



Statistical Reasoning UNIT PLANNER



Unit title	Unit 4: Probability	Unit duration	9 Days
Essential Questions (OR GUIDING QUESTIONS?)			
<p>What is a long-run relative frequency? What are common myths about randomness? How can we use simulation to model chance behaviour? How do we determine whether two events are independent? When do we use a tree diagram to model a chance process involving a sequence of outcomes? What are the steps to determine if it is appropriate to use the multiplication rule for independent events in a given setting? How do we use the multiplication counting principle to determine the number of ways to complete a process involving several steps? When do you use a permutation verses a combination?</p>			
Assessments			
<p>Common Formative Assessment – Quiz #1 covering sections 4.1-4.4, Quiz #2 covering sections 4.5-4.8</p> <p>Common Summative Assessment – Unit 4 Test</p>			
Content Standards			
<p><u>Students will design and implement a plan to collect the appropriate data to answer the statistical question.</u> MSR.CD.2 Students will understand that randomness should be incorporated into a sampling or experimental procedure. a. Students will be able to implement a reasonable random method for selecting a sample or for assigning treatments in an experiment. i. Implement a simple random sample. ii. Randomly assign treatments to experimental subjects or objects.</p> <p><u>Students will select appropriate graphical and numerical methods and use these methods to analyze the data.</u> 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. a. Students will analyze associations between variables and make predictions from one variable to another. a. Analyze associations between two variables. 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.</p>			

Learning Activities and Experiences

Topic	Resource	Content Covered	Standards Addressed
Randomness and Simulation	Lesson 4.1 Randomness, Probability, and Simulation	<ul style="list-style-type: none"> Students will understand that randomness should be incorporated into a sampling or experimental procedure. Students will be able to implement a reasonable random method for selecting a sample or for assigning treatments in an experiment. Implement a simple random sample. Randomly assign treatments to experimental subjects or objects. 	MSR.CD.2
	Additional Resources: <ul style="list-style-type: none"> The Last Banana Task Pg. 264-265 Problems 1-12 		
Basic Rules of Probability	Lesson 4.2 Basic Probability Rules	<ul style="list-style-type: none"> Review of basic probability including prediction of outcomes based on theoretical, experimental, and subjective probability Review of independent and dependent events Students will analyze associations between variables and make predictions from one variable to another. 	MSR.AD.3
	Additional Resources: Pg. 271-273 Problems 1-12		
2-Way Tables and Venn Diagrams	Lesson 4.3 Two-Way Tables and Venn Diagrams	<ul style="list-style-type: none"> Make predictions and draw conclusions from two-variable data based on data displays. 	MSR.AD.3
	Additional Resources: <ul style="list-style-type: none"> Ch. 4 Activity - Promotion Discriminants Pg. 277-282 Problems 1-12 		
Conditional Probability	Lesson 4.4 Conditional Probability and Independence	<ul style="list-style-type: none"> Find and interpret conditional probabilities using two-way tables. Use the conditional probability formula to calculate probabilities. Determine whether two events are independent. 	MSR.AD.3
	Additional Resources: Pg. 287-290 Problems 1-12		
Tree Diagrams and Independence	Lesson 4.5 The General Multiplication Rule and Tree Diagrams	<ul style="list-style-type: none"> Use a tree diagram to model a chance process involving a sequence of outcomes. Calculate conditional probabilities using tree diagrams. 	MSR.AD.3

	Lesson 4.6 The Multiplication Rule for Independent Events	<ul style="list-style-type: none"> ● Use the multiplication rule for independent events to calculate probabilities. ● Determine if it is appropriate to use the multiplication rule for independent events in a given setting. 	MSR.AD.3
	Additional Resources: Pg. 295-298 Problems 1-12 Pg. 304-305 Problems 1-12		
Combinations and Permutations	Lesson 4.7 Multiplication Counting Principle and Permutations	<ul style="list-style-type: none"> ● Applications of combinations and permutations ● Use the multiplication counting principle to determine the number of ways to complete a process involving several steps. ● Steps to calculate permutations 	MSR.AD.3
	Lesson 4.8 Combinations and Probability	<ul style="list-style-type: none"> ● Steps to calculate combinations ● Use combinations to calculate probabilities. 	MSR.AD.3
	Additional Resources: Pg. 310-312 Problems 1-12 Pg. 318-320 Problems 1-12		

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. Dren S. Starnes; Josh Tabor