Individual Take Home Assessment - Statistical Project

Dear parent or guardian,

I am writing to inform you about an exciting project we are about to do in our 6th grade math class.

Students will be creating their own statistical project. This project will include many concepts we have worked on since the start of the school year. This project is the last assessment grade that will be entered in the gradebook for the 1st 9-weeks.

Students are expected to turn in their projects at the **start of class on September 29, 2023.** All of the requirements and additional information about the project is included below.

Learning Targets:

- ☐ We are learning to explore statistical and non statistical questions.
- ☐ We are learning to calculate the mean, median, mode, and range.
- ☐ We are learning to compute the mean and median in a real-world situation in order to determine the best measure of center for that situation.
- ☐ We are learning to explore Mean Absolute Deviation(M.A.D) as a form of variability.
- ☐ We are learning to explore the Interquartile Range (IQR) as a form of variability.
- ☐ We are learning to compute the Mean Absolute Deviation (M.A.D) and Interquartile Range (IQR) in a real-world situation in order to determine the best measure of variability for that situation.
- ☐ We are learning to explore how histograms, dot plots, and box plots can be used to organize and represent data.

Directions:

Students are tasked with creating a statistical project based on a question they create. Students will need to collect and analyze the data. This project will allow students to complete the statistical process on their own.

Students will need to create a poster. The size of the poster is up to the student, but it has to be at least 18 x 24 in. I have poster papers I can provide, but students are encouraged to have their own poster board or poster board paper.

I have additional material or supplies I can loan to students if requested.

Students are encouraged to work with their parents on this project for overall guidance and help. Students have also received a letter for parents that discusses the major concepts we have worked on this week.

Project Requirements

- ☐ *Create a poster that includes the following information:*
- ☐ Your statistical question
- ☐ Your method for collecting a data set
- ☐ Your data set and the number of observations in the data set
- ☐ A data display and an explanation of why you chose the data display
- ☐ *A frequency table* ***- Required*** *(Not included in the example but this is required)*
- ☐ An analysis of the data distribution, including the following information:
    - ☐ The shape
    - ☐ The measures of center and spread you chose, along with an explanation of why you chose them
    - ☐ The center
    - ☐ The spread
    - ☐ Other features, such as outliers, peaks, gaps, clusters, and range, along with a description of what each feature tells you about the data distribution
- ☐ The answer to your statistical question
- ☐ **Students are required to use numerical data**
- ☐ Students will receive extra points for a poster that is decorated
- ☐ Please make sure the information is well written

What is your statistical question?

What are the steps of the investigative process?

- ☐ **Step 1:**
- ☐ **Step 2:**
- ☐ **Step 3:**
- ☐ **Step 4:**

What type of data will you collect?

How will you collect the data?

How will you analyze the data?

What are the three data displays you could use?

- ☐
- ☐
- ☐

Explain how you will describe the shape, center, and spread?

Examples and Potential Statistical Questions

- How many hours of sleep do sixth graders typically get on a school night?
- Suppose a super reader is someone who reads more books than 75% of their classmates.

What is the least number of books read per month that would identify a super reader?

- What is the typical heart rate of a student in my sixth grade class?
- Do most sixth graders spend at least one hour per week playing a sport or game outdoors?
- What are the hat sizes of adults who are interested in buying baseball hats?
- How long is the battery life of a certain brand of batteries?
- How many pets do students have?
- How much variability is there in the amount of time it takes students to get to school?
- What is a typical daily high temperature in my city?
- What is the typical weight of a backpack for students at my school?
- What is the typical number of French fries in a large order from a fast food restaurant?
- Do most students in my class spend less than 2 hours on homework each day?
- What is the range of jump heights for basketball players in the WNBA?
- How many times a week do my friends ride a bike?

Example Poster

Pets

Statistical Question

What is the typical number of pets our classmates have?

Data Collection Method

Class survey

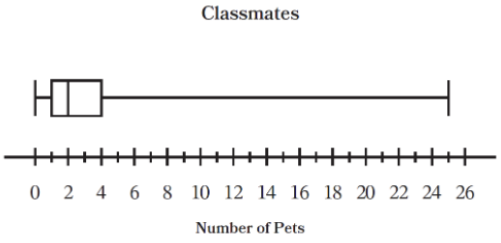
Data Set

0	0	0	0	1	1
1	1	1	1	1	2
2	2	2	2	2	3
3	3	4	4	5	6
6	8	25			

This data set has 27 observations.

Data Display

We chose to use a box plot because it shows the median, which answers our statistical question.



Analysis

Shape: Skewed to the right

Measures of center and spread: We chose to use the median to describe the center and the interquartile range to describe the spread because the data distribution is skewed to the right.

Center: 2 pets

Spread: 3 pets

Outlier: There is an outlier at 25 pets. This tells us that a student with 25 pets has a lot more pets than the rest of the students.

Peaks: There is a peak at 1. This tells us that it is most common for students in our class to have 1 pet. The box plot does not show the peak, but we can determine the peak from the list of data values.

Gap: There is a gap between 8 and 25 pets. This tells us that there is a large space between observations and that the data distribution is more spread out. The box plot does not show the gap, but we can determine the gap from the list of data values.

Range: The range is 25 pets. This tells us that the difference between the greatest and least numbers of pets is 25 pets.

Answer to Our Statistical Question

The typical number of pets our classmates have is 2.