Families of Map Projections

1. Family Resemblance - (THINK) → Everyone looks the same

- Azimuthal - Zenithal
  - If map touches any where but poles
  - Map cross over N and S pole

- Zenithal projection looking @ world from the top
  - @ North point center of circle
  - There is NO Distortion
  - The farther out you go, the greater the distortion

- Flat paper moving globe around
  - (Point of Tangency)
  - Great Circles = straight lines
  - Target point generally @ center of area desired

- If you want to KNOW THE SIZE of Greenland → use an Equivalent Map.
- If you want to know the Shape → you use a Conformal Map.

Every maps projection must be

- Stereographic
  - Viewing from circumference of earth

- Conformal

- Orthographic
  - Shows you how earth might look really
  - Movies etc
5) 2nd type of Map Family Projection

5: Standard Parallel
all around edges there is no distortion

8: Simple Conic

Conic - Two Standard parallels

Conformal Conic / Lambert's
• used for places too large for one simple conic

Polyconic - Quad sheets are made up of polyconic cones

lots of cones

Problem: its sectional - thus cut into piece

Now have quad sheet: along standard parallel

How would you make a projection @ the Equator?
Geography - Notes -

MAP PROJECTIONS

* Polyconic - Many cones = problem many circles that don't match up.

Advantage = if you have many small maps QUAD SHEETS

U.S.G.S = uses quad sheets due to very little distortion

3rd FAMILY

Cylindrical

Gnomonic Cylindrical

\[ \text{light in center of Earth} \]

MERCIATOR PROJECTION (most used projection)

used mostly for navigational

line from pt. A to pt. B called Rhumb line

Constant Compass Bearing - Loxodrome
Q. 15 → Constant Compass Bearing → a great circle? → NO

U have to travel 1/3 more in miles → to get to a Rhumb line.

Gnomonic chart = Great Circles = Shortest Route
Mercator chart =

\[\text{MERCATOR}\]

\[\text{legs of journey}\
\text{approx. (Great Circle)}\]

\[\text{Each leg} \rightarrow \text{Change degree of navigation}\]

Equal area projections =
\[\text{f: show correct proportions among}\]

- Shape and area are best preserved in a Goode's projection

- Azimuthal → paper touches anywhere but pole
- Zenithal → paper touches poles

Greenwich Meridian = O° Meridian
You are in a boat some where? Where is your Long?

Measure Height above horizon - when sun is directly above - then you look at Clock to see what time it is in Greenwich England.

360°/24 hrs = (15°) per hour Earth turns

S: Cronometer = Clock that tells the time in Greenwich England.

Say clock says 3:00 am → where you are is where sun is directly over your head.

Thus, your Long is 3 * 15° = 45° Long.

What is a Day -?

* 1 rotation around - Sun Rise to Sun Rise?

What if you use a different star - NOT Sun.

Siderial Day = 23 hrs. 56 min. 4.09 sec.

Mean Solar Day = 24.0 hrs.

Why is Sun not a good time keeper?

Sun dial - not accurate

Because Earth is speeding up and slowing down.
Why is "Sidereal Day" five min different from "Mean Solar Day"?

But Sue is not there.

But it does everyone move.

TOM

360° in circle
365 days in yr. = 1° Eastward moves
1° Eastward a day

1° degree = is 1/15th of an hour. Which is 4 min
Extra degree = 4 min

If you use Sun to navigate you need to know when Earth is traveling fast or slow around sun.

Analemma tells you if the Sun is going fast or slow.

P.26
5. What is a year? A. 1 complete cycle

1 cycle
- Vernal Equinox → to Sun Reaching passing over
- Next Vernal Equinox.

1 year = 365 days 5 hrs 48 min 45.68 sec.

Calendar - keep track of passage of time.

Gregorian Calendar → U.S. Calendar [BASIC]

- entire world used it for business.
- Who uses a Calendar? - farmers
- Why use?
- When use?

Gregorian Calendar

1st Mar = New Moon → End of 10th Cycle

THE DATE
- SEPT. 7th 2000
- 9/7/2000

Look @ shape of moon - to help you know where time of year you are in.

Lunar Calendar

Has Error of 11 days?

- Jewish
- Chinese Calendar

But... addle two months @ begin.

Instead of March
- 1 is 12 months, it is NO
Julius Caesar
- Changed his calendar name to July 6-7
- But kept the 12th months.

365 days 5 hrs 48 min 45.68 sec. -> Julian Caesar rounded up to 6 hrs

Because of this extra, now there is a LEAP DAY
Feb 29 known as Leap Year.

Now called Julian Calendar

[100 years went by before next calendar was changed.

= Why changed? -> because Julius rounded up to 6 yrs.

Pope of Roman Church changed

Pope Gregory the 13th

Pope was taken to a place to have been shown why Julius was wrong.

Taken to [Vatican City], the "tower of winds".

Easter

1. 3rd Sun.
2. Around (vernal equinox)
   (21st of March)
   1st Sun after 1st full moon and after vernal equinox
   You could have Easter as early as early March 22
   or late as April.

First Pope got rid of the 10 day error.
2nd He changed the way we celebrate a leap year.
Every Century Year

400 ÷ by Century year → if there is No Remainder = Leap Year Feb. 29

400 ÷ by any other year → you get Remainder = a Leap Year.

1582 ÷ 400 = even No Remainder

Last Leap year on Century year = 1600

This year 2000 is first time leap year on Century year since 1600 [Bcuz 400 divides equally - No Remainder]

After 1582 → you need to know what calendar history was using

George Washington said → They were going on Gregorian Calendar.