

NCLB Math Institute Summer 2011



Faculty: LaShara Ramsey

School: Lyon Elementary

Grade Level: 5th

1. Teaching Objective(s) Mississippi Framework

5. Interpret and analyze data and make predictions.

b. Compare data and interpret quantities represented on tables and graphs, including line graphs, stem-and-leaf plots, histograms, and box-and-whisker plots to make predictions, and solve problems based on the information. (DOK 2)

**The students will collect, interpret, and analyze data. The student will create a graph or chart to represent data analyzed.*

2. Instructional Activities

1. The teacher will inform the students that in today's lesson we will be collecting data, analyzing it, and creating graphs to represent it.

2. The teacher will engage the student's prior knowledge by holding a short discussion on what is data and how do we analyze and represent data.

- Inform the students that data is information, often in the form of facts or figures obtained from experiments or surveys, used as a basis for making calculations or drawing conclusions.
- Inform the students that in most cases we use a tally chart to collect data.
- Show students a visual representation of a tally chart. (Attachment # 1)
- Ask student if they know what "analyze" means.
- Remind the students that "analyze" means to study something closely: to examine something in great detail in order to understand it better or discover more about it.
- Discuss ways to represent data we analyze.

- Tell the students that we represent data by using charts and graphs.
 - Ask the students to name different types of graphs.
 - Listen to responses from students and write the different types of graphs on the whiteboard.
3. Inform the students that the graphs we will focus on are the pictographs, bar graphs, and pie chart.
- Tell the students that each graph has different purposes, but they all represent data.
 - Explain to the student that *pictographs* are graphs that use pictures or symbols to represent data and each picture represents a set amount.
 - Show students a visual representation of a pictograph. (Attachment # 2)
 - Explain to the students that *bar graphs* are graphs with rectangular bars with lengths proportional to the values that they represent.
 - Show students a visual representation of a bar graph (Attachment # 3)
 - Explain to the students that *pie charts* are circular graphs that show a part-to-whole relationship. In a pie chart the size of each segment represents the segment's proportion to the whole set of data.
 - Show students a visual representation of a pie chart. (Attachment # 4)
 - Explain to the students that every graph must have a title, a legend or key, and labels that tell what facts are listed.
 - Inform the students that the pictograph must have a picture that represents the data and the sections of the pie chart segments should show what fraction of the whole it represents.
 - Inform the students that they need to determine the range in values for the bar graph by using the tally sheet. Explain the highest and lowest value determines the range.
4. Tell the students that today they are going to be placed in groups and that they will be completing two activities.
- Arrange the students in 3 groups of 6
5. Tell the students that for the first activity they will be searching through magazines and newspapers for the graphs we talked about in today's lesson.
- Explain to the students that they will cut the graphs out and place them on pieces of typing paper.
 - Inform the students that they will also have to write a written explanation of what they think the data in the graph is representing.
 - Allow time for each group to present their findings to the class.
6. Tell the students that for the second activity we will be completing a survey on the favorite candy bars of their classmates.

- Pass each student a survey sheet and tell them to check one favorite candy bar from the list. (Attachment # 5)
- Pass each group a tally sheet. (Attachment # 1)
- Tell the students that one person from each group to bring survey questions to me.
- After all questions are returned, use the overhead or dry erase board to show students how to tally the data.
- Tell each student to record their data on their tally sheet.
- Explain to the students that we just collected data and now we are ready to represent it in a graph.
- Tell the students that group1 will be creating a pie chart, group 2 will be creating a bar graph and group 3 will be creating a pictograph.
- Pass out to each group the steps for making their graphs. (Attachment # 6,7,8)
- Inform the pie chart group to show fractions or percents of each segment of the pie.
- Inform the students that all the materials they need will be on the front table.
- Allow adequate amount of time for the student to complete the activity.
- Allow each group to present their graphs to the class and explain the steps they took to create it.

3. Materials and Resources

A. Materials- overhead projector, transparencies or dry erase board, visuals of different types of graphs, tally sheet, survey, copy paper, newspaper and magazines, posters, markers, crayons, glue, rulers, and protractors.

B. Resources-

- Murphy, E. C. (1986). *Developing Skills with Tables and Graphs*. Palo Alto, CA: Dale Seymour Publications.
- <http://www2.scholastic.com>
- <http://www.rubrics4teachers.com>

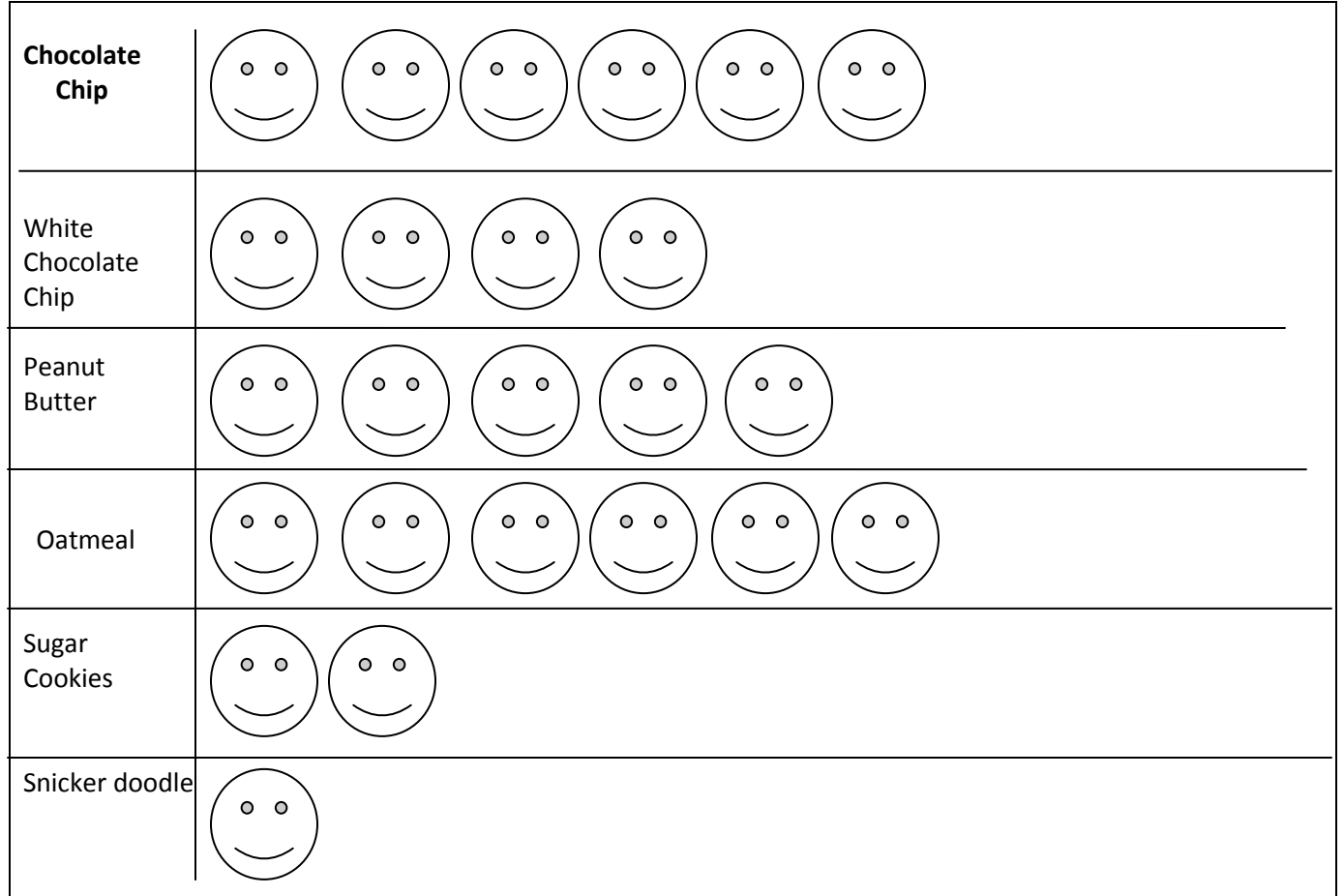
4. Assessment

1. Observation by the teacher- checking for understanding to see whether the students know how to correctly label a graph and if the data was correctly represented.
2. Use a rubric to record a grade for the presentation of graph. (Attachment # 9)

Favorite Candy Bar Tally Chart (Attachment #1)

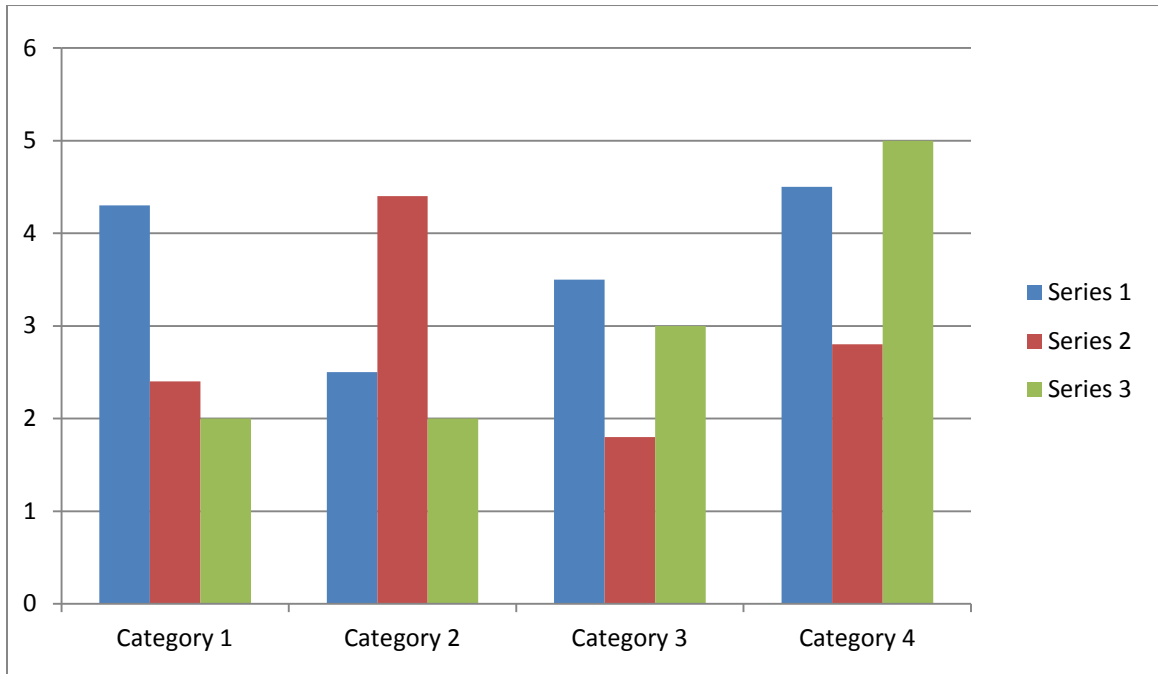
Snicker	
Butterfinger	
Twix	
Reese's	

Favorite Cookie Pictograph (Attachment #2)

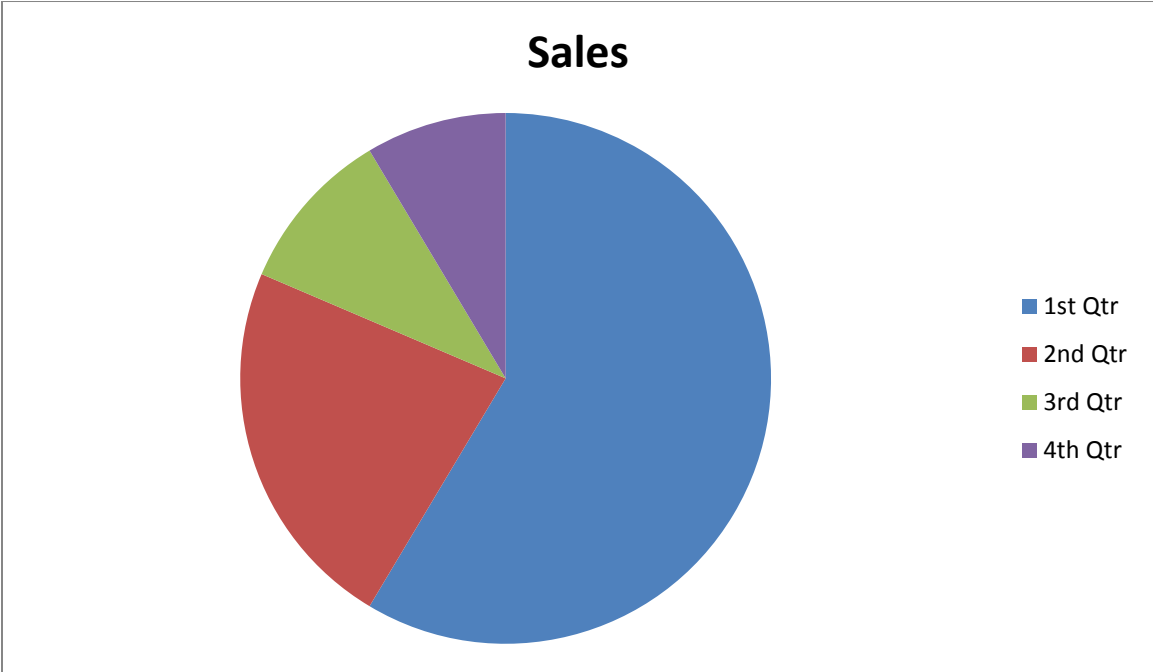


= 5 people

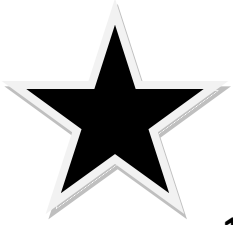
Bar Graph Example (Attachment # 3)



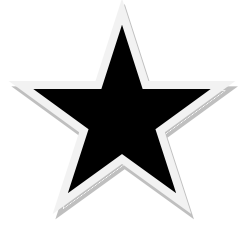
Pie Chart Example (Attachment # 4)



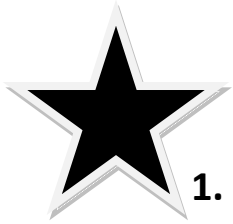
Survey (Attachment # 5)



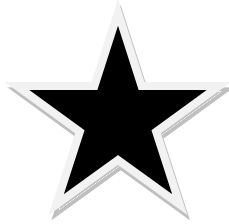
Favorite Candy Bar



1. Snicker
2. Butterfinger
3. Twix
4. Reese's



Favorite Candy Bar



1. Snicker
2. Butterfinger
3. Twix
4. Reese's



Favorite Candy Bar



1. Snicker
2. Butterfinger
3. Twix
4. Reese's

Steps for Making a Circle Graph (Attachment #6)

Step 1 **Find the whole**

What is the subject of your graph? _____

What is the total value for the items on your graph? _____

Step 2 **Find the parts**

Each item to be graphed represents a part of the whole. To complete the circle graph you must find exactly what fraction or percent each item represents.

Fraction: Part/whole Percent (part ÷ whole) x 100

Step 3 **Find the degrees for each part**

Every circle is made up of 360°. Use the following equation to find the angle measure for each item.

Angle measure for item = 360 x fraction or percent of whole item

Make sure the angle measures total 360.

Step 4 **Draw and label the parts**

Draw a circle and a radius. Then use a protractor to draw each angle. _____

Label each part of your graph.

Give the graph a title _____

Steps for Making a Bar Graph (Attachment #7)

Step 1 Find the range in values.

What units are used? _____

What is the greatest value? _____

What is the least value? _____

Step 2 Determine a Scale

Start with 1cm =1 unit. What is the length of the longest bar?

_____ Will it fit? _____ If not, change the scale and try again.

Step 3 Label the Graph

Mark each centimeter along the side of the graph.

Label the marks by the units they represent.

Decide how wide each bar should be.

How many bars will be on the graph?

Step 4 Draw the Bars

Mark where each bar starts and write the labels.

Use your scale to determine the length of each bar.

Bar length in centimeters= number of units bar represent ÷ units per centimeter

Draw the bars on your graph.

Give your graph a title

Steps for Making a Picture Graph (Attachment #8)

Step 1 Find the range in values.

What units are used? _____

What is the greatest value? _____

What is the least value? _____

Step 2 Determine a Scale

Decide what kind of picture you want to use and how big you want it.

Start with 1 picture = 1 unit. How many pictures are needed to represent the greatest value? _____ Will they fit? _____ If not, change the key and try again.

Step 3 Label the Graph

Draw the key at the bottom of your graph.

How many sets of pictures will be on the graph? _____

Step 4 Draw the pictures

Use your key to determine the number of pictures for each item.

Number of pictures = number of units each picture represents \div units per picture

Draw a light line where each set of pictures goes.

Then draw the pictures on your graph.

Give your graph a title.

Rubric (Attachment #9)

Group Oral Presentation Rubric

4	3	2	1
All group members participate equally.	All group members participate.	Some group members participate.	Only 1 or 2 group members participate.
Group members help each other as needed.	Group members help each other as needed.	Some group members speak clearly and are easy to understand.	Most group members are hard to understand.
All group members speak clearly and are easy to understand.	Most group members speak clearly and are easy to understand.	Some group members speak clearly, but are difficult to understand.	Only 1 or 2 group members speak and can be understood.
All group members speak to the entire audience.	Most group members speak to the entire audience.	Group members speak to only part of the audience.	Most group members speak only to part of the audience.
Information is presented in an organized way.	Information is presented in an organized way.	Information may be only partially organized.	Information is presented in a disorganized way.
Oral presentation includes many details.	Oral presentation includes some details.	Oral presentation includes few details.	Oral presentation includes few or no details.
Presentation is visually organized and complete.	Presentation is organized and complete.	Presentation is complete.	Presentation is disorganized or incomplete.