NAVIGATING

WITH YOUR SENSES

1. TRAVEL SLOW ENOUGH TO OBSERVE EVERYTHING SURROUNDING YOU.

2. THIS ALSO MEANS LOOKING BACK TO SEE HOW THINGS WILL LOOK WHEN YOU RETURN.

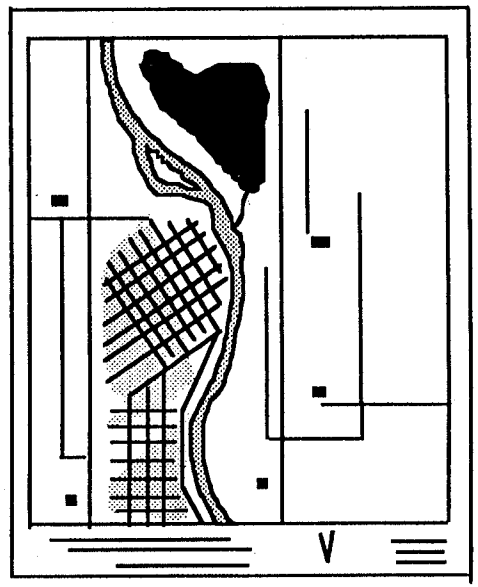
A COMMON OBSERVATION:

Modern travelers go so fast they only remember the blur, not the landmarks.

NAVIGATION

ABSOLUTE NAVIGATION : Global Mapping

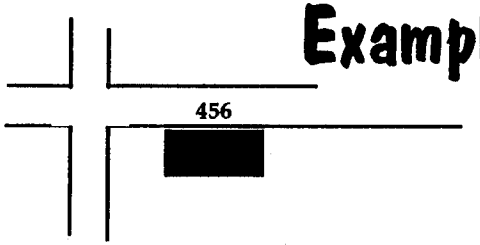
- Geographic
- Uniform Mapping System (UMS)
- Universal Transverse Mercator (UTM)
- Range & Township
- SDMRT
- Geographic Coordinate System (Latitude - Longitude)



The Geographic Coordinate System is the most widely used and recognized approach to global mapping.

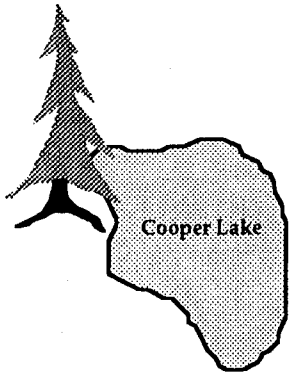
Geographic Mapping

Location system using known descriptive geographic points such as addresses, building site locations, or geographic features.



Examples:

- - Cooper Lake
- - 456 High Street
- - Civic Center Building



Often locations are keyed to these geographic points - -

One half mile south of Cooper Lake on the Canyon Road

The system works great, and needs little training as long as everyone understands the references used.

Uniform Map System

Devised in Washington State as the official system for SAR & other emergencies in that state.

Example Point Designation: **SEA 123 B 4567**

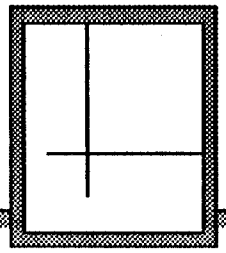
SEA = Sectional Aeronautical Map Designation - - (Seattle Sectional)

123 = Designated number of a 15 minute quadrangle map within the sectional. Quadrangles numbered sequentially from left to right across sectional.

" B" = Represents one of four quadrants (7.5 minute) within the 15 minute quadrangle map. Four quadrants are designated A, B, C, and D. Coincide with U. S. Geological Survey Maps

45 = 4.5 miles horizontally from upper right corner.

67 = 6.7 miles vertically from upper right corner.

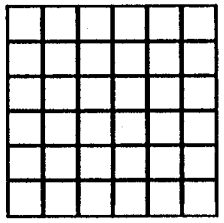


Range - Township System

Dates back to 1784

- The system uses 36 square mile "townships" (6 miles X 6 miles)

  - - The sections are 1 mile by 1 mile - -



Each horizontal row was called a "township" and each vertical row was called a "range".

- Each tier, both north and south is numbered consecutively from a starting point with N, S, E, or W added for accuracy.

Example Designation : **Section 2, T3N, R3W**

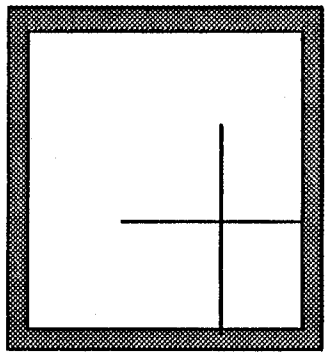
- This refers to Section 2 with the township 3 tiers north & 3 ranges west of the reference point.

SDMRT System

(San Diego Mountain Rescue Team)

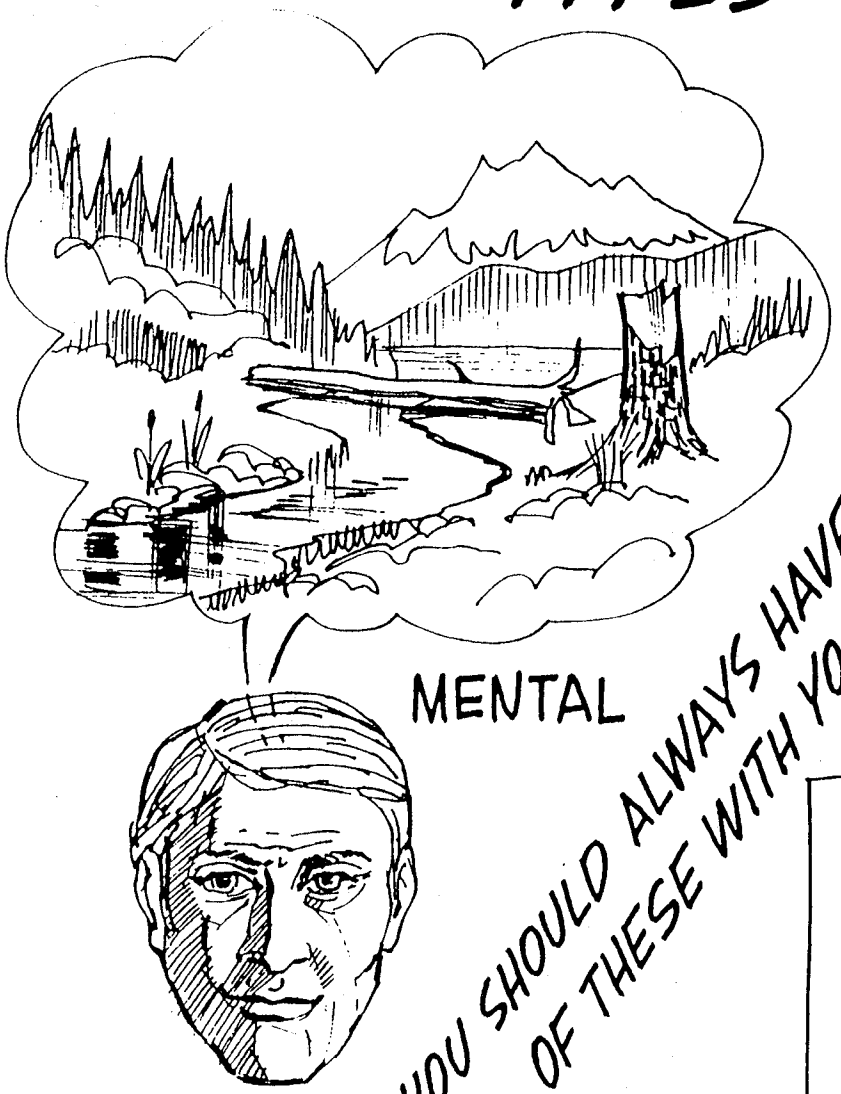
Uses plain measurements in inches from the map margin on both the top and bottom of the map.

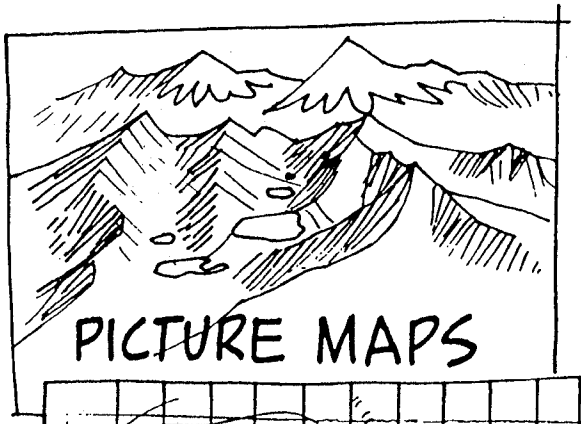
Point A is 2 -1/2 inches from the right and 4 - 3/8 inches from the bottom of the Northampton Quadrangle (7.5 minute series)

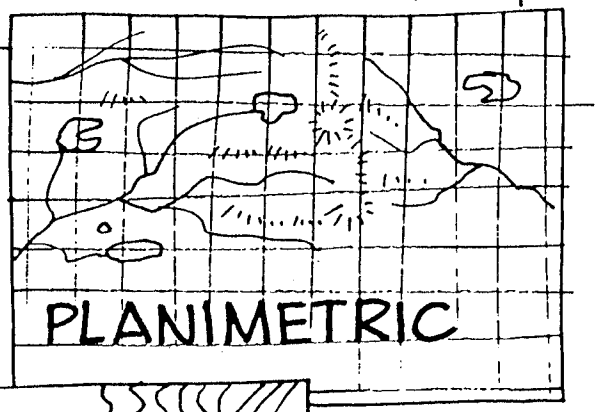


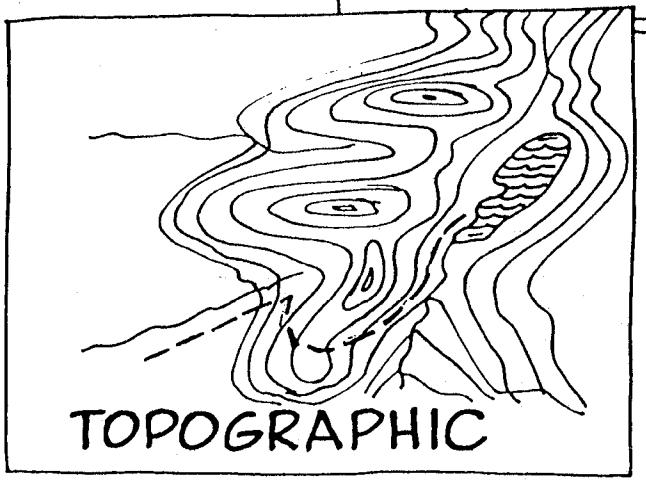
Requires an accurate measuring device for fine detail !

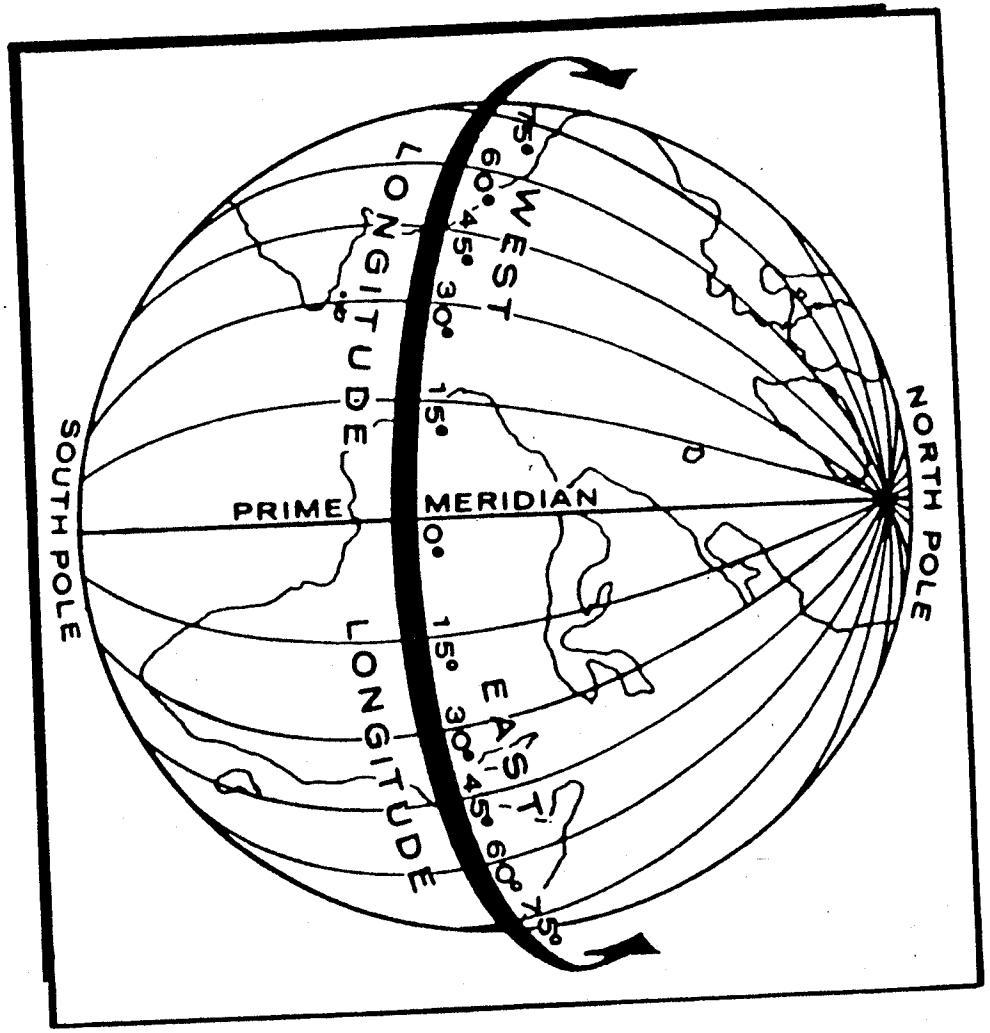
TYPES OF MAPS

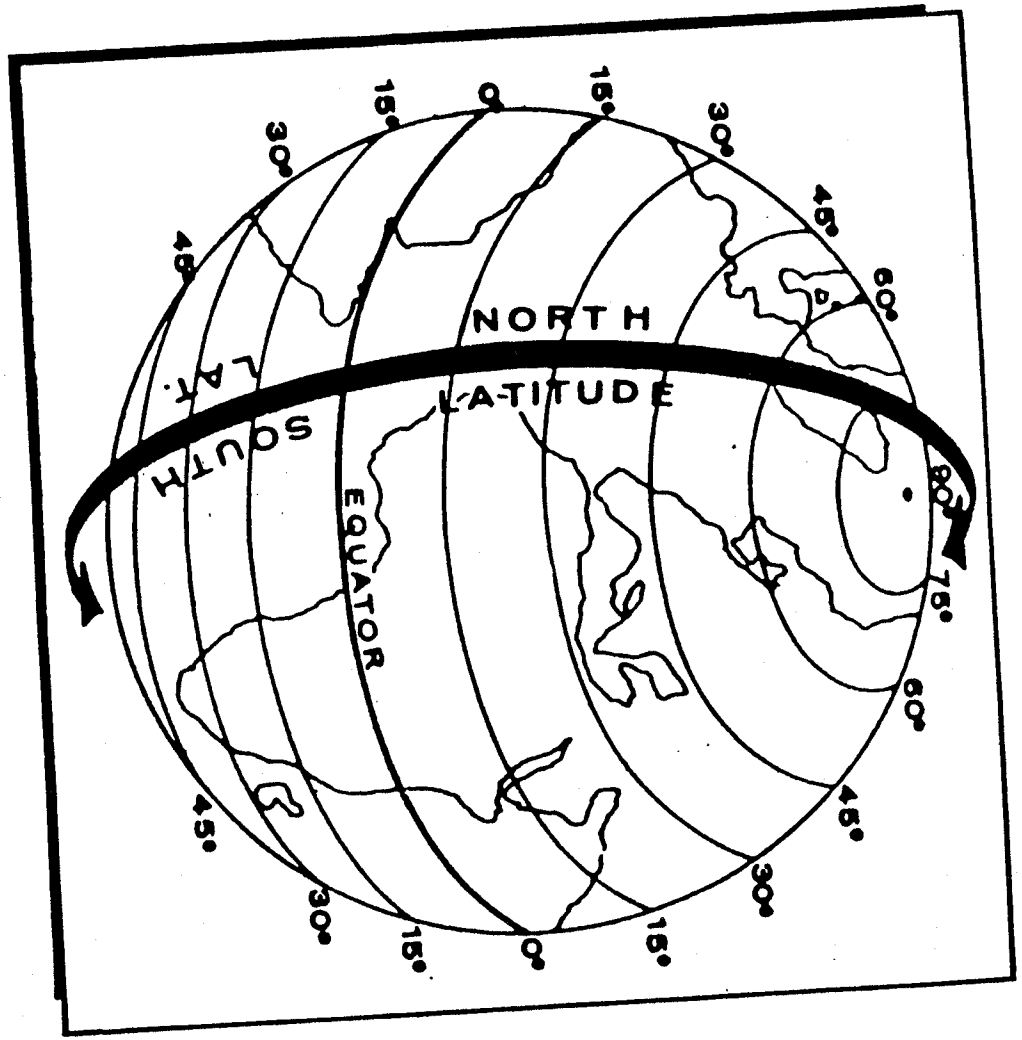


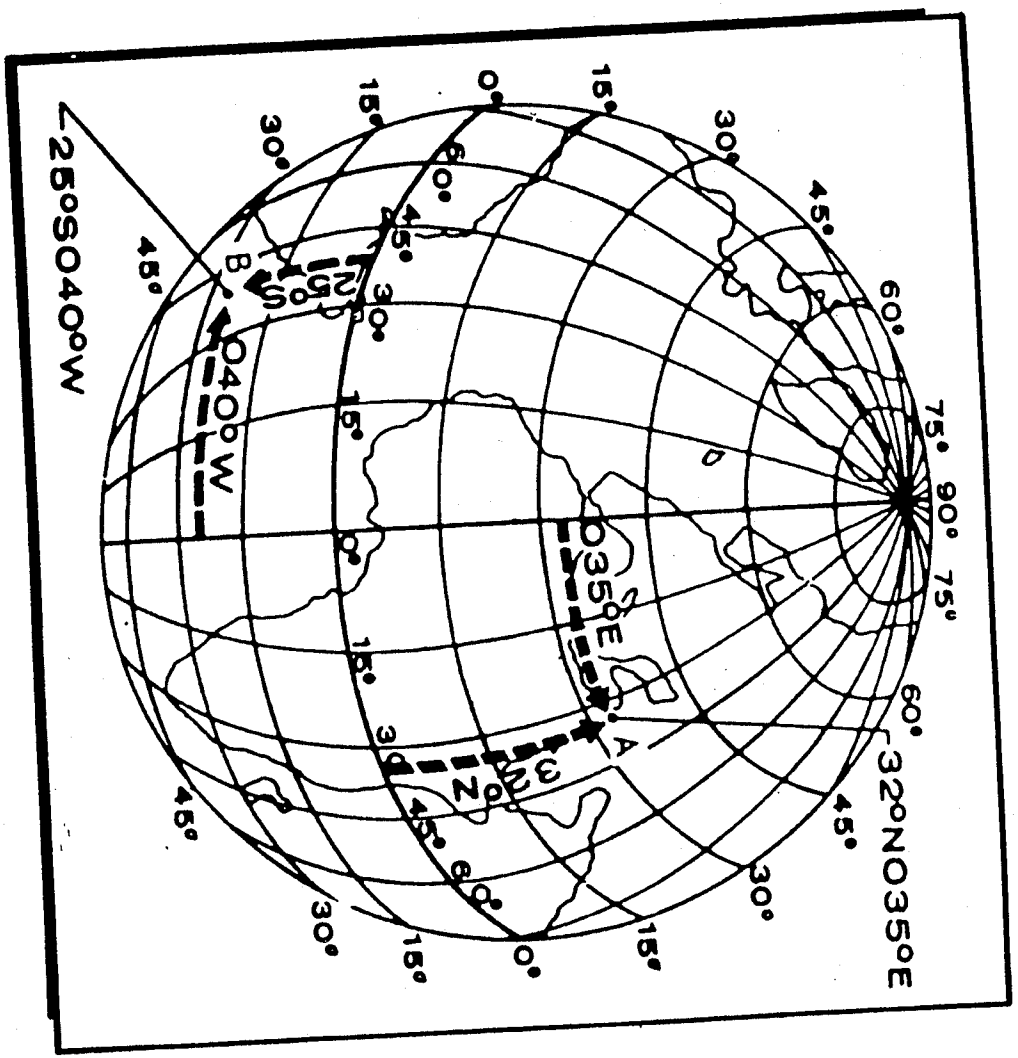




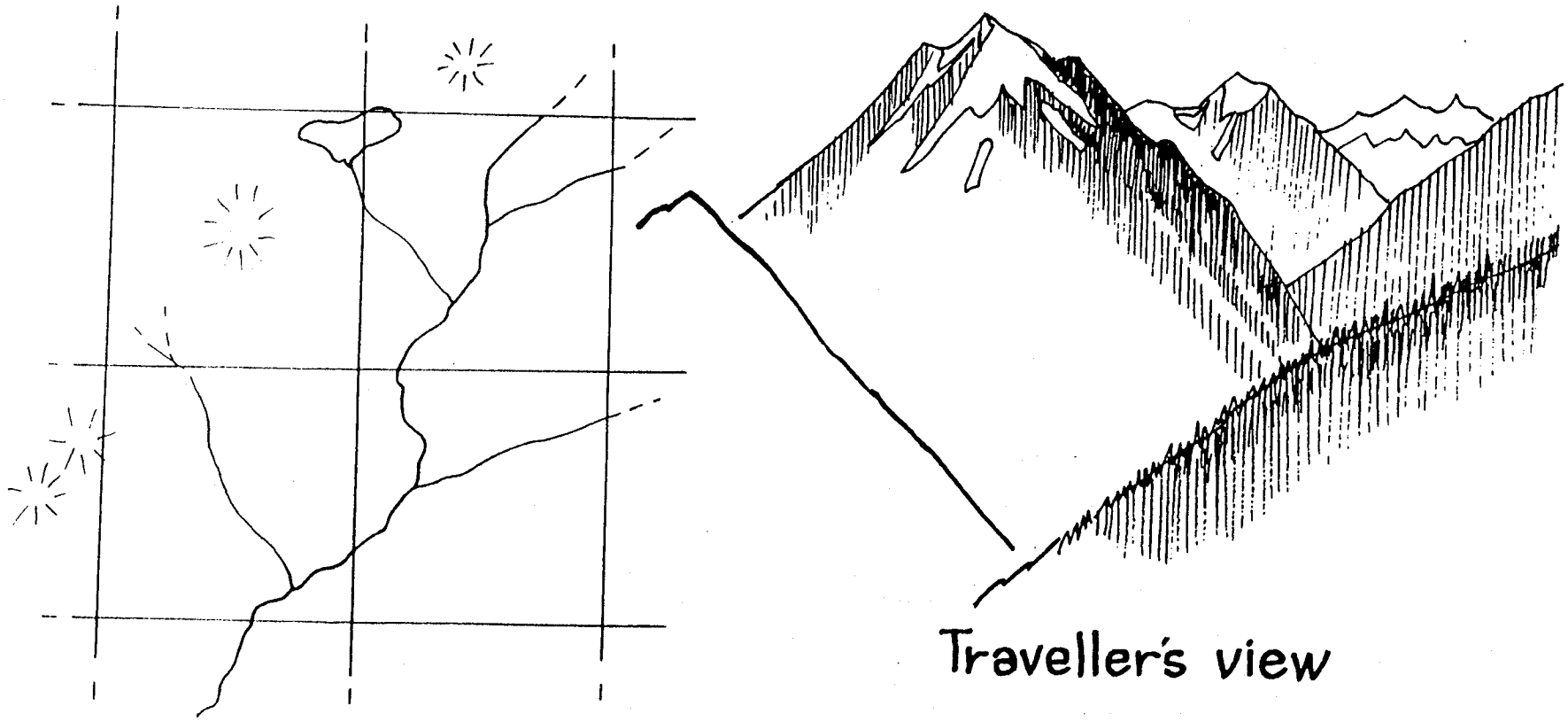



NORTH POLE
SOUTH POLE
PRIME MERIDIAN
0°
15°
30°
45°
60°
75°
WEST LONGITUDE
EAST LONGITUDE


NORTH
LATITUDE
SOUTH
LAT.
EQUATOR
0°
15°
30°
45°
60°
75°
90°

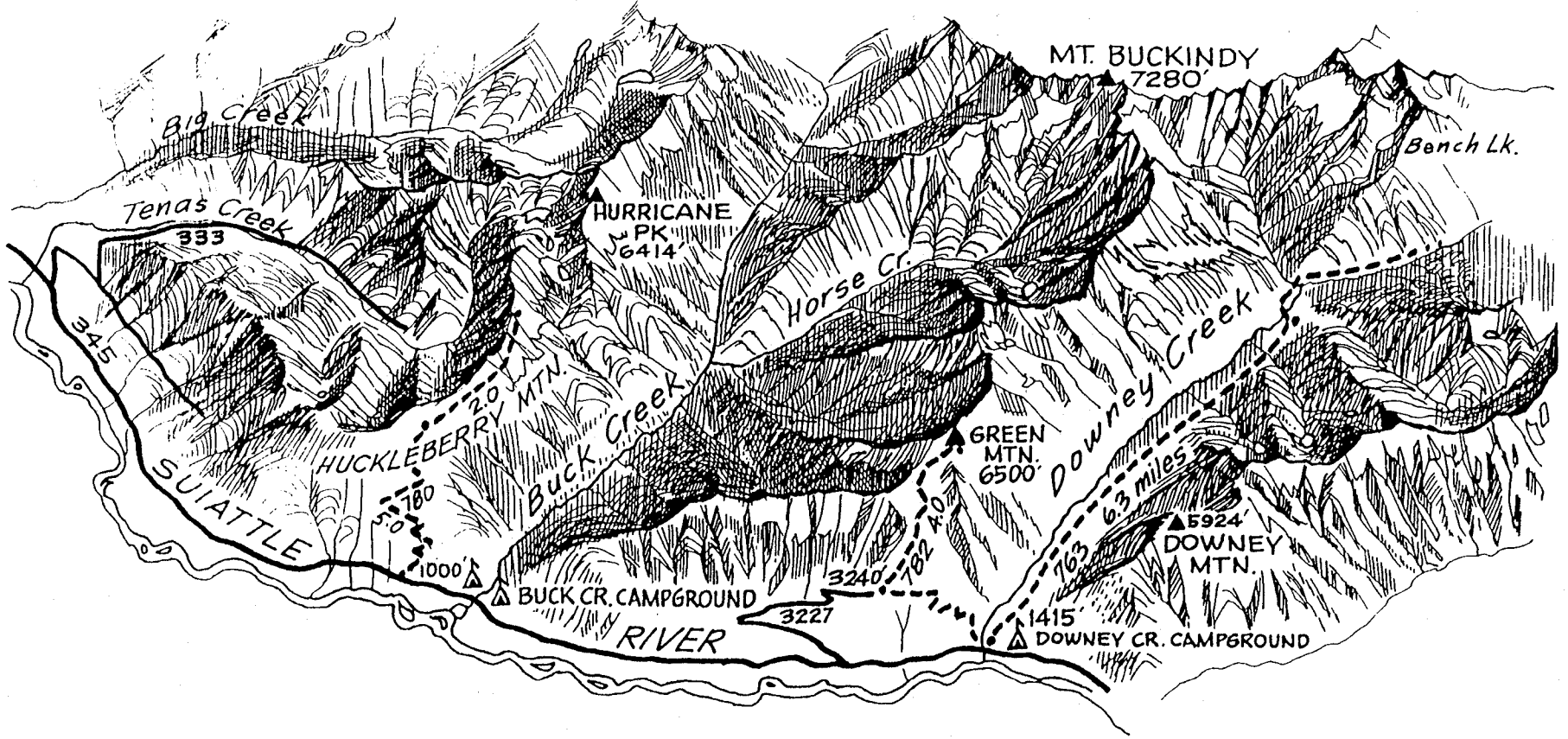

25°S040°W
32°N035°E
040°W
025°S
035°E
32°N
A
B
0°
15°
30°
45°
60°
75°
90°

PLANIMETRIC MAP

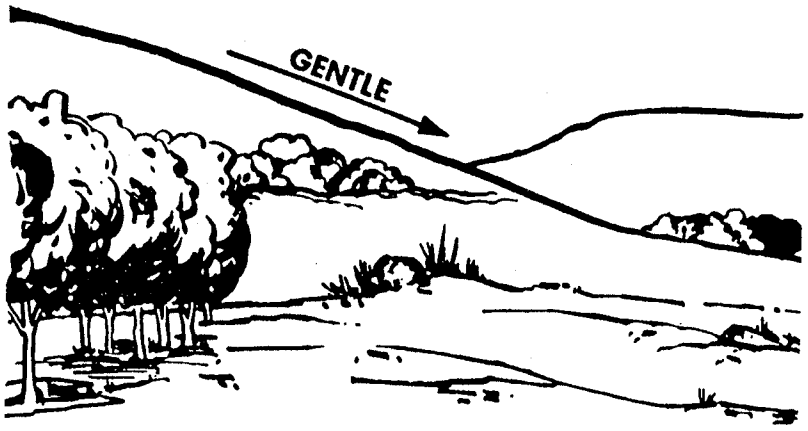


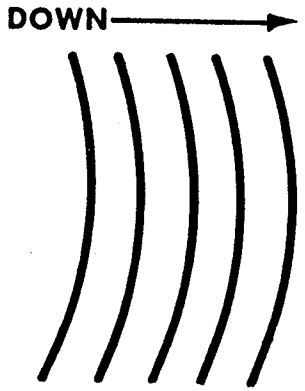
THE PICTORIAL RELIEF MAP

- USE FOR TRIP PLANNING, GENERAL ORIENTATION, BACKROAD AND TRAIL LOCATIONS, ROAD I.D. NUMBERS, TRAIL MILEAGES, AREA NOMENCLATURE

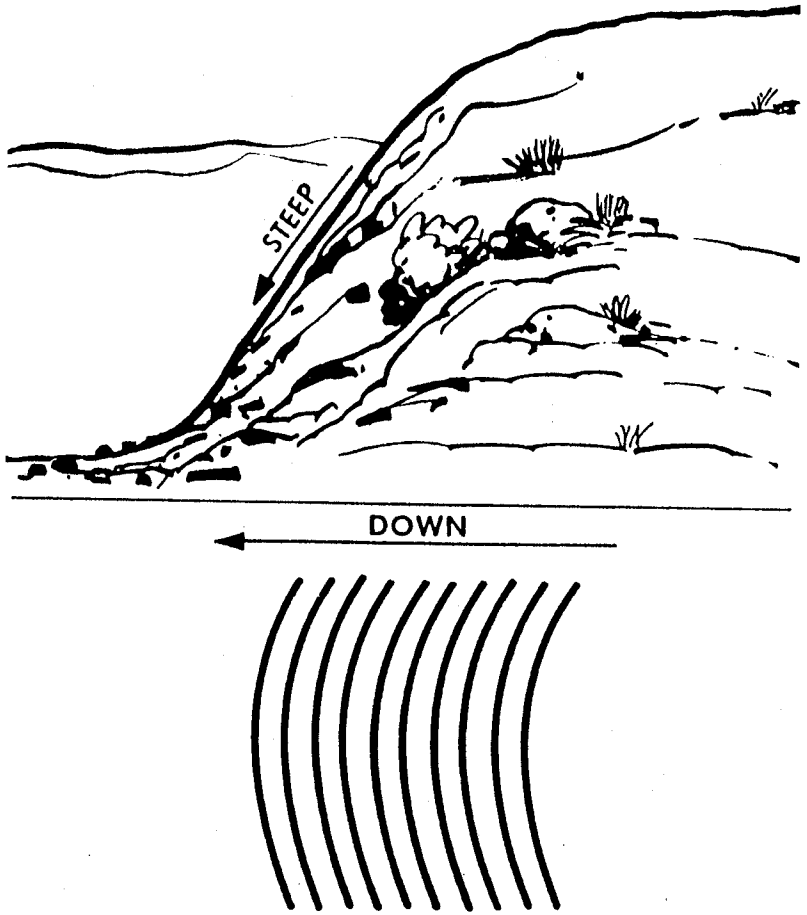


Vertical Photograph with Grid Overlay to Set Scale

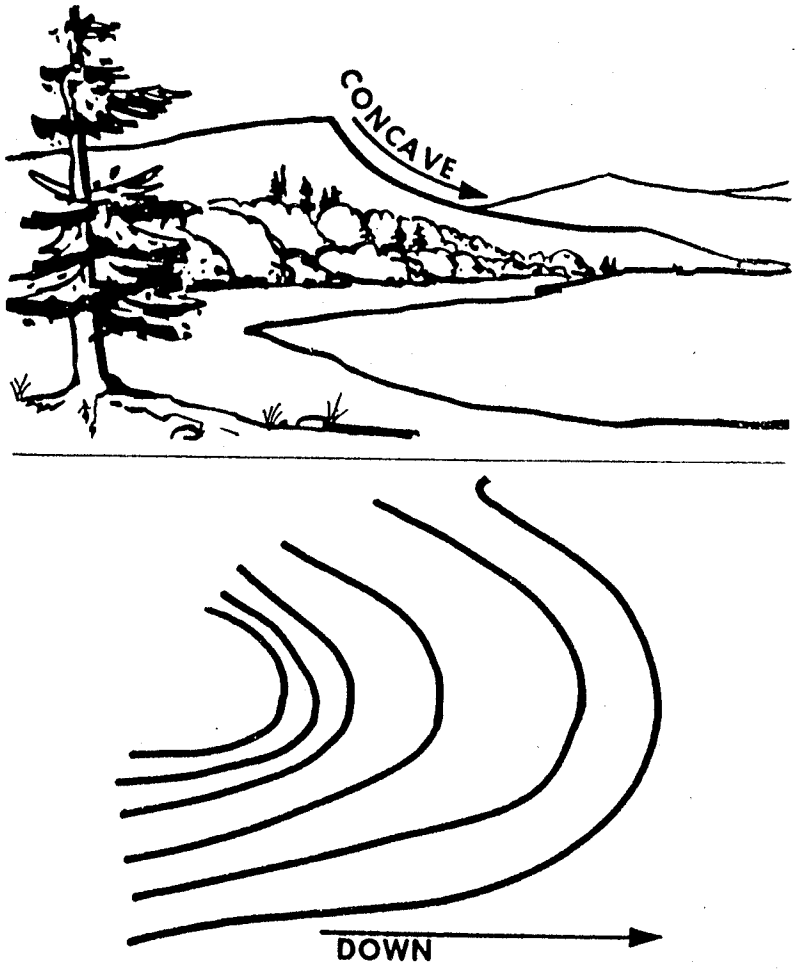




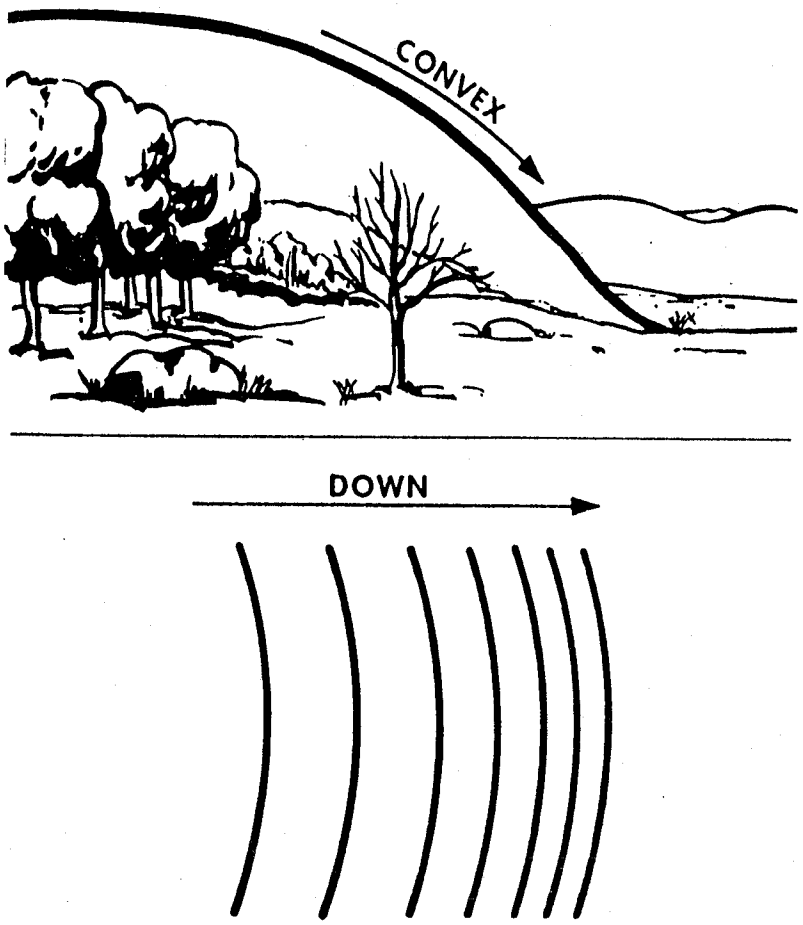
An example of how a topographical map shows contour of terrain. Gentle downward slope indicated here.



Steeper slope on topo map.



A concave downward slope.



A convex downward slope.

Determining Distance by Pace & Tally

There may be occasions when it will be necessary to estimate distance in the field. To do this you need to know:

- ☞ The length of your stride
- ☞ The number of strides taken

Pace is the distance, in normal walking, between one foot strike on the ground and the next foot strike on the ground.

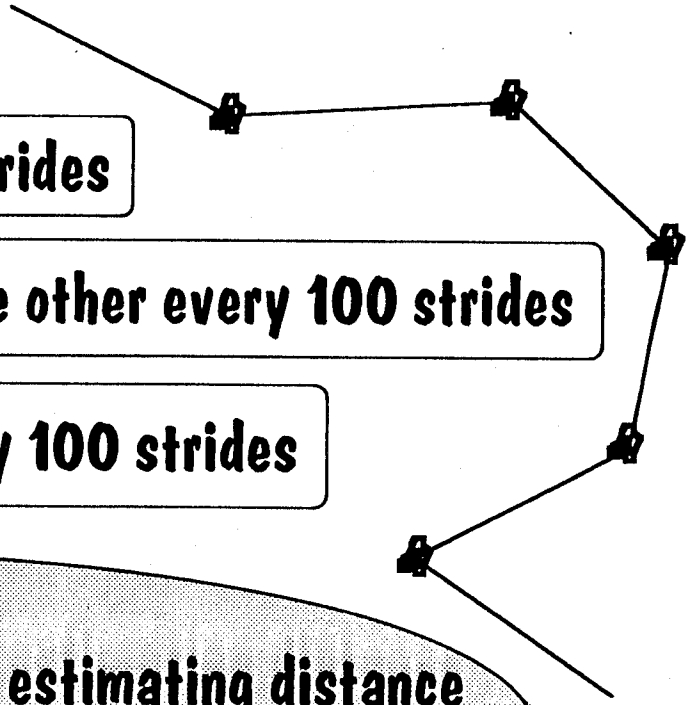
Stride is equivalent to 2 steps, or the distance between foot strikes of the same foot.

Average stride is usually 5 feet on level, even ground.

Determining Distance by Pace & Tally

To keep "tally" is to keep track of the distance traveled by one of several methods.

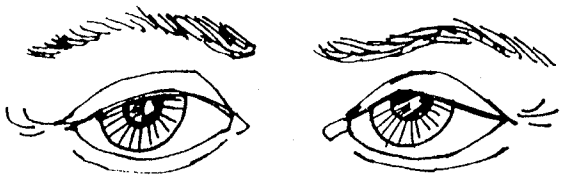
- Tying knots in a string every 100 strides
- Moving pebbles from one hand to the other every 100 strides
- Using a small hand counter for every 100 strides



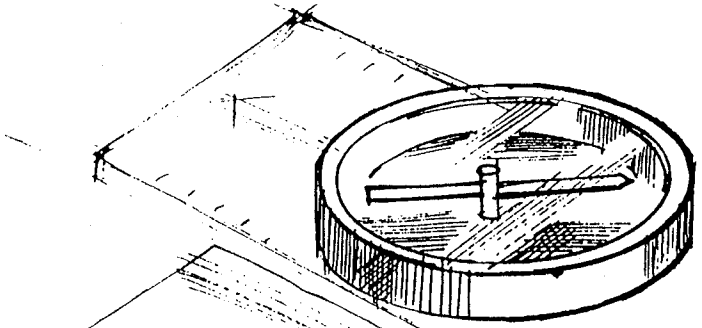
Field personnel should get used to estimating distance traveled and become comfortable with the accuracy of those estimates

PRIMARY NAVIGATION TOOLS:

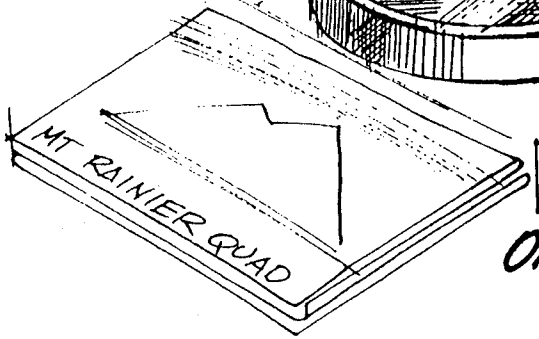
EYES, COMPASS, MAP



EYES: TO OBSERVE WITH

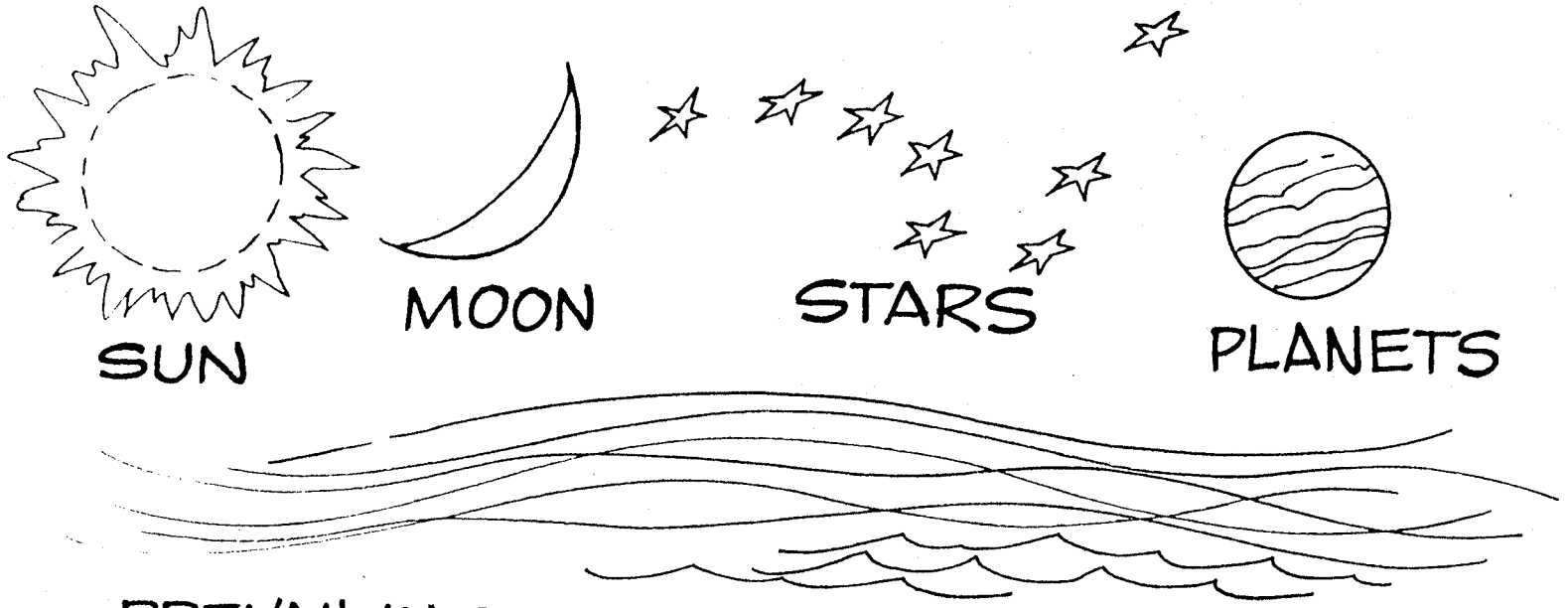


COMPASS: A MAGNETIZED NEEDLE THAT ALWAYS POINTS NORTH

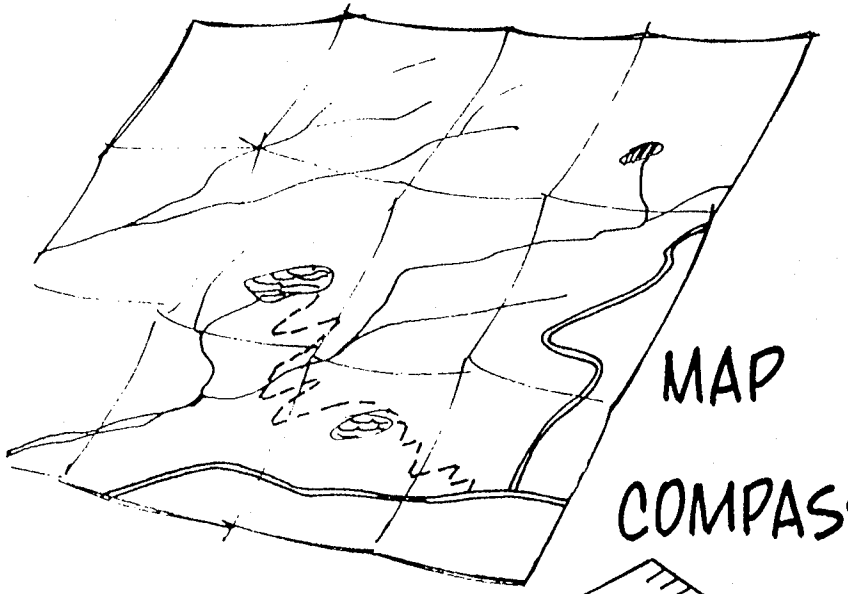


MAP: A GRAPHIC DESCRIPTION OF A PARTICULAR PIECE OF GROUND

NATURAL TOOLS FOR NAVIGATION

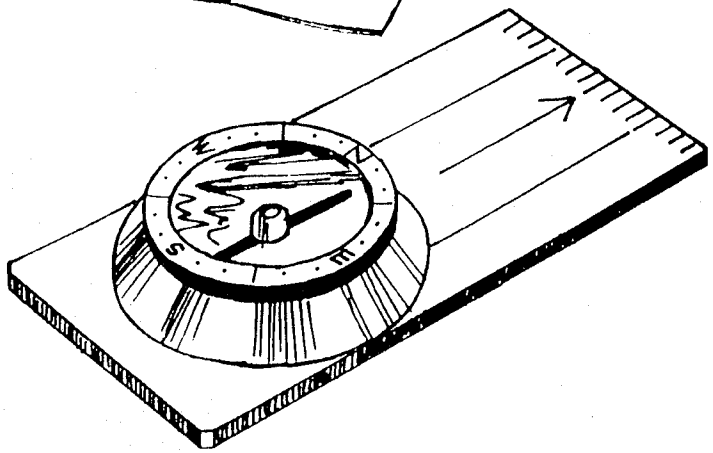


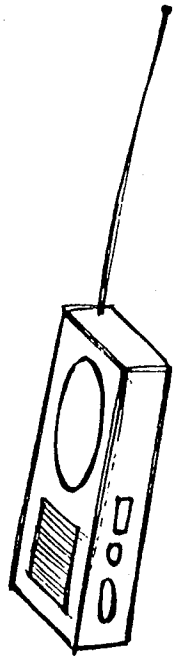
ARTIFICIAL TOOLS FOR NAVIGATION



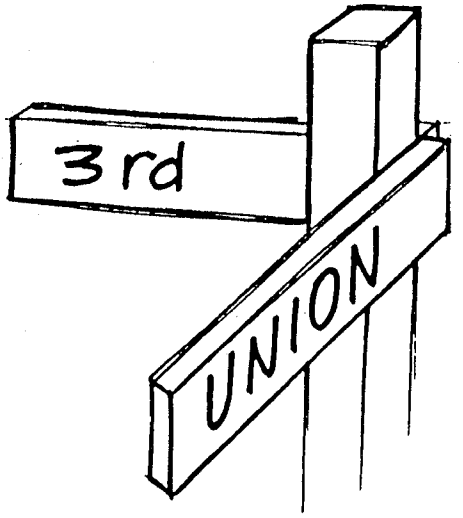
MAP

COMPASS

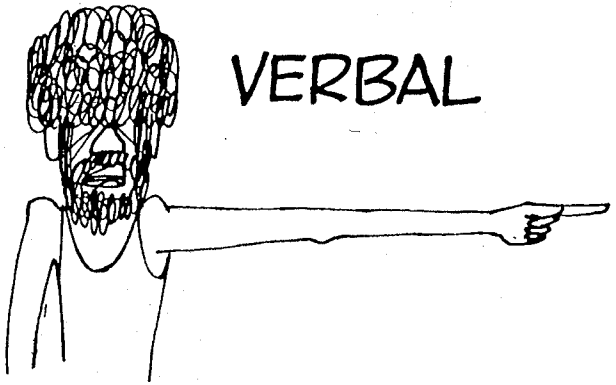




RADIO



SIGNS



VERBAL