



Map Literacy

SIZE IT UP

★ Grades 9-10



Skills and Objectives:

- Students will learn how to read and use a cartogram.
- Students will synthesize information from more than one map.
- Students will draw conclusions about population density.

Suggested Groupings:

Individuals, partners

Getting Started:

- Introduce this activity to the class by letting students know that they will compare information gathered from a U.S. population **cartogram** with information gathered from a standard U.S. map. They will use information gleaned from both maps to draw conclusions about state population density.
- Invite students to share their prior knowledge of the census. Then discuss the idea that the U.S. Census Bureau's primary obligation, as directed by the Constitution, is to provide population totals, by state, every ten years. Data from the census are used to **apportion** seats in the House of Representatives and to redraw voting districts within states. The data are useful for a variety of other purposes, such as mapmaking. For example, the mapmaker who created the cartogram used census population data to calculate each state's size. In fact, both the cartogram and the *We Count!* wall map represent information that would not be available without the census.

Using the Activity Worksheets:

- Distribute copies of worksheet pages 4 and 5 to students. Introduce both the *We Count!* wall map (including the inset map) and the maps on page 5. Have a volunteer read the text on page 4 aloud. Discuss the fact that both the *We Count!* wall maps and the cartogram show population and population density information. The type of information shown differs, however. The *We Count!* maps show numerical population data. The cartogram does not. Instead, it shows a state's population in relation to other states. The states on the cartogram are drawn in mathematical proportion to their populations.
- Ask students whether the *We Count!* Population Density inset map or the cartogram would better answer this question: **Which state is more densely populated, Georgia or South**

Dakota? (*The We Count! Population Density inset map should be used to answer this question correctly. However, by using both the cartogram and the Population Density map, the answer could also be found.*)

Chalkboard Definitions

cartogram: a diagram in map form.

relative: compared with others.

proportional: sized in relation to something else.

apportion: to make a proportionate division or distribution.

- Have students answer these questions: **How does Florida look on the cartogram? Is it bigger or smaller than on the regular map? Is it bigger or smaller than other states?** (*Florida is larger relative to the other states on the cartogram than it is on the standard map.*) Then, have students answer the questions on worksheet page 4.

Wrapping Up:

- Review student answers to questions 1-5 and 8 on the handout.
- Ask students which states they identified as densely populated or sparsely populated in questions 6-7. Have them explain the reasoning behind their choices.
- Discuss situations in which a cartogram might be useful, and situations in which a cartogram would be less useful than a standard map.

Extension Activity: Have students review updated population data from the U.S. Census Bureau Web site (www.census.gov). Under the box labeled "People" choose "Estimates," and then select "State Population Estimates." Based on this data: **Which states might now appear larger on the cartogram? Which might now appear smaller?**

Answers:

Page 4: 1. California. 2. Pennsylvania; because it's larger on the cartogram. 3. New York, Illinois, Kansas, South Dakota. 4. Answers will vary. 5. Answers will vary. 6. Possible answers: Massachusetts, Connecticut, New Jersey. 7. Answers will vary. 8. California, New York, Texas.





Size It Up

Standard maps of the United States make it easy to compare the **relative** land area of each state. Using these maps, it's clear that Montana is much larger than Connecticut. These maps don't tell you anything about population, however. To find that information, you need to look at a special purpose map that uses census data.

The We Count! wall map is one example. It uses color and numbers to show population data from the 1990 Census while maintaining geographical accuracy.

The **cartogram** at the top of the next page is another kind of special purpose map. In a cartogram, the size of each state is not related to the size of the land area. The mapmaker isn't concerned with the accuracy of boundaries or land areas, but does preserve the shapes and positions of geographic locations. This cartogram was specially drawn so that the size of each state is **proportional** to the number of people who live there. At a glance, you can easily see the relative size of each state's population.

Montana, due to its small population, is shown much smaller than it appears on a standard map. The small state of Connecticut looks much larger. Texas, which has both a large land area and a large population, is shown more or less the same size as it would be on a standard map. Using the cartogram and the standard map, you can draw conclusions about state population density.

Use the two maps on page 5 (the U.S. Population Cartogram and the Standard U.S. Map) to answer the following questions:

1. Which state has the largest population?

2. Which state has a larger population, West Virginia or Pennsylvania?

How can you tell?

3. Rank these states according to the size of their populations, from highest to lowest: South Dakota, Illinois, New York, Kansas.

1. _____

2. _____

3. _____

4. _____

4. List a state that is much larger on the cartogram than on the regular map.

5. Find your own state on the cartogram. Does it appear smaller or larger relative to its size on the standard map?

6. Find a densely populated state by comparing the cartogram to the standard U.S. map.

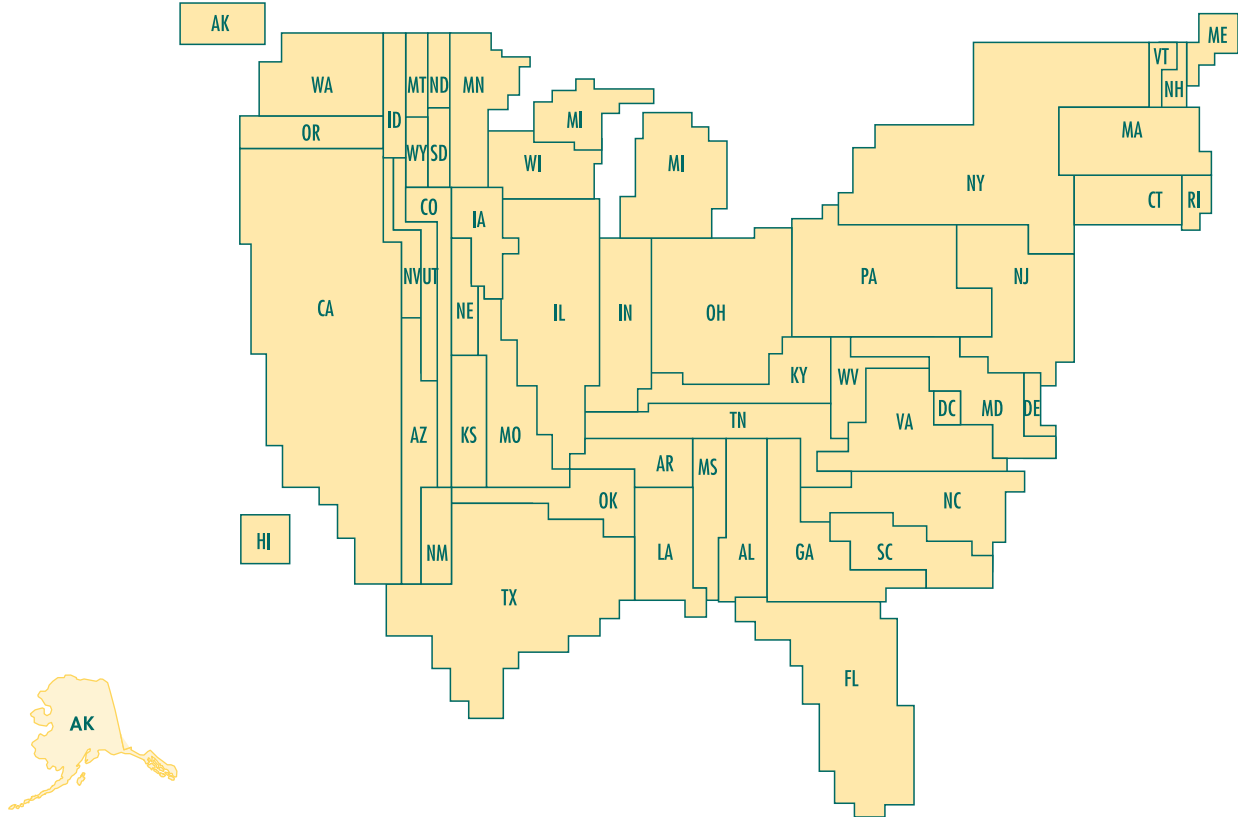
7. Name a sparsely populated state other than Montana.

8. Based on the cartogram, which three states would you conclude have the most U.S. representatives?

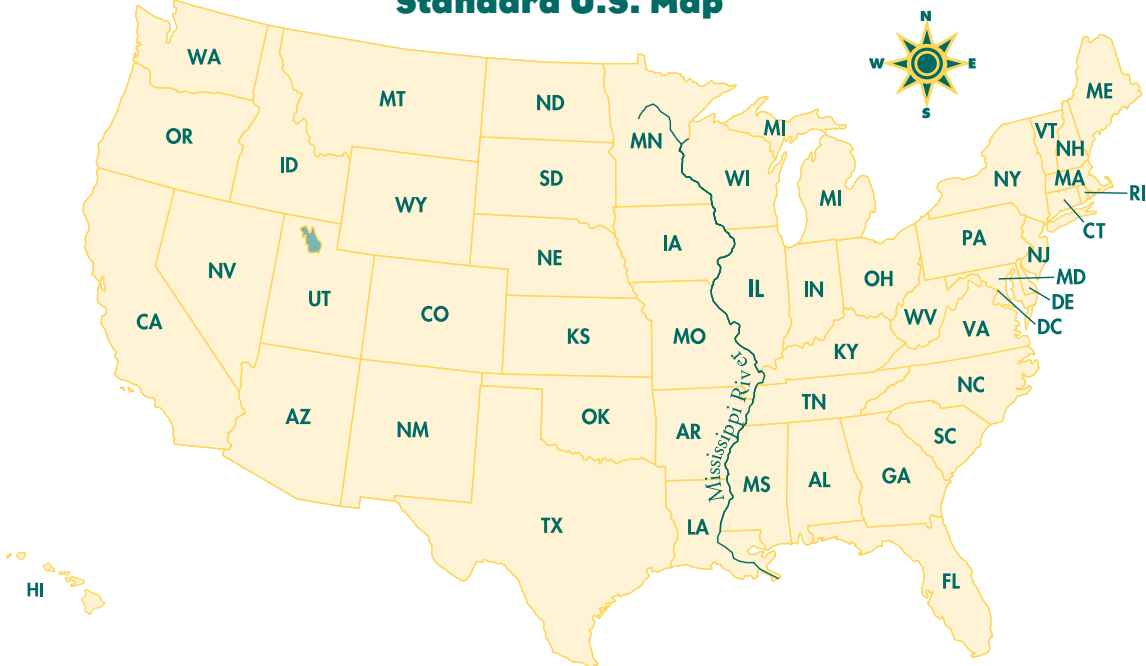


Size It Up (continued)

U.S. Population Cartogram



Standard U.S. Map



Source: U.S. Census Bureau