Statistical Measures and Displays Family Letter

Dear Family,

In this module, ***Statistical Measures and Displays***, students will use their prior knowledge of representing and interpreting data to develop understanding of statistical measures. By having a solid understanding of statistical measures and displays, students will be better prepared to study more advanced mathematical concepts in later courses, as well as being able to analyze data presented in their occupation and in everyday life.

What Did Students Learn Previously?

In elementary grades, students understood how to make pictographs, bar graphs, and line plots to display data. Students also solved problems involving addition and subtraction of fractions by using information presented in line plots.

For example, using information from a line plot displaying distances traveled on vacation, students found and interpreted the difference between the longest and shortest distances.

What Will Students Learn in This Module?

Statistical Measures

- Students will understand that **statistical questions** can be used to collect data.
- **Measures of center** are used to describe the center of a data set and include the mean and median.
- **Measures of variation** are used to describe the **distribution**, or variability, of a data set, and include the range and interquartile range.
- Bar diagrams and equations can be helpful to find missing data values when given the mean of a data set.
- Data can be divided into four equal parts called quartiles. The median divides the data into two parts and is also known as the second quartile. The first quartile is the median of the data values less than the median, while the third quartile is the median of the data values greater than the median.
- **Outliers** can be determined by observing any values that are more than 1.5 times the interquartile range either below the first quartile or above the third quartile. **Outliers** may affect the **measures of center** and/or **variation**.

Statistical Displays

- Students will understand how collected data can be represented in **box plots**, **dot plots**, and **histograms**.
- The **distribution** of a data set can be described by its center, spread (variation), or its overall shape in a display. The shape can be described as either symmetric or

not symmetric. **Distributions** of data in **histograms** can also be described noting clusters, gaps, and peaks.

What Vocabulary Terms Will Students Use?

Term	Definition
box plot	A diagram that is constructed using five values.
distribution	The arrangement of data values.
dot plot	A diagram that shows the frequency of data on a number line. Also known as a line plot.
histogram	A type of bar graph used to display numerical data that have been organized into equal intervals.
measures of center	Numbers that are used to describe the center of a data set. These measures include the mean and median.
measures of variation	A measure used to describe the distribution of data.
outlier	A value that is much greater than or much less than the other values in a set of data.
statistical question	A question that anticipates and accounts for a variety of answers.
statistics	Collecting, organizing, and interpreting data.

How You Can Provide Support

1. Support your child's understanding by involving them in analyzing statistics used in everyday life.
   - *Weather:* Research or record the temperature for your area over a particular period of time. Have your child create a statistical display to represent and then describe the data set using measures of center and variation. Have them explain why making sense of this data is useful to their everyday life.
   - *Scores:* Using your child's grades from a class or scores from a sports team, have them describe the distribution of the data set. Then have them explain what would happen to the distribution if a particular score was added into the data set, specifically any resulting changes in measures of center and variation.
2. Encourage your child to have a positive, growth-oriented attitude towards mathematics and their learning.
   - Encourage them to ask questions – both at home and in class. Sometimes, an answer to a question will generate more questions. That's how you know they are learning!
   - Encourage your child to embrace challenges and remind them that every challenge is an opportunity to learn something new.
   - Celebrate successes – both small and large.
3. Contact me to arrange a time to discuss the specifics of your child's performance and how we can work together to help them succeed in this module.

Sincerely,

Reveal MATH™

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(Teacher's Name) (Email/Phone)