

SCAFFOLDING TASK: Animal Investigation

STANDARDS FOR MATHEMATICAL CONTENT

MCC.3.MD.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Students should develop questions that can be aligned with data and collect, organize, and display data in different ways. Data collection should be for a purpose such as answering a question. The analysis of data should have the agenda of adding information about some aspect of our world. (Teaching Student-Centered Mathematics, John A. Van de Walle and LouAnn H. Lovin, 2007). In this activity students will create picture graphs and bar graphs for a data set and interpret what the data means.

ESSENTIAL QUESTIONS

- How do I decide what increment scale to use for a bar graph?
- How do you interpret data in a graph?
- How can I show data using a line plot graph?
- How do I decide what symbol to use when constructing a pictograph?

MATERIALS

- Chart paper/graphing paper

GROUPING

Individual/Partner Task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Review creating tally charts with the class. List five or more common animals on the board. The animals listed could be a part of the students study on habitats. Then have students raise their hands for an animal he/she would like to know more information about. Write a tally mark for next to each animal chosen. If necessary, review how to count tally marks and mark them correctly for counting purposes. Students should record the data placed on the board on their own tally sheet. Explain to students that they will display the data in another way using a picture graph. As an example create a chart on the board and label it with habitats. Have students come up to the board one at a time and draw a smiley face next to a habitat they have visited or would like to. Ask the students what the title of the picture graph should be. Enter their suggestion above the graph. Discuss what they notice from the picture graph. Have students make comparisons between the rows as well as telling the number of faces in each row. Now ask, "How many votes does each face represent?" [One] Model how to create a legend at the bottom of the chart.

Create a second chart near the first one, but use the legend 😊 = 3. Ask the students what that might mean. Each smiley face now stands for three votes. Students will now create their own pictograph using the data they collected about animals they would like to know more information about.

FORMATIVE ASSESSMENT QUESTIONS

- How did we display our data?
- How did we make it easier to count the tallies in the tally graph?
- Why did that notation make it easier?
- Can you name the categories that we collected data about for the second tally chart?
- How did we show what we found out?
- What questions can you answer from looking at the tally graph?

DIFFERENTIATION

Extension

- Allow students to survey other classrooms and create a graph based on this new data.

Intervention

- Provide a set of data for students and allow them to work in small groups.

Name _____ Date _____



Animal Investigation

Using the data gathered on the Tally Chart for "Animal Investigation" create a pictograph. Be sure to include all the elements of a graph. Answer the questions that follow.

1. Which animal received the most votes?
2. Which animal received the least amount of votes?
3. How many more students want to investigate the animal with the most amount of votes than your choice?