

Where is Everybody?

NAME _____

Open the Canada Data Map and the State Data Map applets (located at illuminations.nctm.org) so that you can easily navigate between the two maps.

1. Do you notice a trend in the location of the least populated provinces or territories in Canada? Why do you think this pattern occurs?
2. What percentage of Canadians lives in Ontario?
3. Notice the location of the three most densely populated states or districts in the United States. Why do these areas have a high population density? Use mathematical language such as numerator and denominator or dividend and divisor when writing your explanation.
4. The three cities with the greatest populations in Canada are Toronto, Montreal, and Vancouver. Use the information below to calculate the population densities of these cities.

	TORONTO	MONTREAL	VANCOUVER
Population (2001)	2,481,494	1,039,534	545,671
Land Area (km ²)	629.91	185.94	114.67
Population Density (people per km ²)			

5. How do highly populated cities affect the population density of the provinces or states in which they are located?
6. What is the approximate ratio of Montreal residents to Vancouver residents?

7. According to the data on these maps, does Canada or the United States have a more dense population (more people per unit of land mass)? Look closely at what you are comparing.

$$1 \text{ km}^2 \approx 0.386 \text{ mi}^2$$

$$1 \text{ mi}^2 \approx 2.589 \text{ km}^2$$

	PEOPLE PER MI ²	PEOPLE PER KM ²
United States Population Density		
Canadian Population Density		

8. Describe the box-and-whisker plot for the United States' population density map. Why do you think it has this shape?
9. If someone asked for the “average” population density in the United States, would you use the mean, median or mode? Justify your reasoning.
10. A data points that seems very different from other observations in a data set is known as an *outlier*. Can you identify any outliers in the U.S. data set for population density? Might there be any reason to exclude this outlier from the data map?
11. How would removing this outlier change the shape of the box-and-whisker plot?
12. Suppose you removed the outlier from the data set. Showing your work below, calculate the new mean for the data provided. Then click on the outlier data, delete it, and click “update map” on the map in order to check your work.