Concept/Topic	GPS/CCSSS
Summary for September 6, 2011	
Parameter (numerical summary of the population) vs. **statistic** (numerical summary of the sample) distinction	MM1D3 MM2D1 S-IC2
Distinguish **type of data** you are working with: **categorical vs. quantitative (discrete vs. continuous)**	M6D1 S-ID5 S-ID6
Appropriate **graphs for representing the two types of data**: categorical - pie chart or bar graph; quantitative - dotplot, stem and leaf plot, histogram, boxplot, or time plot (data over time)	M6D1 M7D1 S-ID1
Appropriate **numerical summaries for representing two types of data**: categorical - counts, proportions, or percentages; quantitative - mean, median, MAD, standard deviation, range, interquartile range	M7D1 MM2D1 S-ID4
Numerical summaries: **"How much?" vs. "How many?"**	M7D1 S1-ID4
Three types of distributions: population distribution, data distribution, sampling distribution	MM1D3 7.SP3
Describing distribution of quantitative variables: shape, center, spread (variability), gaps, and any outlier identification	M7D1 6.SP.2
Five number summary of positions: min, Q1, median, Q3, max	M7D1 MM1D3 6.SP.5 S-ID3
Resistant measures: median, IQR	M7D1 MM1D3 6.SP.5

	S-ID3
Non-resistant: mean, SD, range	M7D1 MM1D3 6.SP.5 S-ID3
Expected relationship of mean to the median wrt shape of the distribution: Symmetry: mean = median; Left Skew: mean < median; Right Skew: mean > median	MM2D1 S-ID.2
Collecting samples/surveys: **role of randomness** - Eliminating (minimizing) bias	MM1D3 S-ID.3
Sample size: **larger sample size reduces variability** - thus, improving the precision of inference	MMID3 S-ID.3
Moving from descriptive statistics to making inference: Margin of Error (ME). ME allows statement about the range of plausible values for the population parameter. ME measures sampling variability you'd expect in repeated samples.	MM4D2 S-IC.1
Mathematical thinking vs. Statistical thinking (context, variability) – distinction between mathematical and statistical questions	N/A
z-score: Tells us the number of standard deviations an observation falls from the mean (and the direction). Can be used for an type of distribution – shape of the distribution does not matter.	MM3D2
Empirical Rule: 68% of observations within 1 SD of mean; 95% within 2 SD; 99.7% within 3 SD of the mean – distribution is unimodal and symmetric (bell shaped)	MM3D2
Range/6: gives an estimate of the SD (assume bell	

shape distribution)	
Box plot: percentages found within quarters of the boxplot. Central box contains middle 50% of the data. We can miss shape, gaps, mean, and possible bimodal distribution by only examining a boxplot.	M7D1 S-ID.1
z-scores and percentiles: z-scores standardize data in different units to allow comparisons of relative standing (how much comparison). We can also use percentiles to compare data in different units (how many comparison).	MM3D2
Criterion for identifying possible outliers using z-scores: If observation more than 2 or 3 standard devations from the mean, obs. classified as a potential outlier. [how much criterion]	N/A
1.5*IQR Criterion: If an observation above Q3+1.5*IQR or below Q1-1.5*IQR, then obs classified as a potential outlier. [how many criterion]	N/A