Understanding Maps: The Language of Geography

Essential Question: How do maps help us to represent geographic information?

### Important Vocabulary

Maps  
Legend  
Compass Rose  
Scale  
Thematic Map  
Latitude  
Longitude  
Parallels  
Meridians  
Prime Meridian  
Equator  
Projection  
Political Map  
Physical Map  
Cartography

A map is a two dimensional representation of space. Maps can:

- Show how places are influenced by their location
- Show how different places affect one another
- Can be used to answer geographic questions
- Make connections
- Infer relationships
- Analyze change
I. Steps to understanding a map
   a. Title
      i. Describes the information it presents

b. Legend
   i. Lists symbols on a map, including any special colors or shading, and identifies what each symbol represents
c. Compass Rose
   i. Shows where the four basic directions – north, south, east and west – are found on the map.

![Compass Rose Image]

d. Scale
   i. A map would be impossible to use if it were the same size as the area it shows
   ii. Cartographers (map makers) reduce the size of the map to fit onto a page
   iii. The scale shows how much it has been reduced

![Map Image]
II. Types of Maps
   a. There is virtually no limit to the type of information that can be depicted on a map. Therefore there are many types of maps. Here are a few examples:
      i. Physical Maps
         1. Shows major physical features of an area, such as rivers, vegetation and elevation (height above or below sea level)

![USA Physical Map](https://www.mapsofworld.com)

   ii. Political Maps
      1. Shows the major boundaries between countries or states

![Political Map of South America](https://www.mapsofworld.com)
iii. Historical Maps

1. Show political boundaries from the past
2. Pay close attention to the names of countries, political borders, and the location of cities. These may be different than they are today.
iv. Thematic Maps

1. Show information related to a specific theme, such as the:
   a. Spread of religion
   b. Trade routes
   c. Industrial growth of a nation
   d. Contour maps
v. Population Density Maps
1. Shows where people live in a specific area
vi. Resource or Product Maps

1. Show the major natural resources and agriculture and industrial products of an area
III. Comparing Maps
   a. Geographers often use two or more maps to find information about an area.
   b. A series of several maps of the same area at different time periods can be especially helpful to see how that area has changed over time.
   c. Geographers may also compare different maps with the same kinds of information.
      i. Example: annual rainfall in the middle east compared to equatorial Brazil.

IV. Hemispheres
   a. Geographers divide the earth into four hemispheres (hemi means “half”).
      i. North, South, East and West.
b. Hemispheres can be subdivided into quarters
   i. NW
   ii. NE
   iii. SW
   iv. SE

V. Latitude and Longitude
   a. Geographers have created two sets of imaginary lines—latitude and longitude—to make it possible to identify every precise location on the Earth’s surface.
      i. Latitude
         1. Also called parallels
         2. Horizontal lines that run parallel across the earth’s surface
         3. The equator, identified as 0 degrees N/S stretches around the middle of the Earth
a. It is the longest line of latitude

4. Each latitude line is assigned a number in degrees to show its distance from the equator
5. Lines of latitude span from 0 to 90 degrees
6. Lines of latitude are either North or South of the equator

7. Two important lines of latitude
   a. Tropic of Cancer (Northern Tropic)
      i. Located 23.5 degrees north of the equator
      ii. Circle of latitude that marks the northern most position at which the sun may appear directly overhead
b. Tropic of Capricorn
   i. Located 23.5 degrees south of the equator
   ii. Marks the southern-most point at which the sun can be directly overhead

ii. Longitude
   1. Imaginary lines that run up and down on the Earth
   2. Also called Meridians
   3. ALL lines of longitude MEET at the North and South Poles
4. The Prime Meridian is the most important line of longitude
   a. Divides the earth into the Eastern and Western Hemisphere
   b. Going in either direction from the Prime Meridian, longitude lines increase from 1 to 180 degrees.
   c. Geographers add E or W to show if the line is East or West of the Prime Meridian
   d. The Prime Meridian runs through Greenwich, England

5. Great Circle
   a. A line that circles the earth dividing into two EQUAL halves
   b. Pilots use Great Circle routes
   c. All lines of longitude are Great Circles
      i. All Great Circles are not necessarily lines of longitude
VI. Absolute location
   a. By using the intersections of lines of latitude and longitude, we can identify the exact or absolute location of every place on Earth
   b. The network of intersecting lines of latitude and longitude on the Earth is called the grid system
VII. Map Projections

a. A map projection is any method of representing the surface of a sphere on a flat surface or flat plane.

b. ALL flat maps have distortion

   i. Distortion means the change in size, shape or position of a place when it goes from a round globe to a flat map.
c. Conic Projection
   i. Often used for
      1. Aeronautical charts (Great Circle routes)
      2. Maps depicting North America

   ![Conic Projection Diagram]

   ![Conic Projection Diagram]

   d. Cylindrical Projection
      i. Parallels and meridians appear as straight lines that intersect each other at right angles in a grid pattern, with the meridians equally spaced and the parallels spaced progressively farther apart moving away from the equator.
      ii. Distortion is minimal in equatorial regions and maximal at the poles.
iii. Winkel Tripel Projection (Robinson Projection)
   1. A variation of a cylindrical projection
   2. Most used in classroom wall maps

iv. Mercator Projection
   1. Used by sailors/navigators
   2. Size and shape of places are distorted
   3. Very little distortion of distances between places
v. Goodes Interrupted Projection
   1. Pseudo-cylindrical
   2. Aimed at creating less distortion of shapes and sizes of continents, but
distorted at distances

e. Planar Projections (Azimuthal)
   i. Can be thought of as a mirror being held next to a globe touching at one point
   ii. Has the least amount of distortion
   iii. Often used for mapping the poles, and by pilots for mapping Great Circle Routes
Notes created by Audrey Alamo, PreAP World Geography based on excerpts from “Mastering the TEKS in World Geography,” Jarrett Publishing.