Unit 10: Sampling

Dear Parents/Guardians,

In Unit 10, students apply their previous learning about statistics and probability to compare populations through sampling. In Lesson 1, students identify populations and samples and explore random sampling. In Lesson 2, students create data displays and use measures of center and spread to compare data sets. These statistical measures are applied in Lesson 3 when students create a mathematical model and make inferences about populations of fish in a lake.

Populations and Sampling

When asking a statistical question, students recognize the efficiency of a sample rather than survey an entire population. They learn to identify when a sample is randomly chosen (not biased) and can be utilized to make inferences about an entire population.

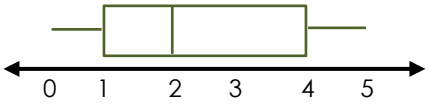
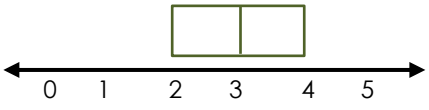
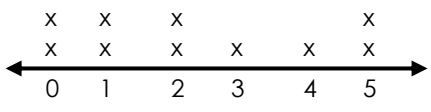
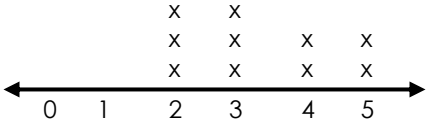
Example: Xander wants to know how many students use reusable water bottles in his junior high school. He wants to survey only a sampling of the population.

Random Sampling	Not a Random Sampling (Biased)
Xander uses the student ID numbers of all students in his school and randomly selects 200 of the ID Numbers as the students to survey.	Xander surveys every student in his Eco Club after school.

Data Displays

Two commonly used visual representations for statistics are box plots and line plots. Students will create both and use them to compare data sets and make inferences about populations.

Example: Christy and Dayna spent spring break babysitting. Their daily work hours are listed below. Note that both graphics show that Christy's data is more spread out (more variability) and has a lesser median value than Dayna's.

Christy **5, 2, 0, 0, 4, 1, 3, 1, 2, 5**	**Dayna** **5, 3, 3, 2, 4, 5, 2, 2, 4, 3**
A box plot is a graphical representation of the 5-number summary set.	
	
A dot plot, or line plot, is a graphical representation of a data set where each data point is represented by dots, or x, above a number line.	
	

Center For Mathematics And Teaching

Math Links
GRADE 7

By the end of the unit, your student should know…

- How to determine if a sampling is random or biased and use random sampling to make valid inferences about populations [Lesson 10.1]
- How to calculate measures of center and spread to use to compare data sets [Lessons 10.2, 10.3]
- How to create dot plots and box plots to visually represent and compare data sets [Lessons 10.2, 10.3]
- How to create a mathematical model that uses random sampling and proportional reasoning to make valid inferences about a population [Lesson 10.3]

Additional Resources

- For definitions and additional notes please refer to Student Resources at the end of this unit.
- Random sampling: https://tinyurl.com/khan-reasonable-samples
- Comparing data sets in dot plots: https://tinyurl.com/khan-distributions-dot-plot
- The Five Number Summary and how to create a box plot: https://tinyurl.com/khan-box-and-whiskers-plot
- Calculating the mean, median and mode of a data set: https://tinyurl.com/khan-mean-median-mode