

Dear Family,

The next unit in your child's mathematics class this year is ***Samples and Populations: Data and Statistics***. The unit will involve the process of statistical investigation. As part of this process, we will pay special attention to the ways that data are collected.

UNIT GOALS

Probability is a tool for understanding sampling issues in statistics; statistics is a tool for representing and analyzing data that may then be used to draw conclusions about a population. The problems in *Samples and Populations* help students make connections between probability and statistics.

This unit begins with tools for grouping data and comparing distributions. Then students explore what samples are and how they are related to populations, ways to select samples, and the use of random samples. Finally, students look at relationships between two attributes and what it means to say that information about values from one attribute can be used to understand, explain, or predict values of another attribute.

HELPING WITH HOMEWORK

You can help with homework and encourage sound mathematical habits as your child studies this unit by asking questions such as:

- What is the population? What is the sample? What sampling method was used?
- What kinds of comparisons among the data from the sample can I explore?
- Can I use my results to make predictions or generalizations about the populations?
- Were the ways in which the data were collected or analyzed likely to give results that represent the population?

In your child's notebook, you can find worked-out examples from problems done in class, notes on the mathematics of the unit, and descriptions of the vocabulary words.

HAVING CONVERSATIONS ABOUT THE MATHEMATICS IN *SAMPLES AND POPULATIONS*

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

- Using newspapers, magazines, television, or radio, help your child identify situations in which statistics are being used, paying particular attention to who or what was sampled.
- Talk about whether data from a particular study can be used to make accurate predictions about a larger population.
- Look over your child's homework and make sure that all questions are answered and that explanations are clear.

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.

Sincerely,

Important Concepts	Examples
The Process of Statistical Investigation This process involves four parts: posing a question, collecting the data, analyzing the distribution, and interpreting the analysis in light of the question. When completed, students need to communicate the results.	Students need to think about the process of statistical investigation whether they are collecting their own data or using data provided for them.
Distinguishing Different Types of Data An <i>attribute</i> is a name for a particular characteristic of a person, place, or thing about which data are being collected. There are two general kinds of data values: categorical and numerical.	We can have the attribute of <i>kind of peanut butter</i> to characterize whether a peanut butter is natural or regular, or the attribute of <i>quality rating</i> to characterize the quality (using a number) of a given type of peanut butter. Categorical values are “regular” or “natural” for the kind of peanut butter. Numerical values are the numbers used in the quality ratings for peanut butter.
Making Sense of a Data Set Using Different Representations DOT PLOT (OR LINE PLOT) Each case is represented as a dot (or an “x”) positioned over a labeled number line. Measures of Jasmine’s Head SCATTERPLOT The relationship between two different attributes is explored by plotting values of two numeric attributes on a Cartesian coordinate system. Peanut Butter Quality and Price	HISTOGRAM The size of the bar over that interval shows the frequency data values in each interval along the range of data values; frequencies may be displayed as counts or percentages. Regular Peanut Butter BOX-AND-WHISKER PLOT The box plot is divided into quartiles and displays the properties of distribution, such as symmetry or skewness. This plot was developed largely because comparing data using frequency bar graphs can often be confusing, especially if one is comparing more than two bar graphs. Quality Ratings for Peanut Butter
Exploring the Concept of Sampling The essential idea behind sampling is to gain information about the whole by analyzing only a part of it. A primary issue in sampling is choosing a sample likely to be unbiased and predictive of the population.	To ensure fair samples, we try to choose random samples. Students consider other types of sampling strategies: convenience sampling, voluntary-response sampling, and systematic sampling. We want students to develop a sound, general sense about what makes a good sample size and how sample size affects the predictive quality of the sample.

On the **CMP Parent Web Site**, you can learn more about the mathematical goals of each unit, see an illustrated vocabulary list, and examine solutions of selected ACE problems. <http://PHSchool.com/cmp2parents>