Sec:____Name:_____

Experiment: Comparing Maps
(E. Science 9-6-3a)

Purpose: To compare some map projections, to observe disadvantages of each type of map and to consider the probable best use of each type of map.

Materials: homolosine map (figure 19-2)
Mercator map (figure 19-1) graph paper
globe 4 sheets of tracing paper

Methods:
1. Record the scales of your maps and of the globe in the results table 1b.
2. Using tracing paper, trace the outlines for Greenland, North America & South America from the globe, then the Mercator, & then the homolosine maps.
3. Measure the approximate lengths and widths of Greenland, North America and South America in centimeters, record in table 1a.
4. Calculate the approximate lengths and widths of Greenland, North America and South America in kilometers by using scale of map, record in table 1b.
5. Calculate the area of each in square kilometers (km^2). Record in the results table 2. (**Area = length x width**).
6. Compare the latitude and longitude lines on each map with those lines on the globe (record if lines are parallel or curved). Record results in Table 3.

Results: **Table 1a: Dimensions on map in cm**

	Globe		Mercator map		Homolosine map	
	length	width	length	width	length	width
Greenland	cm	cm	cm	cm	cm	cm
North A.	cm	cm	cm	cm	cm	cm
South A.	cm	cm	cm	cm	cm	cm

Table 1b: Dimensions converted to real distance on Earth in kilometers

	Globe		Mercator map		Homolosine map	
	length	width	length	width	length	width
Greenland	km	km	km	km	km	km
North A.	km	km	km	km	km	km
South A.	km	km	km	km	km	km
Scale						

Table Two: Area (km^2)

Landmass	Globe	Mercator map	Homolosine map
Greenland	km^2	km^2	km^2
North America	km^2	km^2	km^2
South America	km^2	km^2	km^2

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Table Three: Latitude and Longitude Comparisons

Model Type:	Latitude	Longitude
Globe		
Mercator map		
homolosine map		

Conclusions:

1. Why does Greenland appear so large on a Mercator map?

2. Use the globe to compare the relative size of Greenland and South America?

3. Which of the two maps (Mercator or Homolosine) represents more correctly the sizes of Greenland and South America?

4. Which of the maps (Mercator or Homolosine) is a truer model of the landmasses?

5. How do the longitude lines on a Mercator map appear?

6. How do the latitude lines on a Mercator Map appear?

Discussion:

1. Why would a Mercator map be more useful than a homolosine map to an air plane pilot?

2. If you were asked to map the route you follow to school, would you make a Conic porjection map or a homolosine map?
Why?

3. Use a map to determine the degree location of the following cities (include N,S,W,E):

	latitude	longitude
Philadelphia		
Los Angeles		
Moscow (Russia)		
Ottawa (Canada)		

4. At what general location on Earth are the distances between longitude lines the greatest (near the poles, near the equator, middle latitude regions)?

5. At what Earth location(s) do all longitude lines intersect?

6. What famous meridian is located opposite of the prime meridian?

7. Read Joshua 18:8. What did Joshua instruct the men to do, as the children of Israel were trying decide what portions of the Promised Land of Cannon that they would settle into?