Reading a Paper Map

Geographic map is a 2-dimentional representation of the world or its parts. Most modern professionals rely on using geographic information in their practices either to navigate from location to location (transportation), or to visualize various reports (survey statistics).

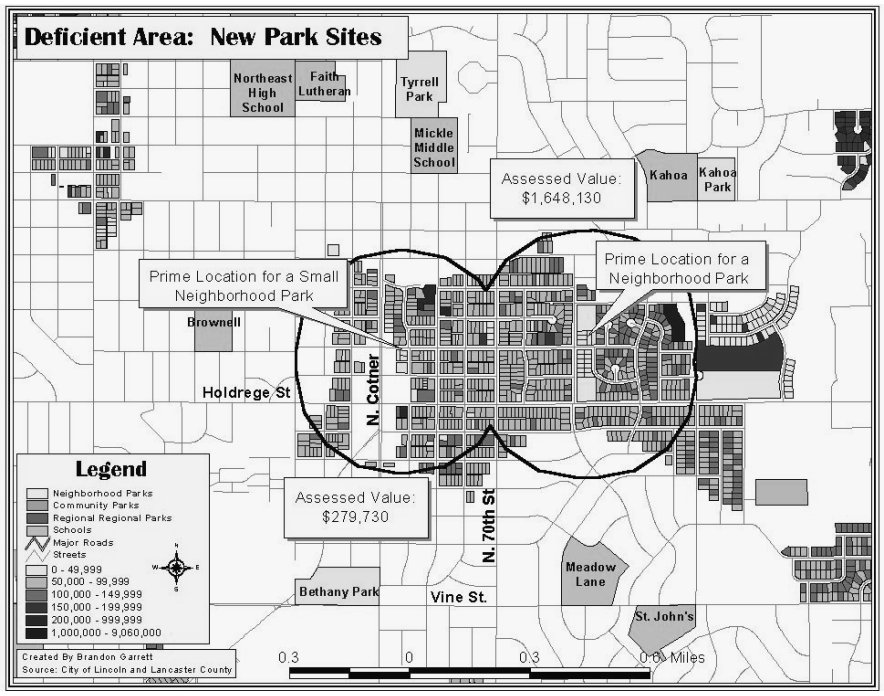
Explorer's Guide

Before You Start

Using a sheet of paper and a pencil, describe to your teammates the way from your home to your school. What geographic features did you include? How did you scale down these geographic features? How did you indicate what is the proper orientation of your map?

Learning by Doing

1. Using the following map, provide answers to the questions below.



	Question	Answer
A	How many schools are in the area represented?	
B	Who did create the map?	
C	What is the title of the map?	
D	How many miles are represented by one scale division?	
E	Does the map have all the key elements?	
F	Which school is located farthest south?	
G	Which park is located farthest east?	
H	In what direction would you travel from Northeast High School to Brownell School?	
I	How far north is Brownell School from Holdrege St?	
J	How far west is Northeast High school from N.70th St?	

2. At your home or school library, find three maps showing 1) world, 2) country, and 3) local area. Indicate on each map key components, including: 1) title, 2) geographic features, 3) labels, 4) legend, 5) scale bar, 6) north arrow, and 7) source. Share your findings with your teammates.

How Does It Work

Geographic maps can contain different sets of geographic features which defines their usage. For example, a tourist map will likely contain landmarks and travel routes, while historical maps may focus on disposition of armed forces before a major battle.

Despite the purpose, each properly constructed geographic map should contain the following basic components:

- **Title** indicating the purpose of the map.
- **Geographic features** represented by different colors, drawings and symbols. The amount of details shown on the map should be sufficient for the purpose of the map and limited to provide easy readability.
- **Labels** indicating the names for some geographic features.
- **Legend** describing the meaning for different colors, drawings and symbols.
- **North arrow** indicating map orientation. Most maps are constructed so that the top of the map corresponds to the North.
- **Scale bar** allowing to measure and interpret distances between different geographic objects. Sometimes verbal or numerical scaling factors are included instead of a scale bar. For example 1:400 scale means that any measurement on the map corresponds to 400 times greater distance in reality.
- **Source** disclosing the author of the map and sometimes referring to where the data came from.

Geographic maps are generally classified according to the scale. Small scale means that one inch on the map corresponds to hundreds of miles in reality, while large scale maps may have one inch corresponding to only a few feet. Small scale maps are typically used to show large areas (world, nations, regions) with few details and large scale maps have been implemented to provide more details relevant to a small area (cities, parks, floor plans).

Every map is a 2D representation of a 3D surface, and therefore it is said that each map is projected. There are three major categories of map projections: conic, planar, and cylindrical. Large scale maps with different projections look very similar. On the other hand, geographic features have different types of distortion when projecting small scale maps.

Additional Challenge

Using the Internet, find examples of geographic maps constructed using different projections systems. What are the names of these projections? Can you identify available basic components for each map?

Vocabulary

Cartography *is the study and practice of making representations of the Earth on a flat surface.*
Geographic features *all objects and confound areas associated with a given geographic location on the Earth.*
Map Projection *is a mathematical transformation that converts 3D to 2D maps.*

Interesting to Know

Anaximander was the first ancient Greek to draw a map of the known world. He is considered by many to be the first mapmaker. He believed that the earth was a cylindrical form.

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