



Statistical Reasoning UNIT PLANNER



Unit title	Unit 2 Analyzing Two Variable Data	Unit duration	10 Days
Essential Questions (OR GUIDING QUESTIONS?)			
<ul style="list-style-type: none">• What is the difference between categorical and quantitative data?• What types of graphs are used to represent various types of data?• How do you calculate a regression line?• When is least squares regression used?• What type of predictions are made from a line of best fit?			
Assessments			
<ul style="list-style-type: none">• Checkpoint Quiz 1 topic 2.1-2.4• Checkpoint Quiz 2 topic 2.5-2.8• Unit 2 Test			
Content Standards			
<p><u>Students will formulate questions to clarify the problem at hand and formulate one (or more) questions that can be answered with data.</u></p> <p>MSR.FQ.2 Students will identify whether the data are categorical or quantitative (numerical).</p> <ul style="list-style-type: none">a. Students will be able to identify the difference between categorical and quantitative (numerical) data.<ul style="list-style-type: none">i. Determine the appropriate graphical display for each type of data.ii. Determine the type of data used to produce a given graphical display. <p><u>Students will select appropriate graphical and numerical methods and use these methods to analyze the data.</u></p> <p>MSR.AD.2 Students will use distributions to compare two or more groups.</p> <ul style="list-style-type: none">a. Students will compare two or more groups by analyzing distributions.<ul style="list-style-type: none">i. Construct appropriate graphical displays of distributions.ii. Use graphical and numerical attributes of distributions to make comparisons between distributions. <p>MSR.AD.3 Students will determine if an association exists between two variables (pattern or trend in bivariate data) and use values of one variable to predict values of another variable.</p> <ul style="list-style-type: none">a. Students will analyze associations between variables and make predictions from one variable to another.<ul style="list-style-type: none">a. Analyze associations between two variables.<ul style="list-style-type: none">1) Create scatter plots for two-variable numerical data.2) Create two-way tables for two-variable categorical data.3) Analyze patterns and trends in data displays.b. Make predictions and draw conclusions from two-variable data based on data displays.c. Distinguish between association and causation.			

Learning Activities and Experiences

Topic	Resource	Content Addressed	Standards Addressed
Relationships between Variables	2.1 Relationships between Two Categorical Variables Statistics and Probability with Applications 3rd Edition pg. 96 – 104	<ul style="list-style-type: none"> • Comparison of two categorical variables • Stacked bar graphs • Applications of stacked bar graphs 	MSR.FQ.2 MSR.AD.2 MSR.AD.3
	2.2 Relationships between two Quantitative Variables Statistics and Probability with Applications 3rd Edition pg. 105 – 113	<ul style="list-style-type: none"> • Comparison of two quantitative variables • Scatter plot analysis 	MSR.FQ.2 MSR.AD.2 MSR.AD.3
Correlation	2.3 Correlation Statistics and Probability with Applications 3rd Edition pg. 113 – 120	<ul style="list-style-type: none"> • Matching r value with scatter plot • Exploring the difference between correlation and causation • Discussion of false correlation 	MSR.AD.2 MSR.AD.3
	2.4 Calculating the Correlation Statistics and Probability with Applications 3rd Edition pg. 121 – 130	<ul style="list-style-type: none"> • Steps to calculate “r” value • Correlation causation web search 	MSR.AD.2 MSR.AD.3
Regression	2.5 Regression Lines Statistics and Probability with Applications 3rd Edition pg. 130 – 137	<ul style="list-style-type: none"> • Practice calculating lines of regression • Making predictions using lines of regression 	MSR.AD.2 MSR.AD.3
	2.6 The Least-Square Regression Line Statistics and Probability with Applications 3rd Edition pg. 137 – 148	<ul style="list-style-type: none"> • PHET simulation of least squares regression • Applications of least squares regression 	MSR.AD.2 MSR.AD.3
	2.7 Assessing a Regression Model Statistics and Probability with Applications 3rd Edition pg. 149 – 159	<ul style="list-style-type: none"> • Assessing a regression line • Modeling curved relationships in real world problems 	MSR.AD.2 MSR.AD.3
Model Curved Relationships	2.8 Fitting Models to Curved Relationships Statistics and Probability with Applications 3rd Edition pg. 160 - 172	<ul style="list-style-type: none"> • Use technology to calculate quadratic models for curved relationships, then calculate and interpret residuals using the model. • Use technology to calculate exponential models for curved relationships, then calculate and interpret residuals using the model. • Use residual plots to determine the most appropriate model. 	MSR.AD.2 MSR.AD.3

Personalized Learning and Differentiation

Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.

- SWD/504- Accommodations provided
- ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports
- Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring
- Extensions- Enrichment Tasks and Projects

Resources

Statistics and Probability with Applications (High School) 3rd Ed. Daren S. Starnes; Josh Tabor