Washington Township School District

The mission of the Washington Township Public Schools *is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.*

Course Title:	*Foundations for Probability, Statistics, and Trigonometry*
Grade Level(s):	12

Duration:	*Full Year:*	**X**	*Semester:*		*Marking Period:*	
Course Description:	Foundations of Probability, Statistics, and Trigonometry is a five-credit elective academic mathematics course for those seniors who have successfully completed Algebra II. This course is a practical coverage that connects mathematics to the world around the students. Each chapter begins with a career-based application, including a "when will I ever use this?" feature that coincides with the mathematics covered in the chapter. Four broad conceptual themes are covered: Trigonometry, Logic and Number Theory, Counting Methods, and Probability and Statistics. This course involves considerable use of technology in analyzing data. Technology tools include the use of graphing calculators, Schoology, and projection equipment.					
Grading Procedures:	The final grade will be a composite of quiz scores, test scores, homework, and participation reflecting the student's mastery of the above skills. The student can pass the course with an overall grade of a seventy percent or better. The grading system will be explained to the student by the classroom teacher.					
Primary Resources:	A Survey of Mathematics with Applications 11th edition textbook					

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

Designed by:	Natalie Taylor and Patricia Tsoukalis

Under the Direction of:	Dr. Carole English

Written: July 2022

Revised: _____

BOE Approval: _____

Unit Title: 1 Sets

Unit Description: The goal of this chapter is to introduce sets. Sets are an underlying topic in logic, probability, statistics, and abstract algebra

Unit Duration: 15 – 20 days

Desired Results

Standard(s): S-CP A Understand independence and conditional probability and use them to interpret data.

Indicators: A 1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").

Understandings:

Students will understand that…

- Set concepts such as sets, equal sets, and equivalent sets
- Subsets and Proper Subsets
- Venn Diagrams
- Set operations such as complement, intersection, union, difference, and Cartesian product
- Applications of Sets in real-world problems
- Infinite and Countable sets

Essential Questions:

- What methods can be used to identify a set? (2.1)
- What symbols can be used to represent set notation? (2.1-2.2)
- How can you identify the complement, intersection, union, difference, and cartesian product of a set? (2.3)
- How can you construct a Venn Diagram? (2.4)
- How can you verify that sets are equivalent? (2.4)
- How can you apply Venn Diagrams to solve applications of sets? (2.5)
- What is an infinite set? Countable set? (2.6)

Assessment Evidence

Performance Tasks:

Students will be able to:

- Use methods such as description, roster form, and set-builder notation to identify sets
- Use set notation to identify elements of a set
- Determine subsets and proper subsets
- Determine the number of subsets and proper subsets of a given set
- Construct a Venn Diagram with two sets
- Determine the complement, intersection, union, difference, and Cartesian product of two sets
- Use a Venn Diagram to verify equality of sets
- Use DeMorgan's law for sets
- Solve application problems of sets
- Identify infinite and countable sets

Other Evidence:

- Class Participation
- Teacher Observation
- Quiz Ch 2
- Class activities
- Computer assignments

Benchmarks:
Unit 2 Test

Learning Plan

Learning Activities: Lectures, class assignments, class activities, computer assignments available through mymathlab.com

Chapter 2 Sets
2.1 Set Concepts
2.2 Subsets
2.3 Venn Diagrams and Set Operations
2.4 Venn Diagrams with Three Sets and Verification of Equality of Sets
2.5 Applications of Sets
2.6 Infinite Sets

Resources: A Survey of Mathematics with Application, 11th edition, Chapter 2

Unit Modifications for Special Population Students

Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators: **RST.11-12.3:** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking and communication.

Unit Title: 2 Logic

Unit Description: This chapter contains some of the basic principles of logic including the language, symbols, and applications.

Unit Duration: 20-25 days

Desired Results

Standard(s): NJSLS 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

Indicators:

Understandings:

Students will understand that…

- Statements can contain logical connectives and quantifiers
- Truth tables can be constructed for negations, conjunctions, and disjunctions to determine truth values
- The construction of equivalent statements and how to use DeMorgan's Law to do so.
- How to use symbolic arguments and standard form of arguments
- The validity of syllogistic arguments using Euler diagrams
- Using logic to analyze circuits

Essential Questions:

- What are statements and quantifiers? (3.1)
- How can you translate a statement into symbols and vice versa? (3.1)
- How can you construct a truth table? (3.2-3.3)
- How can you use DeMorgan's law to construct equivalent statements? (3.4)
- How can you write variations of a conditional statement? (3.4)
- What is the difference between a Symbolic argument and a Syllogistic argument? (3.5-3.6)
- How can you transfer switching circuits into symbolic statements and vice versa? (3.7)

Assessment Evidence

Performance Tasks:
Students will be able to:

- Identify statements and logical connectives
- Identify compound statements
- Identify statements using the words not, and, or, if-then, and if and only if
- Construct truth tables for statements involving negations, conjunctions, disjunctions, conditional statements, and biconditional statements
- Determine truth values of statements without constructing truth tables
- Determine if two statements are equivalent
- Write conditional statements as disjunctions
- Write the negation of conditional statements
- Write variations of conditional statements, including inverses, converses, and contrapositives
- Determine the validity of a symbolic argument
- Determine a logical conclusion from a given set of premises
- Determine the validity of syllogistic arguments using Euler Diagrams
- Use symbolic statements to represent switching circuits
- Draw switching circuits that represent symbolic statements

Other Evidence:

- Class Participation
- Teacher Observation
- Quiz Unit 3
- Class activities
- Computer assignments
- Light Circuit Project
- Logic Puzzle Project

Benchmarks:
Unit 3 Test

Learning Plan

Learning Activities:
Lectures, class assignments, class activities, computer assignments available through MyMathLab, Light Circuit Project, Logic Puzzle Project

Chapter 3 Logic
3.1 Statements and Logical Connectives
3.2 Truth Tables for Negation, Conjunction, and Disjunction
3.3 Truth Tables for the Conditional and Biconditional
3.4 Equivalent Statements
3.5 Symbolic Arguments
3.6 Euler Diagrams and Syllogistic Arguments
3.7 Switching Circuits

Resources: A Survey of Mathematics with Application, 11th edition, Chapter 3

Unit Modifications for Special Population Students	
Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

RST.11-12.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text

RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking, collaboration, and creativity.

Unit Title: 3 Algebra, Graphs, and Functions

Unit Description: This unit is a review of basic concepts of algebra. These topics include solving linear equations, formulas, solving linear inequalities, graphing linear equations, solving systems of linear equations, systems of linear inequalities, and solving quadratic formulas.

Unit Duration: 20-25 days

Desired Results

Standard(s):

A-CED.A: Creating equations that describe numbers or relationships
A-REI.B: Solve equations and inequalities in one variable
A-REI.C: Solve systems of equations
A-REI.D: Represent and solve equations and inequalities graphically
F-IF.C: Analyze functions using different representations

Indicators:

A 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
B 3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
4. Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p) 2 = q that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.
C 6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
D 10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality) and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
C Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

Understandings:
Students will understand that…

- How the order of operations is used in solving linear equations
- How to manipulate formulas
- Solving and graphing linear equations and inequalities
- Solving linear systems
- Solving quadratic equations
- Functions and their graphs

Essential Questions:

- What is the order of operations? (6.1)
- What properties can be used to solve linear equations? (6.1)
- How can you evaluate and manipulate a formula? (6.2)
- What is direct, inverse, and joint variation? (6.3)
- How can you graph a line using intercepts and slope? (6.6)
- How can you solve a system of linear equations by graphing or algebraic methods? (6.7)
- How can you solve a system of linear inequalities by graphing? (6.8)
- How can you solve a quadratic equation using the quadratic formula or zero-factor property? (6.9)
- What are the main properties and graphs of linear, quadratic, exponential, and natural exponential functions? (6.10)

Assessment Evidence

Performance Tasks:
Students will be able to:

- Use the order of operations
- Solve linear equations
- Evaluate a formula
- Solve for a variable in a formula or equation

Other Evidence:

- Class Participation
- Teacher Observation
- Quiz Unit 6
- Class activities
- Computer assignments
- Accuplacer practice

• Solve applications of linear equations • Solve applications using proportions • Solve equations involving direct, inverse, joint, and combined variation • Solve linear inequalities and compound inequalities • Graph linear equations and inequalities • Determine the slope of a line • Solve a system of linear equations using graphing, substitution, and elimination • Solve linear programming problems • Solve quadratic equations by factoring and the quadratic formula • Graph linear, quadratic, exponential, and natural exponential functions	

Benchmarks:
Unit 6 Test

Learning Plan

Learning Activities:
Lectures, class assignments, class activities, computer assignments available through MyMathLab, Accuplacer test practice
Chapter 6 Algebra, Graphs, and Functions
6.1 Order of Operations and Solving Linear Equations
6.2 Formulas
6.3 Applications of Algebra
6.4 Variation
6.5 Solving Linear Inequalities
6.6 Graphing Linear Equations
6.7 Solving Systems of Linear Equations
6.8 Linear Inequalities in Two Variables and Systems of Linear Inequalities

Resources: A Survey of Mathematics with Application, 11th edition, Chapter 6

Unit Modifications for Special Population Students

Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

RST.11-12.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text

RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

9.1.12.CDM.6: Compute and assess the accumulating effect of interest paid overtime when using a variety of sources of credit. (e.g., student loans, credit cards, auto loans, mortgages, etc.).

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking and communication.

Unit Title: 4 Probability

Unit Description: The goal of this chapter is to provide an overview of basic probability concepts and discover various ways of finding and using probabilities.

Unit Duration: 30 – 35 days

Desired Results

Standard(s): S-CP A – B Understand independence and conditional probability and use them to interpret data. Use the rules of probability to compute probabilities of compound events in a uniform probability model. Use the rules of probability to compute probabilities of compound events in a uniform probability model

Indicators: A 1- 3, 5 1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). 2. Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities and use this characterization to determine if they are independent. 3. Understand the conditional probability of *A* given *B* as *P (A* and *B*)/*P*(*B*) and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*. 5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

B 6 – 9 6. Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A and* interpret the answer in terms of the model. 7. Apply the Addition Rule, P (A or B) = P(A) + P(B) – P (A and B) and interpret the answer in terms of the model. 8. (+) Apply the general Multiplication Rule in a uniform probability model, P (A and B) = P(A)P(B|A) = P(B)P(A|B) and interpret the answer in terms of the model. 9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

Understandings:

Students will understand that…

- There are differences between theoretical and empirical probabilities and their formulas.
- You can calculate odds in favor of (or against) the occurrence of an event.
- An expected value can be calculated.
- Calculating probabilities using addition and multiplication rules.
- Use the fundamental counting principle, permutations, and combinations to find the number of arrangements of objects.
- Calculate binomial probabilities.

Essential Questions:

- What are the Theoretical and Empirical Probability formulas and how do you use them to solve probabilities? (11.1)
- What is the Law of Large Numbers? (11.1)
- How do you find the odds of an event? (11.2)
- How do you find the expected value of an event? (11.3)
- How do you determine a fair game or price? (11.3)
- What is the Fundamental Counting Principle? (11.4)
- How can you create a tree diagram to determine probability? (11.4)
- What are the properties of probability? (11.5)
- What is the addition rule of probability? (11.5)
- What is the multiplication rule of probability? (11.5)
- What is the difference between an independent and a dependent event? (11.5)
- What is conditional probability? (11.6)

	• What are permutations and combinations? (11.7 – 11.9) • What is a binomial probability distribution? (11.10) • What is the binomial probability formula? (11.10)

Assessment Evidence

Performance Tasks: *Students will be able to:* • Calculate theoretical and empirical probabilities • Understand the Law of Large Numbers • Compute odds in favor (and against) an event • Convert probabilities to odds and odds to probabilities • Determine expected value • Determine a fair price • Construct tree diagrams to determine probabilities • Apply the fundamental counting principle to probability problems • Calculate the probability of *and* and *or* problems • Solve conditional probability problems • Compute problems using permutation and combination • Solve problems using the binomial probability formula	**Other Evidence:** • Class Participation • Teacher Observation • Quiz Ch 11 • Skittles lab • Class activities • Computer assignments

Benchmarks:
Unit 11 Test

Learning Plan

Learning Activities: Lectures, class assignments, class activities, computer assignments available through mymathlab.com, Skittles/M&M lab

Chapter 11 Probability

11.1 Empirical and Theoretical Probabilities
11.2 Odds
11.3 Expected Value
11.4 Tree Diagrams
11.5 OR and AND problems
11.6 Conditional Probability
11.7 The Fundamental Counting Principle and Permutations
11.8 Combinations
11.9 Solving Probability Problems by Using Combinations
11.10 Binomial Probability Formula

Resources: A Survey of Mathematics with Application, 11th edition, Chapter 11

Unit Modifications for Special Population Students	
Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators: **RST.11-12.3:** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
HS-LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population

Integration of 21st Century Skills

Indicators:
From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking, collaboration, and creativity.

Unit Title: 5 Statistics

Unit Description: This unit provides an overview of some of the basic tools of statistics. Statistics is a branch of mathematics that deals with the collection, analysis, interpretation, and presentation of data. Throughout this unit, students will focus on visual displays of data, measures of central tendency, measures of dispersion, measures of position, normal distribution, regression, and correlation.

Unit Duration: 20 – 25 days

Desired Results

Standard(s): S-ID.A Summarize, represent, and interpret data on a single count or measurement variable

Indicators: 1: Represent data with plots on the real number line (dot plots, histograms, and box plots).
2 – 4: 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. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). 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. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Understandings:
Students will understand that…

- You can calculate the central measures of tendency and use the calculations to make statements about the data.
- You can calculate the variation of the data and make statements about the data.
- You can organize data in a frequency table and use it to graph the distribution
- There are different ways to display data
- A correlation coefficient is a measure of the strength between two variables.
- There are three types of variation: total variation, explained variation, and unexplained variation.

Essential Questions:

- What are the different sampling techniques you can use in Statistics? (12.1)
- What is the difference between frequency and relative frequency distributions? (12.2)
- How do you construct a histogram? (12.2)
- How do you interpret bar, circle, and line graphs? (12.2)
- What are the different measures of central tendency? (12.3)
- How do you calculate mean, median, and mode? (12.3)
- How do you calculate midrange? (12.3)
- How do you calculate range and standard deviation? (12.4)
- What does a normal curve look like? (12.5)
- What is the Empirical Rule? (12.5)
- How can you compare data using a z-score? (12.5)
- What is a scattergram? (12.6)
- How do you compute and graph a least squares line? (12.6)
- How can you use the least squares line to predict values? (12.6)
- What does a correlation coefficient tell you about a set of data? (12.6)

Assessment Evidence

Performance Tasks: *Students will be able to:* • Understand sampling techniques: random, systematic, cluster, stratified, and convenience sampling • Understand the misuses of statistics • Construct a frequency distribution table • Construct histograms and frequency polygons • Construct stem-and-leaf displays • Interpret graphs • Calculate measures of central tendency • Calculate measures of position with percentiles and quartiles • Calculate range and standard deviation • Interpret normal distributions • Calculate a z-score and determine the area under a normal curve • Calculate the percentage of data between any two values in a normal distribution • Understand linear correlation • Calculate a linear correlation coefficient • Interpret linear correlation • Calculate the line of best fit and use it to make predictions	**Other Evidence:** • Class Participation • Teacher Observation • Quiz Ch 12 • Skittles lab • Class activities • Computer assignments

Benchmarks:
Unit 12 Test

Learning Plan

Learning Activities: Lectures, class assignments, class activities, computer assignments available through mymathlab.com, Skittles/M&M lab

Chapter 12 Statistics

12.1 Sampling Techniques and Misuses of Statistics
12.2 Frequency Distributions and Statistical Graphs
12.3 Measures of Central Tendency and Position
12.4 Measures of Dispersion
12.5 The Normal Curve
12.6 Linear Correlation and Regression

Resources: A Survey of Mathematics with Application, 11th edition, Chapter 12

Unit Modifications for Special Population Students	
Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

RST.11-12.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text

RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.

8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.

HS-ESS3-1: Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and climate change have influenced human activity.

interpretations of real-world phenomena.

HS-ESS3-6: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity (i.e., climate change).

6.1.12.EconNE.3.a: Evaluate the impact of education in improving economic opportunities and in the development of responsible citizens.

Integration of 21st Century Skills

Indicators:
From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking, collaboration, and creativity.

Unit Title: 7 Trigonometry

Unit Description:
This chapter gives the student a foundation of trigonometric functions, values, and identities and allows them to solve real-life problems using this foundation.

Unit Duration: 24 – 30 days

Desired Results

Standard(s): F-TF Trigonometric Functions
A. Extend the domain of trigonometric functions using the unit circle

Indicators:
1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
4. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
7. Use inverse functions to solve trigonometric equations that arise in modeling contexts. evaluate the solutions using technology and interpret them in terms of the context.

Understandings:
Students will understand that…

- Calculate using degrees, minutes, and seconds and decimal degree notations
- Trigonometric functions can be found of any angle
- Identifying signs of trigonometric functions in all four quadrants
- Apply basic trigonometric functions
- Evaluate inverse trigonometric functions
- Use angles and trigonometric functions to model and solve real-life problems
- Determine measurements in non-right triangles using Law of Sines and Law of Cosines
- Find area of triangles using Heron's Formula

Essential Questions:

- What are the characteristics of angles and how are they measured?
- How do you find trigonometric functions of an angle?
- What are the trigonometric identities and how do you use them?
- What are the right triangle-based definitions of trigonometric functions and their uses?
- How can you use right triangle trigonometry to solve real world problems?
- How do you determine measurements in non-right triangles?

Assessment Evidence

Performance Tasks:

- Calculate angles using degrees, minutes, and seconds and decimal degree notations.
- Find trigonometric functions of any angle.
- Find reference angle for any non-acute angle

Other Evidence:

- Class Participation
- Teacher Observation
- Quiz Trigonometry
- Class activities

• Evaluate trigonometric functions of any angle. • Evaluate the inverse trigonometric functions • Solve right triangles. • Use angles and trigonometric functions to model and solve real-life problems. • Determine measurements in non-right triangles using Law of Sines and Law of Cosines. • Find area of triangles using Heron's Formula.	• Computer assignments

Benchmarks:
Trigonometry Test

Learning Plan

Learning Activities:
Lectures, class assignments, class activities, computer assignments available through mymathlab.com

Chapter 10 (Old Version of Textbook)

10.1 Angles and Their Measures
10.2 Trigonometric Functions of Angles
10.3 Trigonometric Identities
10.4 Right Triangles and Function Values
10.5 Applications of Right Triangles
10.6 The Laws of Sines and Cosines; Area Formulas

Resources:
Trigonometry-Chapter 10 (Old Version) Textbook pg. 621-669

Unit Modifications for Special Population Students	
Advanced Learners	Complete Extension Activities, Complete Critical Thinking Exercises, Ask Reflective/Extension Questions
Struggling Learners	Read problems aloud frequently, rephrase problems, preferential seating, provide step by step solutions, provide study guides
English Language Learners	Read problems aloud frequently, rephrase problems, allow use of translating device, provide study guides, preferential seating, allow access to language dictionary, help interpret any language/communication difficulties
Special Needs Learners	Read problems aloud frequently, rephrase problems, provide study guides, any modifications listed in IEP
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

RST.11-12.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text

RST.11-12.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

WHST.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

SL.11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with peers on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Integration of 21st Century Skills

Indicators:

From the Partnership for 21st Century Skills (P21), the deeper learning competencies and skills for 21st century learning in this unit include critical thinking, collaboration, and creativity.