

Title: Adventure Land**Brief Overview:**

Students will explore the basic concepts of data analysis in this unit as they gather data concerning amusement park rides. This learning unit involves collecting, organizing, classifying, and displaying data. The students will organize and classify collected data in graphic form.

Links to NCTM 2000 Standards:**• Standard 5: Data Analysis, Statistics, and Probability**

Mathematics instructional programs should include attention to data analysis and statistics so that all students pose questions and collect, organize, and represent data to answer those questions; interpret data using methods of exploratory data analysis; and develop and evaluate inferences, predictions, and arguments that are based on data.

• Standard 6: Problem-Solving

Students will demonstrate their ability to solve problems in mathematics including problems with open-ended answers, problems that are solved in a cooperative atmosphere, and problems that are solved with the use of technology.

• Standard 8: Communication

Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics with language and the signs, symbols, and terms of the discipline.

• Standard 9: Connections

Students will be writing to persuade the owner of Adventure Land to open an amusement park in their area. They will be touching upon a variety of mathematical skills including collecting data, graphing, and writing informatively.

Grade/Level:

Grades 4-6

Duration/Length:

This unit will take approximately 2 - 3 class periods (45-50 minutes)

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Constructing pictographs
- Comparing and analyzing data
- Classifying data
- Working cooperatively in groups
- Collecting data
- Tallying
- Writing to inform

Student Outcomes:

Students will:

- work in cooperative groups.
- collect, organize, and interpret data and construct a pictograph of collected data.
- write an informative letter to amusement park officials.

Materials/Resources/Printed Materials:

- Chart paper
- Colored markers or crayons
- Rulers
- Pencils
- Student and Teacher Resource Sheets

Development/Procedures:

Activity 1:

- Have students brainstorm and reflect on their last visit to their favorite amusement park. Ask students to identify their favorite amusement park rides and create a web to record their choices. (Student Resource Sheet #1).
- Have students work in cooperative groups of four to identify the top five favorite types of rides (Student Resource Sheet #2), such as roller coasters, bumper cars, ferris wheels, etc.
- Have students use the data from Student Resource Sheet #2 to construct a group pictograph on large paper displaying the group's favorite amusement park rides.
- Display the groups' graphs for students to compare.
- As a homework assignment, ask students to survey friends and peers in their neighborhood about their favorite amusement park rides.

Activity 2:

- Have students discuss their findings from the data collected from their friends and peers.
- Ask the students to classify and organize their group data into appropriate categories, such as water rides, adventure rides, grizzly rides, etc.
- Have students now use the data they collected and organized from Student Worksheet #3 to construct another pictograph to represent this data.
- Have students interpret and analyze the pictograph and make a comparative analysis to the previous days graphs.

Activity 3:

- Have students read the vignette from Student Resource Sheet #4. Display the vignette on the overhead. (Teacher Resource Sheet #1)
- Ask students to create a blueprint of their amusement park. Remind students to include the three most popular rides in their blueprint. The blueprint should also include shops and food vendors.
- After they have completed their blueprint, ask students to write a summary explaining their rationale for selecting the rides included in their blueprint (independent activity).

Performance Assessment:

Adventure Land is a three day unit divided into three tasks. Teachers may conduct an informative assessment throughout this unit through observation and group participation. Students will also be assessed on their written work of informative writing (Teacher Resource Sheet #2).

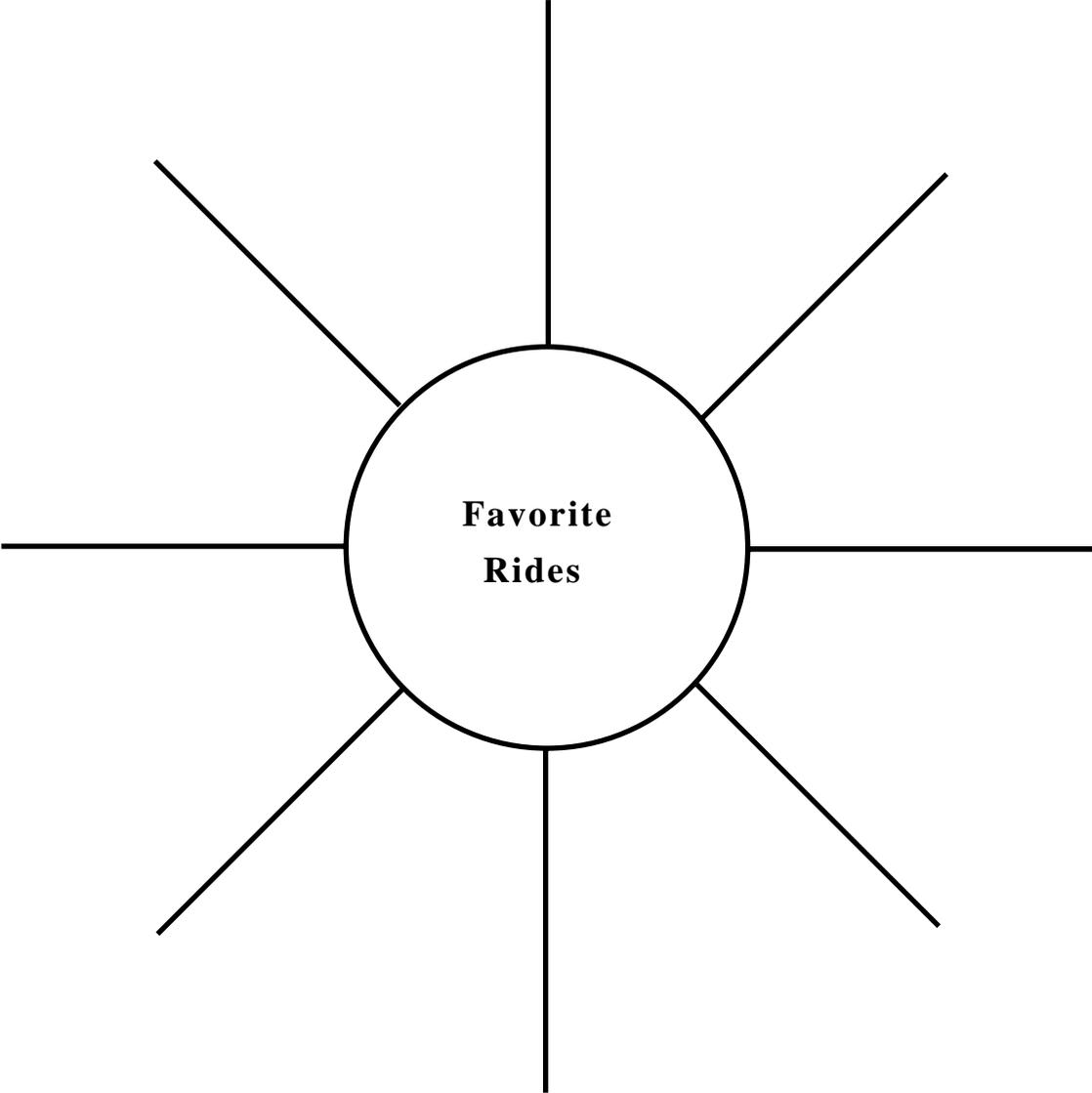
Extension/Follow Up:

- Have students create an advertisement for the amusement park using chart paper.
- Generate an admission price list for their amusement park. Have students survey other students in their school and community to compare the price list for Adventure Land with other similar amusement parks.

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Tally Sheet

Directions: Using the webs you have completed, classify the amusement park rides into categories below. Tally the number of rides next to each category.

Type of Ride	Tally Column

***When you have completed tallying up the number of rides in each category, construct a pictograph with your group on a large piece of paper to display your results.

Amusement Park Rides Survey

Directions: Conduct a survey of your friends and peers about their favorite amusement park rides. Tally the results below.

Type of Ride	Tally Column

- When you completed tallying up the numbers of favorite rides in each category, construct a pictograph with your group on a large piece of paper to display your results.

Vignette for Performance Assessment

Mrs. Six Flags has decided to open a mini-amusement park that will be used by elementary and middle school students only. She needs your help in deciding what rides are popular among elementary and middle school students. The data your class has collected will be used to select the most popular rides, to be included in the park (at least five rides, no more than ten rides).

Create a blueprint of a mini-amusement park. Select a name for the park. Choose a location in your neighborhood for the site. Illustrate on the blueprint the most popular types of rides. You may choose to include vendors and games. Write a letter to Mrs. Flag offering good reasons to select the most popular rides. Support your reasons with your data. Mrs. Six Flags will appreciate your help.

Vignette

Mrs. Six Flags has decided to open a mini-amusement park that will be used by elementary and middle school students only. She needs your help in deciding what rides are popular among elementary and middle school students. The data your class has collected will be used to select the most popular rides, to be included in the park (at least five rides, no more than ten rides).

Create a blueprint of a mini-amusement park. Select a name for the park. Choose a location in your neighborhood for the site. Illustrate on the blueprint the most popular types of rides. You may choose to include vendors and games. Write a letter to Mrs. Flag offering good reasons to select the most popular rides. Support your reasons with your data. Mrs. Six Flags will appreciate your help.

Scoring Rubric for Performance Assessment

3 Points

- Written work is neat, organized, and uses proper math language.
- Math reasoning and thinking are clear and correct.
- Mathematical data is accurate.

2 Points

- Written work is neat, organized, and uses proper math language.
- Math reasoning and thinking are clear and mostly correct.
- Most of the mathematical data is accurate.

1 Point

- Written work is legible and has some organization.
- Some math reasoning is evident.
- Some mathematical data is correct.

0 Points

- Written work is not organized.
- There is little evidence of math reasoning.
- Very little mathematical data is accurate.