Name _____ Date _____

Start Your Day the Right Way

Graphically Representing Data

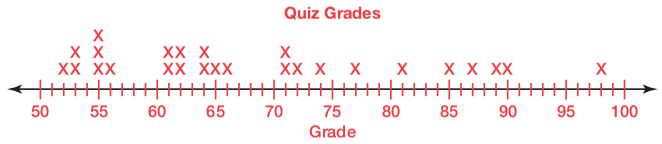
1. Mr. Follweiller finished grading the quizzes for one of his Algebra 1 classes. The table shown is the recorded grades of the class.

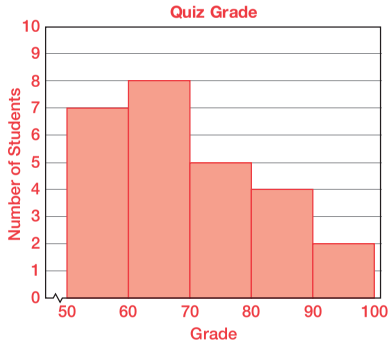
Student	Grade	Student	Grade
A	85	N	53
B	89	O	71
C	66	P	90
D	74	Q	65
E	77	R	55
F	72	S	98
G	64	T	53
H	55	U	62
I	61	V	55
J	52	W	64
K	81	X	62
L	61	Y	56
M	71	Z	87

a. Mr. Follweiller is worried that his students may not have understood the material covered on the quiz. He would like to get a better idea of how the class did as a whole. Would you recommend that he make a dot plot, a box-and-whisker plot, or a histogram to display this data? Explain your reasoning.

Answers will vary.

b. Construct a dot plot and histogram of the data in the table.





c. Describe the distributions of the graphs. What do you notice?

Both graphs are skewed to the right.

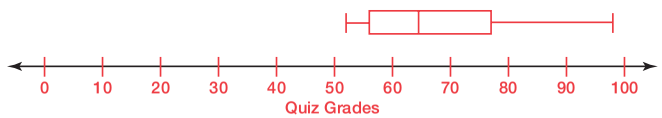
d. What information does the dot plot provide that the histogram does not?

The dot plot shows individual student grades. The histogram only shows the number of students whose grades fall within a 10 point range.

e. The students argue that more than half the students failed the quiz, so they think Mr. Follweiller should let them retake it. A grade of 56 is failing.

Construct a box-and-whisker plot of the data.

Minimum = 52, Q1 = 56, Median = 64.5, Q3 = 77, Maximum = 98



Name _____ Date _____

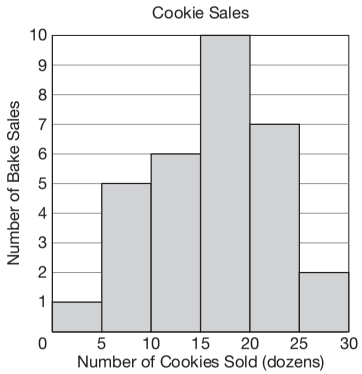
f. Describe the distribution of the box-and-whisker plot. Explain what it means in terms of this problem situation.

The box-and-whisker plot is skewed to the right. This means that the majority of the students had low scores.

g. Are the students correct? Explain your reasoning.

The students are incorrect. The value of Q1 is 56, and this means that 25% of the students scored less than 56. So, 75% of the students scored 56 or more and thus, passed the quiz.

2. The student government is gearing up for their next semi-annual bake sale. The graph shown displays the cookie sales at the last 31 bake sales.



a. At how many bake sales did the student government sell 18 dozen cookies? Explain how you determined your answer.

I cannot determine the number of bake sales at which the student government sold 18 dozen cookies because the histogram does not show counts for individual bake sales. I do know that there were 10 sales at which the student government sold at least 15 dozen, but less than 20 dozen cookies.

8

b. At how many bake sales did the student government sell at least 20 dozen, but less than 25 dozen cookies? Explain how you determined your answer.

The student government sold at least 20 dozen, but less than 25 dozen cookies at 7 bake sales. I determined this by looking at the height of the bin on the histogram that represents at least 20 dozen but less than 25 dozen cookies.

c. Describe the distribution of the graph. Explain what this means in terms of the problem situation.

The graph is slightly skewed to the left. This means that the student government more often sold many dozens of cookies at their bake sales.

d. How many dozen cookies would you recommend the student government bake for the upcoming bake sale? Explain your reasoning.

Answers will vary.

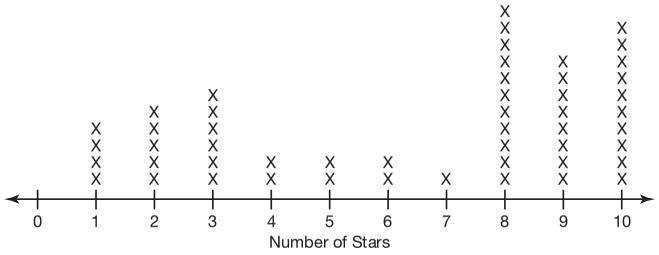
Name _____ Date _____

Which Measure Is Better?

Determining the Best Measure of Center for a Data Set

1. In a constant effort to improve service, WeSellItAll.com asks its clients to rate their online shopping experience by giving it a rating from 1 star to 10 stars. A rating of 1 star represents a poor experience, and a rating of 10 stars represents an excellent experience.

   The ratings for one day last month are shown in the dot plot.



   a. Describe the distribution of the dot plot.

   There are only a few ratings in the middle and slightly more ratings on the right. So, the dot plot is slightly skewed to the left.

   b. How do you think the mean and median of the data set will compare? Explain your reasoning.

   As the plot is skewed left, the median will be greater than the mean.

   c. Calculate the mean and median. Explain what they mean in terms of the problem situation.

$$\bar{x} = \frac{\sum x}{n}$$
$$= \frac{329}{51}$$
$$\approx 6.45$$

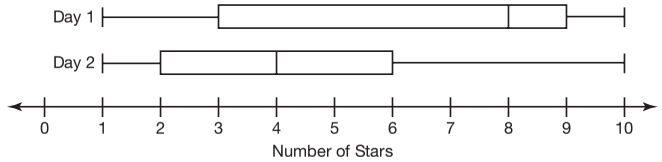
   The mean is approximately 6.45 and the median is 8. The mean is the average rating for the data given. The median means that 50% of the ratings were less than or equal to 8 and 50% were greater than or equal to 8.

   d. Which measure of center do you think best represents this data? Explain your reasoning.

   Answers may vary.

   Students will likely choose the median because that data is slightly skewed to the left.

2. The ratings of online shopping experience for 2 separate days are shown in the box-and-whisker plots. A rating of 1 star represents a poor experience, and a rating of 10 stars represents an excellent experience.



   a. Compare the box-and-whisker plots. Explain what the shapes of the box-and-whisker plots say about the ratings on each day.

   The box-and-whisker plot for Day 1 is skewed to the left. This means that there were more high ratings on Day 1. The box-and-whisker plot for Day 2 is skewed to the right. This means that there were more low ratings on Day 2.

   b. Determine and compare the median for both days.

   The median for Day 1 is 8, and the median for Day 2 is 4. The median on Day 2 is significantly lower than the median on Day 1.

   c. How will the means compare to the medians on each of the days? Explain your reasoning.

   Because the box-and-whisker plot for Day 1 is skewed to the left, I know that the mean will be less than the median. So, the mean for Day 1 will be less than 8. Because the box-and-whisker plot for Day 2 is skewed to the right, I know that the mean will be higher than the median. So, the mean for Day 2 will be greater than 4.

   d. How will the means for each day compare to each other? Explain your reasoning.

   Because the mean for Day 1 is less than 8 and the mean for Day 2 is greater than 4, it is possible for the means to be relatively close together.