

HOW DOES OUR CLASS COMPARE?

TEACHER VERSION

Subject Level:
Elementary School Math

Grade Level:
K-1

Approx. Time Required:
60 minutes

Learning Objectives:

- Students will be able to collect, represent, and analyze data.
- Students will be able to compare and contrast data about themselves and about other children in the United States using the "more than," "less than," and "equal to" phrases and symbols.

Activity Description

Students will collect, organize, and compare data about the number of girls and the number of boys in their classroom who play sports, take lessons, and participate in clubs. Then students will compare these classroom data with U.S. Census Bureau data for girls and boys across the United States. Teachers may choose to adapt this activity for different data if other categories are more applicable to their students.

Suggested Grade Level:
K–1

Approximate Time Required:
60 minutes

Learning Objectives:

- Students will be able to collect, represent, and analyze data.
- Students will be able to compare and contrast data about themselves and about other children in the United States using the "more than," "less than," and "equal to" phrases and symbols.

Topics:

- Using data to find answers

Skills Taught:

- Analyzing data
- Collecting data
- Comparing and contrasting data
- Conducting a survey

Materials Required:

- The student version of this activity, 6 pages; it contains an image that should be printed in color.

Activity Items

The following item is part of this activity. The item and its source appear at the end of this teacher version.

- Item 1: A Child's Day At a Glance

For more information to help you introduce your students to the 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.K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.	K MD – Measurement & Data	Describe and compare measurable attributes.
CCSS.MATH.CONTENT.K.MD.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	K MD – Measurement & Data	Classify objects and count the number of objects in each category
CCSS.MATH.CONTENT.1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	1 MD – Measurement & Data	Represent and interpret data

Common Core State Standards for Mathematical Practice

Standard
CCSS.MATH.PRACTICE.MP2. Reason abstractly and quantitatively. Students will compare data they collect from a survey. They will also compare this survey data with national data on the same topic.

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

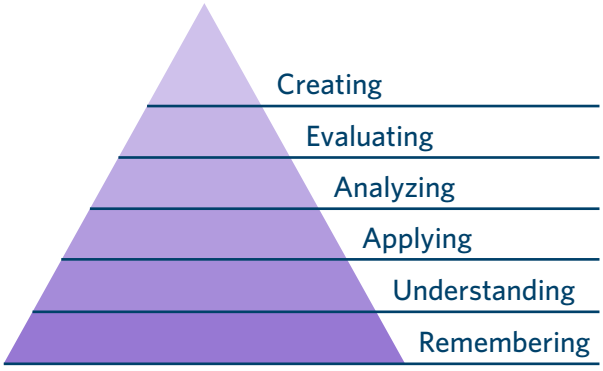
Content Standard	Students should be able to:	Expectation for Grade Band
Number and Operations	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.	Count with understanding and recognize "how many" in sets of objects.
Data Analysis and Probability	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.	Pose questions and gather data about themselves and their surroundings. Sort and classify objects according to their attributes and organize data about the objects.
Data Analysis and Probability	Select and use appropriate statistical methods to analyze data.	Describe parts of the data and the set of data as a whole to determine what the data show.

Guidelines for Assessment and Instruction in Statistics Education

GAISE	Level A	Level B	Level C
Formulate Questions	X		
Collect Data		X	
Analyze Data	X		
Interpret Results	X		

Bloom's Taxonomy

Students will compare data they collect about students in their classroom as well as ***analyze*** how those data are similar to or different from national data about children.



Teacher Notes

Before the Activity

Students must understand the following key terms:

- **Data** – facts usually represented by numbers
- **Less than** – when one amount is smaller than another amount
- **More than** – when one amount is larger than another amount
- **Survey** – a way of asking a question and collecting information about that question
- **Tally mark** – a line that is used to keep track of something as it's being counted

Students should have the following skills:

- Ability to count up to 20
- Ability to use tally marks

Teachers will conduct a survey of the class to demonstrate how information can be collected. Teachers will create a tally chart on the board similar to the one provided in the activity about how students got to school that day (e.g., by bus, on foot, by car). Teachers will ask students to raise their hand for the option that applies to them.

Teachers will explain to students that the information in the tally chart is called data, with each tally mark representing one student's answer. Teachers should also discuss with and show students how tally marks can be grouped into sets of five to count information more easily and represent that information clearly.

During the Activity

(The activity uses data from **Item 1** about national rates of extracurricular participation among boys and girls. Teachers have the option of adapting this activity to use different data from **Item 1** if such participation is not applicable to their students.)

Teachers will ask students if they participate in sports, take lessons, or are in a club, explaining that all those are called extracurricular, or after-school, activities. Teachers will record the answers for girls and for boys in two different tally charts on the board (as demonstrated in the activity).

Teachers will complete the activity with students as a class, modeling how students should record data in the tables and how they should use "more than" (>), "less than" (<), or "equal to" (=) symbols to compare data about girls and boys in their classroom.

When teachers introduce **Item 1**, they should explain to students that it shows what people at the Census Bureau learned about children all over the country.

After the Activity

Teachers should ask students to reflect on what they learned.

Extension Idea

- Teachers could have students ask the class another survey question and collect the data.
- Students could also survey another classroom at the school to see how the data change from one classroom to the next. This could help students understand variability from group to group (a key concept in statistics).

Student Activity

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

Activity Item

Use this item at the end of your packet to complete this activity.

- Item 1: A Child's Day At a Glance

Student Learning Objectives

- I will be able to collect numbers to tell a story.
- I will be able to see how other children in my class are different from or similar to children across the United States.

Part 1 – Put Data in a Tally Chart

Today we surveyed our class to learn how many girls and how many boys take part in different types of extracurricular activities. Let's fill in the chart below together.

Student answers will vary depending on the results of the survey.

Girls in Our Class

Type of Activity	Tally Marks	Total
Sports	𝍸	5
Lessons	𝍸	3
Clubs	𝍸	4
None	𝍸	1

Total girls in our class: **13**

Boys in Our Class

Type of Activity	Tally Marks	Total
Sports	| | |	**3**
Lessons	~~|||||~~ |	**6**
Clubs	| |	**2**
None	|	**1**

Total boys in our class: **12**

Part 2 – Answer Questions With Your Data

Student answers will vary depending on the results of the survey.

1. Who plays more sports, girls or boys?

   Girls

2. Who takes more lessons, girls or boys?

   Boys

3. Who takes part in more clubs, girls or boys?

   Girls

Part 3 – Compare Our Class With Children Across the United States

Let's look at **Item 1:** A Child's Day At a Glance. This item shows data for children aged 6–17. We are going to look at the data to learn if students in our class are similar to or different from other students across the United States and fill in the chart below.

First let's write in the data from **Item 1** for girls and boys in the United States who play sports, take lessons, and take part in clubs. Then we will draw a "more than" (>), "less than" (<), or "equal to" (=) symbol between the two boxes so that we can learn if more, less, or equal numbers of boys or girls in the United States do each extracurricular activity.

Girls in the United States	<, >, or =	Boys in the United States
Sports: **36 out of every 100 children**	<	Sports: **47 out of every 100 children**
Lessons: **36 out of every 100 children**	>	Lessons: **25 out of every 100 children**
Clubs: **31 out of every 100 children**	>	Clubs: **26 out of every 100 children**

Student answers will vary depending on the results of the survey.

1. Are the girls and boys in our class similar to or different from other girls and boys in the United States when it comes to playing sports?

   They are different. (Teachers will guide students to understand that fewer boys than girls in our class play sports, which is different from other students in the United States.)

2. Are the girls and boys in our class similar to or different from other girls and boys in the United States when it comes to taking lessons?

   They are different. (Teachers will guide students to understand that more boys than girls in our class take lessons, which is different from other students in the United States.)

3. Are the girls and boys in our class similar to or different from other girls and boys in the United States when it comes to taking part in clubs?

   They are similar. (Teachers will guide students to understand that children in our class are similar to the children across the United States, because in both data sets more girls than boys take part in clubs.)

Item 1: A Child's Day At a Glance



The graphic above is based on a Child's Day Infographic available online at www.census.gov/programs-surveys/sis/resources/visualizations/childs-day.html.