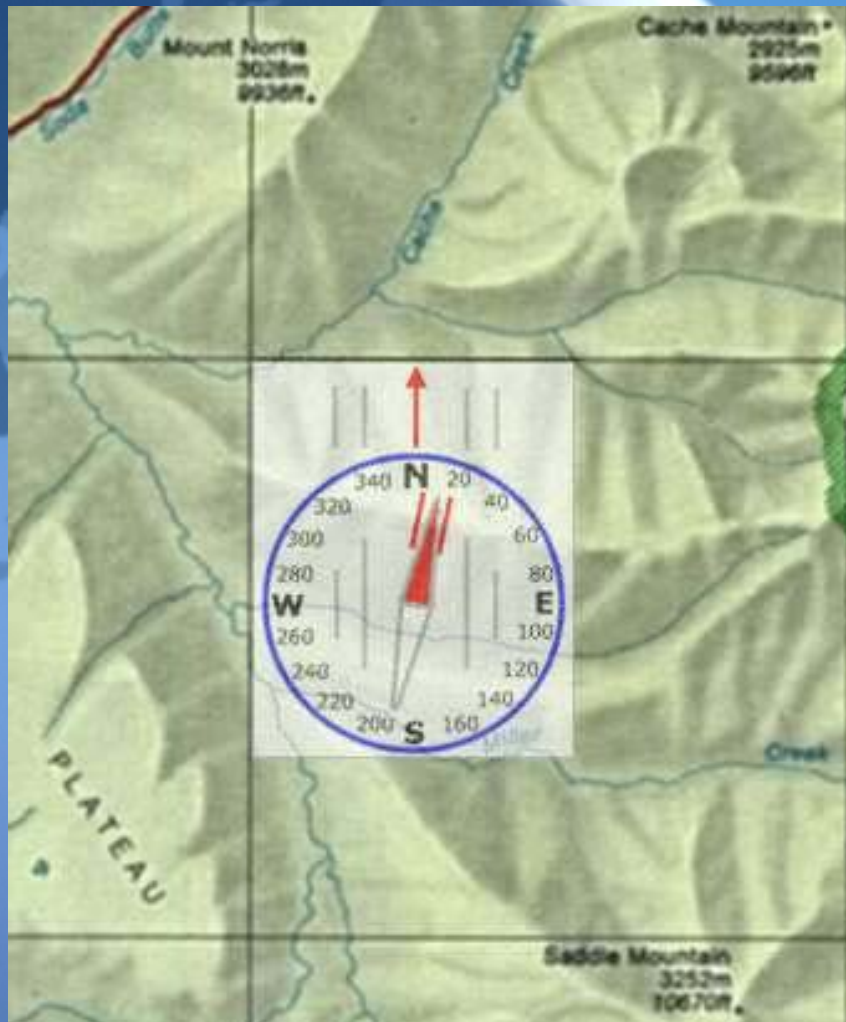


Land Navigation From a Map

How to Read a Map

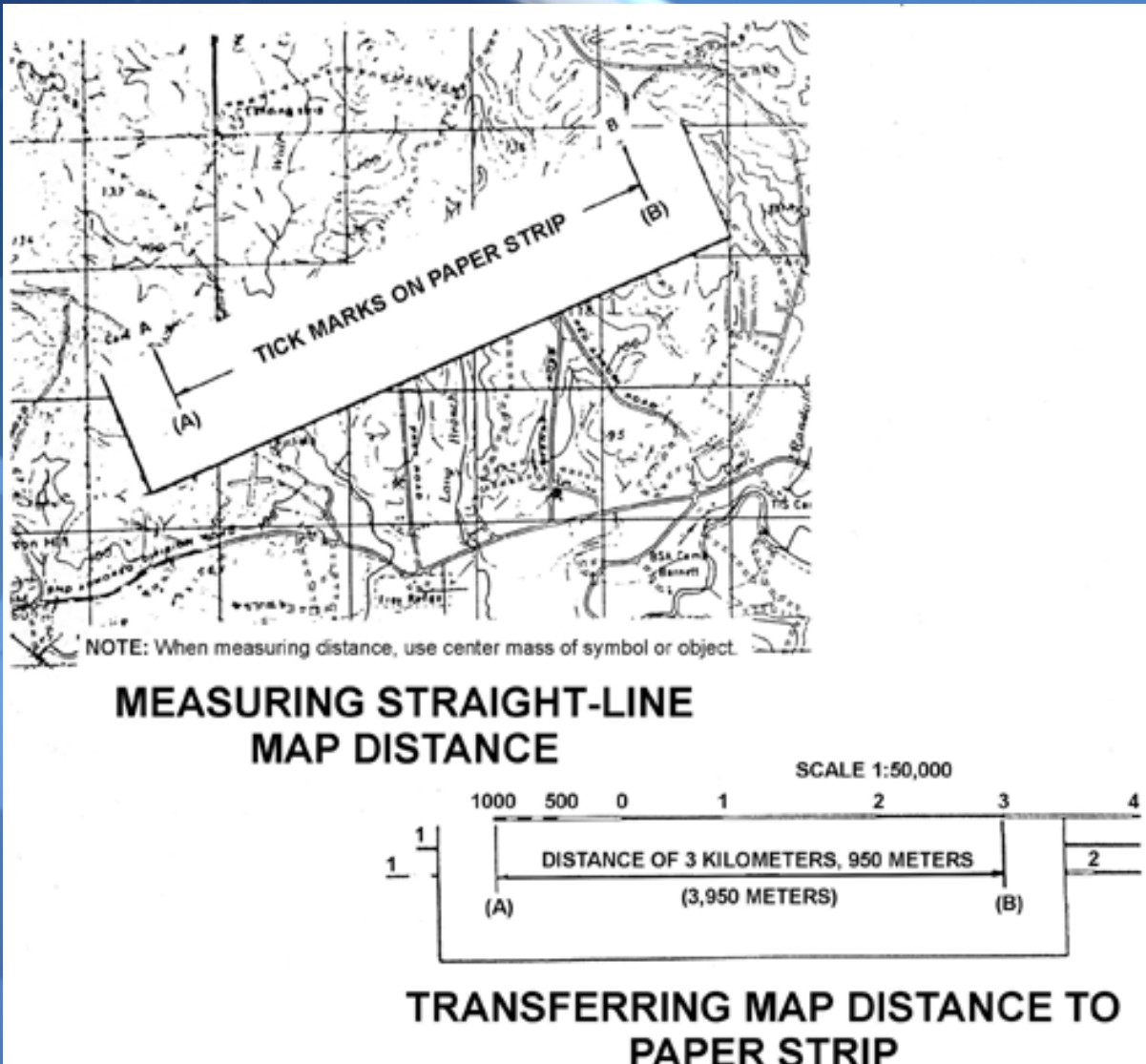


Orient a Map



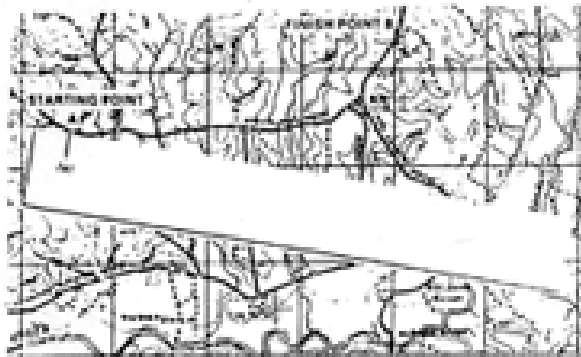
- Align your compass with vertical grid lines and orient your map in a north-facing manner

Measuring Straight Line Distance

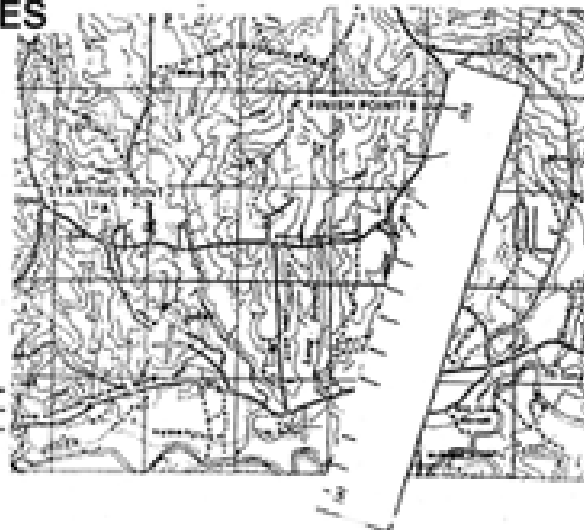


Utilizing a straight edge, mark distance on measuring tool (e.g. Scrap paper, protractor, etc.) and bring from map to scale to determine distance.

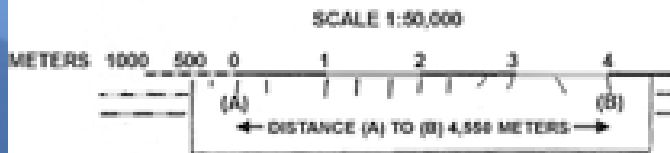
Measuring Curved Line Distance



MEASURING CURVED LINES



PLACING TICK MARKS



DETERMINING DISTANCE

Pin measuring tool and pivot at each turn. Transfer from map to scale to determine distance.

Shooting and Azimuth on a Map

- Center the index of your protractor directly on your point of interest.
- Align your base line with the vertical grid line.
- Align straight edge with index and degree of azimuth and mark point on map.
- Remove protractor and draw line of direction.

Back Azimuths

- If it's more than 180, subtract 180
- If it's less than 180, add 180
- Ex: Find the back azimuth for 130°
–Answer: 310°
- Ex: Find the back azimuth for 277°
–Answer: 97°

4 Digit Coordinates

- Ex: What road runs through grid square 9977?
- Answer: Yankee Road

4 Digit Grid Coordinates

1. What benchmark is located in grid square 9374?
2. What terrain feature is located in grid square 0473?
3. What is located in grid square 0371?
4. What is the straight line distance of the road going through grid square 9473?
5. What topographical feature is located in grid square 9771?
6. What is the curved line distance for the road starting in grid square 8876 and ending at the intersection in grid square 9372?



Answers

1. Benchmark 67
2. Hilltop
3. Cemetery
4. Approx. 1,400 km
5. Vineyard/Orchard
6. Approx. 7,500 km



In Closing...

- With a basic understanding of map reading and land navigation, one can effectively utilize even the simplest maps, as long as they contain a scale and compass rose.



QUESTIONS?

NORMAN TRONES

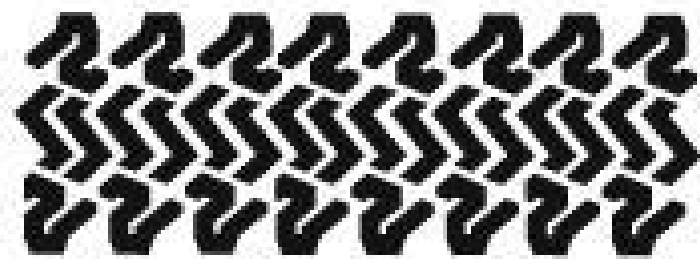
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TAKE A BREAK

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