Grade 7 Standards Parent Resource

Unit 4: Statistics and Probability

Unit 4 includes 2 topics of study, listed below. This resource is for Topic 2.
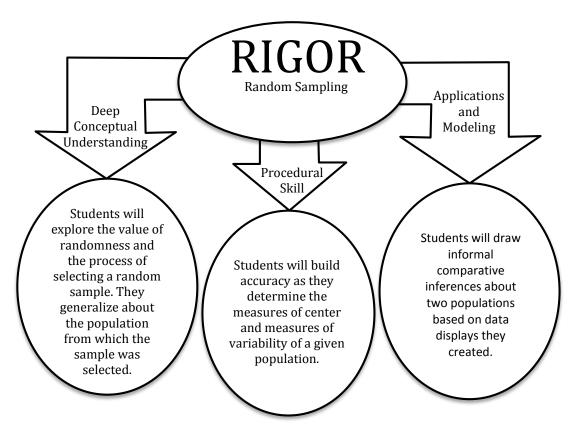
Topic 1	*Topic 2*
Chance Events and Probability Models	***Random Sampling***

Topic	**Learning Goals by Common Core State Standard** *Students will be able to...*
Random Sampling	• Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. • Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. • Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.*

The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling.

RIGOR
Random Sampling

Deep Conceptual Understanding

Students will explore the value of randomness and the process of selecting a random sample. They generalize about the population from which the sample was selected.

Procedural Skill

Students will build accuracy as they determine the measures of center and measures of variability of a given population.

Applications and Modeling

Students will draw informal comparative inferences about two populations based on data displays they created.

Learning Experiences by Common Core State Standard

In school, your child will…

At home, your child can…

Topic 2: Random Sampling

- Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
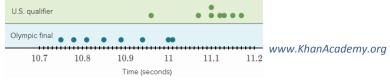
  P.R. Middle School has over 1,000 students. Members of the SGA want to survey a sample of students. Write a letter to the principal suggesting possible survey methods that can be used. Describe why they are valid and would likely produce a sample that is representative of the population.

- Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

T-shirt sizes	XS	S	M	L	XL	TOTAL
Sample 1	10	29	31	20	20	100
Sample 2	17	22	24	22	15	100
Sample 3	15	25	28	20	12	100

  If you had to order 500 t-shirts for the students at your school, how many medium sized shirts would you order? Why?

- Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

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  What conclusions can you draw based on the two data distributions?

- Design and conduct a survey based on a question of interest. (Ex. The number of hours of screen time 7th graders have each week.)
- Design a simulation to model your survey and create multiple random samples of the same size.
- Design a dot plot and compare the two samples.
  - How is the sample data in your dot plot clustered?
  - Are there any gaps in the data?
  - Is the data distribution skewed in any way?
  - What statements can you make about the variability or spread of the data represented in your display?
  - What similarities do you notice? What differences?
- Investigate a news article that makes inferences based on data. Discuss how large the sample is and if the inferences made are accurate.

Additional Resources
- LearnZillion: Drawing Inferences about a Population (video tutorial)
- Learn Zillion: Use Proportional Reasoning to Make Population Estimates (video tutorial)
- Khan Academy: Comparing Distributions with Dot Plots (video tutorial)
- Khan Academy: Comparing distributions (video tutorial)
- Yummy Math: Which is better…original or movies or their sequels? (applying content in context)
- Yummy Math: Do the "Best" Movies Make the More Money? (applying content in context)
- Random Sampling (online practice)
- Draw inferences based on random samples (online practice)

Additional Practice links support C2.0 content,
but may use vocabulary or strategies not emphasized by MCPS.