

World Geography

USING STATISTICS

Name _____ Date _____

PURPOSE

Learn to analyze and interpret geographic data
so as to better evaluate current world events and
predict future world events.

HOW TO DO THIS COURSE: Do the steps in order. Write your initials and the date on the sign-off line when you finish a step. Two lines means you get the step checked and signed off by another student or sometimes by your academic supervisor. Turn your written work in to your supervisor.

ESTIMATED TIME: 20 hours.

BOOK:

World Geography—Using Statistics, Heron Books

A. INTRODUCTION: GEOGRAPHY AND STATISTICS

1. READ: *World Geography—Using Statistics*, Chapter 1 The Main Divisions of Geography. _____
2. DEMONSTRATION: Using objects, show
 - a) the difference between physical and human geography. ____
 - b) political geography. ____
 - c) economic geography. ____
 - d) environmental geography. ____ _____
3. READ: Chapter 2 Geography and Statistics, to section “Using Age Distribution Statistics.” _____
4. DEMONSTRATION: Using objects, show the definitions of
 - a) raw data. ____
 - b) statistics (both definitions). ____
 - c) indicators. ____ _____

5. DEMONSTRATION: Explain to someone why trends are valuable to researchers.
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B. RESEARCHING STATISTICS

1. READ AND PRACTICAL APPLICATION: Research countries with the largest populations and the largest land mass.

This can be done using reference books such as the *World Almanac*, but it is recommended that you do the research online.

The website <https://www.nationmaster.com/statistics> is a good place to start. Another useful site is <https://www.cia.gov/the-world-factbook>. You can also do a google search.

When comparing information from different sites, there are several factors to pay attention to:

- how a statistic is defined. Comparing definitions may help explain inconsistencies in the data.
- the source of the data. Going to the source may provide more background on how the data was gathered, and its validity.
- the date of the statistics. Data gathered for the same time period would provide accurate comparison.

Compare two or more sources to see if the data is consistent.

Keep a record of the data, your sources, and any additional information as you will use this in later steps. Note: Putting the data in an Excel file will make it easier to create your own graph later.

- a) Find the 10 largest countries by land mass and list them in order (along with their areas). ____
 - On NationMaster, click on Top Stats at the top of the page and then select Land Size.
 - On CIA World Factbook, scroll down and below “Oceans” click on Country Comparisons, then Geography and Area.
 - You may google “land mass countries.”
- b) Determine the top 10 countries by population and list them in order (along with the numbers). ____
 - On NationMaster, click on Categories at the top of the page and select People, then Population in 2015.

- On CIA World Factbook, scroll down and below “Oceans” click on Country Comparisons, then under People and Society, click on Population.
 - Another source for population is <https://www.worldometers.info>.
 - You may google population by country (date).
- c) If the sources aren’t consistent for a) and b), choose the one(s) you think are best and explain why. ____
- d) Compare a) and b) to see if countries with the largest land mass have the largest populations. Explain in writing what you found. ____
2. READ: Chapter 2 Geography and Statistics, section “Using Age Distribution Statistics.” _____
3. DEMONSTRATION: Using objects, show an example of how a planner might make use of statistical data to predict the future needs of a country. ____
4. PRACTICAL APPLICATION:
- a) Research the age distribution breakdown of the ten largest populations using one of the following sources. (Note that the breakdown varies by source.) ____
- On <https://www.nationmaster.com>, scroll down and click on Categories at the very bottom of the page. A list of categories with explanations will appear. Scroll down to People and at the bottom of the explanation, click on “Age distribution>Population aged 0-14.” Note down the year and the percentage. Note the same for the next two: at the top of the list where it shows “0-14”, change to “15-64 >”; and “65 or over> percent.”
 - You may also google “age distribution by country.”
- b) Draw graphs or histograms (defined in Chapter 4 World Geography Glossary) to show the age distributions of the different countries. ____
- c) Choose a country other than India, the U.S. or Japan, and write an essay on what the age distribution might mean to the future of the country. ____

C. DISPLAYING STATISTICS

This section makes use of an internet site called Gapminder that features interactive statistical graphs that you can explore.

1. PRACTICAL APPLICATION: Define Gapminder (using the chapter 4 glossary). _____
2. PRACTICAL APPLICATION: Gapminder Tools.
 - a) Go to Gapminder at <https://www.gapminder.org/> and select “Resources” at the top of the page.
 - b) Scroll down and under “Frameworks” select “World Health Chart.” (Note that sometimes the placement of these items change on this website, so you may need to search for items by name.)
 - c) Watch the Hans Rosling video (2nd item on the screen). Mr. Rosling explains the use of a chart to show a relationship between how long people live and how much money they earn. _____
3. READ AND DEMONSTRATION: Read Chapter 3 Using Gapminder. You should have an example Gapminder display (such as the “World Health Chart” expanded to full screen) open on your screen as you read, so you can try each feature as it is explained. (The glossary in the book may help you with some of the terms.) _____
4. PRACTICAL APPLICATION:
 - a) Go back to the Gapminder Resources page, and click on “Understand a changing world.” _____
 - b) At the top of the bubble chart that comes up, click on “How to Use” and a Vimeo on “How to use Gapminder Bubbles” appears. It covers the information you read about in chapter 3. _____
 - c) Watch the Vimeo (you may want to expand it to full screen), pausing it as often as you like to study the display. _____
 - d) Locate on the graph each item handwritten on the Gapminder Tools Guide in the book, doing any actions called for in the item. _____

5. READ AND DEMONSTRATION: Below the “Understand a changing world graph” are a number of boxes displaying statistical data. Watching the animated graphs in these boxes will not only show data over time, but also give different methods for presentation of information.

Have fun with them, choosing different countries, stopping and starting, while also giving some thought to the information presented and why changes might be happening.

Following each of these will be reads that explain some of the causes for the changes, along with additional videos to watch.

Shown at the end of each video are the sources for the data presented.

- a) Choose the Ranks box and
 - play the “Population, Total” animated graph.
 - At the bottom of the page, choose “How Did the World Population Change?” Read the text, and watch the video.
 - On the left side of that same page, click on the title “What Makes the World Population Continue to Grow?” Read the text, and watch the video.
 - Again, on the left, click on “The rapid growth of the world population, when will it slow down?” Read the text, and watch the video.
 - There are additional titles given that you can watch, if you wish. ____
- b) Click on Home at the top of the page, scroll down to “Animating Data,” click on “Understand a changing world,” choose the Trends box and
 - play the “Income Per Person” animated graph.
 - Click on the title on the bottom “How many are rich and how many are poor?” Read the text and watch the video.
 - Click on the title “How Does Income Relate to Life Expectancy?” Read the text and watch the video. (You watched this earlier. This time see if you have a different understanding of the information presented.) ____

- c) Go back “Home,” “Animating Data,” and “Understand a changing world.” Click on the Ages box and
- play the “Population by Age” animated graph.
 - Play it again, this time changing from “World” to any countries you are interested in seeing.
 - Choose the Income box and
 - play the “Number of people by income” animated graph.
 - Notice which regions moved the furthest out of extreme poverty.
 - When it’s finished, place your cursor over each of the regions and notice where the region falls on the income graph in 2018.
 - Notice what this shows regarding the spread of wealth across the world. ____
- d) Click on Africa as a region. A box will come up that has a check in “Select all in that group.” Click on the line below it that says “Remove everything else.” Notice the income spread for the region. Play the video and notice the change over time. Click on countries within the region to see their placement and consider what the individual country rankings tell you about drawing conclusions from the broader regional statistics. ____
- e) Repeat the above step with a different region. You can look at all regions, if you wish. ____

6. ESSAY: Using examples from the Income graph, tell in what ways you think presenting statistics graphically can be useful, and some possible misconceptions they can lead to if taken too broadly. ____

D. CREATING YOUR OWN GRAPHS

1. PRACTICAL APPLICATION: Using Gapminder, compare the trails of the top 10 countries by population that you found in step B.1.b above. Click on “?” and then on the sources given, to open each of the data bases used to generate the graph indicator points (per chapter 3) and examine them to gain more understanding of the data. ____
2. ESSAY: Select two of the top 10 countries you researched above. Pick two that have significantly different histories as shown by their graphs.

From your research (study the two countries more if you wish), tell what you think makes these countries different and how the graph could be used to help convey this to others. _____

3. PRACTICAL APPLICATION: Make a graph.

- a) On Gapminder bring up the Bubbles graph (Life expectancy, and Income). Choose the top 10 countries researched earlier.
- b) Look over the list of indicators for the Y axis, and choose “Babies per woman”. The graph will change. Click the “?” to read the definition of the statistic. _____
- c) Play the graph to see what it shows. _____
- d) Repeat this step until you understand well how you can access the data and learn what it means. _____

4. PRACTICAL APPLICATION: Make a different graph.

- a) Using the last graph created, change the X axis. Choose Education/Literacy rate, adult female. _____
- b) Notice changes in the graph. _____
- c) Choose one or two different indicators and change the graph. Run the graph. _____
- d) Repeat if needed until you have a graph that interests you. _____
- e) Open the data bases (“?” symbol) used to generate the graph and examine them. _____
- f) Write an essay discussing the results and how you think they might be useful. _____

E. VIDEO—“ASIA’S RISE”

1. PRACTICAL APPLICATION: At the Gapminder web page <https://www.gapminder.org/> select Resources, Videos, Ted Talks and Documentaries, and “Hans Rosling: Asia’s rise—how and when (TEDIndia).” It can also be found on TED at http://www.ted.com/talks/lang/eng/hans_rosling_asia_s_rise_how_and_when.html.

Watch the video (more than once if you need to). Refer to the chapter 4 glossary, section “Asia’s Rise” Video as needed. This section has definitions and explanations of terms used that you may not be familiar with and they are listed in the order in which they appear in the presentation. _____

2. PRACTICAL APPLICATION: Conduct further research on the information presented in the video, and discuss whether, in your opinion, India and China will actually achieve a higher standard of living than the U.S. by mid-century. Back up this argument with other references and citations from other geography sources as well. **Supervisor pass.** _____

F. FINAL APPLICATION

1. PRACTICAL APPLICATION: Use statistics and other research tools to examine some aspect of physical or human geography in order to evaluate a situation or make a prediction in an essay. You may use graphs or videos from the Gapminder website, or choose another primary source. Back up this discussion with other references and citations from other geography sources as well. **Supervisor pass.** _____

I have completed the steps of this course. I understand what I studied and can use it.

Student _____ Date _____

The student has completed the steps of this course and knows and can apply what was studied.

Academic supervisor _____ Date _____

The student has passed the exam for this course.

Examiner _____ Date _____

FOR FACULTY

NOTE:

The student's writing piece done for the final application will be needed for the exam.

ADDITIONAL RESOURCES

Exam and answers

Materials List

