

COMPARING MY STATE

TEACHER VERSION

Subject Level:
Elementary School Math

Grade Level:
4

Approx. Time Required:
45 minutes

Learning Objectives:

- Students will be able to round large numbers to different place values.
- Students will be able to compare multidigit numbers using symbols.

United States® Census Bureau

Classrooms Powered by Census Data

STATISTICS IN SCHOOLS

Activity Description

Students will compare data for two states using comparison symbols and both rounded and unrounded (exact) numbers. Students will then write their own question to compare the data.

Suggested Grade Level:
4

Approximate Time Required:
45 minutes

Learning Objectives:
- Students will be able to round large numbers to different place values.
- Students will be able to compare multidigit numbers using symbols.

Topics:
- Population
- Rounding
- States

Skills Taught:
- Analyzing data
- Comparing multidigit numbers using symbols

Materials Required

- The student version of this activity, 6 pages
- A computer with Internet access for each student
- Teacher computer with Internet access and a projector to display web sites

Activity Item

This activity uses the following online tool:

- State Facts for Students
  www.census.gov/programs-surveys/sis/resources/data-tools/state-facts.html

For information to help you introduce your students to the U.S. Census Bureau, read "*Census Bureau 101 for Students*."

Standards Addressed

See charts below. For more information, read "*Overview of Education Standards and Guidelines Addressed in Statistics in Schools Activities*."

Common Core State Standards for Mathematics

Standard	Domain	Cluster
CCSS.MATH.CONTENT.4.NBT.A.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	4 NBT – Number & Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.
CCSS.MATH.CONTENT.4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.	4 NBT – Number & Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.

Common Core State Standards for Mathematical Practice

Standard
CCSS.MATH.PRACTICE.MP4. Model with mathematics. Students will use comparison symbols to communicate mathematically.
CCSS.MATH.PRACTICE.MP6. Attend to precision. Students will consider the difference between comparison statements that include rounded numbers and those that include unrounded (exact) numbers.

National Council of Teachers of Mathematics' Principles and Standards for School Mathematics

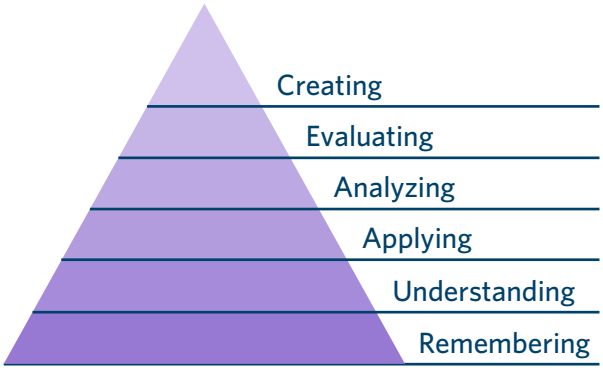
Content Standard	Students should be able to:	Expectation for Grade Band
Numbers and Operations	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.	Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals.
Algebra	Represent and analyze mathematical situations and structures using algebraic symbols.	Express mathematical relationships using equations.

Guidelines for Assessment and Instruction in Statistics Education

GAISE does not apply for this activity.

Bloom's Taxonomy

Students will ***apply*** their understanding of place value and comparison symbols to write comparison statements about census data on two states. Then they will ***create*** a comparison question that can be answered with those data.



Teacher Notes

Before the Activity

Students must understand the following key terms:

- **Compare** – to find how things are similar
- **Contrast** – to find how things are different
- **Data** – facts usually represented by numbers
- **Less than** – when one amount is smaller than another amount, identified by the symbol "<"
- **Greater than** – when one amount is larger than another amount, identified by the symbol ">"
- **Population** – the number of people living in an area

Students should have the following skills:

- Identifying place values up to the hundred millions
- Rounding

Teachers should review with students a few example comparison statements (e.g., "6 < 8").

Teachers should display State Facts for Students (*www.census.gov/programs-surveys/sis/resources/data-tools/state-facts.html*) on the screen and point to the school's state on the map, clicking through to see the data for that state. Teachers should then examine the neighboring states and discuss with students any interesting comparisons that can be made (e.g., "This neighboring state has fewer people than our state, but it has more toy stores.").

During the Activity

Teachers should walk students through the activity. If any students struggle with tracking or reading large sets of data on the screen, teachers should give them a piece of paper with a straight edge to hold up to their computer screens under the line of data they want to focus on.

After the Activity

Teachers should ask students to share their comparison question with a partner.

Teachers should ask a few students to share how their state compares with a different state, encouraging them to use appropriate math vocabulary like "less than," "greater than," and "equal to." Teachers should also encourage students to articulate their reasoning in terms of place value. For example, "Rhode Island has '3-hundred' dentist offices while Pennsylvania has '47-hundred,' and 47 is greater than 3."

Extension Ideas

- Teachers could direct students to compare a third state with their first two states, creating a comparison statement such as "x < z < y."
- Teachers could ask students whether their comparison statements would change if they rounded to a different place value, to help students appreciate the importance of precision.

Student Activity

Click *here* to download a printable version for students.

Activity Item

This activity uses the following online tool:

- State Facts for Students
  www.census.gov/programs-surveys/sis/resources/data-tools/state-facts.html

Student Learning Objectives

- I will be able to round large numbers to different place values.
- I will be able to compare numbers with many digits using symbols.

The U.S. Census Bureau collects and organizes a wide variety of population data and other types of data for the United States, and it reports these data for states, counties, and even smaller areas, like towns. Governments, businesses, and school districts use the data to make decisions that affect everyone's lives — including yours!

Student answers for parts 1 through 4 will vary based on states chosen.

Part 1 – Collect Data About Two States

In the first blank below, write the state where you live. In the second blank below, write any other state you want. You are going to compare data for the two states using State Facts for Students.

My state is **Pennsylvania**. I am going to compare it with **Rhode Island**.

To get to State Facts for Students, type this web site into your browser: *www.census.gov/schools/facts*.

Now fill in the information for each state in the table below using the 2023 population data at the top of the page and the 2023 data in the *Kids My Age* section in the tool.

	My State: Pennsylvania	**A Different State: Rhode Island**
Population	**12,961,683**	**1,095,962**
Total 10-year-olds	**147,718**	**11,300**
11-year-old boys	**76,049**	**5,840**
11-year-old girls	**72,296**	**5,485**

Part 2 – Compare Data for Your State

1. Using a comparison symbol (<, >, ≤, ≥, =), compare the exact number of 11-year-old girls with the exact number of 11-year-old boys in your state.

   72,296 < 76,049

   a. Write a sentence comparing these two exact numbers and explaining what that comparison means.

      72,296 is less than 76,049, which means that the number of 11-year-old girls in Pennsylvania is less than the number of 11-year-old boys in Pennsylvania.

2. Round these two exact numbers to the thousands place.

   11-year-old girls: **72,000** 11-year-old boys: **76,000**

   a. Using a comparison symbol, compare these two rounded numbers.

      72,000 < 76,000

   b. Write a sentence comparing these two rounded numbers and explaining what that comparison means.

      72,000 is less than 76,000, which means that the rounded number of 11-year-old girls in Pennsylvania is less than the rounded number of 11-year-old boys in Pennsylvania.

3. Are your comparison statements from question 1a and question 2b the same or different? Why or why not?

   My comparison statements are the same, because there are still less 11-year-old girls than 11-year-old boys in my state, so rounding doesn't change how they compare.

   a. What do you think would have happened if you had rounded your numbers to a bigger or smaller place value and why?

      If I had rounded to the nearest ten thousand, my comparison statements would have been the same. But if I had rounded to the nearest hundred thousand, my comparison statements would have been different: 72,296 and 76,049 both equal 100,000 when rounded to the nearest hundred thousand.

Part 3 – Compare Data About Two States

1. Using a comparison symbol (<, >, ≤, ≥, =), compare the population of your state with the population of your other state.

   12,961,683 > 1,095,962

2. Round these two numbers to the millions place.

   Pennsylvania = **13,000,000** Rhode Island = **1,000,000**

   a. Using a comparison symbol, compare these rounded numbers.

      13,000,000 > 1,000,000

3. Are your comparison symbols from questions 1 and 2a the same or different? Why or why not? Use what you know about place values to explain.

   My comparison symbols are the same because there are millions more people in Pennsylvania than in Rhode Island. Pennsylvania has digits in the ten millions place and Rhode Island does not.

Part 4 – Create Your Own Comparison Question

1. Make up your own question — and answer it — using data from State Facts for Students.

   Question:

   In 2022, how did the number of dentist offices in Rhode Island compare with the number of dentist offices in Pennsylvania?

   Answer:

   Rhode Island = 344 Pennsylvania = 4,708

   344 < 4,708

2. Now use your rounding skills and what you know about place value to explain your comparison.

   Explanation:

   The number of dentist offices in Rhode Island is much less than the number in Pennsylvania, because 344 is only in the hundreds and 4,708 is in the thousands. If I round both numbers to the hundreds place (to make 300 and 4,700), I can see that 3 is much smaller than 47.

Part 5 – Reflect on What You Learned

When you are comparing rounded and exact numbers, will the comparisons always be the same? Why or why not?

- **No. For example, if two numbers are very close together in the same place value, then rounding could make them the same number. Then my comparison statements could go from being "greater than" or "less than" to "equal to."**