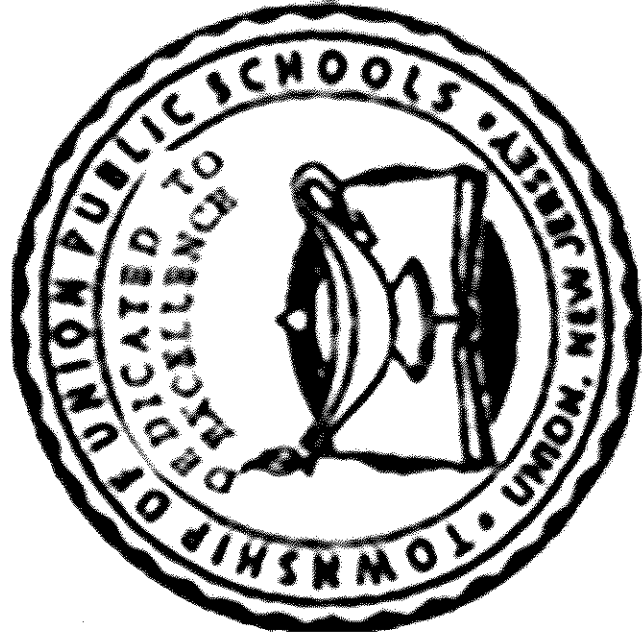
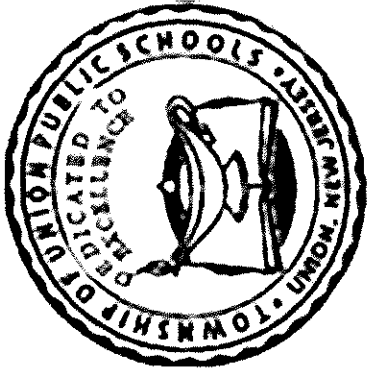


TOWNSHIP OF UNION PUBLIC SCHOOLS



**Honors Algebra I
Curriculum Guide
2016**



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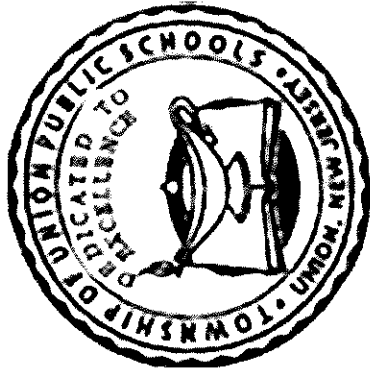
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TOWNSHIP OF UNION PUBLIC SCHOOLS

Administration

<u>District Superintendent</u>	Gregory Tatum
Assistant Superintendent	Noreen Lishak
Assistant Superintendent	Annie Moses
School Business Administrator /Interim Board Secretary	Manuel Viera
Director of Personnel	Gerald Benaquiasta
Director of Special Projects	Ann Hart
Director of Special Services	Kim Conti
Director of Athletics, Physical Education, Nurses	Linda Ionta
District Security	Nick Ardito

DEPARTMENT SUPERVISORS

School Counseling K-12.....	Nicole Ahern
Special Services Pre K-8	Kristin Szawan
Special Services Pre K-8	Frank Santora
Special Services 9-12.....	Joseph Seugling
Pre-K English/Math/Science/SS	Maureen Corbett
English 2-5/Social Studies 2-5.....	Robert Ghiretti
Mathematics 2-5.Science 2-5.....	Theresa Matthews
English 6-12.....	Randi Moran
Mathematics 6-12.....	Jeremy Cohen
Science 6-12/NCLB.....	Maureen Guilfoyle
Social Studies 6-12/Business 9-12.....	Libby Galante
Career Ed/World Lang/ESL.....	Yvonne Lorenzo
Art/Music	Ronald Rago

**Curriculum Committee
Honors Algebra I**

Linda Banks

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Administration

Department Supervisors

Curriculum Committee

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Mission Statement

The mission of the Township of Union Public Schools is to build on the foundations of honesty, excellence, integrity, strong family, and community partnerships. We promote a supportive learning environment where every student is challenged, inspired, empowered, and respected as diverse learners. Through cultivation of students' intellectual curiosity, skills and knowledge, our students can achieve academically and socially, and contribute as responsible and productive citizens of our global community.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is formulation of a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principals.**
- **To be able to work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Efficient and effective participation in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**
- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation.**

Course Description

Honors Algebra I

Honors Algebra I will help mathematics students to build a strong conceptual foundation. The focus of the class will be what algebra really is: patterns and functions, with a concentration on problem solving and critical thinking skills. The main topics of the class will include equivalence, representation and modeling with variables, linearity, and the connections between algebra and geometry, probability, and statistics. Students taking Honors Algebra I will use many tools and forms of technology to help students grasp a firm understanding of the core ideas: calculators, computers, spreadsheets, algebra tiles, etc.

- Unit 1: Operations on Numbers and Expressions
- Unit 2: Linear Relationships
- Unit 3: Non-Linear Relationships
- Unit 4: Data and Statistics

Recommended Textbooks

McDougal Littell Algebra I Larson

Course Proficiencies

Unit 1: Operations on Numbers and Expressions

SWBAT:

- Define, give examples of, distinguish between, use the numbers of, and use the properties of number systems within the set of real numbers
- Use rates, ratios, and proportions to solve problems, including measurement problems
- Use variables as symbols for verifying quantities ($3X$), as symbols for fixed unknowns ($3x - 2 = 7$), as symbols used in properties ($x + 0 = x$), as symbols used in formulas ($A=lw$), and as symbols for parameters (m and b for slope and intercept in $y = mx + b$)
- Use matrices to represent and then solve by adding and subtracting matrices or by multiplying a matrix by a scalar
- Apply the laws of exponents to numerical and algebraic expressions
- Use properties of radicals to convert expressions or to solve problems
- Add, subtract, and multiply polynomial expressions
- Factor polynomial expressions
- Simplify, multiply, and divide rational expressions

Unit 2: Linear Relationships

SWBAT:

- Recognize, describe, and represent linear relationships using words, tables, numerical patterns, graphs, and equations
- Describe, analyze, and use key characteristics of linear functions and their graphs
- Graph and analyze the graph of the absolute value of a linear function
- Solve problems that can be modeled using a linear function
- Solve single-variable linear equations and inequalities with rational coefficients

- Solve and graph inequalities containing “and” and “or”
- Solve absolute value equations
- Graph and analyze the graph of two variable linear equations and inequalities
- Solve systems of linear equations algebraically and graphically
- Solve systems of linear inequalities graphically
- Solve problems that can be modeled using single or two variable equations, inequalities, and systems of linear equations and inequalities

Unit 3: Non Linear Relationships

SWBAT:

- Recognize, describe, represent, and analyze quadratic functions using words, tables, graphs, or equations
- Solve problems that can be modeled using a quadratic function
- Solve equations for one variable in terms of the others
- Solve single-variable quadratic equations
- Recognize, describe, and represent exponential relationships using words, tables, numerical patterns, graphs, and equations
- Solve single-variable radical equations

Unit 4: Data and Statistics

SWBAT:

- Compare linear models that exhibit a linear trend
- Use measures of central tendency to compare and analyze data sets

Curriculum Units

Unit 1: Operations on Numbers and Expressions

Unit 2: Linear Relationships

Unit 3: Non Linear Relationships

Unit 4: Data and Statistics

Pacing Guide- Course

<u>Content</u>	Number of Days
<u>Unit 1:</u> Operations on Numbers and Expressions	35
<u>Unit 2:</u> Linear Relationships	50
<u>Unit 3:</u> Non-Linear Relationships	80
<u>Unit 4:</u> Data and Statistics	15

Unit 1: Operations on Numbers and Expressions

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<ul style="list-style-type: none"> • What are some ways to represent, describe, and analyze patterns (that occur in our world)? • When is one representation of a function more useful than another? • How can we use algebraic representation to analyze patterns? • Why are number and algebraic patterns important as rules? • How are arithmetic operations related to functions? • How can numeric operations be extended to algebraic objects? • Why is it useful to represent real-life situations algebraically? • What makes an algebraic algorithm both effective 	<p>Use properties of number systems within the set of real numbers to verify or refute conjectures or justify reasoning.</p> <p>N-RN #1-3; N-Q #1-3</p>	<ul style="list-style-type: none"> • Students will be given cards with conditional statements and must identify the hypothesis and conclusion. If the statement is false, the student needs to find the class members whose cards have the counterexample. • Students will use the smartboard by matching properties to justify algebraic steps used to reach a conclusion. 	<ul style="list-style-type: none"> • Rewrite the given conditional statement in if-then form. Decide if it is true or false. If false give the counter-example. None of the rational numbers has an opposite equal to itself. • Students will find the area of a shaded region and surface area/volume of a designated portion of a solid. • Use deductive reasoning to show that $3(2x + 8)/6 - 4 = x$. Justify each step. • Simplify the following: a) $(1/2x - 2y)(4x+y)$

and efficient?

b) $(4x^5 - 3x^3 + 2x^2 - 7) - (x^4 + 2x^3 - 4x - 3)$

c) $6xy(2x^2 - 3xy + \frac{1}{3}y^2)$

• Simplify the following:

a) $((\frac{1}{4}x^2)^3)$

b) $(2w^3/v)^3 (1/6w^3)$

c) $(-2x^4y^4/3y^{-1}z^{-2})^4$

• Factor the following expressions:

a) $2x^4 - 5x^3 + 6x^2 - 15x$

b) $-3x^2 + 16x + 35$

c) $y^2 - (5/3)y + (25/36)$

d) $72 - 32x^2$

• Compare the graph of the function $f(x) = 4^x - 2$ with the graph of the function $g(x) = (1/16)^x + 4^x$. Use properties of exponents to explain your observation.

Unit 2: Linear Relationships

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<ul style="list-style-type: none"> • How can change be best represented mathematically? • How can we use mathematical language to describe change? • How can we use mathematical models to describe change or change over time? • How can patterns, relations and functions be used as tools to best describe and help explain real-life situations? 	<ul style="list-style-type: none"> • Recognize, describe, and represent linear relationships using words, tables, graphs and patterns, graphs and equations. A-REI #1,3,10,12; N-Q #1-3; A-CED #1-3; F-IF #1-7a 	<ul style="list-style-type: none"> • Use Smart Board to represent linear equations in graph form. Explore slope and y-intercept. • Use Smart Board to create a data table (X and Y) and plot the linear relationship. • Use graphing calculator to organize data and plot the relationship, showing whether linear or not. • Students working in groups. Create a data table using arm span and height. Plot results, draw a line of best fit and find equation of the line. Then compare that equation to the one produced using linear 	<ul style="list-style-type: none"> • The elevation at which a baseball game is played affects the distance a ball travels when hit. For every increase of 1000 ft. in elevation, the ball travels about 7 ft. farther. If a ball travels 400 ft when hit at sea level, how far would it travel when hit at an elevation of 3500 ft.? • Write a rule for the nth term of the sequence -12, -5, 2, 9, 16, ... • Express the following sentence in equation form: Seven less one-half of a number is equal to the same number increased by five.

		regression.	
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Unit 2: Linear Relationships (continued)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> Describe, analyze and use key characteristics of linear systems and their graphs. A-REI #5-7; N-Q #1-3; F-IF #1-7a 	<ul style="list-style-type: none"> Use the Smart Board to graph linear systems and analyze the results to produce the solution to the system. 	<ul style="list-style-type: none"> Write a system of inequalities for the rectangle with vertices at (2,1), (2,4), (6,4) and (6,1). A company makes rectangular tablecloths in two sizes. The perimeter of smaller one is 196 inches. The larger one is 80% longer 25% wider than the smaller one, with a perimeter of 300 in. Find the area of the larger tablecloth. Graph the system of linear inequalities: $X \leq 5, y < 4, 3x + y < 10$

Unit 2: Linear Relationships (continued)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> Graph the absolute value of a linear function and determine and analyze its key characteristics. A-REI #10; F-IF #1,2,4,5,7b 	<ul style="list-style-type: none"> Students will graph $f(x) = x$ and the resulting graphs of the expanded functions. Compare and contrast the behavior of these graphs to $f(x) = x$ and its expanded versions $f(x) = ax + c$. 	<p>Graph the following absolute value equation.</p> $-5 = -3 d + 3 + 4$

Unit 2: Linear Relationships (continued)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CP/s)	Activities	Assessments
	<ul style="list-style-type: none">Recognize, express and solve problems that can be modeled using linear functions. Interpret solutions in terms of the context of the problem. A-REI #1; N-Q #1-3; A-CED #1-3; F-IF #2, 5, 6, 7a	<ul style="list-style-type: none">Students to work in groups. Give each group a box with a number of concert tickets in it, either adult or student tickets. Set up and solve a linear system which will show the exact number of each type of ticket sold.	<ul style="list-style-type: none">A chemist needs 500 mL of a 20% acid and 80% water mix. She combines x mL of a 10% acid and 90% water mix and y mL of a 30% acid and 70% water mix to make the desired 20/80 mix. How many mL of the 10/90% and the 30/70% need to be used?

Unit 2: Linear Relationships (continued)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPI/s)	Activities	Assessments
<ul style="list-style-type: none"> • How are patterns of change related to the behavior of functions? • How are functions and their graphs related? • How can technology be used to investigate properties of linear functions and their graphs? • How can systems of equations be used to solve real-life situations? 	<ul style="list-style-type: none"> • To solve single-variable linear equations and inequalities with rational coefficients. A-REI #1,3 • To solve equations involving the absolute value of a linear expression. A-REI #1-3 • To graph and analyze the graph of the solution set of a two-variable linear inequality. A-REI #5, 6, 10-12; A-CED #2,3; F-IF #1, 2, 4-7a • To solve systems of linear equations in two variables using algebraic and graphic procedures. A-REI #5, 6, 10-12 • To recognize, express and solve problems that 	<ul style="list-style-type: none"> • To use algebra tiles to solve sample equations. • To graph the lines of the equations and use 2 different color crayons to graph each inequality and show that where the colors overlap is the solution to the system. • Graphing using the Smart Board. • Give groups of students a can with coins and the number of coins and the \$ amount, students will set up and solve an equation to figure out how many of the coins are dimes and how many are nickels. 	<ul style="list-style-type: none"> • Solve the equation $\frac{x - x - 1}{2} = 2$ • Solve the inequality $1 \leq 3 + (2/3)x < 7$ • Solve the equation $-3 2 - (5/4)x = 18$ • Solve the linear system by the method you think is best $(1/3)x + 5y = -3$ $(-2/3)x + 6y = -10$ • A Δ is formed by the intersections of the x – axis, the y-axis, and the line $2x + 34 = 6$. What is the area of the Δ?

	can be modeled using single-variable equations, one or two-variable inequalities, or two-variable systems of linear equations. A-REI #1, 3, 5-7, 10-12 N-Q #1-3; A-CED #1-3 F-IF #1, 2, 4-6	
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Unit 3: Non- Linear Relationships

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<ul style="list-style-type: none"> How can we use mathematical language to describe non-linear change? How can we model situations using quadratics? How can we model situations using exponents? How can we model situations using rational 	<ul style="list-style-type: none"> Recognize, describe, represent and analyze a quadratic function using words, tables, graphs or equations. F-IF #1, 2, 4, 5, 7a,c, 8a A-APR #1-3; A-REI #4; A-SSE #1-3; A-CED #1-3 Content Clarification: Key characteristics include vertex, zeros, y-intercept, domain and range, maximum and minimum, and opening 	<ul style="list-style-type: none"> Students will bring in examples of real-life parabolic curves and discuss shape, location, and meaning of vertex, domain, range, max/min and opening direction. Have students chart the growth of compound interest (monthly, quarterly, etc) and the growth of simple interest. Compare, exponential versus linear growth. 	<ul style="list-style-type: none"> Determine the vertex of the function $f(x) = \frac{1}{4}x^2 + 7x + 11$ Given the following ordered pairs, determine the type of relationship that exists (linear quadratic or exponential) and justify your conclusion: (1, 2m - 1), (2, 10m + 2), (3, 26m), (4, 51m - 7), (5, 85m - 49) A football player attempts a field goal. The path of

<p>functions?</p>	<p>direction.</p> <ul style="list-style-type: none"> Analyze a table, numerical pattern, graph, equation or context to determine whether a linear, quadratic or exponential relationship could be represented. <p>F-LE #1-3, 5 A-CED #3; F-IF #4, 5</p>		<p>the football can be modeled by $y = -0.03x^2 + 1.8x$ where x=horizontal dist. (in yards) and y = height (in feet). Will the football pass over the goal post that is 10 feet above the ground and 45 yards away?</p> <ul style="list-style-type: none"> Write a polynomial equation with integral coefficients that has the given roots: 0, -2, and 1. Solve for t: $S = \pi r l + \pi r^2$ Solve for t: $((t-5)/3)^2 = 49$
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Unit 3: Non-Linear Relationships (continued)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> Recognize and solve problems that can be modeled using a 	<ul style="list-style-type: none"> Use the Smart Board to illustrate changes to the vertical motion model in 	<ul style="list-style-type: none"> You invest \$500 in an account that earns interest compounded

quadratic function.
Interpret the solution in terms of the context of the original problem.
A-REI #4;
N-Q #1-3;
A-SSE #1-3
A-APR #1-3
A-CED #1-3
F-IF #1, 4, 5, 7a, c, 8a
F-BF #1-3

- Solve equations involving several variables for one variable in terms of the others.
A-CED #4
- Solve single-variable quadratic equations.
A-SSE #1-3
A-APR #1-3
F-BF #1, 3
- Provide and describe multiple representations of solutions to simple exponential equations using concrete models, tables, graphs, symbolic expressions and technology.
A-SSE #1-3
N-Q #1-2
A-CED #1
F-LE #1-3, 5
F-IF #1, 2, 4, 5, 7e, 8b
- Recognize and solve

real-life problems.

- Given a formula of various solids, students will rewrite the formulas in terms of another variable.
- Use the graphing calculator to identify the zeros, maximum and minimum of the quadratic equation.
- Students will track a credit card purchase over a given period of time. Students will graph the final result.
- Students will investigate cell phone plans and graph results.

monthly. Use a table or graph to find the least annual interest rate (to the nearest tenth of a percent) that the account would have to earn if you want to have a balance of \$600 in 4 years.

- An archway over a two-lane road is cut out of rock. Its shape is modeled by the quadratic function $y = -0.1x^2 + 12$ for y greater than or equal to 0. Can a camper 6 ft. wide and 7 ft. high fit under the arch without crossing the median line?
- Compare the graph of the function $f(x) = 4^{x-2}$ with the graph of the function $g(x) = (1/16)^x$. Use properties of exponents to explain your observation.
- Solve for x :
 $4d + 2 = (d - 1)(d + 3)$
- What is the solution set for $(-2/3)x^2 + 9x + 1 = 0$?

problems that can be modeled using a rational function. Interpret the solution in terms of the context of the original problem.

A-REI #2

A-APR #6-7

A-CED #1-3

- Recognize, express, solve and graph problems that can be modeled using radical functions. Interpret solutions in terms of the problem.

A-REI #1, 2

N-RN #1-3

A-SSE #1b, 2, 3

F-IF #1, 2, 4, 5, 7b

- You and your friend plan to spend 10 minutes mowing your family's lawn together. You can mow the entire lawn alone in 30 minutes. Suppose your friend can mow the entire lawn alone in 20 minutes. Can the entire lawn be mowed if you and your friend work together for 10 minutes?
- Graph the function $y = 6x + 10/3x + 6$

Unit 4: Data and Statistics

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<ul style="list-style-type: none"> How can the collection, organization, interpretation and display of data be used to answer questions. How can the representation of data influence decisions? 	<ul style="list-style-type: none"> Interpret and compare linear models for data that exhibits a linear trend in the context of a problem. S-ID #1, 3, 6-9 Use measures of center and spread to compare and analyze data sets, and to pick out misleading uses. S-ID #2, 3, 4 	<ul style="list-style-type: none"> See activity for scatter plot in Unit 2. Find the average rate of change. Research the amount of snowfall in 2 towns from September to April. Analyze the mode, mean and median of the data in terms accurately predicting snowfall. 	<ul style="list-style-type: none"> Given the weight in ounces of a piece of first class mail is 1, 4, 5, 10 and 12 and the cost in dollars of mailing it is 0.37, 1.6, 1.29, 2.44, and 2.90 respectively, describe the growth trend as a rate of change. Create a graph to illustrate with labels and proper intervals. Predict the cost of a 18.5 ounce piece of mail. If a student has scores 78, 82, 91, 84 and 67, what score must be achieved on the sixth test to raise the average to 82?

Common Core State Standards

Mathematics | High School – Number and Quantity

The Real Number System N - RN

Extend the properties of exponents to rational exponents.

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5(1/3)3$ to hold, so $(5^{1/3})^3$ must equal 5.*
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers.

3. Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

Quantities ★ N -Q

Reason quantitatively and use units to solve problems.

1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
2. Define appropriate quantities for the purpose of descriptive modeling.
3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example, $(-1 + \sqrt{3}i)^3 = 8$ because $(-1 + \sqrt{3}i)$ has modulus 2 and argument 120° .*

6. (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

The Complex Number System

N-CN

Perform arithmetic operations with complex numbers.

1. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
2. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

Represent complex numbers and their operations on the complex plane.

4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.
5. (+) Represent addition, subtraction, multiplication, and conjugation of

Use complex numbers in polynomial identities and equations.

7. Solve quadratic equations with real coefficients that have complex solutions.
8. (+) Extend polynomial identities to the complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.*
9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

Vector and Matrix Quantities

N - VM

Represent and model with vector quantities.

- (+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v , $|v|$, $\|v\|$, v).
- (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
- (+) Solve problems involving velocity and other quantities that can be represented by vectors.

Perform operations on vectors.

- (+) Add and subtract vectors.
 - Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
 - Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
 - Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w , with the same magnitude as w and pointing

in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.

- (+) Multiply a vector by a scalar.
 - Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(vx, vy) = (cvx, cvy)$.
 - Compute the magnitude of a scalar multiple cv using $\|cv\| = |c|v$. Compute the direction of cv knowing that when $|c|v = 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).

Perform operations on matrices and use matrices in applications.

- (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
- (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
- (+) Add, subtract, and multiply matrices of appropriate dimensions.
- (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
- (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
- (+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
- (+) Work with 2×2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.

Seeing Structure in Expressions

A-SSE

Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its context.
 - a. Interpret parts of an expression, such as terms, factors, and coefficients.
 - b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P .*
2. Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
 - a. Factor a quadratic expression to reveal the zeros of the function it defines.
 - b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
 - c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression $1.15t$ can be rewritten as $(1.151/12)^{12t} \approx 1.01212t$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*

4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*

Arithmetic with Polynomials and Rational Expressions A -APR

Perform arithmetic operations on polynomials

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials

2. Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems

4. Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.*

5. (+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n , where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. 1

1 The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

Rewrite rational expressions

6. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.

7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

Creating Equations ★ A -CED

Create equations that describe numbers or relationships

1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

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*

Reasoning with Equations and

Inequalities A -REI

Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Solve equations and inequalities in one variable

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 $x^2 = 49$), 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 $a \pm bi$ for real numbers a and b .

Solve systems of equations

5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.*

8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.
9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

Represent and solve equations and inequalities graphically

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).
11. Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
12. Graph the solutions to a linear inequality in two variables as a halfplane (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.

Mathematics I High School – Functions

Interpreting Functions F-IF

Understand the concept of a function and use function notation

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1)$ for $n \in \mathbb{I}$.*

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*

5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*
6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
 - a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
 - b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
 - c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
 - d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)t$, $y = (0.97)t$, $y = (1.01)12t$, $y = (1.2)t/10$, and *classify them as representing exponential growth or decay.*

9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

Building Functions F-BF

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.

a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*

c. (+) Compose functions. *For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.*

2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

Build new functions from existing functions

3. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, k , $f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Include recognizing even and odd functions from their graphs and algebraic expressions for them.

4. Find inverse functions.

a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$.*

b. (+) Verify by composition that one function is the inverse of another.

c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.

d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

5. (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

Linear, Quadratic, and Exponential Models ★ F -LE

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
 - a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
 - b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
 - c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
 3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
 4. For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear or exponential function in terms of a context.

Trigonometric Functions F-TF

Mathematics I High School – Modeling

Extend the domain of trigonometric functions using the unit circle

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.
3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x , where x is any real number.
4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

Model periodic phenomena with trigonometric functions

5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
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.

Prove and apply trigonometric identities

8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.
9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

Modeling Standards Modeling is best interpreted not as a collection of isolated topics, but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high standards....

Mathematics I High School – Statistics and Probability

Interpreting Categorical and

Quantitative Data S-ID

Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
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.
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. 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.

Summarize, represent, and interpret data on two categorical and quantitative variables

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.

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.*
 - 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

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
8. Compute (using technology) and interpret the correlation coefficient of a linear fit.
9. Distinguish between correlation and causation.

Making Inferences and Justifying

Conclusions S-IC

Understand and evaluate random processes underlying statistical experiments

1. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

Make inferences and justify conclusions from sample surveys, experiments, and observational studies

3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
4. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
6. Evaluate reports based on data.

Conditional Probability and the Rules of Probability S-CP

Understand independence and conditional probability and use them to interpret data

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 $P(A \text{ and } B)/P(B)$, 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 .
4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
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.*

Use the rules of probability to compute probabilities of compound events in a uniform probability model

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, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.

8. (+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in terms of the model.
9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

Using Probability to Make Decisions S-

MD

Calculate expected values and use them to solve problems

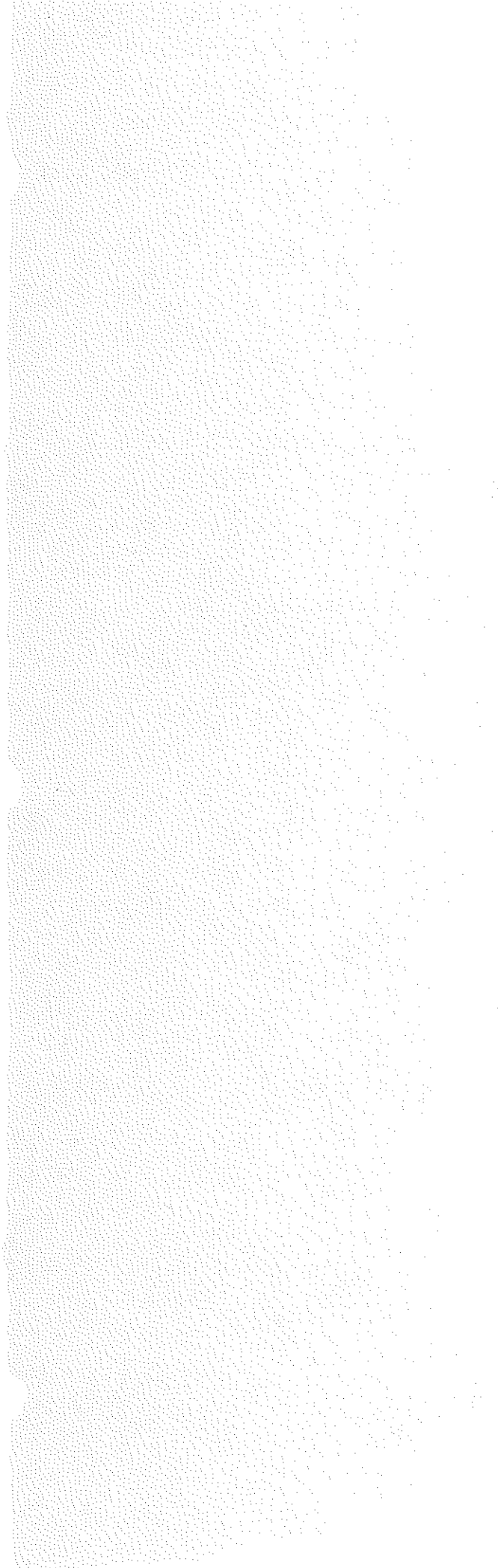
1. (+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
3. (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a*

multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.

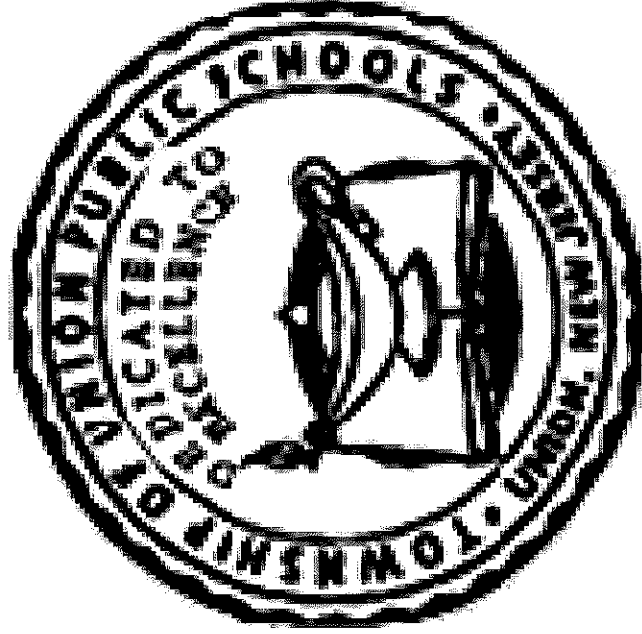
4. (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*

Use probability to evaluate outcomes of decisions

5. (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
 - a. Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant.*
 - b. Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).



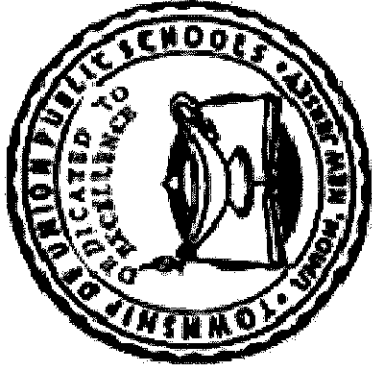
TOWNSHIP OF UNION PUBLIC SCHOOLS



HS CRAFTS

Curriculum Guide

2016/17



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Administration

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Asst Superintendent: Dr. Noreen Lishak

Asst Superintendent: Annie Moses

School Business Administrator/Interim Board Secretary: Manuel E. Vieira

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DEPARTMENT SUPERVISORS

Nicole Ahern	School Counseling: K - 12
Kristin Szawan	Special Services: PreK - 8
Joseph Seugling	Special Services: 9 - 12
Gregory Pardo	Special Services: PreK - 8

10-Month

Maureen Corbett	Pre K-2 English/Math/Science/SS
Libby Galante	Social Studies: 6 - 12, Business 9-12
Robert Ghiretti	English: 2 - 5, Social Studies: 2 - 5

Maureen Guilfoyle Science: 6 - 12/NCLB
Yvonne Lorenzo Career Ed, World Lang, ESL
Randi Moran English: 6-12
Theresa Matthews Mathematics: 2 - 5, Science: 2 - 5
Jeremy Cohen Mathematics: 6-12
Ron Rago Art, Music: K - 12

Curriculum Committee

Rich Catino

Mike Neshimka

Academic Area

CRAFTS

AR 212FY

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Mission Statement

The Township of Union Department of Visual and Performing Arts is committed to increasing opportunities for all students K-12 to participate in and understand the arts.

We all share the common belief that the arts are one of humanity's most eloquent means of understanding the world. Through the arts, we share the highest achievements of every culture and find a universal language which permits communication among all peoples. As such, the arts are an essential component of a complete education. Through the years, studies have discovered that the inclusion of the performing arts in a broad-based curriculum improves the quality of a child's educational experience. The arts teach discipline, improve self-esteem, inspire creativity, and help young people to set and reach goals. Knowledge of the arts makes our district a challenging place where our children are encouraged to explore, to create, and to reach their full potential.

Philosophy Statement

The arts are a critical and essential part of the education of every young person in America, and every American should have high-quality opportunities to be educated in all of the arts. Such an education should occur both in and out of classroom settings as part of an ongoing learning process for all individuals, including those with special talents or needs.

A comprehensive arts education draws upon the expertise of both arts specialists and classroom teachers, and upon the experiences and resources of professional artists and community cultural resources. Only by utilizing all of these resources can individuals achieve the full educational potential of the arts.

Statement of District Goals

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principals.**
- **Work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**

- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation.**

Course Description

The Crafts Course is the exploration of works of art that combine the skilled hand and the creative mind to produce works of art that are expressive and have utilitarian purposes. In this course the students will produce crafts that are unique in that they will merge form and function to produce solutions that are beautiful as well as practical. Students will gain an appreciation of crafts in its cultural traditions and within a historical context. The students will understand and illustrate the nature and value of crafts.

The students will explore and complete various crafts activities using the elements of art and principles of design as a foundation. The students will complete a series of craft projects in accordance with the New Jersey Core Curriculum Content Standards. By combining their creativity, mastery of skills and techniques, personal statement and functional capability the students will be able to identify crafts in its individual characteristics and

expressive possibilities. The students will develop, through the teacher's attitude and program, positive attitudes toward instruction and the process of learning.

Recommended Textbooks

**Gatto, Porter, Selleck. *Exploring Visual Design*
Worcester, MA: Davis Publication, Inc., 2000.**

Course Proficiencies

Students will be able to...

- **Understand and apply knowledge of structures and functions through observation of the visual, tactile, spatial and temporal elements in crafts.**
- **Consider the use of the elements of art and principles of design in their production.**
- **Understand and apply media, techniques and processes.**
- **Choose and evaluate a range of subject matter, symbols and ideas.**
- **Understand craft in relation to history and culture.**
- **Reflect upon and assess the characteristics and merits of their work and the work of others through art criticism, aesthetics and exhibition.**
- **Make connections between craft and other curricula.**

Curriculum Units

Examine a variety of objects:

Unit 1: Appreciation of Craft as an art form

Explore art elements:

Unit 2: Line

Unit 3: Color and Value

Unit 4: Shape and Form

Unit 5: Space

Unit 6: Texture

Apply principles of design

Unit 7: Pattern

Unit 8: Emphasis

Unit 9: Balance

Unit 10: Variety and Repetition

Unit 11: Rhythm and Movement

Unit 12: Unity

Pacing Guide- Course

<u>Content</u>	<u>Number of Days</u>
<u>Unit 1: What is Craft? Art Criticism</u>	<u>1-2 weeks</u>
<u>Unit 2: Line</u>	<u>1-3 weeks</u>
<u>Unit 3: Color and Value</u>	<u>1-3 weeks</u>
<u>Unit 4: Shape and Form</u>	<u>1-3 weeks</u>
<u>Unit 5: Space</u>	<u>1-3 weeks</u>
<u>Unit 6: Texture</u>	<u>1-3 weeks</u>
<u>Unit 7: Pattern</u>	<u>1-3 weeks</u>
<u>Unit 8: Emphasis</u>	<u>1-3 weeks</u>
<u>Unit 9: Balance</u>	<u>1-3 weeks</u>
<u>Unit 10: Variety</u>	<u>1-3 weeks</u>
<u>Unit 11: Movement</u>	<u>1-3 weeks</u>
<u>Unit 12: Unity</u>	<u>1-3 weeks</u>

Unit 1: What is Crafts?

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>Part 1: What is Craft?</p> <p>How should we look at Crafts?</p> <p>Part 2: Art Criticism.</p>	<p>To introduce students to a variety of craft processes and media.</p> <p>NJCCCS#1.1.2.1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Define Crafts • Discover the history and cultural traditions of Crafts. • Understand the characteristics and structure of Crafts works that are designed for function, as well as aesthetic appreciation. • Answer several questions pertaining to a piece of artwork, which applies to an art critique. Answers will be in essay form, five paragraphs. 	<ol style="list-style-type: none"> 1. Students will examine, compare a variety of crafts and crafts materials 2. Students will examine and discuss various functional crafts objects, compare and contrast objects that are mass produced and handmade, crafts from various cultures, and examine the craft movement historically. 3. By doing the art critique, student will learn how to look at a piece of artwork differently, more as an artist. Then, applying the technique to conducting their own self critiques in class. 	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric developed by teacher will be used for assessment.</p>

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Unit 2: Line

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How does the artist define the element of line in Craft?</p> <p>What activity, art design, uses Line?</p>	<p>To Define line and differentiate the effects of different types of line in crafts.</p> <p>NJCCCS# 1.1, 1.2, 1.3, 1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Acquire art vocabulary related to line. • Differentiate the effects of different types of line in crafts • Identify types of line that occur in various crafts. • Create crafts using line as a foundation. 	<p>1. Wire sculpture. Student will create a wire sculpture of either a static inanimate object, person in a static or gesture pose, or an animal.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 3: Color and Value

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What are the characteristics of color and value as an art element in craft?</p> <p>How can color be organized and used in crafts?</p> <p>How can we use color and value for expression in crafts?</p>	<p>Students will understand and use color and value as an art element in a variety of crafts.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Name and define the characteristics of color: hue, intensity, value. • Describe various categories and organizations of color: color wheel, warm and cool colors and color schemes. • Understand the use of color and value as an art element in a variety of crafts. 	<ol style="list-style-type: none"> 1. Create a custom designed color wheel with colored pencil, Value scales, and color harmonies. 2. Art vocabulary related to color and value will be included with the activity. 3. Create a custom designed color wheel, in paint, that can be used as a reference for applying color to craft projects. 	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 4: Shape and Form

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How does the artist use the element of shape and form for creative expression in the creation of crafts?</p> <p>What are the differences in free-form, geometric and organic shapes?</p> <p>What are positive and negative shapes?</p> <p>What are the three dimensional characteristics of form?</p>	<p>Students will use shape and form for creative expression in a variety of media.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Define shape and form. • Distinguish between geometric, free form and organic shapes • Understand the three-dimensional characteristics of form. 	<p>1. In the fall – Pumpkin sculpture: Create 2D drawings and translate to 3D with red or modeling clay. Pumpkin will be hollowed out to carve the Jack O'Lantern. Finish with acrylic paint.</p> <p>2. Watercolor painting. Shape fall related organic objects, like pumpkins, corn stalks, leaves, with watercolor paint.</p> <p>3. Art vocabulary related to color and value will be included with the activity.</p> <p>4. Second half year- Coil pots, or, animal sculpture, Oaxaca or other.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 5: Space

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How do we incorporate space, the element of art that indicates areas between, around, above, below or within something in Crafts?</p>	<p>The study of space and the perception of spatial relationship will be introduced to the students in a numbers of interesting ways. NJCCCS#: 1.1,1.2,1.3,1.4 The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Understand and use various ways to create the illusion of space on a two dimensional surface. • Use and understand the concept of negative space 	<ol style="list-style-type: none"> 1. Art vocabulary related to space will be included with the activity. 2. Students will create an original visual image using colored construction paper that will demonstrate that all spaces within a work of art have their own unique shapes. 	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 6: Texture

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPI/s)	Activities	Assessments
<p>What is Texture?</p> <p>What is the difference between simulated (visual) and tactile texture?</p> <p>How can this element of art, texture, be used as an expressive power in crafts?</p>	<p>Students will explore ways to create texture using both two and three-dimensional art media.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Identify various textures in natural and human-made environments. • Identify texture in a variety of crafts, both two and three-dimensional art media. • The expressive power of texture as an art element. 	<ol style="list-style-type: none"> 1. Art vocabulary related to space will be included with the activity. 2. Sand Art: Students will fill in Egyptian art design with glue and sand, with attention to applying the previously learned color harmonies. 3. Will view historical pictures, and video (if available), of Egyptian art to understand how color was used. <p>Or...</p> <ol style="list-style-type: none"> 4. Scratch art: Complete a design on scratch art paper, with the black (or other color) empty space used to understand implied texture through hatching, cross hatching, stippling. 	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 7: Pattern

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How do artists create unity and in artworks?</p>	<p>The students will use several strategies in their crafts. NJCCCS#: 1.1, 1.2, 1.3, 1.4 The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Identify proximity, the tendency to see things that are overlapped, touching or grouped. • Organize things based on their similarity in color, value texture, shape or form. • Observe continuation, the flow of vision directed by lines, shapes and arrangement of elements. 	<p>1. Tessellations – Create a tessellation out of paper. Using two colors to make a checkerboard like pattern.</p> <p>Instructional Media: Watch a related video on how to create such a design.</p> <p>Or...</p> <p>2. Create a Fraktur, a folk art craft developed by Pennsylvania Germans</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 8: Emphasis

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How does the artist create emphasis in an artwork?</p>	<p>The students will use a combination of methods to focus attention on a specific area of their artwork.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Understand and explain that a focal point is the part of an artwork that viewers tend to notice first • Observe and describe how artists create emphasis in an artwork through contrast. 	<p>1. Create a plaque by tooling metal through embossing and repousse techniques. Emphasize the focal point by raising the metal and contrasting other areas by pressing into the metal and oxidizing the surface.</p> <p>Motivation: Study the ancient art of embossing or pressing shapes into metal to create a design..</p> <p>Materials: metal foil, oxidizer, embossing tools, foam pads.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 9: Balance

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How do artists make adjustments to their artworks so that they appear balanced to viewers?</p>	<p>Students will explore various ways to achieve balance in their artworks. NJCCCS#: 1.1,1.2,1.3,1.4 The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Understand and explain how balance in design can create a sense of stability in an artwork. • Identify and describe symmetrical, asymmetrical, radial, and dynamic balance. 	<p>1. Create a mobile on the style of Alexander Calder. Students will understand how objects are needed to balance others. Motivation: view video, Alexander Calder. Materials: Wire, plastic. Or...</p> <p>2. Dream Catchers; review the folklore of Native American dream catchers. Students will create a radial symmetry design. Motivation: examples Materials: plastic ring, fibers, feathers, charms.</p> <p>3. Chinese Brush Painting/Sumi: Create dynamic balance in the traditional style. Motivation: History, and examples. Materials: Ink, brush, pen and paper.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 10: Variety

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How do variety and repetition add interest to crafts.</p> <p>What is pattern?</p>	<p>Students will use repetition and pattern effectively in their productions.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Define pattern. • Recognize patterns in art, nature and the constructed environment. • Perceive and understand how artists use a variety of patterns within their artworks. 	<p>1. Oaxaca figures: Fabricate typical Mexican Oaxaca figures wrapping plaster gauze around a wire. armature, or, using modeling clay. Paint the figures in the typical style of bright colors and beautiful repeating patterns</p> <p>Motivation: Folk Art of Mexico, show examples of Oaxacan Crafts.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 11: Rhythm and Movement

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What are the three methods for creating rhythm in artworks?</p> <p>What is implied movement?</p> <p>What is Optical Art?</p>	<p>Students will explore a variety of ways to use the principles of rhythm and movement in their artworks.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> • Use a repeating element in their design to create movement • Repeat more than one element to create an alternating rhythmic pattern • Use progression by gradually changing an element • Capture a moment in time that implies a relationship to time and movement. 	<p>1. Marbleizing on Paper to recognize marbling as a decorative art shoeing movement. Use this technique to create a book cover. Materials: paper, marbling paints and gel water.</p> <p>2. Basketry one of the oldest crafts, predating pottery, has been practiced throughout history in every culture. Create a basket identifying the rhythm and movement by using a repeating pattern Materials: reed, sea grass, dyes.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

Unit 12: Unity

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CP/Is)	Activities	Assessments
<p>What is the distinction between proportions and scale?</p> <p>How can changes in scale and proportion be used to express ideas, feelings and moods in crafts?</p>	<p>Students will examine and explore the principle of proportion through a variety of two and three-dimensional crafts.</p> <p>NJCCCS#: 1.1,1.2,1.3,1.4</p> <p>The Students Will Be Able To:</p> <ul style="list-style-type: none"> Define Unity, and understand how all the Elements and Principles of art work and come together for the given project. 	<p>Board Game: Design a board game on paper using all elements of art while considering mixed media.</p> <p>Construct 3D playing field and pieces while considering all aspects of function and strategy.</p> <p>Materials: Foam board, markers, paint, colored pencils, paper, rulers, craft sticks, pipe cleaners, etc.</p> <p>Or, Other project idea.</p>	<p>Teacher observation, class participation grade.</p> <p>Conduct a final class critique/discussion of completed student craft works.</p> <p>A rubric will be used for assessment by the student to do a self critique, and the teacher.</p>

New Jersey Core Curriculum Content Standards

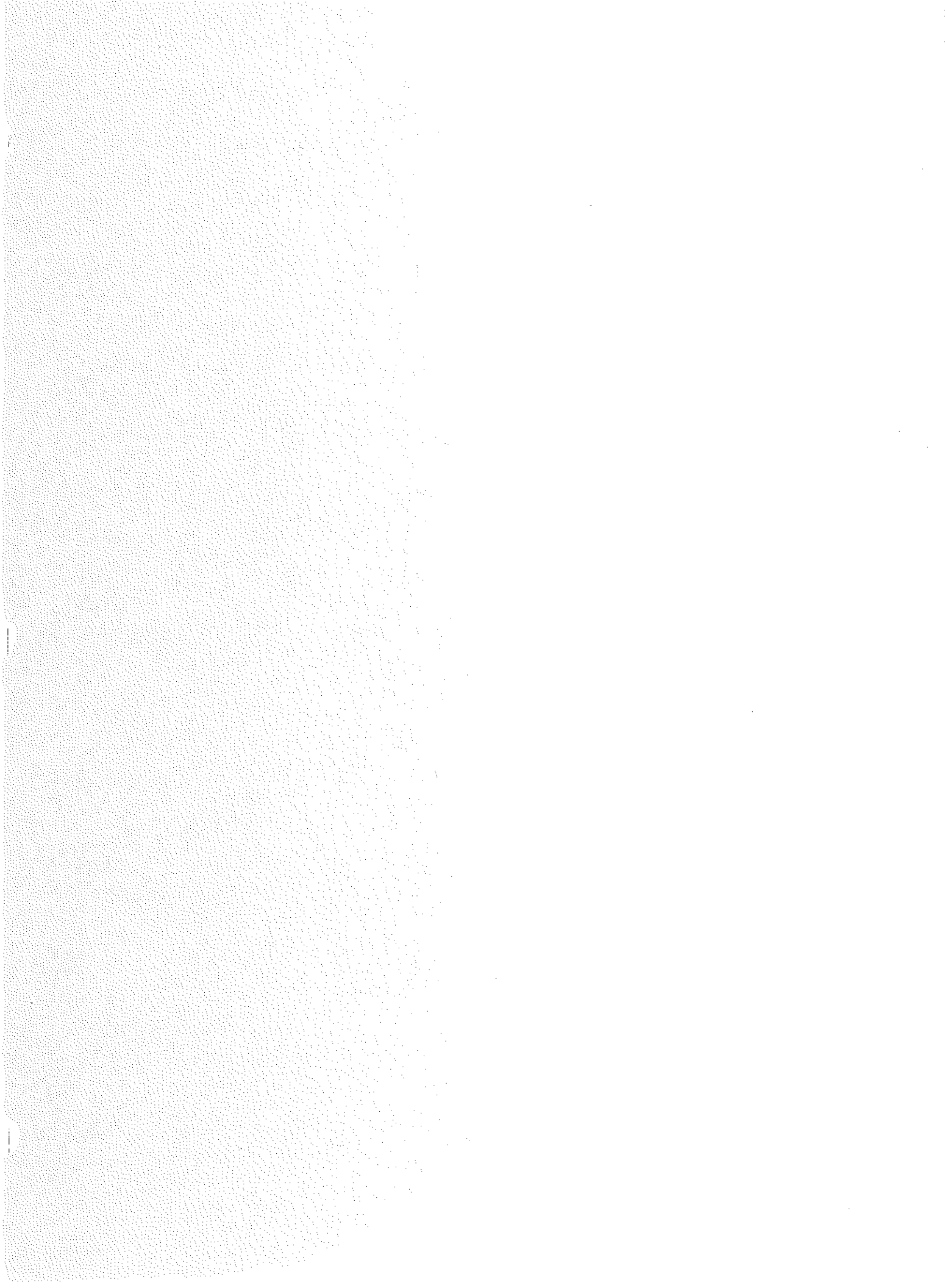
Academic Area

Visual and Performing Arts

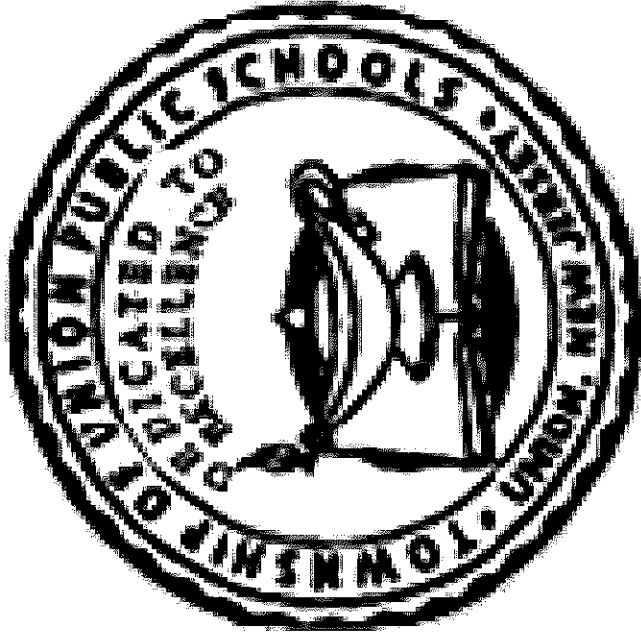
- 1. Standard 1.1 The Creative Process:** All students will demonstrate an understanding of the elements and principles that govern the creation of works of art in dance, music, theatre and visual art.
- 2. Standard 1.2 History of the Arts and Culture:** All students will understand the role, development and influence of the arts throughout history and across cultures.
- 3. Standard 1.3 Performing:** All students will synthesize skills, media, methods and technologies that are appropriate to creating, performing, and/or presenting works of art in dance, music, theatre and visual art.
- 4. Standard 1.4 Aesthetic Responses & Critique Methodologies:** All students will demonstrate and apply an understanding of arts philosophies, judgment and analysis to works of art in dance, music, theatre and visual art.

Rubric

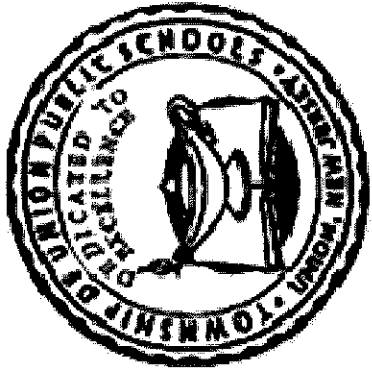
1. Expressiveness of theme/idea
2. Originality (does not use trite, overused symbols)
3. Technical use of medium/execution/skill in handling tools and materials
4. Composition (use of design Elements and principles)
5. Visual complexity/details
6. Experimentation with new combinations of materials
7. Transfer of learning to new situations
8. Effort/interest in project (amount of thought, planning, time, care)
9. Followed instructions, consistency in the final product, use of the medium.
10. Completed project on time



TOWNSHIP OF UNION PUBLIC SCHOOLS



AP Photography AR 409 1 & 2
Curriculum Guide
2016



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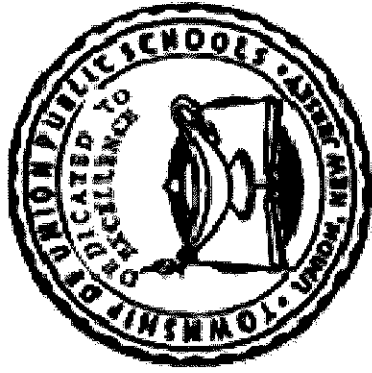
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Art/Music	Mr. Ronald Rago

**Curriculum Committee
Academic Area**

**AP Studio Art/Photography
2010**

AP SCHOOL CODE 311510

Janet Gabriel

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Mission Statement

The Township of Union Board of Education believes that every child is entitled to an education designed to meet his or her individual needs in an environment that is conducive to learning. State standards, federal and state mandates, and local goals and objectives, along with community input, must be reviewed and evaluated on a regular basis to ensure that an atmosphere of learning is both encouraged and implemented. Furthermore, any disruption to or interference with a healthy and safe educational environment must be addressed, corrected, or when necessary, removed in order for the district to maintain the appropriate educational setting.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- Develop reading, writing, speaking, listening, and mathematical skills.
- Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.
- Acquire and use the skills and habits involved in critical and constructive thinking.
- Develop a code of behavior based on moral and ethical principals.
- Work with others cooperatively.
- Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.
- Acquire a knowledge and understanding of the physical and biological sciences.
- Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.
- Appreciate and understand literature, art, music, and other cultural activities.
- Develop an understanding of the historical and cultural heritage.
- Develop a concern for the proper use and/or preservation of natural resources.

Course Description

The Advanced Placement Program in Photography is intended for the student who is interested in a serious study of photography. Students need to be highly motivated and willing to work intensely in and outside the classroom, beyond the regularly scheduled periods. The scope of the course work is the equivalent of an introductory college course in photography.

The curriculum is designed to allow students the opportunity to create a portfolio that will show fundamental competence in the creation of photography, as well as an understanding of aesthetic issues within an area of studio art/photography.

The course work for AP Photography requires the completion of extensive pre-course summer assignments. Students will be required to shoot 5 rolls of film over the summer to begin their area of concentration. Students will explore a wider range of aesthetic issues as well as varied photographic techniques. The Concentration Section of the College Board Portfolio is also constructed and developed around an initial exploratory piece. Second semester work focuses on the completion of the Concentration Section as well as the Breadth Section and the final draft of the Commentary.

Throughout the course elements and principles of design, expressive content and developing technical skill will serve as criteria for assessment of student progress. Students will be able to analyze the components of a good photograph, and be able to critique their own work and the work of fellow students. Art criticism is a required aspect of this course and provides a way to constantly edit and improve each portfolio.

Recommended Textbooks

The Photographic Eye, Learning to See with a Camera

Michael O'Brien and Norman Sibley

High Contrast

J. Seeley

Bystander: A History of Street Photography

Colin Westerbeck and Joel Meyerowitz

Looking at Photographs

Jacques Lowe

Course Proficiencies

Students will be able to...

Create a body of work that meets the requirements of the AP Studio Art Exam.

Create work that will also meet the New Jersey State Core Curriculum Standards.

Complete the Section on Concentration which is an in-depth, personal commitment to a particular artistic/photographic concern.

Complete the Section on Breadth with twelve photographic images that demonstrate the student's proficiency in both technical and creative skill.

Make a selection of five quality pieces from their work and mat them for presentation.

Write a commentary describing in detail their original photographic idea and the means in which they completed their task.

Complete all requirements for the AP Studio portfolio and be able to digitally send their body of work to AP Exam Board.

Curriculum Units

Unit 1: Overview/Requirements

Unit 2: Concentration

Unit 3 Breadth

Unit 4: Critique/Commentary

Unit 5: Quality

Unit 6: Preparation of the Portfolio for AP Exam

Pacing Guide- Course

<u>Content</u>	Number of Days
<u>Unit 1: Overview</u>	2 weeks
<u>Unit 2: Concentration</u>	15-18 weeks
<u>Unit 3: Breadth</u>	6-8 weeks
<u>Unit 4: Critique/Commentary</u>	3 weeks
<u>Unit 5: Quality</u>	3-5 weeks
<u>Unit 6: Preparation of the Portfolio</u>	3-4 weeks

Unit 1:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What are the requirements for the AP Studio/photography Portfolio?</p> <p>What are the three areas of work students must complete for their portfolios?</p> <p>What importance does the commentary play in one's portfolio?</p>	<p>C.C.S. 1.4. 12.A.1,2. 1.1.12.D.1</p> <p>Students will be able to understand the benchmarks and challenges that the AP Photography portfolio presents.</p> <p>Students will be able to know the different work needed for each section of their portfolio; Concentration, Breadth, and Quality.</p>	<p>Handouts of guidelines and information from the AP College Board.</p> <p>Presentation of timeline to complete different areas of exam.</p> <p>Review previous work to see what meets the criteria for the portfolio.</p> <p>Begin first draft of a commentary.</p>	<p>Written assignments on what constitutes an AP Portfolio.</p> <p>Brainstorming to begin ideas for concentration.</p> <p>One on one meeting to see that each student understands requirements and is prepared to start their work.</p> <p>Students are required to keep a written journal where they will write about their experiences and new ideas.</p>

Unit 2:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What ideas can one pursue for their concentration?</p> <p>What challenges can this in depth exploration of a subject present?</p> <p>What goals, time frame should be developed?</p> <p>What choices as far as both technical and creative skill must I make?</p>	<p>C.C.S. 1.1.12,D1,D2 1,3.12D.1 1.3.12.D.5</p> <p>Students will be able to select an idea to explore for their concentration.</p> <p>Students will be able to use previous technical and creative skills in their development of their central idea and also be developing new skills.</p>	<p>Students will begin to brainstorm what are possible people, places or things to shoot.</p> <p>Students will plan and execute a storyline and exploration of one of their ideas.</p> <p>Students will begin their photography study by focusing on the process of investigation, growth and discovery.</p> <p>Students will continue to shoot their idea until a completed investigation encompasses 12 final works of art.</p>	<p>Several critiques will take place. One on one critique with teacher. Group critique.</p> <p>Written essay by student explaining the development of their concentration.</p> <p>Exploration of new directions and ideas.</p> <p>A beginning commentary on what their goals are and their own creative process.</p> <p>Work will be graded when finished on both technical and creative skills.</p>

Unit 3:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What constitutes the Breadth section of the AP Studio/Photography Exam?</p> <p>What different techniques can I use to show a broad understanding of the field of photography?</p> <p>What work have I produced that could be considered as a Breadth piece?</p> <p>What new ideas can I photograph that would define my artistic vision and show the integration of art elements and design?</p>	<p>C.C.S. 1.3.12.D.5 1.4,12A.1 1.1.12.D.2</p> <p>Students will be able to showcase a variety of skill and creative ability by using different photographic techniques and styles.</p> <p>Students will be able to complete the required 12 finished photographs for this section of the AP portfolio.</p> <p>Students will be able to work in both traditional black and white film photography and digital imaging for this section.</p>	<p>A hand out of ideas for this section will be provided.</p> <p>Students then will create their own list of Breadth photo pieces that they will create.</p> <p>Students will use techniques such as; high contrast, digital, hand color, sepia-toning, blue toning, and surrealism to demonstrate that they have mastered different photo techniques both technically and creatively.</p> <p>Students will work to complete the 12 pieces required for this section.</p>	<p>Critique by teacher.</p> <p>Student self-evaluation.</p> <p>Written report by students describing the different techniques used.</p> <p>Finished 12 photographs will be graded as a body of work.</p>

Unit 4:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>How does my selection of my final images communicate visually what I have been exploring for the past several months?</p>	<p>C.C.S. 1.3,12.D.1 1.2,12.D.2 1.1,12.D.1</p> <p>Students will be able to write a commentary in their own words that describes the creative process that they explored while completing the concentration section of their portfolios.</p>	<p>Students will write several drafts throughout the school year.</p> <p>They will revise and re-write their commentary until it is a descriptive analysis of their artistic choices and the path that led to the selection of their final 12 photographic images for their Concentration section of their AP Portfolio.</p>	<p>Teacher will evaluate their written drafts and offer suggestions on their compositions.</p> <p>Final commentary will be read aloud to the class during a critique of the student's concentration.</p>
<p>How will my journal assist me in writing my commentary?</p>	<p>Students will answer in their essay two questions presented by the AP College Board. Students will be able to write about their challenges, set backs and successes.</p>		
<p>How will a critique help me to produce a commentary that reflects my artistic endeavor?</p>	<p>They will tell the story of goal setting and the means that they used to achieve those goals.</p>		

Unit 5:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
<p>What is the criteria for a work of Quality for the AP Studio Exam?</p> <p>How do I select 5 pieces of art to send to the examiners?</p> <p>How is the work to be presented to the AP Examiners?</p>	<p>C.C.S. 1.4.12.A.1 1.1.12.D.2 1.2.12.A.2</p> <p>Student will be able to understand that the Quality Section of the AP exam is looking for work that demonstrates excellence in original artwork/photography.</p> <p>Students will be able to select their 5 best photographs and prepare to send them as the third requirement for the exam.</p>	<p>Students will begin to select their best work from either their concentration or their breadth sections.</p> <p>They will choose 5 final works that they will then mount or mat for presentation to the AP Board.</p> <p>Students will be able to professionally mat their 5 pieces of work ranging in size from an 8"x10" to an 11"x14" photograph.</p>	<p>Student's 5 best photographs will be matted by students and presented to the teacher for an evaluation.</p> <p>Students will be graded on their selection and presentation of their Quality Section for the AP Studio Art Exam.</p>

Unit 6:

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CP/Is)	Activities	Assessments
<p>How do I prepare to send my photographs and written commentary to the AP Board for grading?</p> <p>How do I register online in order to submit my Concentration and Breadth Sections?</p> <p>How will my artwork/photographs be labeled and safely sent?</p>	<p>C.C.S. 1.3.12.D.1 1.3.12.D.2 1.3.12.D.3</p> <p>Students will be able to prepare their portfolios for shipping.</p> <p>Students will be able to have mounted all artwork for Quality being sent via mail.</p> <p>Students will learn how to scan in their Concentration and Breadth Sections and submit it digitally on the computer.</p>	<p>Students will scan in their 12 Concentration and 12 Breadth Sections on the computer.</p> <p>They will then send them via email to the teacher for final approval.</p> <p>If approved, digital images will be forwarded to the AP School Coordinator who then sends the portfolio on to the Exam Board.</p>	<p>Teacher will evaluate each section of the AP Portfolio. The three sections are: Concentration, Breadth and Quality.</p> <p>If any section is incomplete or needs to be reworked the portfolio is returned to the student for further work and then re-submitted to the teacher.</p>

New Jersey Core Curriculum Content Standards
Academic Area

Standard 1.1 **The Creative Process:** All students will demonstrate an understanding of the elements and principles that govern the creation of art in dance, music, theatre, and visual art.

Standard 1.2 **History of the Arts and Culture:** All students will understand the role, development, and influence of the arts throughout history and across cultures.

Standard 1.3 **Performance:** All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and presenting works of art in dance, music, theatre, and visual art.

Standard 1.4 **Aesthetic Responses and Critique Methodologies:** All students will demonstrate and apply an understanding of arts, philosophies, judgment, and analysis to works in dance, music, theatre and visual art.

New Jersey Scoring Rubric

Students will be assessed by the following means:

Critique with fellow classmates.

Critique, one on one with the teacher.

The requirements for both the AP Studio Art Portfolio and the New Jersey Core Curriculum Standards.

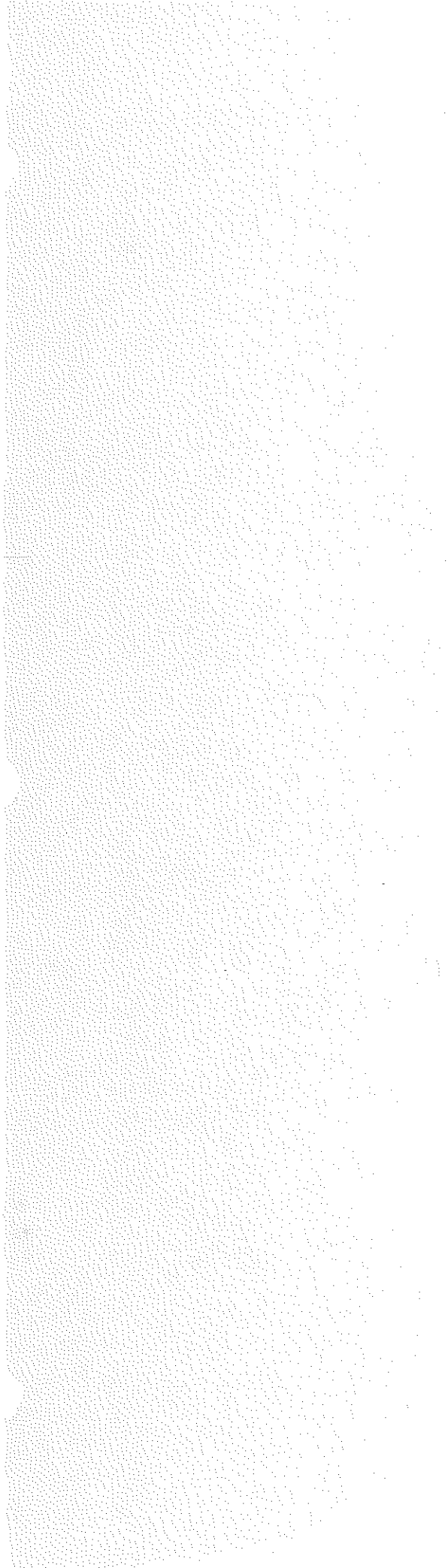
Benchmarks for students to reach during the course of the year.

Written essays on their area of concentration and what they are trying to achieve.

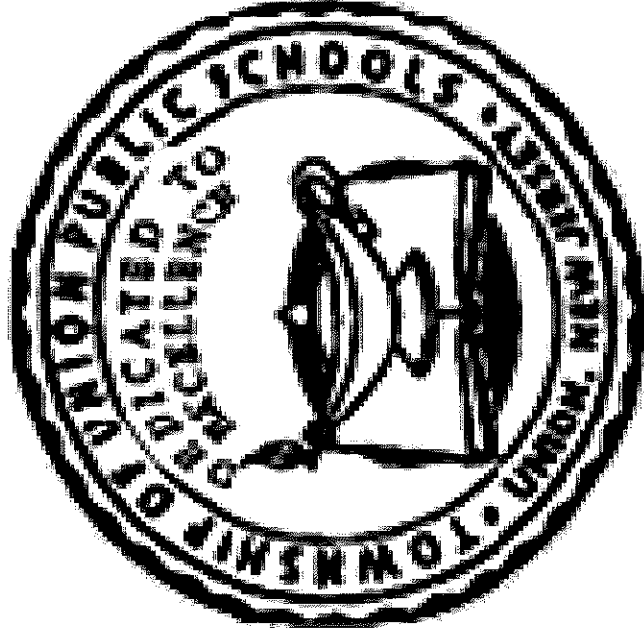
Grading of photographic work in progress as it relates to both technical and creative skill in each content area.

Students will be required to keep a journal to record their experiences and their own artistic journey.

Students will use self-reflection to evaluate their work answering specific questions on their progress.



TOWNSHIP OF UNION PUBLIC SCHOOLS

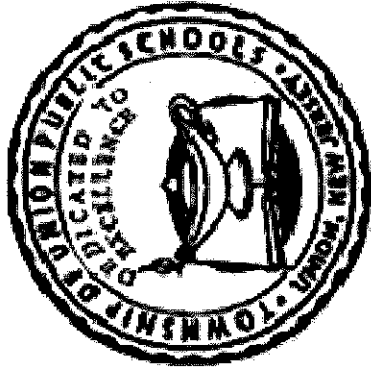


Chorus/ Grade 5

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Angel Salcedo
Nancy Zuena



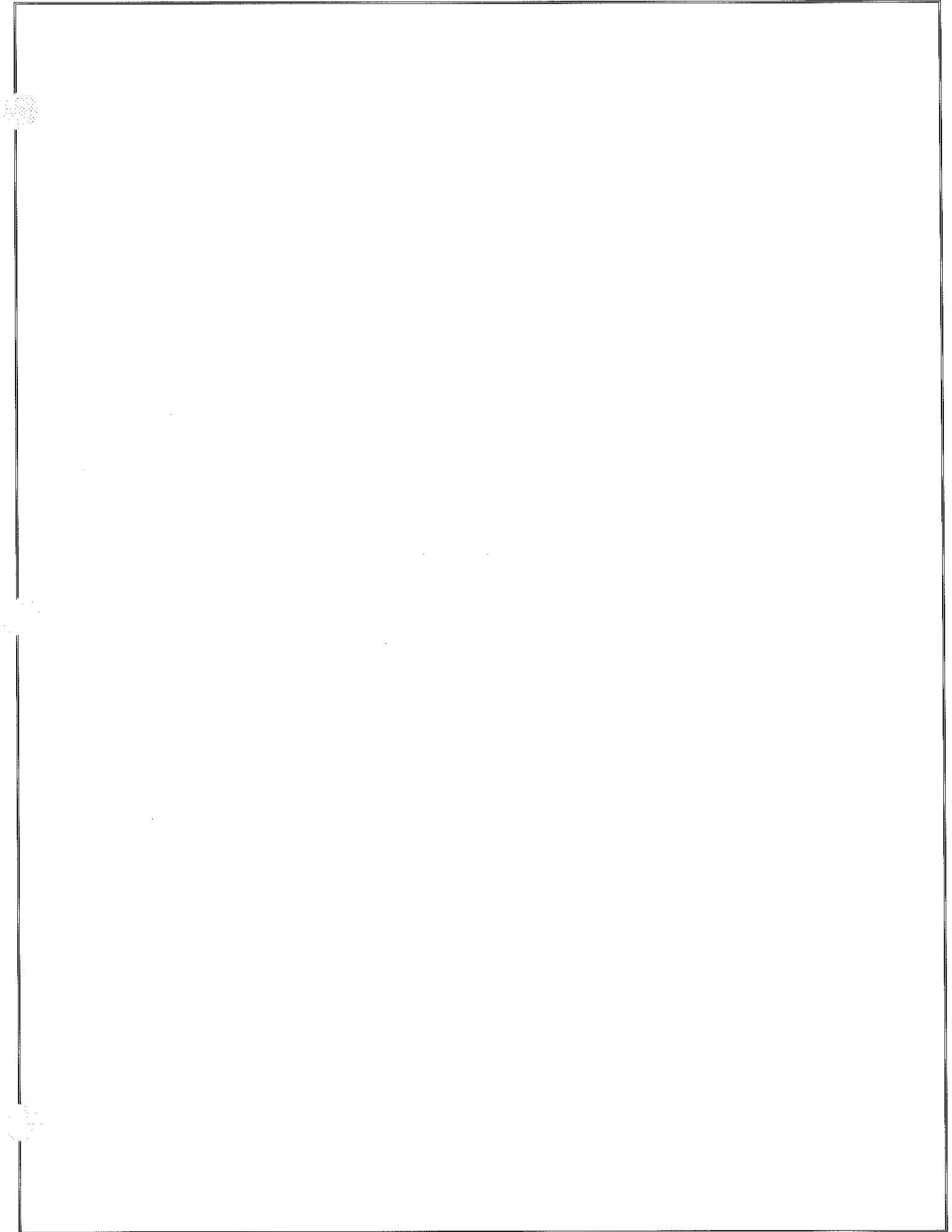
TOWNSHIP OF UNION PUBLIC SCHOOLS
Administration

Superintendent: *Mr. Gregory Tatum*
Asst. Superintendent: *Dr. Noreen Lishak*
Asst. Superintendent: *Annie Moses*
School Business Administrator/Interim Board Secretary: *Manuel E. Vieira*
Director Of Personnel: *Gerry Benaquista*
Director Of Special Projects: *Ann Hart*
Director Of Special Services: *Kim Conti*
Director Of Athletics, Physical Education and Nurses: *Linda Ionta*
District Security: *Nick Ardito*

DEPARTMENT SUPERVISORS

School Counseling K-5: *Nicole Ahern*
Special Services Pre-K-8: *Kristin Szawan*
Special Services 9-12: *Joseph Seugling*
Special Services Pre-K-8: *Frank Santora*

Pre-K-2 English/Math/Science/ SS: *Maureen Corbett*
Social Studies 6-12/Business 9-12: *Libby Galante*
English 2-5/Social Studies 2-5: *Robert Ghiretti*
Science 6-12/NCLB: *Maureen Guilfoyle*
Career Ed/World Language/ ESL: *Yvonne Lorenzo*
English 6-12: *Randi Moran*
Math 2-5/Science 2-5: *Theresa Matthews*
Math 6-12: *Jeremy Cohen*
Art/Music K-12: *Ron Rago*





**Curriculum Committee
Academic Area**

Nancy Schoenberger/Julie Melchior

Grade 5 Chorus

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Mission Statement

The mission of the Township of Union Public Schools is to build on the foundations of honesty, excellence, integrity, strong family and community partnerships. We promote a supportive learning environment where every student is challenged, inspired, empowered, and respected as diverse learners. Through cultivation of students' intellectual curiosity, skills, and knowledge, our students can achieve academically and socially, and contribute as responsible and productive citizens of our global community.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principals.**
- **Work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**
- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation.**

Course Description

Grade 5 Chorus is a full year course that meets once a week, and is designed to guide the young musician through a vocal training and literacy program. Chorus involves progressive course of study in fundamentals of music, singing technique and performance. Through choral repertoire, students will explore their vocal potential, as well as; develop their music vocabulary and general music theory.

The listed materials should be used as guidelines and are subject to the discretion of the individual teacher. This course is outlined according to the New Jersey Core Curriculum Standards for Visual and Performing Arts. Time frames are formatted to serve as a guide, but may be adjusted according to schedules.

Recommended Textbooks

1. Successful warm-ups: Book 1: Nancy Telfer.
2. Complete elementary choral music guide: Donald W. Roach

Course Proficiencies

Students will be able to...

1. Study a variety of styles and languages through classroom literature reinforced by listening to recordings and watching videos.
2. Develop performance etiquette (poise, presence, concert attire.)
3. Increase individual performance ability in relation to proper tone production and auditory perception.
4. Increase music reading and literacy skills.
5. Perform quality choral literature of various levels.
6. Develop and increase the skills of critique and evaluation in relation to their individual, as well as, the full ensemble performance.

Curriculum Units

Unit 1: Week # 1 – 4 Choral Fundamentals

1. Review General music terms and symbols.
2. Test all voices.
3. Introduce warm ups and repertoire.

Unit 2: Week # 5 – 8 Vocal Repertoire

1. Introduce “solfeggio”
2. Discuss tempo and dynamics
3. Continue teaching and rehearsing choral repertoire.

Unit 3: Week # 9 – 12 Vocal/ Theory Testing

1. Review music.
2. Test individual voices and small groups.
3. Test theory and vocal anatomy.

Unit 4: Week # 13 – 15 Concert Preparation

1. Finalize all music.
2. Combine groups
3. Review choreography and instruments
4. Rehearse concert logistics.

Unit 5: Week # 16 Critique and Evaluation

1. Watch concert performance.
2. Critique both individual and full ensemble performance.

Unit 6: Week # 17- 36 Choral Fundamentals (Vocal Repertoire)

1. The second semester will be taught in the same format as weeks # 1 – 16.
2. Different music will be taught and performed

Pacing Guide- Course

<u>Content</u>	<u>Number of Days</u>
<u>Unit 1:</u> Week # 1 – 4 Choral fundamentals	15 - 20
<u>Unit 2:</u> Week # 5 – 8 Vocal repertoire	15 - 20
<u>Unit 3:</u> Week # 9 – 12 Vocal repertoire/Testing	15 - 20
<u>Unit 4:</u> Week # 13 – 15 Concert preparation/Performance	15 - 20
<u>Unit 5:</u> Week #16 Critique and evaluation	5
<u>Unit 6:</u> Week # 17 – 36 (Same as week # 1 – 16)	2 marking periods

Unit 1: Week # 1-4 Choral Fundamentals (1.1., 1.2, 1.3)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Review general music terms and symbols. • Discuss the physical techniques of the human voice. • Review proper breathing and posture. • Introduce warm up book and all exercises. • Test all students for voice placement. 	<ul style="list-style-type: none"> • Distribute a notebook to be used for music theory. • Place the terms: staff, bar lines, measure, treble clef, time signature, note and rest values, repeat signs. • Begin warm ups on open vowels focusing on relaxed jaw and rounded tones. • Begin "successful warm up. Each week, a new exercise will be included. • Test all student voices for placement in either soprano or alto. • Discuss and demonstrate: Head voice and falsetto. • Introduce the choral repertoire in Weeks # 3-4. 	<ul style="list-style-type: none"> • Level 1: Students will be able to identify at least 5 music terms and symbols both in their notebooks and in the music. • Level 2: Students will be able to identify and define at least 5 – 10 music terms and symbols both in their notebooks and the music. • Level 3: Students will be able to identify and define all music terms and symbols both in their notebooks and on the music.

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments

Unit 2: Weeks # 5 – 8 Vocal Repertoire (1.1, 1.2, 1.3,)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Continue to develop proper vocal technique and music reading skills. • Teach choral repertoire focusing on proper diction, placement of all vowel, consonant and consonant blends. • If applicable, teach pronunciation and diction of any foreign language. 	<ul style="list-style-type: none"> • Continue with "Successful warm ups." • Review note and rest values for rhythmic accuracy. • Discuss the tempo and dynamic markings in each selection. • Rehearse any music that is complete, from memory. • Identify any sharps and flats and teach the concept of key signatures. 	<ul style="list-style-type: none"> • Level 1: Students will perform the concert selections with all tempo and dynamic changes. Depending on the number of selections, at least one should be memorized in week # 8. • Level 2: Students will perform the concert selections with all tempo and dynamic changes. Depending on the number of selections, at least 2 – 3 should be memorized in week # 8.

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Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Introduce any tempo and dynamic terms. • Point out sharps and flats, then introduce "key signatures." • Review proper phrasing: legato, staccato accents. 		<ul style="list-style-type: none"> • Level 3: Students will perform the concert selections with all tempo and dynamic changes, and identify the key signatures. At least 3 – 4 selections should be memorized in week # 8.

Unit 3: Weeks # 9 – 12 Vocal Repertoire and Testing (1.1., 1.2, 1.3)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Continue vocal warm ups and concert music. • Begin to add in any choreography and instruments. • Review music terms and symbols for testing. 	<ul style="list-style-type: none"> • Complete all concert music and begin to add in any movement and instruments. • During weeks # 11 – 12 all chorus students will be tested. • Students will be tested individually or in small groups. • Test for pitch and rhythmic accuracy, blend, balance and proper execution of phrasing, tempo and dynamic markings. 	<ul style="list-style-type: none"> • Level 1: Students will be able to sing through concert selections and in combination with the written theory test, should achieve a grade of at least 2 (70 – 79%) • Level 2: Students will be able to sing through concert selections and in combination with the written theory test, should achieve a grade of at least 2 – 3 (70 – 89%)

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Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
		<ul style="list-style-type: none"> Students will also be tested on music theory and general choral terms and application. 	<ul style="list-style-type: none"> Level 3: Students will be able to sing through concert selections and in combination with the written theory test, should achieve a grade of at least 3 – 4 (85 – 100%)

Unit 4: Week # 13 – 15 Concert Preparation and Performance (1.1, 1.2, 1.3, 1.4)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Proper performance skills. • Concert logistics. • Finalize all concert repertoire. 	<ul style="list-style-type: none"> • During these final rehearsals, review proper posture, etiquette attire. • Combine all students and place in order on the risers. • Rehearse both the entrances and exits to and from the risers. 	<ul style="list-style-type: none"> • Since all students perform together, each level 1, 2, and 3 will be equally responsible for their performances. • Tiered level assessments will be determined through the previous weeks of testing.

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Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
		<ul style="list-style-type: none"> • Finalize all lighting and sound (if applicable.) • Warm up and rehearse all concert selections. • Review concert attire, arrival time and place, and attendance policy. 	

Unit 5: Week # 16 Critique and Evaluation (1.1, 1.3, 1.4)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Listen to or review the concert performance. • Discuss criteria of critique and evaluation. • Point out positive and negative aspects of the concert. 	<ul style="list-style-type: none"> • All chorus classes will listen to or view the concert performance. • In their notebooks, they will chart the topics to be evaluated: pitch and rhythmic accuracy, tempo, dynamics, phrasing, overall timbre, choreography and stage presence. 	<ul style="list-style-type: none"> • Level 1: Students will rate at least 4 – 5 topics. • Level 2: Students will rate at least 5 – 7 topics. • Level 3: Students will rate all the topics.

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
		<ul style="list-style-type: none"> • Students will rate each of the criteria both on their individual performance and the full ensemble. • Discuss, as a class, the positive qualities and areas in need of improvement. 	

Weeks # 17 – 36 Choral Fundamentals Repertoire, Performance and Critique
Unit 6: (1.1, 1.2, 1.3, 1.4)

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
	<ul style="list-style-type: none"> • Introduction of new choral repertoire, warm ups, basic sight singing and ear training skills. 	<ul style="list-style-type: none"> • All chorus classes will follow the same format as designated in weeks # 1 – 16. • Students will continue music theory and all proper vocal technique. • Students will be tested during week # 24 – 25. 	<ul style="list-style-type: none"> • All levels of assessment will be formatted according to week # 1 – 16.

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments
		<ul style="list-style-type: none"> • Review all concert procedures in preparation for the spring concert. • Following the same format for critique and evaluation from week # 16. • Discuss the positive qualities and improvements made. 	

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New Jersey Core Curriculum Content Standards
Academic Area

Standard 1.1 "The Creative Process." All students will use aesthetic knowledge in the creation of and in response to dance music, theater and visual arts.

Standard 1.2 "Creating and Performing" All students will understand and analyze the development and continuing influence of the arts in relation to world cultures, history and society.

Standard 1.3 "Elements and Principles Of The Arts." All students will demonstrate an understanding of the elements and principles of dance, music, theater and visual arts.

Standard 1.4 "Aesthetic Responses and Critique Methodologies." All students will develop, apply and reflect upon knowledge of the process of critique.

