

# Mapping

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# Mapping

- Chief goals of expedition?
  - Water Route across Northwest
  - Map of that route



# Mapping

- **Latitude, Longitude, Map Making**
- **So how did Lewis and Clark determine Longitude and Latitude?**
- **Our mapping exercise**

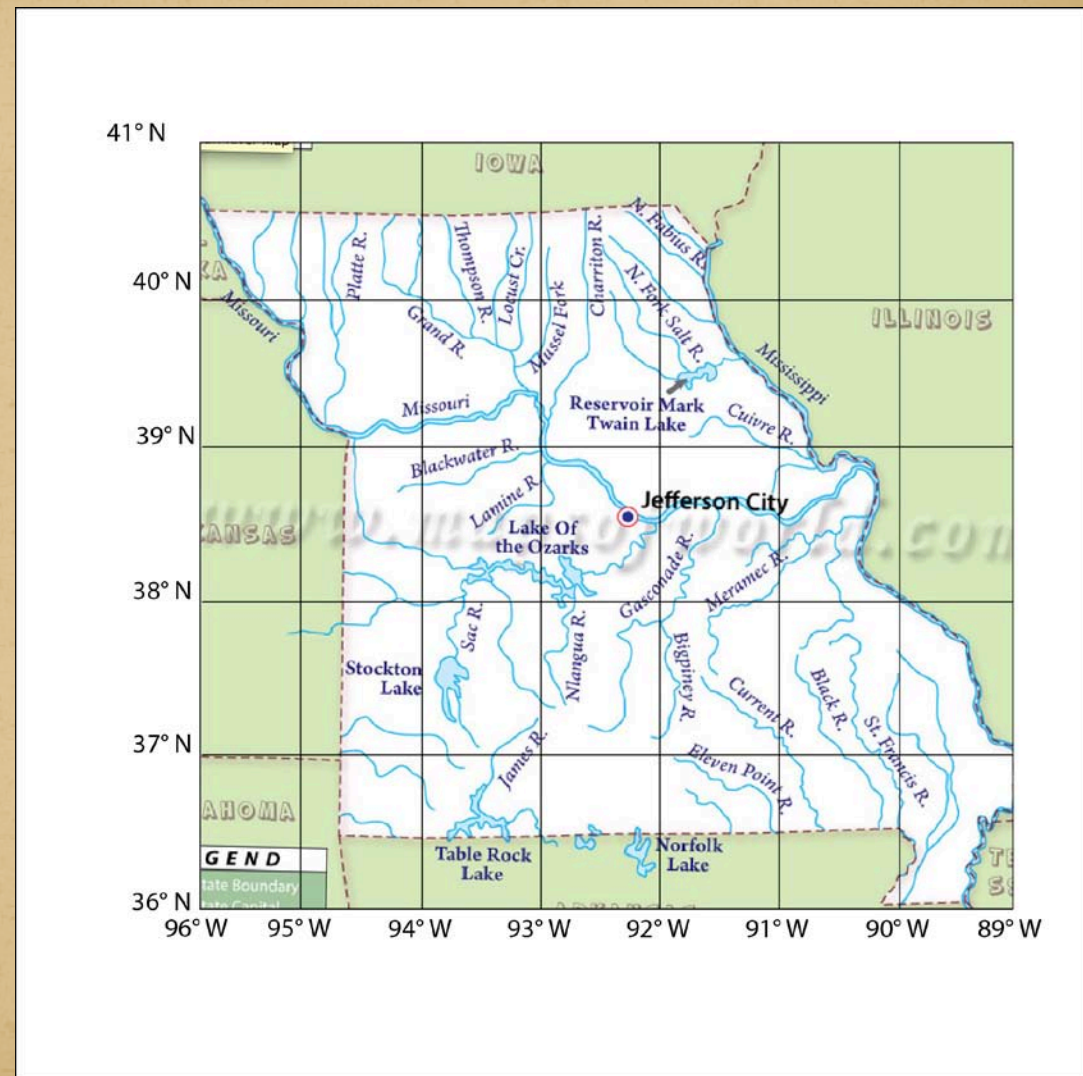
# Latitude, Longitude, Map Making

- <http://www.youtube.com/watch?v=swKBi6hHHMA>



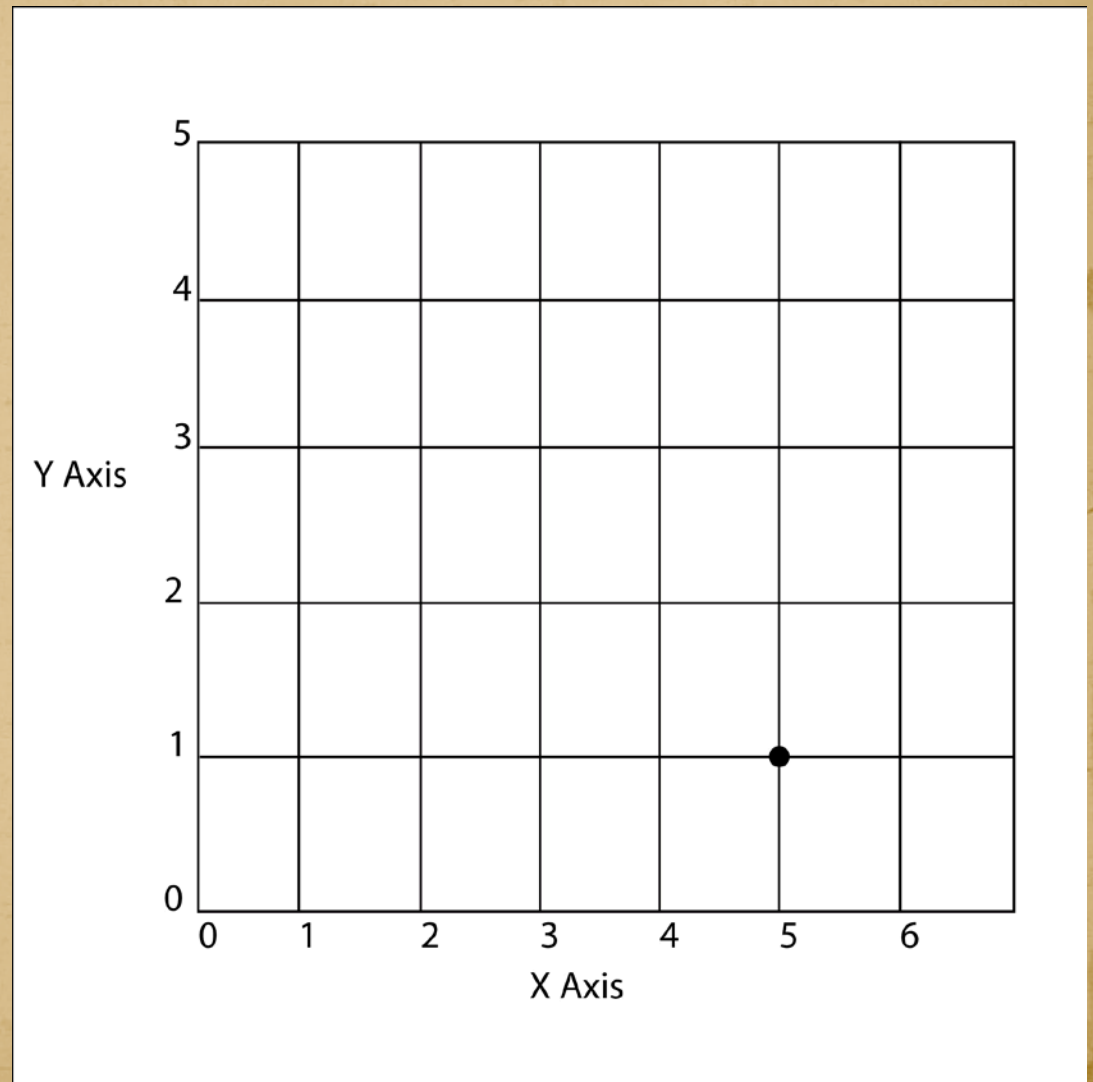
# Latitude, Longitude, Map Making

- Latitude lines are called parallels and measure North or South from the Equator, a natural point
- Longitude lines are called meridians and are measured East or West from a chosen point as a standard, known as the Prime Meridian



# Latitude, Longitude, Map Making

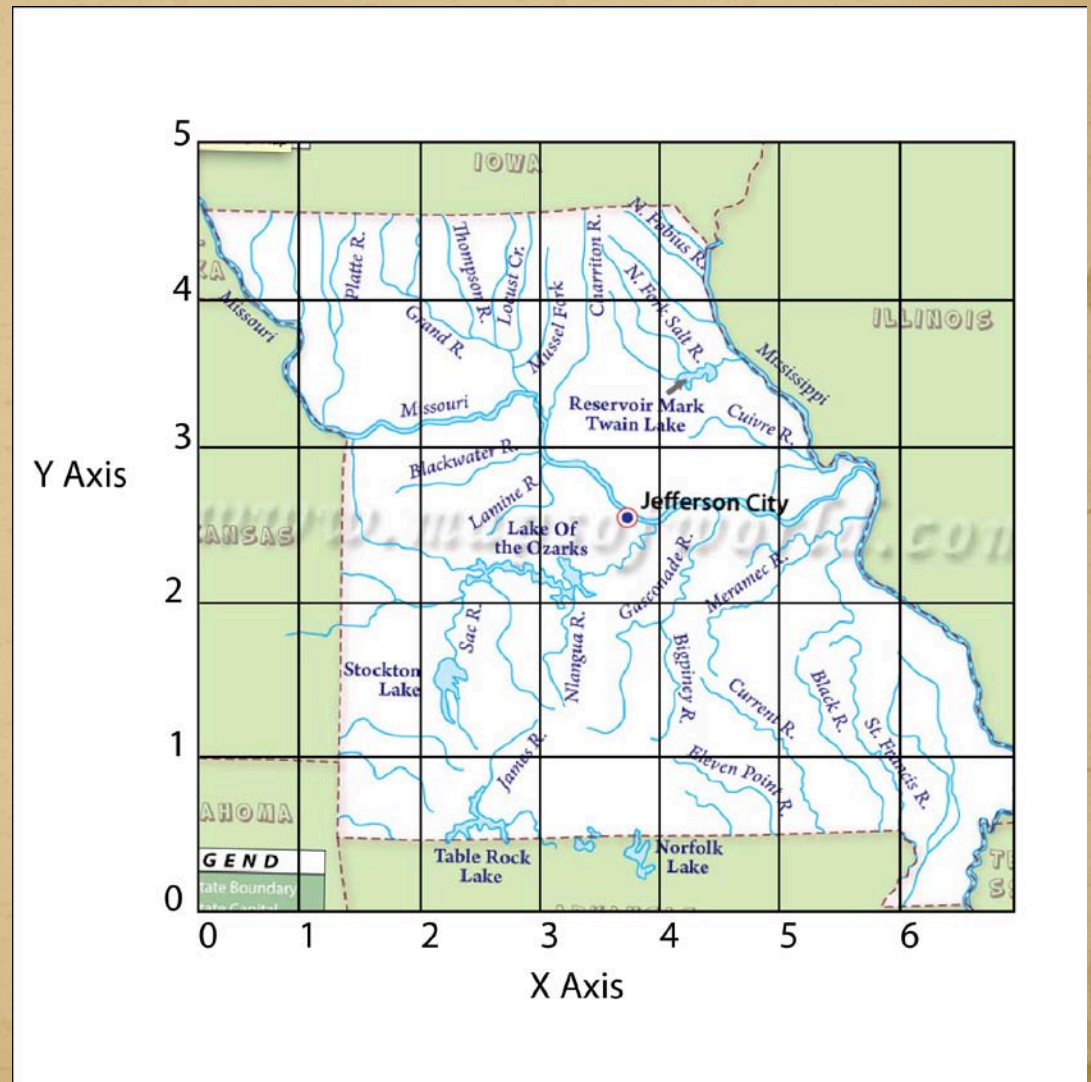
- Determining a location is essentially like plotting a point on a graph





# Latitude, Longitude, Map Making

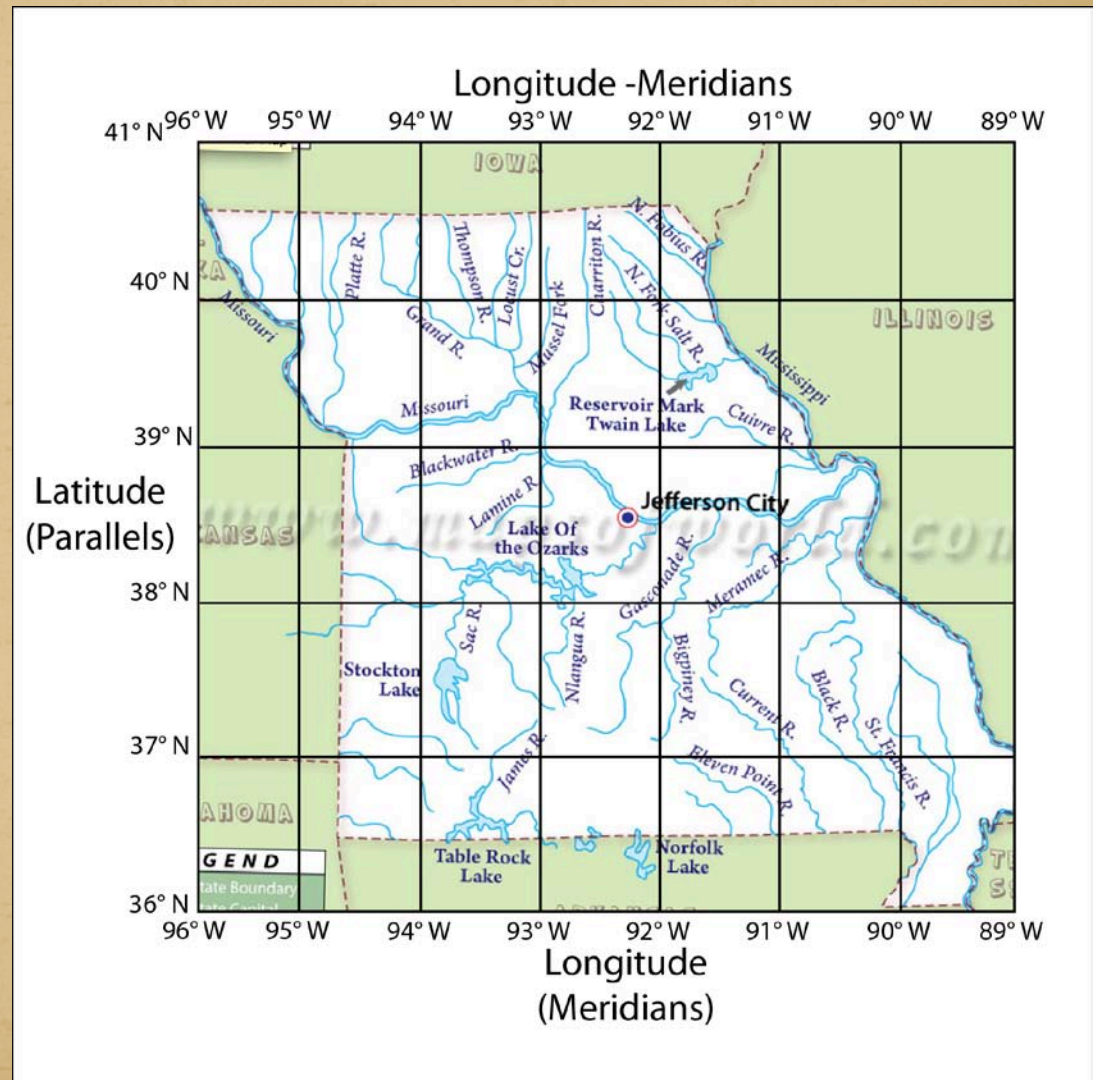
- Excepts we call the X Axis the Meridians and the Y Axis the Parallels





# Latitude, Longitude, Map Making

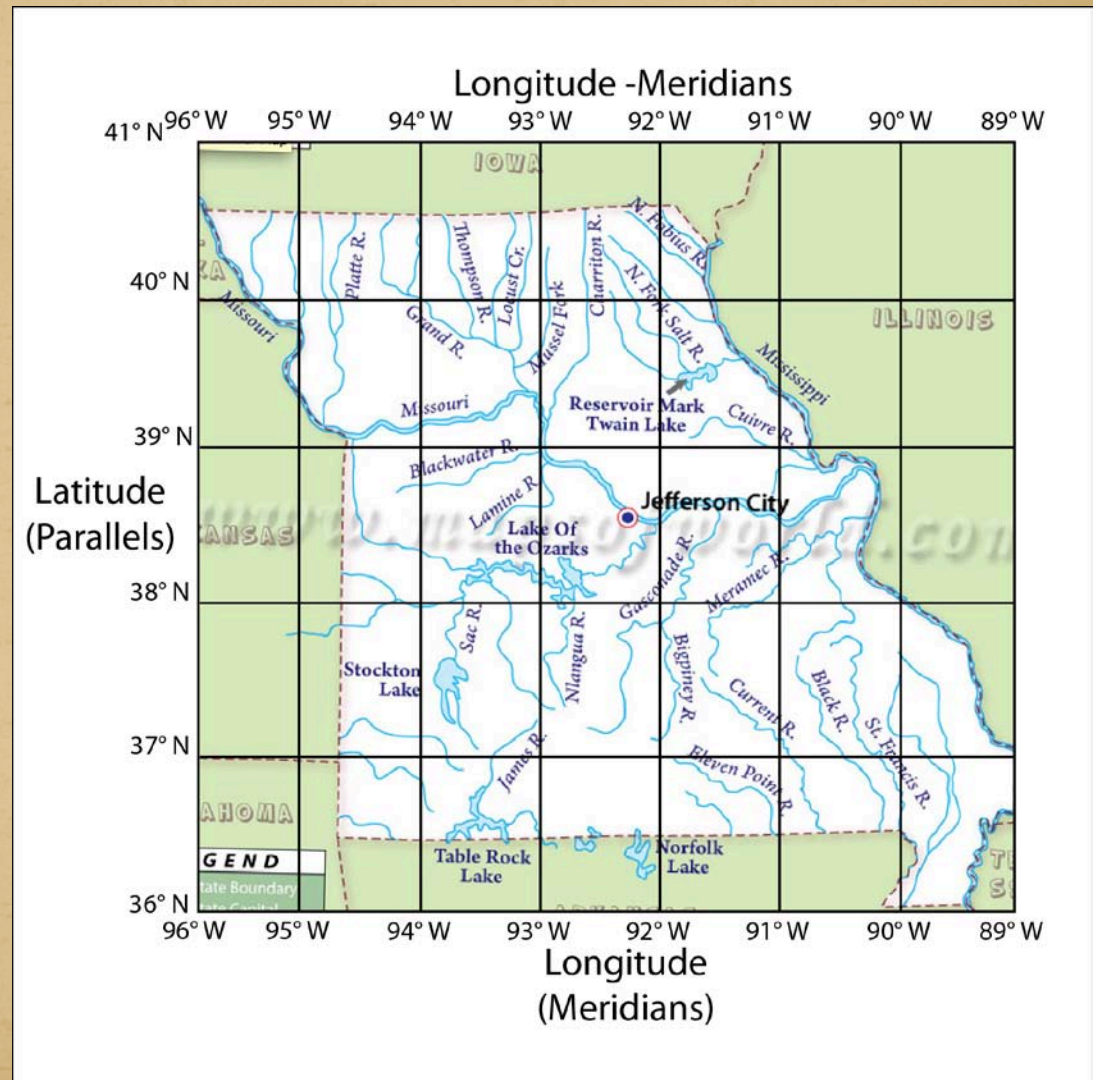
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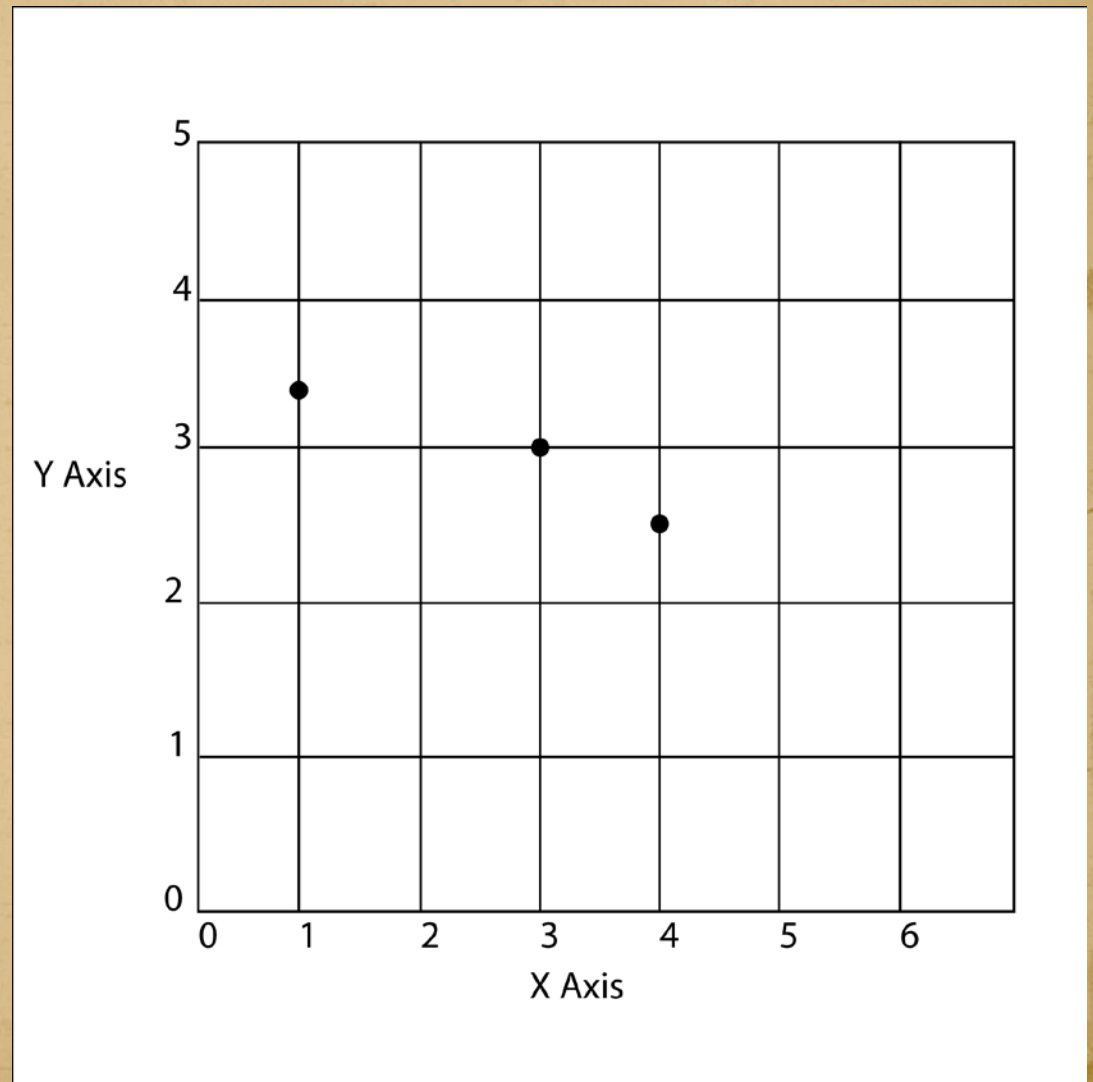
# Latitude, Longitude, Map Making

- One big difference: rather than give map coordinates as (x,y) latitude and longitude are reported with Parallel first, then Meridian second



# Latitude, Longitude, Map Making

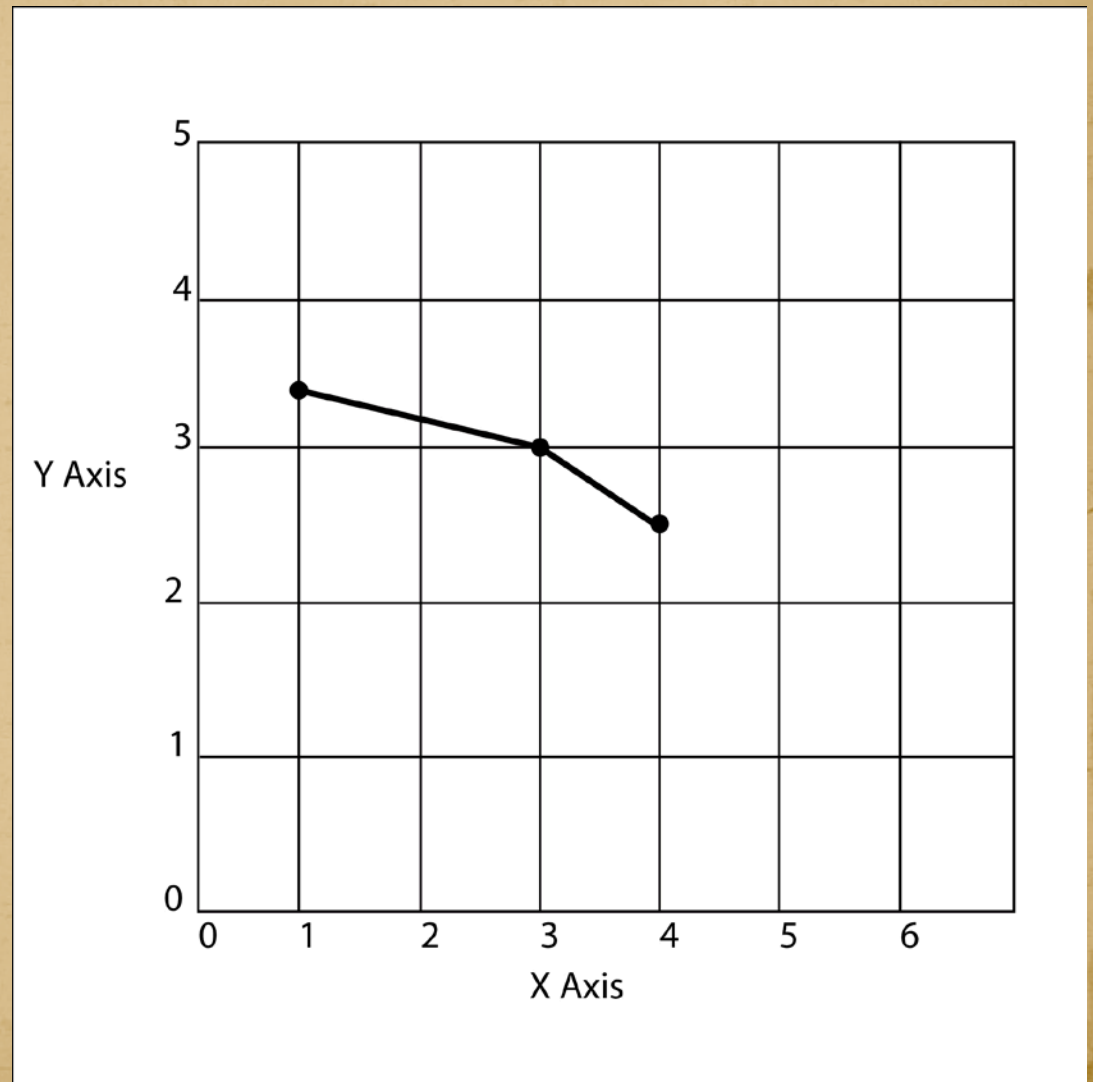
- On graphs, once we plot the points, we can connect them





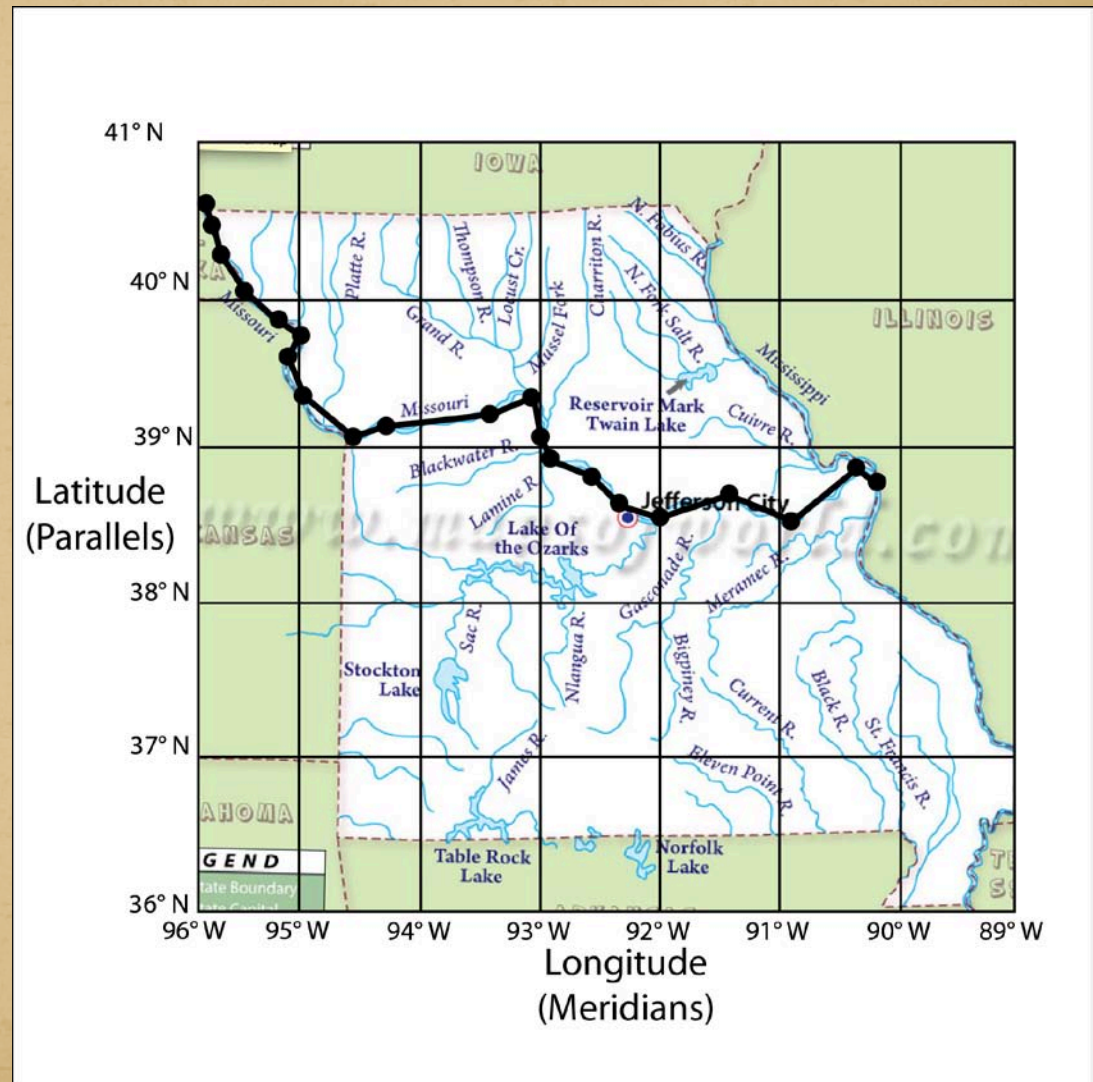
# Latitude, Longitude, Map Making

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# Latitude, Longitude, Map Making

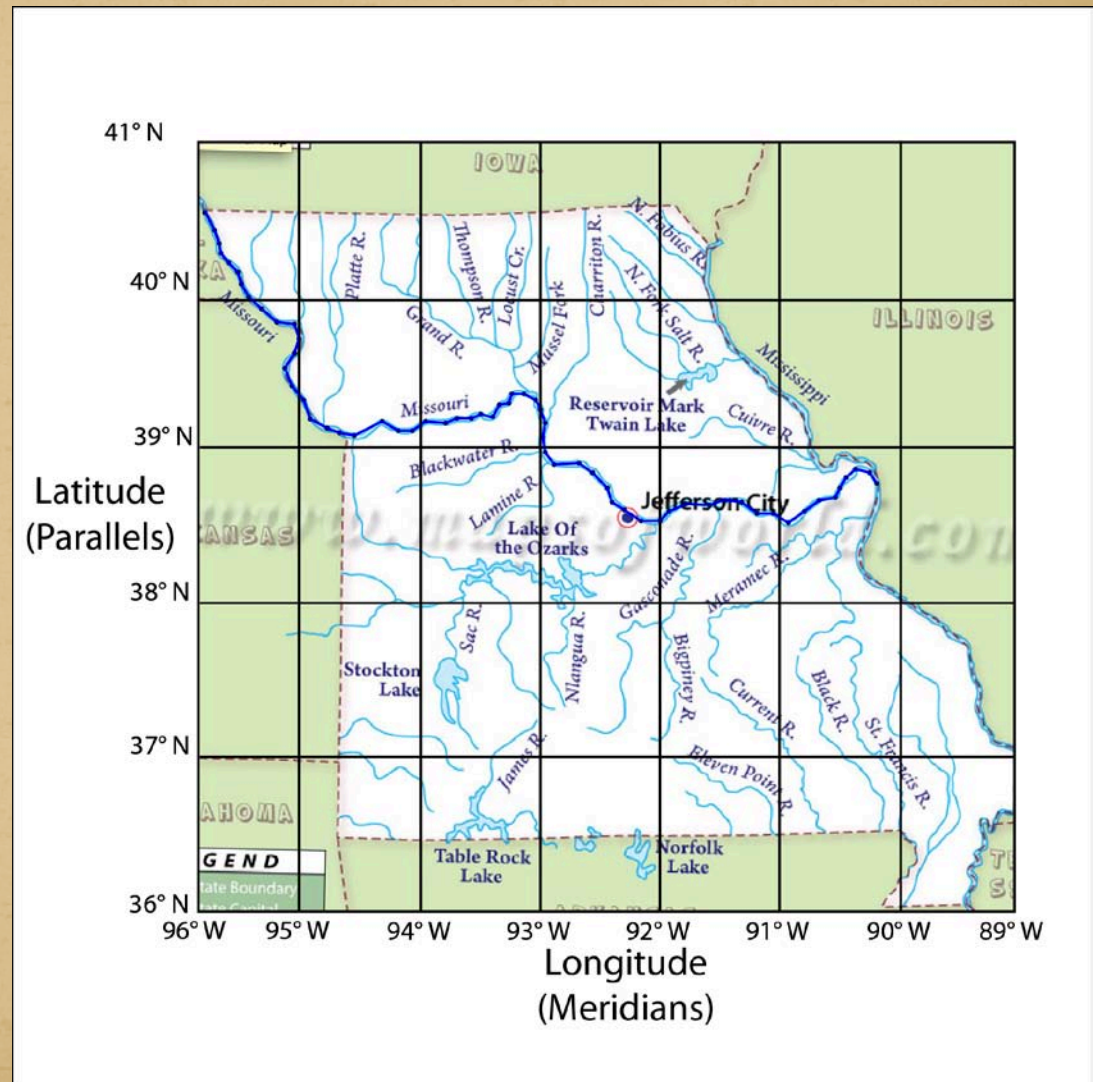
- Same idea on maps, we could plot the course of a river by knowing points along it





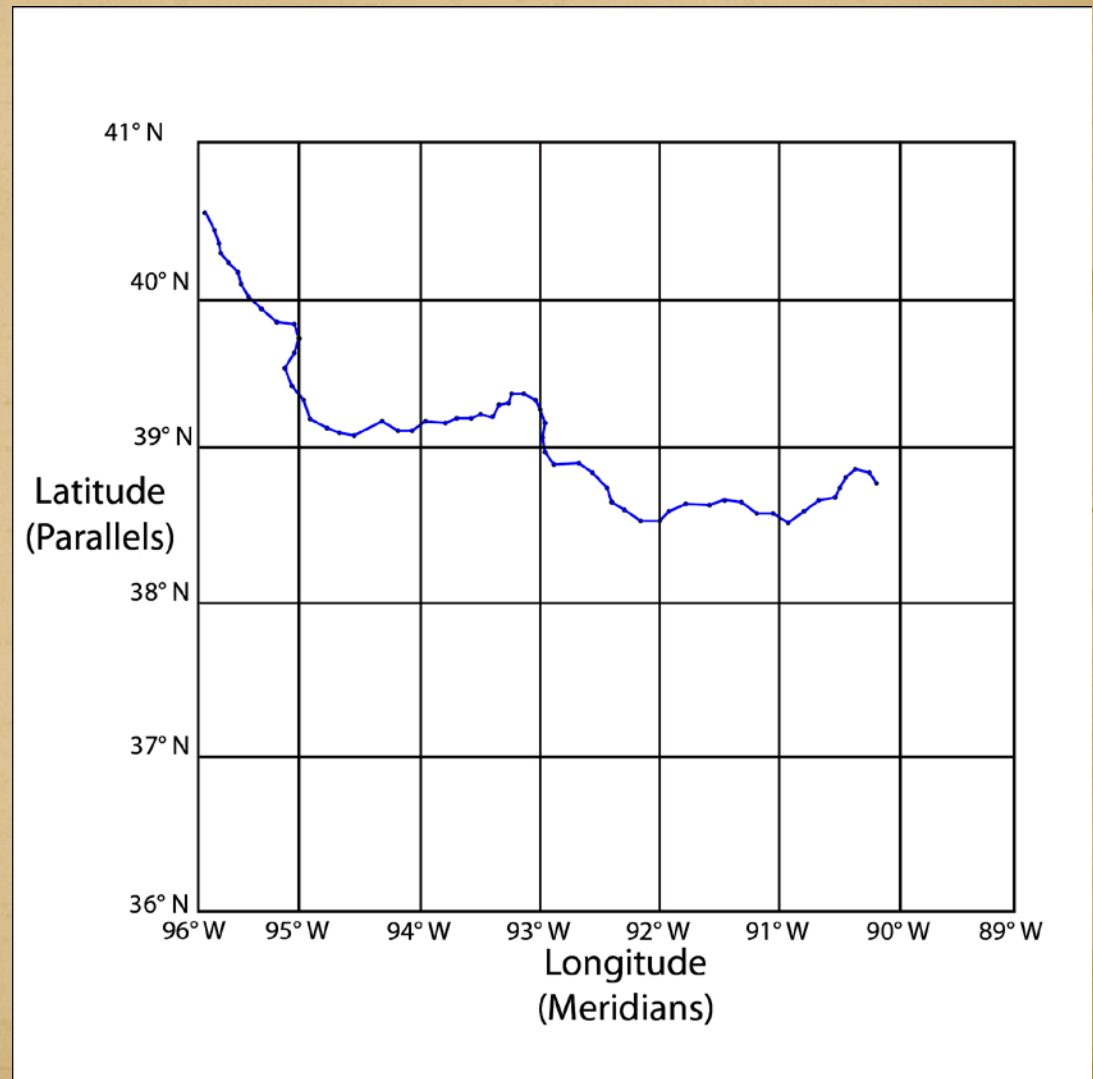
# Latitude, Longitude, Map Making

- The more points we have to plot, the more accurate we can represent the features



# Latitude, Longitude, Map Making

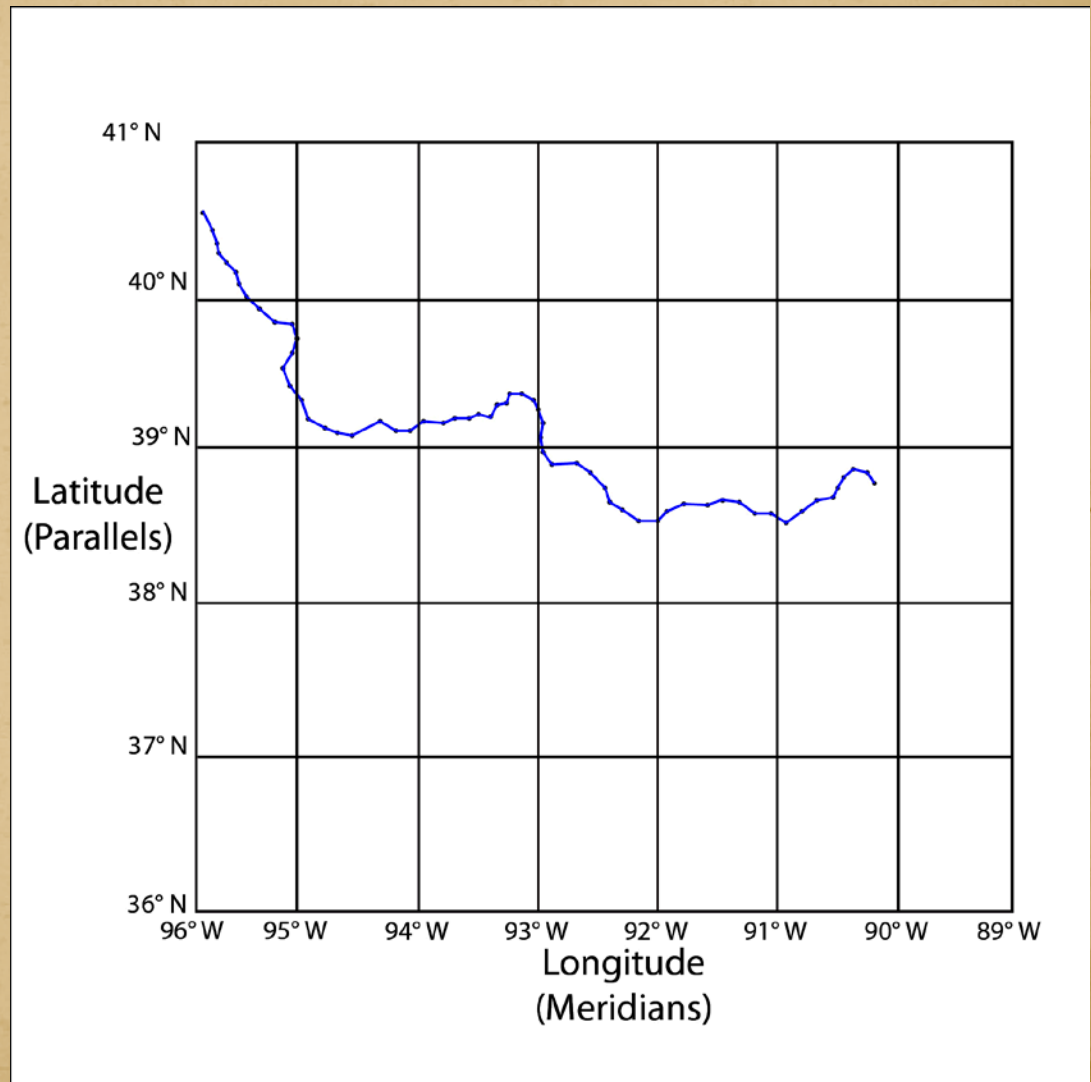
- So, if we didn't have a map, but had to make one, we could plot features with Longitude and Latitude points.





# Latitude, Longitude, Map Making

- And that's what Lewis and Clark had to do for the entire Missouri River!



# So how did Lewis and Clark determine Longitude and Latitude?

- Observations to measure angles of sun, moon and stars
    - Using devices called an octant and an sextant used to measure those angles
  - Latitude
    - By sun's angle at noon or known stars at night compared to charts
  - Longitude
    - Local Time (Solar noon) compared to Chronometer (Accurate clock set to a standard, Prime Meridian)
- OR
- Local Time (Solar, Stellar, and Lunar observations) compared to Tables of times they represent in known location of Prime Meridian



Octant



Sextant



# Our mapping exercise

- We are not attempting to make celestial observations, mapping instead over a shorter distance, where angles on the ground and distance can be more simply be measured.
- But we are measuring the angles of bends and the distance so we can make as accurate map as possible