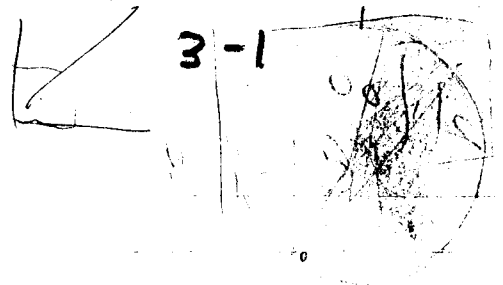


③

2/1/00

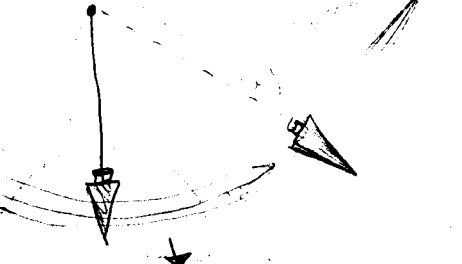


Spherical trigonometry

Polaris - North Star that doesn't appear to move - 1°

Elegant Proof

Ma. Foucault
Foucault's Pendulum
Basic Proof Earth is round.



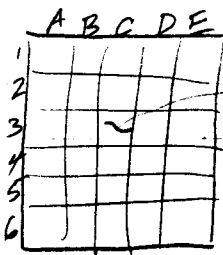
@ North Pole - takes 24 hrs

BIRO'S EYE



How do you find your way around Planet?

[AM - ante meridian] [PM - post meridian]

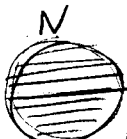


Map Maker

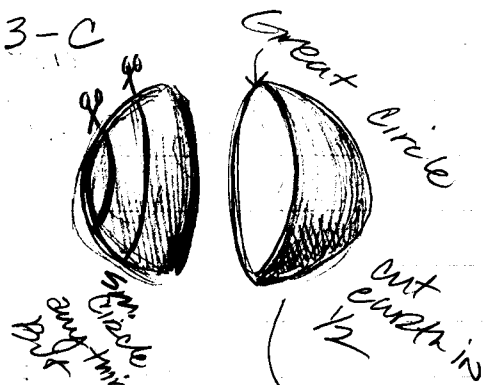
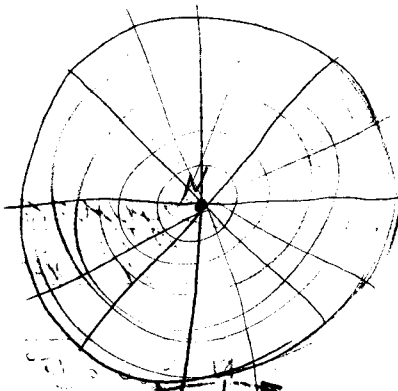
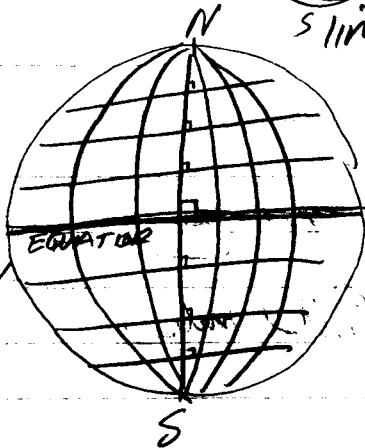
1. Grid
2. #

Elm Street

3. Elm St. located 3-C



5 lines parallel to equator



only equator is great circle

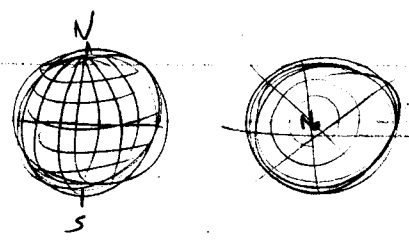


Meridian = Lines

Any Great Circle that

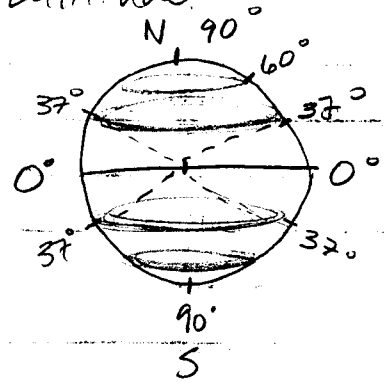
Great Circle
= shortest distance
between 2 points

2/1/00
④



Parallels
Meridians } = think of direction of lines

Longitude } = Measurements
Latitude }



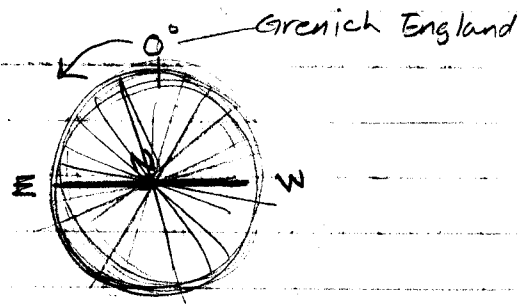
37th Parallel

38th Parallel
FOREIGN WAR

• 42nd parallel - Top of
California, Nevada
Utah

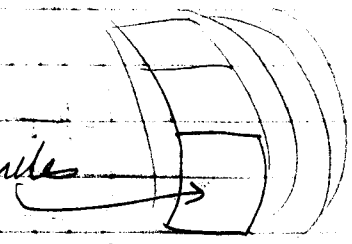
- Can't have a lat. > than 90°

Greenich England = 0°
Longitude lines

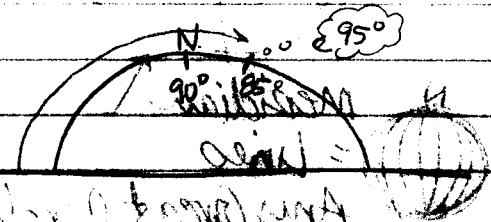


lat = 37° N
long = 122° W

360° ÷ 25,000 miles = 70 sq/miles
SQUARE MADE UP OF (49,000 miles)



95° =



Handwritten scribbles and notes at the bottom right of the page.

⑤

Accuracy
and Precision

° # ' # " # ""

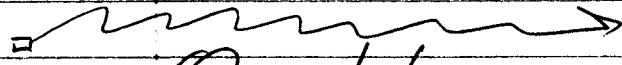
00° 00' 00" 00

GPS -

- Boats
- Airplanes
- Cars
- Misc

→ Global positioning system

[Satellites
launched up into
space]



① 2/3/00 notes:

① 2/3/0

3-4

Lat./Longitude

GPS - Global Positioning System

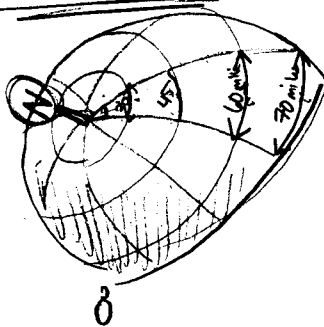
Reason's why use time (3) [hr] min' sec" hundredth of sec.

[Greenich England - is Prime Meridian] 0° 00' 00"
time / Distant from Greenich England

approx. { 1 min = 6,000 ft.
1 sec. = 100 ft. }

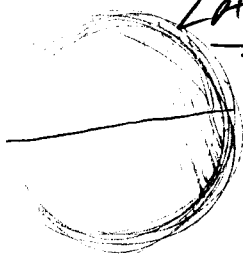
Determines location of whatever place in the world.

How big is a degree° @ Equator about 70 miles
LONGITUDE But changed as you get closer to pole.



[The Distance changes]
From Equator @ 70 miles
North Pole → 0 miles

How Big is a degree° → Doesn't change much.
LATITUDE around 27 miles



only Because of Rotation and Distortion of Earth.

[68.7 miles North pole ↔ 69.4 miles Equator]
How Big Degree is?

How far is A Mile? [2-types]

• Statue Miles [found in Car - odometer]

↳ 5280 Feet / derived Roman Paces

② (cont) International - Nautical Mile

3-5

6076.1 feet

f: 1 min LATITUDE @ 45° in either direction

Because of polar flattening - the distance changes.
Thus only @ 1:00 Latt. @ 45° = is 6076.1 feet

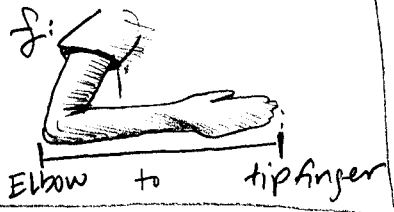
2 types

INTERNATIONAL NAUTICAL MILE / or STATUTE MILE

6076.1 Ft. \leftrightarrow 5280.0 Ft.

use conversion to find other (ie)
 $\frac{5280}{6076.1} \times \frac{x}{50 \text{ knots}}$

Whats a Cubit?
Distance from



6-1

■ CADASTRAL SYSTEM: system of determining ownership of land, and boundaries
(Latin-based term)

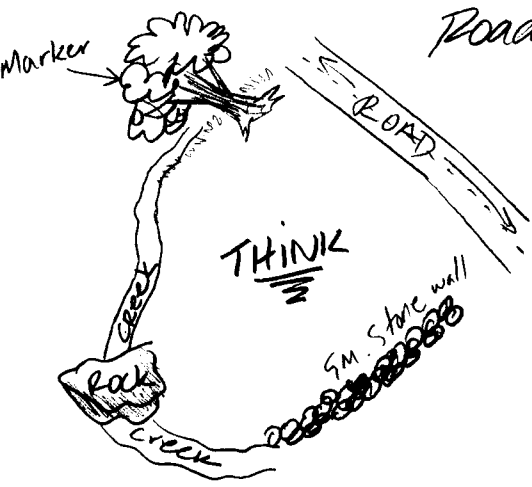
Europe = worked their way up ward. - individuals owning land.

IDEA (1st) SYSTEM \rightarrow

METE'S & BOUNDS = (System) [ODD shape properties]

Roads became boundaries/markers

Consider = natural land marks ie, tree \rightarrow to Creek \rightarrow to Pink Rock \rightarrow to Small Stone Rocks.
Back to ROAD. \rightarrow would mark out the boundaries of LAND



THINK

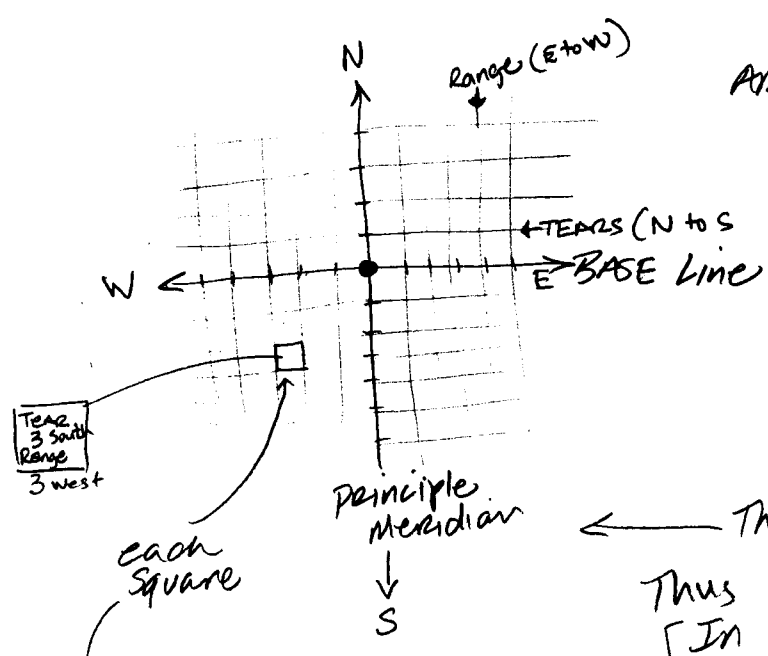
BOTH SPAINISH and MEXICAN TIME FRAMES;
where found on Metes and Bound systems.

② SYSTEM = found in 1785 Thomas Jefferson.
RECTANGULAR SYSTEM

idea to give everyone enough land to be self sufficient

③ [Meads Ranch/Kansas] - TODAY Big Brass Ball where all these

Meridian → lines that pass thru Both poles N and S

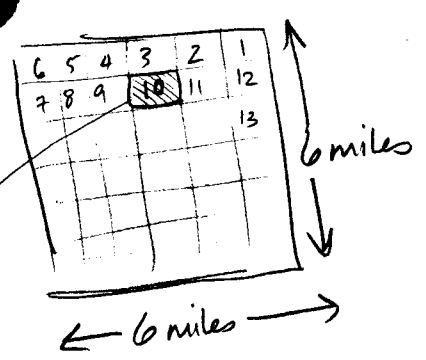


ARMIES JOB WAS TO START IN CENTER and walk 6 miles out In Both Directions

* Govt decided to give land away in these sections. law - said people had to live on land for 5 years
 Mr. Homestead. (ACT)
 Army survey land - Next set time, place = think far & away

← There are a bunch of principle Meridia
 Thus we live in Mt. Diablo principle Meridi
 [In California there are 3 principle Meridian's]

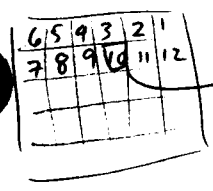
CLOSE UP



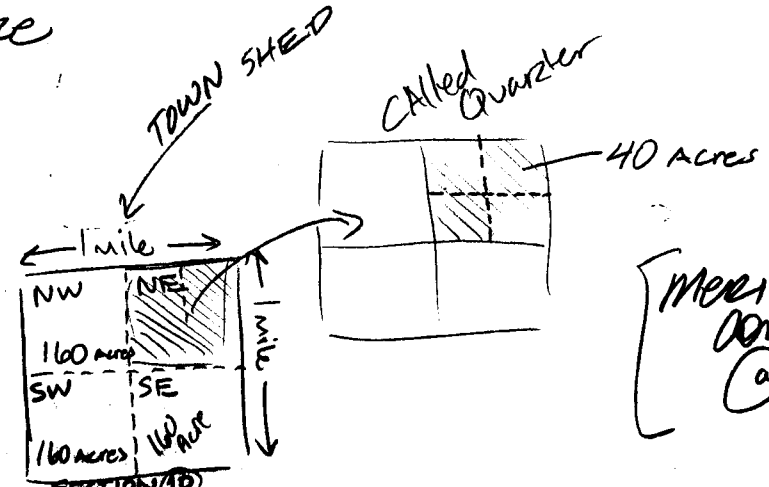
this was so Big - and way more land than anyone need, thus Army divided it into 36 equal parts [the #ing starts @ Top Rt. corner]

The deed would read for this square

[TEAR 3 SOUTH RANGE 3 WEST SECTION 10]



CLOSE UP



[Meridians come together @ the poles]

1 SQ mile = 640 acres

A) 3rd system.

6-3

or TRACT
SUB-DIVISION - Big Houses on Small Lots. (NOW A DAYS)

1. Go to County - Surveyor comes out and divides up land.
2. Next you number the sections and give Record to County Govt.

* MAPS & SURVEYS are important in many AREAS.

1890 - Yosemite National park is established After people owned parts of land.

→ "In Holdings" → were the deeds/titles of property markers.

MAPS & MAP PROJECTIONS

4-1

Ⓕ: Cartography - map maker

? - When does Drawing Become a map? What do you need.

5 THINGS - MAPS MUST HAVE

1. Projection
2. Orientation/direction
3. Scale
4. legend/key
5. Title

• TITLE = Needs to Be [SHORT / TO THE POINT]

Relief = means elevation differences

Need to put title of what it is that they're looking @.

political map - shows state lines
physical (etc)

• SCALE = Relationship between Distances in SIZE
from MAP ↔ to Real World.

RF = Representative Fraction Ex: 1 unit = 50,000 miles

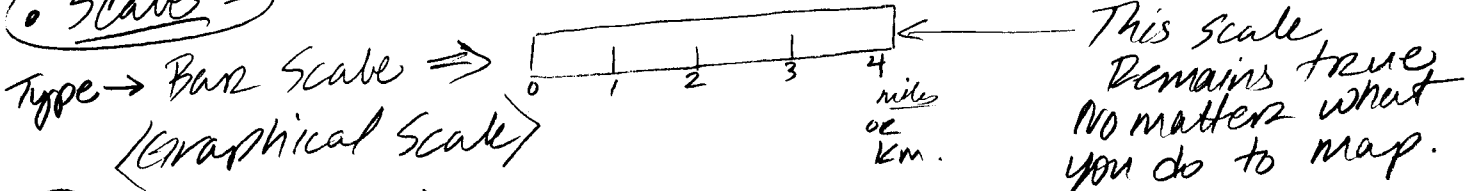
• "Rule of 250" - Basically everyone knows about 250 people - Because, when you have 250 people, they will tell 250 more people.

● Review [5 things MAPS must HAVE]

1. Projection
2. orientation / direction
3. Scale
4. legend / key
5. Title

∴ Representative Fraction - Ratio 1 unit of measure =
to _____ units of measure

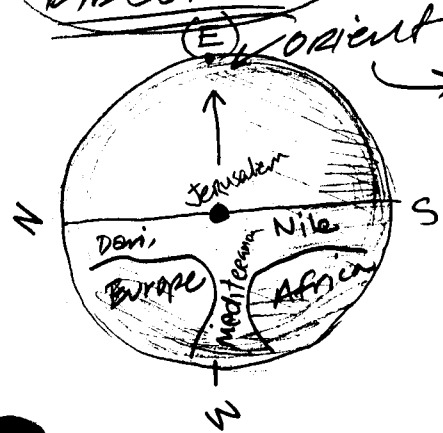
↓
● Scale =



Bar Scale: is most use ful to Road maps.

Type → VERBAL SCALE -
Everything is all written out for you. — ie. —
(Basic California Map.)


● Direction → THERE ARE (3) TYPES OF NORTH



→ IDEA where the word orientation

Compass came from invention from the EAST

↓
Thus, COMPASS points North and now maps are turned → TO where North is up.

MAPS - Need Direction arrow
Type 1 → 

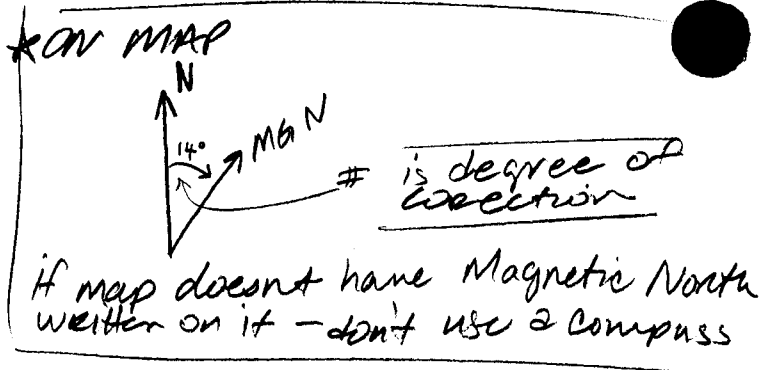
Cardinal Direction of compass = 

② (cont) DIRECTION

Compass points generally NORTH and to the Magnetic North close to Hudson Bay.

Type 2 magnetic North -
LAT: 70°N Long: 100°W

TRUE Real North Pole -
LAT: 90°N Long: 0°W



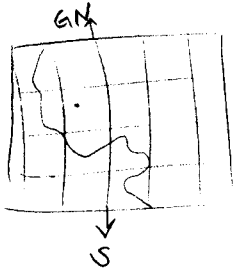
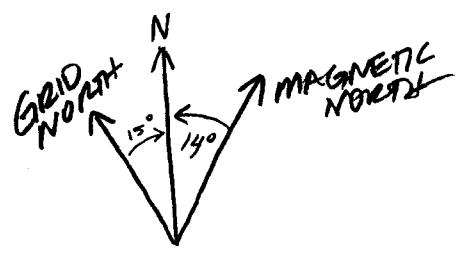
you walk down the 100°W meridian
you walk about 20° south from North pole.

MAGNETIC BEARINGS
vs.
TRUE BEARINGS

$1^\circ \approx 70 \text{ miles } (69.4) \Rightarrow 20^\circ (70 \text{ miles}) \approx 1400 \text{ miles}$

Why have True North? → [Building House]

Type (3) = Use GRID - Grid Related to True North



- Military
- Archeologist use grid
- Universal Transverse Locator.

• CARTOGRAPHIC NOTATION { legend/key }

- Short hand for mapmaker

- ie. →
- +++ → Rail road
 - * → Air port
 - ▲ → Camp ground (etc.)

- simplify map

• Pictograph map ⇒ Aerial map tinted green - w/ overlain

3) 2/8/00

There are (4) different types of MAPS

4-4

1. Colors represent different things
Shapes and outlines of things. [i.e. → climate map / in class]
2. Patterns and arrangement—
Shows you sewers / gas lines / pipes etc.
ROADS

DONT SPEED ON TOLL ROADS

3. Distribution of Numeric Values

(i.e.) → population map

Census—
takes population
Data every 10 years

4. Elevation Maps or Surface Relief



Green on elevation maps → low lands.

[As map reader → it's your responsibility to know the key/legend.]

• MAP PROJECTIONS —

All maps have distortions →

[Shape & Area] → you can have one or the other

A map that shows true Shape ⇒ §: Conformal Map

A map that shows true Area ⇒ §: Equivalent Map

NOT BOTH