**Overview of Common Core Math High School Statistics and Probability**

**Interpret Categorical and Quantitative Data**

1. **What is the nature of a population or group?** (Single quantitative variable)

Represent data with plots on the real number line (dot plots, histograms, and box plots).

* 1. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
  2. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
  3. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate.
  4. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

1. **Compare two categories to decide if they are the same or different** (One quantitative, one categorical variable)
   1. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different groups.
2. **How are two variables** (i.e. both quantitative, or both categorical) **related?**
   1. Two categorical: Summarize categorical data for two categories in two-way frequency tables.

Interpret relative frequencies in the context of the data. Recognize possible associations and trends.

* 1. Two quantitative:

1. Linear relationships: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. Compute (using technology) and interpret the correlation coefficient of a linear fit. Distinguish between correlation and causation.
2. Non-linear relationships: Fit quadratic, and exponential functions to data; use functions fitted to data to solve problems in the context of the data. Informally assess the fit of a function by plotting and analyzing residuals.

**Make Inferences and Justifying Conclusions**

1. Understand and evaluate random processes underlying statistical experiments
2. Make inferences and justify conclusions from sample surveys, experiments and observational studies

**Apply conditional probability and the rules of probability**

1. Understand independence and conditional probability and use them to interpret data
2. Use the rules of probability to compute probabilities of compound events in a uniform probability model

**Use probability to make and justify decisions**

1. Calculate expected values and use them to solve problems
2. Use random sampling to make and evaluate fair decisions

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Mathematical Practices

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.