Dear Family,

The next Unit in your child's mathematics class this year is *Samples and Populations: Making Comparisons and Predictions.* In this Unit, your child will work within the process of statistical investigation, paying special attention to the ways that data are collected and analyzed.

Unit Goals

In this Unit, students pose questions, collect and analyze data, and interpret the data to answer the questions. Students write and use simple surveys as a method of collecting data.

This Unit uses statistical concepts that were introduced in Grade 6. *Samples and Populations* reinforces and extends these concepts in Grade 7. Students will organize data using tables, dot plots, line plots, bar graphs, histograms, and box-and-whisker plots. Students will then explore measures of center (mean, median, and mode), and measures of spread (range, mean absolute deviation, and interquartile range).

Students extend their previous work by applying these concepts to samples, or subsets of populations. Students decide whether or not samples are representative of the population. They also compare samples to draw conclusions about those samples and the populations from which they come.

Homework and Conversations About the Mathematics

In your child's notebook, you can find worked-out examples, notes on the mathematics of the Unit, and descriptions of the vocabulary words. You can help with homework and encourage sound mathematical habits as your child studies this Unit by asking questions such as:

- *Describe the sample. From what population was the sample collected?*
- *What relationships can you describe among the data?*
- *Can you interpret the data to draw conclusions about the sample? About the population?*
- *Can you compare the data with another data set to identify relationships between them?*
- *Can you use the results from the analyses to answer the original question(s)?*

You can help your child with his or her work for this Unit in several ways:

- Help your child identify statistics in newspapers, magazines, television, or radio reports, paying particular attention to who or what was sampled.
- Discuss graphical displays of data and ask your child questions about the information shown.
- Ask your child about the data studied in class. What were the typical (mode, median, or mean) values for these data?
- Review your child's work. Be sure that all questions are answered and clearly explained.

Common Core State Standards

While all of the Standards of Mathematical Practice are developed and used by students throughout the curriculum, in this unit particular attention is paid to constructing viable arguments and critiquing the reasoning of others as students make conjectures about relationships they see in data sets. *Samples and Populations* focuses largely on the Statistics and Probability domain of the CCSSM.

A few important mathematical ideas that your child will learn in *Samples and Populations* are given on the back.

As always, if you have any questions or concerns about this Unit or your child's progress in class, please feel free to call. All of us here are interested in your child's progress and want to be sure that this year's mathematics experiences are enjoyable and promote a firm understanding of mathematics.

Sincerely,

Important Concepts	Examples
The Process of Statistical Investigation This process involves posing questions, collecting data, analyzing distributions, and interpreting analyses in light of the questions. It also involves considering whether to collect new data or use existing data. Finally, the results are communicated.	Students refine their ideas about asking questions and collecting data. The questions must be clear, and the samples of data must be unbiased. For example, if a survey asks about the number of movies watched during a particular time frame, the definition of "movie" must be clarified. Also, if the sample is intended to be representative of a greater population, it must be free of bias. The method of collecting data, therefore, is important.
Exploring the Concept of Sampling Sampling is used to draw conclusions about a whole population by analyzing only a part of it. Collecting data on the entire population may be difficult because of cost or the size of the population. Statisticians try to obtain a representative sample by selecting the sample at random. Sample size is also important.	A *random sample* is one in which every member of a population is equally likely to be chosen. A *representative sample* is one whose characteristics accurately reflect those of the larger population. For example, when determining the typical number of movies students watch, you can number each student in the population and then choose numbers at random. Sampling methods that are not random, such as surveying a movie club, are less likely to be representative.
Making Sense of Data With Data Displays Statisticians use representations or statistics to analyze data. This involves displaying data, reading graphs, and calculating measures of central tendency and measures of spread. Line Plots (Dot Plots): Each item is represented by an "**✗**" (or a dot) above a number line. Histogram: The size of the bar over each interval shows the frequency of data values in that interval; frequencies may be displayed as counts or percentages. Ordered-Value Bar Graph: Each case is represented by a separate bar. The length of each bar corresponds to the magnitude or value of the case. The bars are ordered from least to greatest or greatest to least. Frequency Bar Graph: A bar's height is not the value of an individual case, but rather the number (frequency) of cases that have that value. Box-and-Whisker Plot: Box plots group data into quartiles to make the data easier to analyze or to compare with other sets of data. They display symmetry or skewness of data.	**Household Sizes** (dot plot) **Cookie Simulation** (histogram — Frequency vs. Total Number of Chips Used) **Household Sizes** (ordered-value bar graph: 6, 6, 4, 3, 3, 2) **Bag 21 – Percent of Each Color** (frequency bar graph — Percentage vs. Color of Jellybeans: Green, Yellow, Orange, Blue, Brown, Red) **Resting Heart Rate** (box-and-whisker plot — Beats per Minute (bpm))