

# Population Growth & Density

OVERVIEW & OBJECTIVES	GRADES
<p>Students will use maps of population distribution to examine the history of world population growth. They will also examine current world population distribution. Students will role-play the difference between arithmetic and physiologic densities using Egypt as an example. They will then craft a response to a prompt where they evaluate the Negative Population Growth perspective.</p> <p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> <li>• Use maps of population distribution to examine the history of world population growth.</li> <li>• Construct a dot map to show current world population distribution.</li> <li>• Describe the difference between arithmetic and physiological densities.</li> <li>• Craft a response to a prompt to evaluate the Negative Population Growth perspective</li> </ul>	9 <sup>th</sup>
	<b>TIME</b>
	4-5 days
	<b>REQUIRED MATERIALS</b>
	<ul style="list-style-type: none"> <li>✓ Atlases</li> <li>✓ Colored Pencils</li> <li>✓ Computer Internet access with projector</li> <li>✓ Handouts: “Population Geography Pre-Assessment”; “Historical Population Maps”; “Negative Population Growth Persuasive Letter Rubric”; “Negative Population Growth Persuasive Letter”; “Population Geography Post Test”</li> <li>✓ Carpet piece or masking tape</li> <li>✓ Textbook: Human Geography: Culture, Society, and Space, H.J. deBlij, 7th ed., 2003</li> </ul>
MINNESOTA SOCIAL STUDIES STANDARDS & BENCHMARKS	

**Standard 1.** People use geographic representations and geospatial technologies to acquire, process and report information within a spatial context.

**9.3.1.1.1** Create tables, graphs, charts, diagrams and various kinds of maps including symbol, dot and choropleth maps to depict the geographic implications of current world events or to solve geographic problems.

*For example:* Maps showing changing political boundaries and tables showing the distribution of refugees from areas affected by natural disasters.

**Standard 3.** Places have physical characteristics (such as climate, topography and vegetation) and human characteristics (such as culture, population, political and economic systems).

**9.3.2.3.1** Make inferences and draw conclusions about the physical and human characteristics of places based on a comparison of maps and other geographic representations and geospatial technologies.

*For example:* Physical characteristics—landforms (Rocky Mountains), ecosystems (forest), bodies of water (Mississippi River, Hudson Bay), vegetation, weather and climate. Human characteristics—bridges (Golden Gate Bridge), Erie Canal, cities, political boundaries, population distribution, settlement patterns, language, ethnicity, nationality, religious beliefs.

**Standard 5.** The characteristics, distribution and migration of human populations on the earth’s surface influence human systems (cultural, economic and political systems).

**9.3.3.5.1** Describe the patterns of human population distribution in the United States and major regions of the world.

**Standard 5.** The characteristics, distribution and migration of human populations on the earth’s surface influence human systems (cultural, economic and political systems).

**9.3.3.5.3** Compare the population characteristics of places at a range of scales using population pyramids, birth and death rates, and other key demographic variables.

## SUGGESTED PROCEDURE

### Day 1:

1. Pass out “Population Geography Pre-Assessment”, which is a blank world outline map as a pretest, and have students make a choropleth map of the world’s population distribution. Give them about 20 minutes to color their map using darker colors to show greater numbers of population. If students do not understand how to make a choropleth map, some explanation may be needed. Collect the maps when students are finished.
2. Pass out the “Historical Population Maps” handout (without the years) or make your own worksheet based on the maps, “Human Population Through History” that can be found at: <http://desip.igc.org/populationmaps.html>. Directions for the worksheet are: “Review the following maps of world population growth. Thinking like a geographer, explain in the space provided what you see while looking at each map. Specifically, notice the areas of development and the population increase from map to map. Include other observations to answer questions; e.g., Why are these changes occurring? What developments or technology could have influenced population growth?”
3. Students’ homework is to answer the following question and complete a world population map:
  - a. *What are the obvious differences between these maps? Be as specific as possible.*
  - b. *Re-create the dot map that you see in deBlij on page 56-57 on a blank outline map. Take your time and recreate the map using a color.*

The map in deBlij is simply a dot map of population distribution and density in the world.

### Day 2:

1. Discuss the “Historical Population Maps” handout as a class. What did students note? What was their reasoning for the population growth in certain areas? Why are some areas not populated at all? Where are the maps inaccurate? Look at the website where these maps are located and identify the years. <http://desip.igc.org/populationmaps.html> This is a good opportunity for students to critically analyze maps. One should note that these maps exaggerate the growth of population so it may be advisable to mention that as well.
2. Pass back their pretest and lead a short discussion of the differences from the map in deBlij and the Historical Population Maps handout and the map that they created themselves. The main question to structure the discussion is: “Why are there differences between your map and deBlij’s?” This lesson can be discussed in multiple ways. Students may be placed in groups of two and given five minutes to discuss their maps. Some monitoring of groups and re-directing students with pointed questions would be beneficial. Often students’ perspective of population location is very inaccurate. This is also a very good topic for discussion: “Why is your perspective inaccurate?”
3. Homework: Read pages 53-58 of the text for tomorrow’s lesson. These pages provide the foundation for population distribution and arithmetic density and physiologic density. A good reading strategy for students is SQR3.

### **Day 3:**

1. Prior to this carpet population density activity, measure your room to learn the square footage. Count the number of students in your class and determine the arithmetic density of your classroom for each class. (The numbers will differ based on the number of students in each class and the classroom you are teaching in.) To get the arithmetic density, take the square footage of your classroom and divide it by the number of students in your class. For example: A 25 ft. x 25 ft. square room would equal 625 sq. ft. If you have 30 students in the class, each student would have 20.83333 sq. ft. on which to “live”. Many classrooms have tiles that are usually one square foot. Students can use the tiles to space themselves.
2. Spread the students into 20.8 sq. ft. sections (taking into account furniture may cause minor adjustments). Students will basically be spaced evenly in the room. At this point, ask students their comfort level. How are they feeling? Do they feel like they can move? Students are to return to their seats.
3. Next, have the students use their atlas to see the population distribution in Egypt. Students will analyze the map to determine what is meant by arithmetic density. Google Earth can also be used here to show the size and land features of the country; it can be downloaded for free at: <http://www.google.com/earth/>. Zoom in Google Earth to show that most of the population lives along the Nile River. In fact, roughly 98% of the people live on 3% of the land. Discuss whether the arithmetic density figure would be accurate for Egypt.
4. Introduce physiologic density. Roll out a carpet that can be any size, but big enough to fit your entire class uncomfortably. (Instead of a carpet, masking tape may be used to outline the space.) Explain that this carpet is the only place that you can be and still get an “A” in the class. A 10 ft. by 10 ft. carpet would have an area of 100 sq. ft. giving each student in a 30-person class 3.3 sq feet to stand. Pack all of the students on the carpet. Explain that this carpet is the only land that will sustain life. Therefore, people will live on this area and will put up with higher densities because living elsewhere will be much more difficult.
5. Students in pairs will review the difference between arithmetic and physiological densities. They will provide examples of countries that illustrate the difference between the two concepts, such as Canada, Brazil, and China. Students will record their responses and submit them as an Exit Slip.

Homework: Read pages 59-63 of the deBlij text using the SQR3 reading strategy.

### **Day 4:**

1. Post or view the Negative Population Growth poster that can be found at <http://www.npg.org/for-educators.html> in a place where all students can see it clearly. (I believe that this poster can be obtained with a request from the company.) Lead a discussion about the contents of the poster to challenge students’ critical thinking. Ask: “What is wrong with this poster in regards to what you have learned over the past few days?” The poster focuses on U.S. population growth as a critical issue that needs to be corrected. On a global scale, the population growth of the United States is much less than most of the rest of the world besides Europe. Does the poster illustrate an accurate perspective? If we are truly a global community, should this perspective focus on just the United States?
2. Students will write a rebuttal that explains why the statements on the poster are misguided. Pass out the “Negative Population Growth Persuasive Letter Rubric” handout that explains the assignment and the “Negative Population Growth Persuasive Letter” that provides an example. Students will read the letter with a partner. The first person reads one paragraph while the second person listens. Then the second person summarizes the paragraph. The students will switch roles and continue reading the entire letter

together using this partner sharing strategy. When they are done reading and summarizing the letter, students will review the rubric on the handout and determine the grade that this letter would receive. Discuss the grading as a class.

Use the rubric provided on the handout or go to <http://rubistar.4teachers.org> to create your own rubric for the document, which may take the form of an essay or a letter to the company. (These letters may be mailed to the company.)

### **Day 5**

Students complete the post-assessment, “Population Geography Post Test” that shows the population distribution in the world. It can be structured similar to the pre-assessment. Students need an understanding of current world population distribution to be successful.

### **Extension**

Show the brief video (7.18) “World Population” from Population Connection (formerly Zero Population Growth) at <http://www.populationeducation.org/content/world-population-video>. Conduct a class discussion about the video and its perspective. Discuss limited resources and increasing population in light of the Earth’s carrying capacity.

### **Assessment:**

- “Population Geography Pre-Assessment” handout
- “Historical Population Maps” handout
- Exit Slip
- Homework Question and Map
- Class Discussion
- Negative Population Growth Persuasive Letter or similar rebuttal document
- “Population Geography Post Test” handout

### **Website Resources:**

“Human Population through History: 1 A.D. to 2020” from Demographic, Environmental, and Security Issues Project <http://desip.igc.org/populationmaps.html>

“U.S. Population Poster” at For Educators from Negative Population Growth <http://www.npg.org/for-educators.html>

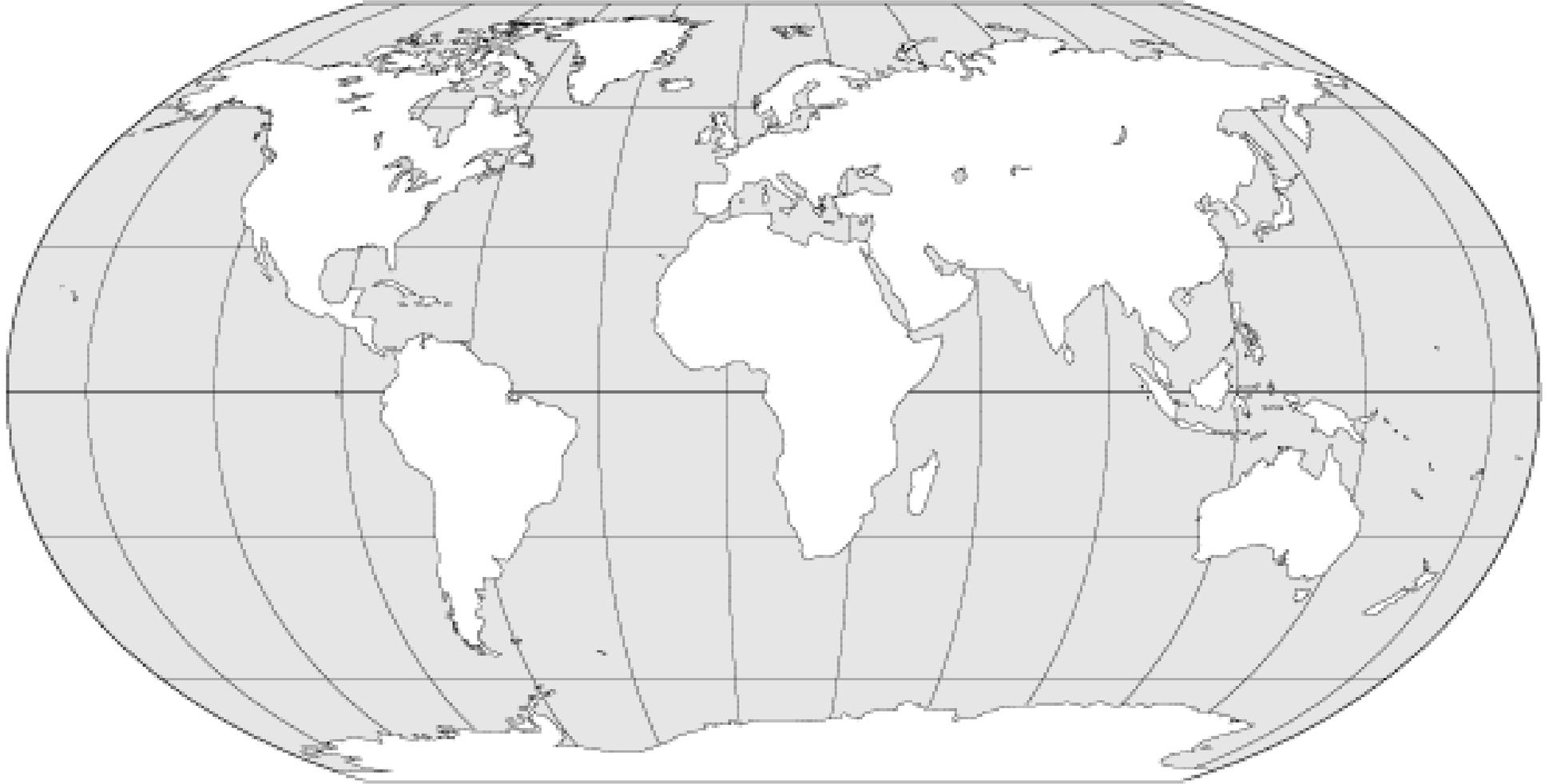
“Create Rubrics for Your Project-Based Learning Activities” at Rubistar <http://rubistar.4teachers.org>

Note: This site was the place where the rubric was developed

Google Earth <http://www.google.com/earth/>

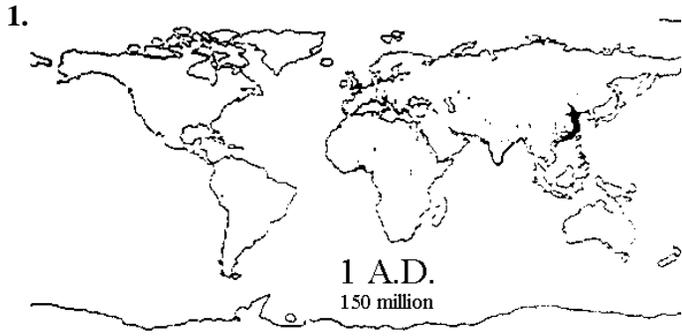
# Population Geography Pre-Assessment

**Directions:** Use the world map below to make a population distribution map for the world. Create a choropleth map using increasingly darker colors to show greater numbers of people. (Remember that darker colors mean greater intensity, or more people.) Write a short paragraph in the space provided explaining why you located the population where you did.



Explanation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

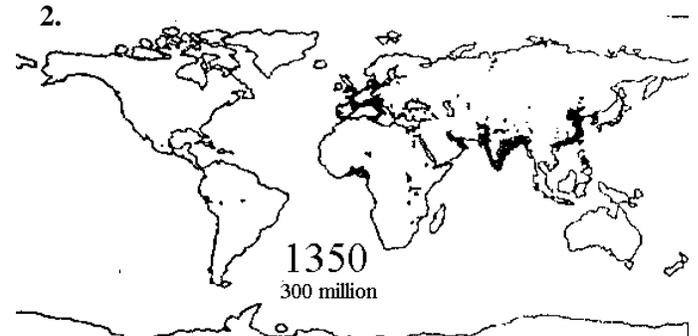
**Directions:** Review the maps of world population growth from 1 A.D. Thinking like a geographer, explain in the space provided what you see while looking at each map. Specifically, notice the areas of development and the population increase from map to map. Include other observations to answer questions; e.g., Why are these changes occurring? What developments or technology could have influenced population growth?



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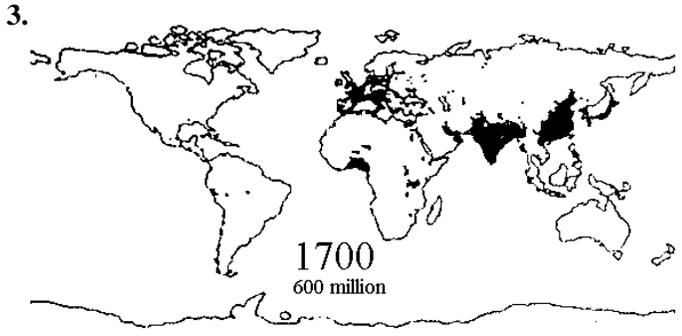
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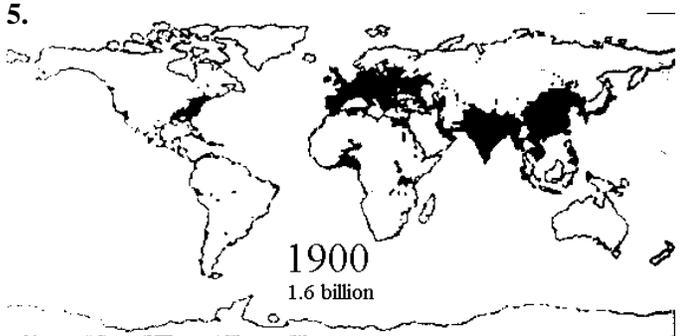
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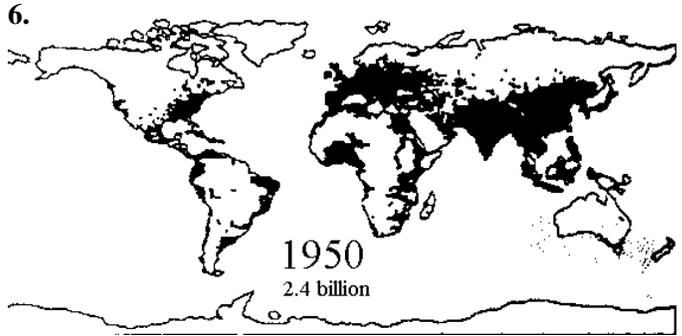
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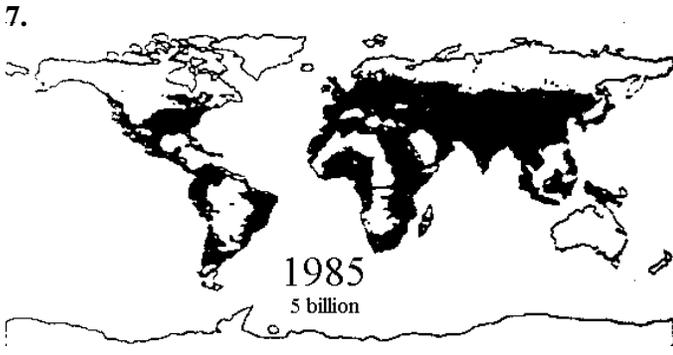
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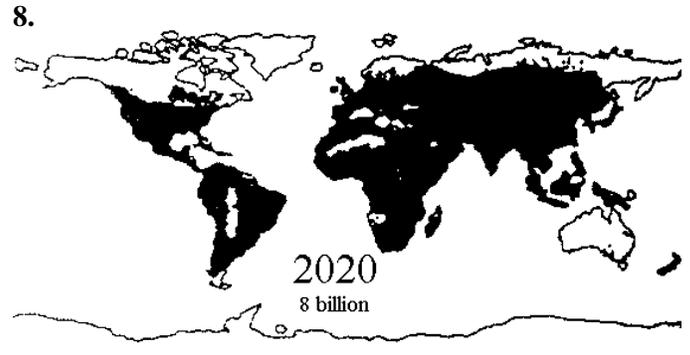

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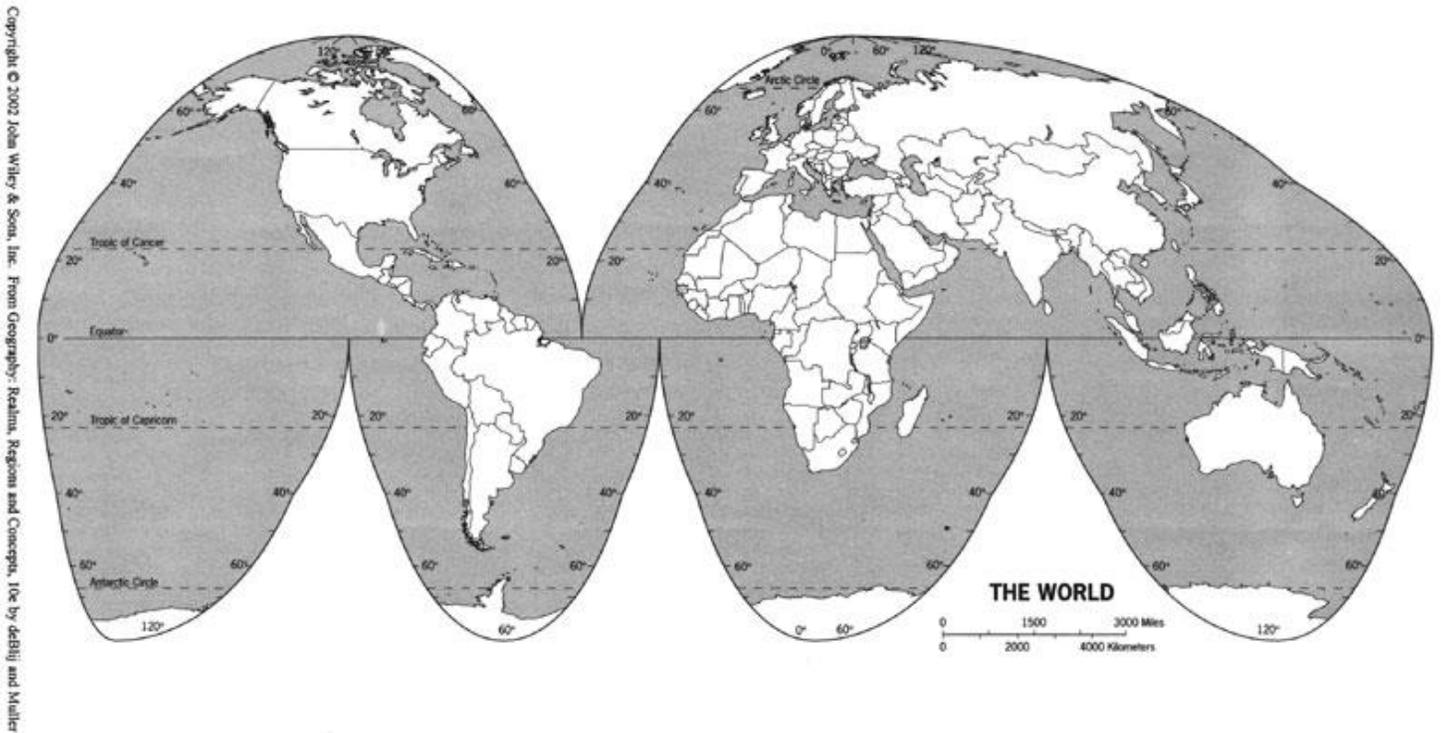
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<http://desip.igc.org/populationmaps.html>

Now, take a critical look at the map on page 56-57 of deBlij and explain the differences you see.

9. What are the obvious differences between these maps? Be as specific as possible.

10. Re-create the dot map that you see in deBlij on page 56-57 on the map below. Take your time and recreate the map using a color.



## Negative Population Growth Persuasive Letter

Dear NPG,

My name is \_\_\_\_\_ and I am a 9<sup>th</sup> grade human geography student at Spring Lake Park High School in Spring Lake Park, MN. While In a Human Geography class we came across your website and we're assigned to write a letter to your organization. I'm writing your organization to tell you that I disagree with your ideas. If your ideas were accepted by the U.S government you would only make it legal for a limited number of immigrants to move to the U.S. Thousands of immigrants would be unable to leave their home countries which could be unsafe for them. You also propose that couples should only be allowed to have 2 children. Some couples may choose not to have children or may be unable to have children. And some couples may get married too late to be able to have children. With only being allowed to have 2 children the U.S population would slowly decline until it is very small. Your Ideas could have unexpected consequences that could affect all of the U.S.

One of your ideas on your Proposed National Population Policy is that we should limit the amount of immigrants entering America. If your plan was legalized many immigrants would be forced to stay in their current countries. Their countries could be in the middle of a war or could be low in food or water supplies or have no jobs available. Your idea could leave thousands of migrant's homeless, jobless, hungry, or in danger. Without the migrants filling open jobs less money will be made on taxes less people will help support retired workers on social security leaving America unable to support its elderly.

NPG's Proposed National Population Policy states that American families should only be allowed to have 2 children. Some couples may choose not to have children or may be unable to. People in same-sex marriages cannot have children unless they adopt or use a surrogate mother. And some couples may marry too old to have children. The declining number of children and the restriction in immigrants would decrease the United States population to very small numbers. This would leave many necessary jobs open like construction workers.

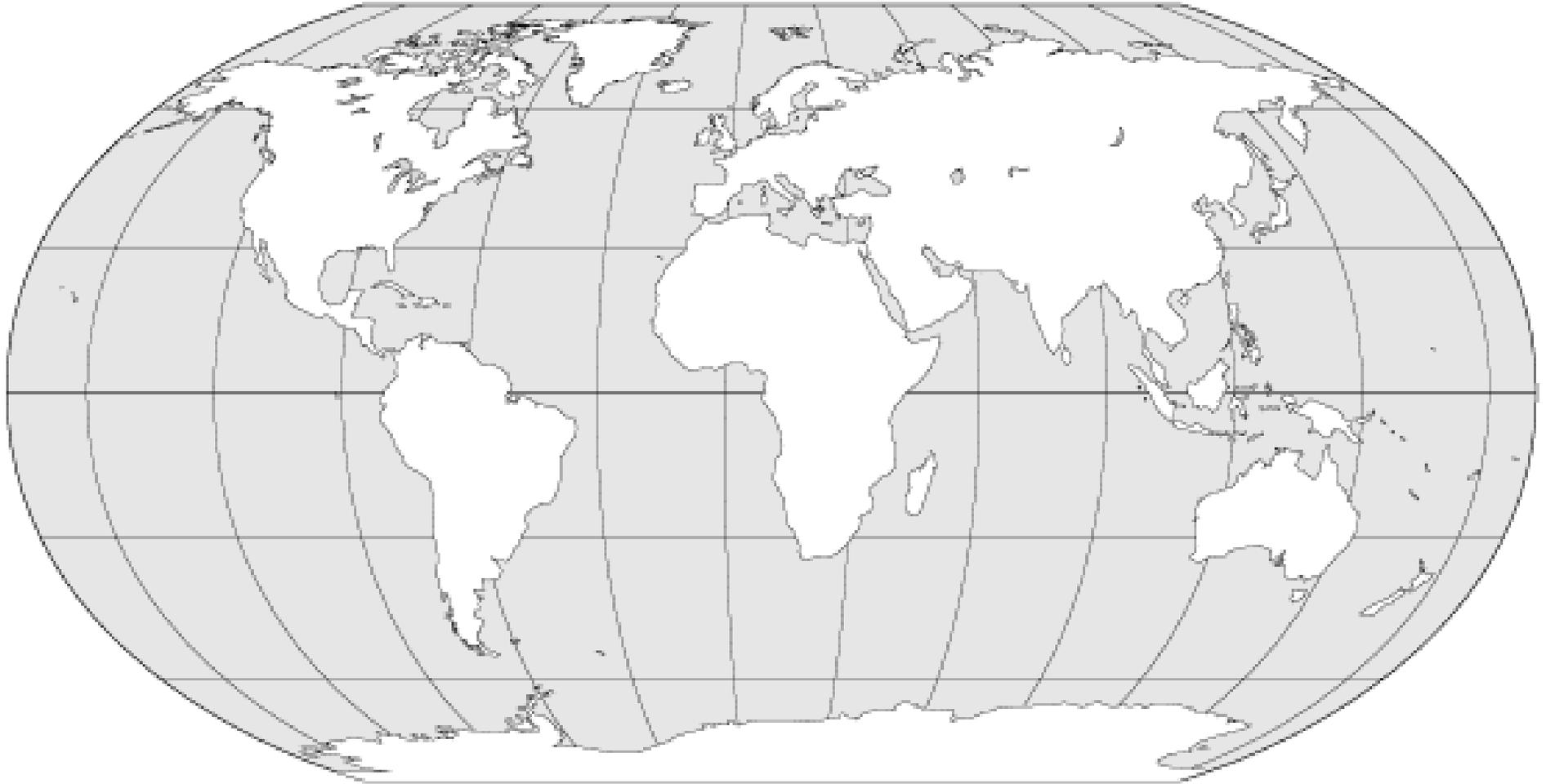
Your organization suggests that America should help Arab countries bring down their birth rates. This idea could be costly to Americans. If your idea was accepted in Arab countries their population would decrease rapidly also. Arab countries have a high infant mortality rate. If families only had 1 or 2 children 1 or no children of theirs would survive. Arab populations would decrease rapidly also which could cause serious issues.

If your ideas were accepted by the U.S. government problems would arise around the world. Immigrants could be left in dangerous or life-threatening situations. U.S populations would decrease rapidly along with Arab country populations. These are the reasons that I disagree with your Proposed National Population Policy. NPG would be more successful and accepted if instead of refusing to allow immigrants they helped the immigrants countries become safer, more desirable places to live. And they should make birth control easier available to decrease birth rates instead of endorsing a 2-child law. If you changed your ideas the U.S. government would accept it easier and your ideas would be used. Thank you for your time.

Sincerely,

# Population Geography Post Test

**Directions:** Use the world map below to make a population distribution map for the world. Create a choropleth map using increasingly darker colors to show greater numbers of people. (Remember that darker colors mean greater intensity, or more people.) Write a short paragraph in the space provided explaining why you located the population where you did.



Explanation: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_