Class 1b:
Introduction to maps
What is a map?

• A generalized view of an area, usually some portion of Earth’s surface, as seen from above at a greatly reduced size
• Any geographical image of the environment
• A two-dimensional representation of the spatial distribution of selected phenomena
Why make maps?

• To represent a larger area than we can see
• To show a phenomenon or process we can’t see with our eyes
• To present information concisely
• To show spatial relationships
How do we read maps?

• Maps are *selective* views of reality
• Size of the map relative to reality (scale)
• What’s on the map (symbolization)
• Shape of the map (projection)
• Politics of the map
Map scale

• Ratio of the distance on the map to the distance on the ground
• Scale is a fraction
• Larger area covered means larger denominator
• Larger denominator means smaller fraction
• So a *large-scale* map covers a small area
Map scale

- Ratio of the distance on the map to the distance on the ground

1. Graphic:

- Stays the same when photocopied
- Might not be right for the whole map
Map scale

2. Verbal:

1 inch equals 10 miles

• Easy to understand
• Can change if photocopied
Map scale

3. Representative fraction or ratio:
   1:24,000

- Units don’t matter
- Can change if photocopied
Map symbolization

• Symbols are a code instead of text
• Three kinds: point, line, area
• Consider shape, size, orientation, pattern, color, value
Point symbols

• Every symbol counts as one occurrence
• Qualitative points
  – Indicate location
  – Can also describe that location
• Quantitative points
  – Show a distribution
  – Indicate a value (graduated symbols)
Line symbols

• One-dimensional
• Mostly taken for granted (borders, roads)
• *Isolines* connect same values
• Flow-line maps indicate value by width of line
Area symbols

• Each territory or region has one value
• Differences in kind
• Differences in value
  – Choropleth maps
  – Usually, darker indicates more
• Cartograms distort area to show value
Politics of maps

• Remember that maps are selective
• What counts as a country’s borders?
• What’s “east” or “west”?
• Depends on who’s drawing the map
Topographic maps

- Also called quadrangles
- Nearly 54,000 for the U.S.
- Done by the US Geological Survey (USGS) since 1897
- Map out the entire country in a standard fashion
Topographic maps

- Till the 1940s, you climbed to the highest point and plotted what you could see from there
- Aerial photography after WWII
- Two overlapping photos are put in a stereoscope
- 10 photos for each 7.5 minute map
Topographic maps

• Show 2D features, point, line and area; also show 3D via contour lines
• Common symbols are in the appendix of the text
• Note the contour interval at the bottom of the map