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| **Subject: Integrated Algebra Unit: Five** | |
| **Unit Topic and Length:**  **Statistics and Probability -- (15 days)** | |
| **Common Core Learning Standards:**  **S-ID.1** Represent data with plots on the real number line (dot plots, histograms, and box plots).  **S-ID.2** 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.  **S-ID.3** Interpret differences in shape, center, and spread in the context of the data sets,  accounting for possible effects of extreme data points (outliers).  **S-ID.5** Summarize categorical data for two categories in two-way frequency tables. Interpret  relative frequencies in the context of the data (including joint, marginal, and conditional  relative frequencies). Recognize possible associations and trends in the data.  **S-ID.6** Represent data on two quantitative variables on a scatter plot, and describe how the  variables are related.  a. Fit a function to the data; use functions fitted to data to solve problems in the context  of the data. *Use given functions or choose a function suggested by the context.*  *Emphasize linear, quadratic, and exponential models.8*  b. Informally assess the fit of a function by plotting and analyzing residuals.  c. Fit a linear function for a scatter plot that suggests a linear association.  **Interpret linear models**  **S-ID.7** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in  the context of the data.  **S-ID.8** Compute (using technology) and interpret the correlation coefficient of a linear fit.  **S-ID.9** Distinguish between correlation and causation. | |
| **Big Ideas/Enduring Understandings:**  The way that data is collected,  organized and displayed influences  interpretation.  The probability of an event’s  occurrence can be predicted with  varying degrees of confidence. | **Essential Questions:**  Why is data collected and analyzed?  How do people use data to influence others?  How can predictions be made based on  data?  What is the best way to organize sets of data to make comparisons? |

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| **Content:**  **Representation of Data**  **Comparing Data Distributions**  **Center and Spread in the Context of Data Sets**  **Recognize Possible Associations and Trends in the Data**  **Represent Data On Two Quantitative Variables**  **Linear Regression**  **Interpret the Correlation Coefficient**  **Distinguish Between Correlation and Causation** | **Skills:**  Ability to determine the best data representation to use for a given situation  Knowledge of key features of each plot  Ability to correctly display given data in an appropriate plot  ***IMP Pg 276***  Ability to analyze data given in different formats  ***IMP Pg 208***  ***IMP Pg 205***  Ability to interpret measures of center and spread (variability) as they relate to several data sets  Ability to identify shapes of distributions (skewed left or right, bell, uniform, symmetric)  ***IMP Pg 219***  Ability to recognize appropriateness of mean/standard deviation for symmetric data; 5 number summary for skewed data  Ability to recognize gaps, clusters, and trends in the data set  Ability to recognize extreme data points(outliers) and their impact on center  Ability to effectively communicate what the data reveals  Knowledge that when comparing distributions there must be common scales and units  ***IMP Pg 221***  Knowledge of the characteristics of categorical data  Ability to read and use a two-way frequency table  Ability to use and to compute joint, marginal, and conditional relative frequencies  Ability to read a segmented bar graph  Ability to recognize types of relationships that lend themselves to linear and exponential models  • Ability to create and use regression models to represent a contextual situation  ***IMP Pg 274, 275***  Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data  ***IMP Pg 271, 272***  Knowledge of the range of the values and the interpretation of those values for correlation coefficients  Ability to compute and analyze the correlation coefficient for the purpose of communicating the goodness of fit of a linear model for a given data set  Ability to provide examples of two variables that have a strong correlation but one does not cause the other  ***IMP Pg 280*** | **Days:**  **2**  **2**  **2**  **2**  **2**  **2**    **2**  **1** |
| **Assessment Evidence and Activities:**  Pre and Post Tests (formative assessment and assessments for evidence of growth)  Quizzes  Questioning and Observations  Do Nows and Exit Slips  Class work and Homework | | |
| **Possible Support Strategies:**  Use of manipulatives  Word Walls and Individual Glossaries  Journals  Back Tracking Technique demonstrated for solving equations | | |
| **Formative Assessment:**  The assessments listed above will be used to identify students’ strengths and weaknesses.  There will be constant adjustments and fine tuning of the curriculum delivery based on this analysis. Sharing student work, sharing best practice and planning next steps will be an integral part of common planning meetings. | | |
| **Final Performance Based Task:**  Students will research the cost of a university education at the school of their choice. They will then compare this cost to the cost of the average 4-year public school colleges. They will then predict the cost of an education for a student of the next generation. | | |
| **Extension:**  Differentiated column sheets for order of operations and evaluating like terms.  Table logic for adding and subtracting integers and polynomial expressions.  Differentiated column sheets for solving equations. | | |
| **Learning Plan & Activities:**  The learning plan will incorporate work shop style lessons which will allow for student centered learning. Group work will be incorporated into various concepts with a focus on students learning collaboratively. There will be an emphasis on technique to enable students to solve skills based questions. This will be supported with problem solving exercises for all content to give students a conceptual understanding of the material. | | |
| **Resources:**  Text book : Meaningful Math Algebra I Prentice Hall Mathematics Algebra I  Graphing calculators  Algebra Tiles  Smart Board Demonstrations  Problem solving materials created by teachers | | |