ROBBINSVILLE PUBLIC SCHOOLS

OFFICE OF CURRICULUM AND INSTRUCTION

Mathematics Department

Algebra 1

Board of Education

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BOARD OF EDUCATION INITIAL ADOPTION DATE:

Course Philosophy

The content of a mathematics course is brought to life when the student is involved in investigating real-world applications using inductive reasoning, cooperative learning, and critical thinking skills. To be able to communicate effectively in mathematics, a student needs to have a conceptual understanding of the mathematical topics. Use of technology and the use of real-world data will expand the students' mathematics experience so that they are able to solve real problems, reason effectively, make logical connections, and think mathematically.

Course Description

Algebra I will introduce and develop essential algebraic insights and competencies through in-depth instruction and a cooperative learning environment. At the completion of the course, students will understand operations with algebraic symbols, elementary set theory, solutions of linear equations and inequalities including those involving systems, graphing algebraic functions and relationships, exponents, polynomials and factoring, quadratic functions, rational and radical expressions, elementary statistics, and probability. Problem solving and critical thinking skills are emphasized throughout the course. Students will learn the applications of the graphing calculator.

Core Materials	Supplemental Materials
• Algebra 1 Common Core (Pearson Education)	 Desmos Graphing Calculator IXL and other online resources Peardeck Google Tools Microsoft tools

Social Emotional Learning Connections

Below are the five core SEL Competencies as outlined by CASEL, and examples of how each may be addressed within this curriculum

Self-awareness: The ability to accurately recognize one's emotions and thoughts and their influence on behavior. This includes accurately assessing one's strengths and limitations and possessing a well-grounded sense of confidence and optimism.

Example 1: Students will self-reflect on their performance and understanding of the day's topics via exit slips **Example 2:** Students will be given warm-ups that include common errors on recent graded assignments. The will then be able to compare to their own assignment or assessment and determine if they are making similar errors or did not make those errors, seeing where their strengths are and level of understanding on the topic.

Self-management: The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working toward achieving personal and academic goals.

Example 1: Through the use of projects, whether they are group projects or individual projects, in which they can monitor their own progress through checkpoints.

Example 2: Students will be given time in class to work independently or with a group on class assignments. They must monitor their time to make sure they complete their assignments on time.

Social awareness: The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.

Example 1: Students will work with groups to complete group work or projects. These students will be of diverse backgrounds and will work together to complete the assignments.

Example 2: In certain topics, students will be able to research about different cultures within the probability/data analysis unit or with exponential or quadratic applications.

Relationship skills: The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.

Example 1: Students will be working in groups together to complete projects or different assignments. They must be able to work together to solve problems and listen to other opinions.

Example 2: Students should be able to effectively communicate with each other, but also with the teacher in order to assist them with the

assignment.

Responsible decision-making: The ability to make constructive and respectful choices about personal behavior and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others.

Example 1: Students will be given the opportunity to correct their mistakes or other mistakes. Students should respect each other's opinions on the topics and feel safe to openly communicate with each other.

Example 2: Students will be made aware of classroom expectations and understand that there are consequences to the things they may say to each other.

Integration of 21st Century Themes and Skills

NJSLS-CLKS 9.4: Life Literacies and Key Skills				
Creativity and Innovation	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
	Can be found in unit: 9			
	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
Critical Thinking and Problem Solving	Can be found in unit:1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 122			
Digital Citizenship	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
	Can be found in unit: 7, 12			
Global and Cultural Awareness	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
	Can be found in unit: 5, 7, 9, 12			
Information and Media Literacy	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
	Can be found in unit: 7, 12			
Technology Literacy	See specific standards and their connections/examples for this disciplinary concept listed within each individual unit			
	Can be found in unit: 7, 9			

Robbinsville Ready 21st Century Skill Integration

The following skills will be embedded throughout the curriculum and instruction of this course.

Collaborative Team Member: Robbinsville students will learn more by working together than in isolation. As educational theorist Lev Vygotsky advocated, learning is a social process. Many workplaces today encourage employees to work in teams to solicit diverse perspectives, brainstorm new ideas and/or products, and solve problems. Further, collaboration fosters interpersonal relationships, self-management skills, cooperation, and a sense of collective responsibility. Collaborative team members are able to work with diverse groups of people who hold a variety of perspectives.

Effective Communicator: Robbinsville students must be able to clearly articulate their ideas orally, in writing, and across various media in order to successfully connect to the world around them. As the world becomes increasingly globalized, communication is more than just sharing one's ideas. Effective communicators are able to communicate their convictions, actively listen and analyze others' work to identify perspective and/or potential bias.

Emotionally Intelligent Learner: Robbinsville students who are emotionally intelligent learn to be empathetic, demonstrate integrity and ethical behavior, are kind, are self-aware, willing to change, and practice self-care. They are better able to cope with the demands of the 21st century digital society and workplace because they are reliable, responsible, form stable and healthy relationships, and seek to grow personally and professionally. Emotionally intelligent people are able to manage their emotions, work effectively on teams and are leaders who can grow and help to develop others.

Informed and Involved Citizen: Robbinsville students need to be digital citizens who are civically and globally aware. The concept of what it means to be "literate" has evolved along with 21st century technological and cultural shifts. Our progressive vision of literacy entails having our students explore real world problems in the classroom. Informed and involved citizens are able to safely and accurately communicate with people all around the world and are financially, environmentally and informationally literate.

Innovative Thinker: Robbinsville students must encompass innovative thinking skills in order to be successful lifelong learners in the 21st century world. As stated by Karl Fisch and Scott McLeod in the short film Shift Happens, "We are currently preparing students for jobs that don't yet exist . . . using technologies that haven't been invented . . . in order to solve problems we don't even know are problems yet." Innovative thinkers are able to think analytically, solve problems critically, creatively engage in curiosity and tinkering, and demonstrate originality.

Resilient and Self-Directed Learner: Robbinsville students need to take risks and ultimately make independent and informed decisions in an ever-changing world. Author of Life, the Truth, and Being Free, Steve Maraboli stated, "Life doesn't get easier or more forgiving, we get stronger and more resilient." Self-directed scholars of the 21st century are able to set goals, initiate resolutions by seeking creative approaches, and adjust their thinking in light of difficult situations. Resilient students are able to take risks without fear of failure and overcome setbacks by utilizing experiences to confront new challenges. Resilient and self directed scholars will consistently embrace opportunities to initiate solutions and overcome obstacles.

Career Awareness and Planning Standards 9.2		
9.1.12.PB.6: Describe and calculate interest and fees that are applied to various forms of spending, debt and saving.	Example : Students will calculate the amount of interest earned or total amount in the bank account by identifying interest rates and using exponential functions to assist in this calculation.	
9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas	Example: Students will critique their work and other's work by analyzing work for accuracy. Then determine what was done incorrectly,	

Robbinsville Public Schools Scope, Sequence, Pacing and Assessment

Algebra 1

Unit Title	Unit Understandings and Goals	Recommended Duration/ Pacing	Assessments
Unit 1: Foundations for Algebra	 Classify and compare real numbers Simplify expressions using order of operations and properties Represent quantities, patterns, and relationships Relate properties to algebra 	2 weeks	Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins Student created problems and feedback
- Relate properties to algebra			Summative · Mid-unit quiz · Test · Rubric based project
			Common Benchmark Assessments (mid/end of course) • End of course final exam
			Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project
Unit 2: Solving Equations	 Write and solve multi-step equations in one variable Identify the process for solving equations Determine what types of solutions equations can have. Apply the process of solving equations to solve proportions and percentage problems 	3-4 weeks	Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins Student created problems and feedback
			Summative · Mid-unit quiz · Test · Rubric based project
			Common Benchmark Assessments (mid/end of course) • End of course final exam

			Alternative Assessments (projects, etc when appropriate) Student presentation of topic
Unit 3: Solving Inequalities	 Build on and apply knowledge of equations to writing and solving inequalities. Demonstrate understanding that the solution to a one-variable inequality has more than one answer Represent solutions to inequalities using a number line Solve absolute value inequalities and identify the differences between a conjunction and disjunction. 	3 weeks	 Rubric based project Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins Student created problems and feedback Summative Mid-unit quiz Test Rubric based project Common Benchmark Assessments (mid/end of course) End of course final exam Alternative Assessments (projects, etc when appropriate)
Unit 4: An Introduction to Functions	 Identify key characteristics of a function Represent and describe functions. Use patterns, relations, and functions to describe real life situations Recognize the difference between linear and nonlinear functions 	2 weeks	 Student presentation of topic Rubric based project Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins Student created problems and feedback Summative Mid-unit quiz Test Rubric based project Common Benchmark Assessments (mid/end of course) End of course final evem
			Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project
Unit 5: Linear Functions	 Write linear equation and use different forms of a linear Understand what the slope of a line is and what is shows about a line Use linear equation to represent real-world situations Use a linear equation to describe the line of best fit for a scatterplot 	4 weeks	Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins Student created problems and feedback Summative Mid-unit quiz Test

			Rubric based project
			Common Benchmark Assessments (mid/end of course)
			• End of course final exam
			Alternative Assessments (projects, etc when appropriate)
			· Student presentation of topic
			Rubric based project
Unit 6: Systems of Equations and Inequalities	- Solve systems of equations by graphing, substitution, and eliminations	3-4 weeks	Formative Teacher observations and feedback
	- Apply methods of solving a system for		· Peer-to-peer feedback
	real-world situations		· Exit slips
	- Extend skills of linear equation and		· Warm-up check-ins
	systems for systems of linear inequalities		Student created problems and feedback
			Summative
			· Mid-unit quiz
			· Test
			Rubric based project
			Common Benchmark Assessments (mid/end of course)
			• End of course final exam
			Alternative Assessments (projects, etc when appropriate)
			· Student presentation of topic
			Rubric based project
Unit 7: Exponents and	- Learn and apply rules of operations with	2-3 weeks	Formative
Exponential Functions	exponents including rules of		 Teacher observations and feedback
	multiplication, division, and negative		· Peer-to-peer feedback
	exponents		• Exit slips
	- Identify exponential functions and how		· Warm-up check-ins
	they are different from linear functions		Student created problems and feedback
	- Use exponential equations to represent		Summative
	real-world situations		· Mid-unit quiz
			· Test
			Rubric based project
			Common Benchmark Assessments (mid/end of course)
			• End of course final exam
			End of course final exam Alternative Assessments (projects, etc when appropriate)
			End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic
			 End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project
Unit 8: Polynomials and	- Categorize, add, subtract, and multiply	2-3 weeks	End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project Formative
Unit 8: Polynomials and Factoring	- Categorize, add, subtract, and multiply polynomials	2-3 weeks	End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project Formative Teacher observations and feedback
Unit 8: Polynomials and Factoring	 Categorize, add, subtract, and multiply polynomials Identify and factor out the greatest 	2-3 weeks	 End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project Formative Teacher observations and feedback Peer-to-peer feedback
Unit 8: Polynomials and Factoring	 Categorize, add, subtract, and multiply polynomials Identify and factor out the greatest common factor of a polynomial 	2-3 weeks	 End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project Formative Teacher observations and feedback Peer-to-peer feedback Exit slips
Unit 8: Polynomials and Factoring	 Categorize, add, subtract, and multiply polynomials Identify and factor out the greatest common factor of a polynomial Factor different types of polynomials 	2-3 weeks	 End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project Formative Teacher observations and feedback Peer-to-peer feedback Exit slips Warm-up check-ins

			Summative · Mid-unit quiz · Test · Rubric based project Common Benchmark Assessments (mid/end of course) · End of course final exam Alternative Assessments (projects, etc when appropriate) · Student presentation of topic · Rubric based project
Unit 9: Quadratic Functions and Equations	 Examine and understand the different parts of a quadratic graph Solve a quadratic with different methods including factoring, finding square roots, the quadratic formula, and completing the square Represent real-world situations as a quadratic function and how does it relate to the critical points of a quadratic graph 	3-4 weeks	Formative · Teacher observations and feedback · Peer-to-peer feedback · Exit slips · Warm-up check-ins · Student created problems and feedback Summative · Mid-unit quiz · Test · Rubric based project Common Benchmark Assessments (mid/end of course) · End of course final exam Alternative Assessments (projects, etc when appropriate) · Student presentation of topic · Rubric based project
Unit 10: Radical Expressions and Equations	 Understand solving equations with squares roots Solve right triangle problems and real-world situations with right triangles using Pythagorean Theorem Simplify radicals and perform operations with radicals 	2 weeks	Formative · Teacher observations and feedback · Peer-to-peer feedback · Exit slips · Warm-up check-ins · Student created problems and feedback Summative · Mid-unit quiz · Test · Rubric based project Common Benchmark Assessments (mid/end of course) · End of course final exam Alternative Assessments (projects, etc when appropriate) · Student presentation of topic · Rubric based project
Unit 11: Rational Expressions and Functions	 How to simplify rational expressions similarly to how to simplify a numeral fraction 	2 weeks	Formative · Teacher observations and feedback · Peer-to-peer feedback

	 What are characteristics of a rational function and its graph Compare/contrast operations of rational expressions to that of numerical fractions 		 Exit slips Warm-up check-ins Student created problems and feedback Summative Mid-unit quiz Test Rubric based project Common Benchmark Assessments (mid/end of course) End of course final exam Alternative Assessments (projects, etc when appropriate) Student presentation of topic Rubric based project
Unit 12: Data Analysis and Probability	 Calculate the measures of central tendency and use it to analyze data Use different forms of graphs to represent data (i.e. histograms, box plots, etc) Find probability for simple and compound events 	2 weeks	Formative • Teacher observations and feedback • Peer-to-peer feedback • Exit slips • Warm-up check-ins • Student created problems and feedback Summative • Mid-unit quiz • Test • Rubric based project Common Benchmark Assessments (mid/end of course) • End of course final exam Alternative Assessments (projects, etc when appropriate) • Student presentation of topic • Rubric based project

Unit 1: Foundations for Algebra

Enduring Understandings:	Essential Questions:		
• Students use variables to transform English phrases into mathematical	• How can we classify and compare real numbers?		
expressions, which are then simplified and evaluated using the order of	• How can we simplify expressions using the order of operations and		
operations	properties?		
	• How can you represent quantities, patterns, and relationships?		
	• How are properties related to algebra?		

Interdisciplinary Connections

HS-PS4-1: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media

Example: Students will use variables to represent different quantities found within different situations.

9.3.12.BM-**MGT.2** Access, evaluate, and disseminate information for business decision making. *Example:* Students will access, evaluate, and disseminate information given related rates problems

Guiding with S	y / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
A.SSE.A.1	How can we represent	Translate, simplify, and evaluate expressions	Anticipatory sets to measure	Worksheets and sample	Written tests and
.А	mathematical phrases	using the order of operations.	background knowledge and engage	problems to analyze	quizzes
	and real-world		students	step-by-step solutions	
A.SSE.A.1	relationships?	Classify numbers according to number sets,		of the problems	Worksheets
.В		with extra attention to rational and irrational	Use guided and independent practice		
	How can you represent	numbers.	activities	Textbook & associated	Notebook assessments
A.SSE.A.2	different mathematical			materials	
	operations including	Understand and use the properties of numbers.	Use the Mimeo, whiteboard, and		Response to discussion
A.SSE.B.3	exponents?		worksheets to reinforce the concepts	Teacher created	questions
		Add, subtract, multiply, and divide real numbers.		worksheets	
A.CED.A.	How can you estimate		Use cooperative learning activities		Anticipatory Sets/Do
1	the value of a square	Apply the distributive property.		Mimio lessons	Now Problems
	root?		Use discovery based learning activities	Geometer's Sketchpad	
8.NS.A.1		Add and subtract matrices.	that require students to make	_	Diagnostic
			conjectures and investigate patterns	GeoGebra	Assessments to
8.NS.A.2					determine readiness

How can you represent	Use whiteboards to show immediate	TI Smart View with TI	
the sum or difference	feedback on questions	84 Graphing	Closure question/ Exit
of integers?		Calculators	Slips
How can you represent		Desmos	
the quotient or product			
of integers?			
How can we represent			
the relationship			
between two quantities?			

Unit 2: Solving Equations

Enduring Understandings:	Essential Questions:	
• Students write and solve multi-step equations in one variable, and apply	• What is the process for solving an equation?	
this process to solve proportions and percent problems	• How can you determine if an equation has one solution, no solutions,	
	or infinitely many solutions?	
	• What kinds of relationships can proportions represent?	
	• What are the steps for solving all types of proportion problems?	
	• How can equations that appear to be different be equivalent?	
Interdisciplingry Connections		

Interdisciplinary Connections

8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. Example: Solve an equation and check the answer by substituting it back in, then fix if there is an error.

HS-PS4-3 Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other Example: Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Guiding with	g / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
A.CED.A.	How can we use	Solve one-step, two-step, and multi-step	Anticipatory sets to measure	Worksheets and sample	Written tests and
1	equivalent expressions	equations including rational numbers.	background knowledge and engage	problems to analyze	quizzes
	to solve equations?		students	step-by-step solutions	
A.CED.A.		Solve equations with variables on both sides,		of the problems	Worksheets
3	What are the rules for	identifying different solution types.	Use guided and independent practice		
	solving one, two, and		activities	Textbook & associated	Notebook assessments
A.CED.A.	multi-step equations?	Solve literal equations and transform formulas.		materials	
4			Use the Mimeo, whiteboard, and		Response to discussion
	How is solving a literal	Identify ratios and rates and convert units of	worksheets to reinforce the concepts	Teacher created	questions
A.REI.A.	equation	measures.		worksheets	
1	similar/different to		Use cooperative learning activities		Anticipatory Sets/Do
	solving an equation with	Write, solve, and apply proportions in real-life		Mimio lessons	Now Problems
A.REI.A.	one variable?	context, including similar figures.	Use discovery based learning activities	Geometer's Sketchpad	
2			that require students to make		Diagnostic
	What is a ratio and how	Solver percent problems, including percent of	conjectures and investigate patterns	GeoGebra	Assessments to
A.REI.B.3	do we use to find	change.			determine readiness

relationships between	Solver word problems including:	Use whiteboards to show immediate	TI Smart View with TI	Closure question/ Exit
two quantities?	Consecutive integers	feedback on questions	84 Graphing	Slips
	2D geometric shapes		Calculators	
How do you create a	Distance, rate, and time			
proportion to represent	Multiple unknowns that can be set up with a		Desmos	
relationships?	"key"			
How do you use				
proportions to solve				
similar figures?				
How do you find				
percentages and how are				
they related to				
proportions?				

Unit 3: Solving Inequalities

Enduring Understandings:	Essential Questions:
• Students will build on and apply their knowledge of equations to writing	• How can you write an inequality for a real-life scenario given specific
and solving inequalities. Students will demonstrate that the solution to a	constraints?
one-variable inequality is more than just one number and needs to be represented	• How can you solve an inequality?
on a number line.	• How can the solution to an inequality be represented on a number
	line?
	• Compare how solving an absolute value equation and inequality
	differs from a non-absolute value equation or inequality.
	• Why is it possible to have three different types of solutions to
	absolute value problems?
	• Identify the differences between a conjunction and disjunction.

Interdisciplinary Connections

ELA NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. *Example:* Students will use previously learned identities to solve problems presented in new ways.

HS-PS1-8: Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.

Example: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Guiding with	g / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
A.CED.A.	What is an inequality	Write, graph, and interpret a simple inequality.	Anticipatory sets to measure	Worksheets and sample	Written tests and
1	and how do you graph		background knowledge and engage	problems to analyze	quizzes
	them?	Solve one-step, two-step, and multi-step	students	step-by-step solutions	
A.CED.A.		inequalities.		of the problems	Worksheets
3	How do you solve an		Use guided and independent practice		
	inequality?	Write solutions as number sets.	activities	Textbook & associated	Notebook assessments
A.REI.B.3				materials	
	How do you use	Write, solve, and graph compound inequalities.	Use the Mimeo, whiteboard, and		Response to discussion
8.EE.C.7.	inequalities for real-life		worksheets to reinforce the concepts	Teacher created	questions
А	situations?	Write and solve absolute value equations and		worksheets	
		inequalities.	Use cooperative learning activities		

8.EE.C.7.	How can you represent		Mimio lessons	Anticipatory Sets/Do
В	solutions using number	Use discovery based learning activities	Geometer's Sketchpad	Now Problems
	sets?	that require students to make		
		conjectures and investigate patterns	GeoGebra	Diagnostic
	What is a compound			Assessments to
	inequality?	Use whiteboards to show immediate	TI Smart View with TI	determine readiness
		feedback on questions	84 Graphing	
	How can you determine		Calculators	Closure question/ Exit
	the type of solutions for			Slips
	absolute value equations		Desmos	
	and inequalities?			

Unit 4: An Introduction to Functions

Enduring Understandings	Ferential Questions:
Enduring Onderstandings.	Essential Questions.
• A function is a relationship between variables in which each value of the	• What are the characteristics of a function?
input variable is associated with a unique value of the output variable. Functions	• How can you represent and describe functions?
can be represented in a variety of ways, such as graphs, tables, equations, or	• How can patterns, relations, and functions be best used to describe
words. Functional relationships can be expressed in real contexts. Each	and explain real life situations
representation of a given function is simply a different way of expressing the	• Describe the differences between linear and non-linear functions and
same idea.	graphs.
	• How do you decipher if a given set of data represents a linear or
	non-linear situation?
	• Can functions describe real-world situations?
Interdisciplinary	Connections
Science HS-PS2-4. Use mathematical representations of Newton's Law of Gravitat	ion and Coulomb's Law to describe and predict the gravitational and
alesterette former heteren alester	ion and obtionity's haw to describe and predict the gravitational and
electrostatic forces between objects.	
<i>Example</i> : Create an equation to define real-world situations.	
Science LIC ESS1 (Apple sciencific and science for the state	

Science HS-ESS1-6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

Example: Look at patterns and relationships to create functions between two quantities.

Guiding with	g / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.A.1	How can you use a	Graphs can be used to visually represent the	Anticipatory sets to measure	Worksheets and sample	Written tests and
	graph to represent	relationship between two variable quantities as	background knowledge and engage	problems to analyze	quizzes
F.IF.A.2	different real-world	they each change.	students	step-by-step solutions	
	problems?			of the problems	Worksheets
F.IF.B.5		Tables and graphs can both show relationships	Use guided and independent practice		
	How do you define a	between variables	activities	Textbook & associated	Notebook assessments
F.BF.A.1.B	linear function?			materials	
		Identify Functions and their features.	Use the Mimeo, whiteboard, and		Response to discussion
F.LE.A.1.	What patterns can you		worksheets to reinforce the concepts	Teacher created	questions
А	find in linear and	Use function equations to find range with a		worksheets	
	nonlinear functions?	given domain.	Use cooperative learning activities		

F.LE.A.2				Mimio lessons	Anticipatory Sets/Do
	How do you graph a	Identify patterns and the difference between	Use discovery based learning activities	Geometer's Sketchpad	Now Problems
F.LE.A.3	defined function rule?	linear and nonlinear functions.	that require students to make		
			conjectures and investigate patterns	GeoGebra	Diagnostic
S.ID.B.6.A	How can you write a	Graphing functions using a table of values.			Assessments to
A.CED.A.	function rule?		Use whiteboards to show immediate	TI Smart View with TI	determine readiness
1		Write a function rule based on data given in	feedback on questions	84 Graphing	
A.CED.A.	What is an arithmetic	chart form or verbal phrase		Calculators	Closure question/ Exit
2	sequence and how can				Slips
A.CED.A.	you find any term?			Desmos	
3					
A.REI.B.3					
S					
A.REI.D.1					
0					
8.F.A.1					
8.F.A.2					
8.F.A.3					
8.F.A.4					

Unit 5: Linear Functions

Enduring Understandings:	Essential Questions:			
• Students write linear equations and study different forms of linear	• What does the slope of a line indicate about a line?			
equations. They examine the relationship between slope and rate of change, and	• Describe a real-world situation that uses direct variation.			
the relative slope of the graphs of two lines that are parallel or perpendicular. The	• What information does the equation of a line give you?			
students will focus on the connections between a linear equation and its graph.	• How can you make predictions based on a scatterplot?			
Interdisciplinary Connections				
Interdisciplinary	Connections			

HS-LS1-7: Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Example: Identify key information to represent the rate of change and initial value to write a linear equation in slope-intercept form.

Guiding with S	/ Topical Questions pecific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.B.4	What is rate of change	Identify and find rate of change and slope from	Anticipatory sets to measure	Worksheets and sample	Written tests and
	and how do you	tables, graphs, and ordered pairs.	background knowledge and engage	problems to analyze	quizzes
F.IF.B.5	calculate slope?		students	step-by-step solutions	
		Identify an equation or set of data represents		of the problems	Worksheets
F.IF.B.6	How can do you know	direct variation and write direction variation	Use guided and independent practice		
	when there exists a	equations.	activities	Textbook & associated	Notebook assessments
F.IF.C.7.A	relationship that varies			materials	
	directly?	Write and graph equations in slope intercept	Use the Mimeo, whiteboard, and		Response to discussion
F.IF.C.8		form given data.	worksheets to reinforce the concepts	Teacher created	questions
	How can you write a			worksheets	-
F.LE.A.1.B	linear equation in	Graph and write equations using point-slope	Use cooperative learning activities		Anticipatory Sets/Do
	point-slope form and	form.		Mimio lessons	Now Problems
F.LE.A.3	slope-intercept form?		Use discovery based learning activities	Geometer's Sketchpad	
	- +	Graph equations using standard form with x	that require students to make		Diagnostic
F.LE.B.5	What is the standard	and y-intercepts.	conjectures and investigate patterns	GeoGebra	Assessments to
	form of a linear				determine readiness

S.ID.B.6.A	equation and how can	find slopes of parallel and perpendicular lines.	Use whiteboards to show immediate	TI Smart View with TI	
	you use it to graph?		feedback on questions	84 Graphing	Closure question/ Exit
S.ID.B.6.C		Write equations of parallel and perpendicular		Calculators	Slips
	How do you know	lines given data.			
S.ID.C.7	when two lines are			Desmos	
	parallel or	Graph scatterplots, and find equations of lines			
A.SSE.B.3	perpendicular?	of best fit (trend line) Use the line of best-fit			
		(trend line) to make predictions.			
A.CED.A.1	How can we represent				
	data and find the line				
A.CED.A.2	of best fit?				
A.CED.A.3	How do you graph an				
	absolute value				
A.CED.A.4	function?				
A.RED.D.1					
0					

Unit 6: Systems of Equations and Inequalities

Essential Questions:		
• What is a system of equations?		
• Which method is the most efficient for solving a given system of		
equations?		
• What types of real-world problems are best solved using a system of		
equations?		
• How do you show all the solutions to linear inequalities and systems		
of linear inequalities?		

Interdisciplinary Connections

ELA NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Example: Students will discuss different ways to solve the same problem, and determine the best method when appropriate

Science HS-PS3-1: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

Example: Given a world problem, write a system of equations and solve by elimination or substitution.

Guiding with	g / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.B.4	How do you solve a	Identify a system of equations and what is a	Anticipatory sets to measure	Worksheets and sample	Written tests and
	system of equations by	solution to a system of equations.	background knowledge and engage	problems to analyze	quizzes
A.CED	graphing?		students	step-by-step solutions	
.A.1		Solve a system of equations through multiple		of the problems	Worksheets
	How can we use	methods including:	Use guided and independent practice		
A.CED.A	substitution to solve a	Graphing	activities	Textbook & associated	Notebook assessments
.2	system of equations?	Substitution		materials	
		Elimination	Use the Mimeo, whiteboard, and		Response to discussion
A.CED.A	How do you use		worksheets to reinforce the concepts	Teacher created	questions
.3	elimination method to	Apply methods of solving a system of equations		worksheets	
	solve a system of	so solve real-world problems.	Use cooperative learning activities		Anticipatory Sets/Do
A.CED.A	equations?	_		Mimio lessons	Now Problems
.4		Solve and graph linear inequalities as well as	Use discovery based learning activities	Geometer's Sketchpad	
	How can you tell which	systems of linear inequalities.	that require students to make		
	method is the most		conjectures and investigate patterns	GeoGebra	

A.REI.C.	appropriate depending	Use real world applications to linear inequalities			Diagnostic
5	on the system of	and systems of linear inequalities.	Use whiteboards to show immediate	TI Smart View with TI	Assessments to
	equations?		feedback on questions	84 Graphing	determine readiness
A.REI.C.				Calculators	
6	How is a linear				Closure question/ Exit
A.REI.C.	inequality similar to a			Desmos	Slips
7	linear equation and/or				
	an inequality?				
A.REI.D.					
10	What does it mean to be				
	a solution to a linear				
A.REI.D.	inequality? System of				
11	linear inequalities?				
A.REI.D.					
12					
8.EE.C.8.					
А					
Q E E C Q					
о.Е.Е.С.о. В					
D					
8 F F C 8					
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Unit 7: Exponents and Exponential Functions

Enduring Understandings:		Essen	tial Questions:
•	Students will learn and apply the rules of operations with exponents.	•	How is a negative exponent different from a negative coefficient?
		•	How can you simplify expressions using exponents?
		•	What are the rules for multiplying powers of exponents?
		•	What are the rules for dividing powers of exponents?
		•	How can the exponential rules be applied to scientific notation?
		•	What are the characteristics of exponential functions?

Interdisciplinary Connections

Tech HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Example: Students will graph exponential functions and discuss the real world factors that affect rate of growth or decay

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

Example: Students will study the spread of disease to a population as exponential growth, and how human activity can affect spread

Guiding with S	/ Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.C.7.E	What is the effect or a	Identify and evaluate expressions with zero and	Anticipatory sets to measure	Worksheets and sample	Written tests and
	zero or negative	negative exponents.	background knowledge and engage	problems to analyze	quizzes
F.IF.C.8.B	exponent?		students	step-by-step solutions	
		Apply the multiplication rules of exponents to		of the problems	Worksheets
F.LE.B.5	How do you multiply	all algebraic expressions, including powers with	Use guided and independent practice		
	values with the same	the same base and raising a power to a power.	activities	Textbook & associated	Notebook assessments
S.ID.B.6.A	base?			materials	
		Understand and apply the division properties of	Use the Mimeo, whiteboard, and		Response to discussion
A.SSE.A.1.	What are the	exponents.	worksheets to reinforce the concepts	Teacher created	questions
В	properties of			worksheets	
	exponents for a power	Write numbers in standard and scientific	Use cooperative learning activities		Anticipatory Sets/Do
A.SSE.A.2	of a product?	notation, and apply the exponent rules to		Mimio lessons	Now Problems
	quotient?	numbers written in scientific notation.	Use discovery based learning activities	Geometer's Sketchpad	
A.SSE.B.3			that require students to make		Diagnostic
		Identify the exponential functions and how they	conjectures and investigate patterns	GeoGebra	Assessments to
		differ from linear functions.			determine readiness

A.SSE.B.3.	What is an exponential	Use whiteboards to show immediate	TI Smart View with TI	
С	function?	feedback on questions	84 Graphing	Closure question/ Exit
			Calculators	Slips
A.SSE.B.4	What features of an			
	exponential function or		Desmos	
A.CED.A.1	graph identifies it as a			
	growth or decay?			
A.CED.A.2				
	What is a geometric			
A.CED.A.3	sequence and how do			
	you find an			
A.REI.D.1				
0				
8.EE.A.3				
8.EE.A.4				

Unit 8: Polynomials and Factoring

Enduring Understandings:	Essential Questions:		
• Students categorize, add, subtract, and multiply polynomials. They also	• What are the classification of polynomials based on degree and		
factor all types of polynomials using a variety of different methods.	number of terms?		
	• Can two algebraic expressions that appear different be equivalent?		
	• How does addition and subtraction of polynomials differ from		
	multiplying polynomials?		
	• If given a polynomial, which method is the best for factoring it?		
Interdisciplinary	Connections		

ELA NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric. *Example:* Students will discuss different ways to solve the same problem, and determine the best method when appropriate

Guiding with	g / Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
	How can you classify a	Identify and classify polynomials based on their	Anticipatory sets to measure	Worksheets and sample	Written tests and
A.SSE.A.1	polynomial?	degree and number of terms.	background knowledge and engage	problems to analyze	quizzes
.A			students	step-by-step solutions	
	How can you combine	Add, subtract, and multiply polynomials		of the problems	Worksheets
A.SSE.A.1	polynomials through		Use guided and independent practice		
.В	addition and	Factor polynomials using their greatest common	activities	Textbook & associated	Notebook assessments
	subtraction?	factor.		materials	
A.SSE.A.2			Use the Mimeo, whiteboard, and		Response to discussion
	What does it mean to	Factor all forms of polynomials using a variety	worksheets to reinforce the concepts	Teacher created	questions
A.SSE.B.3	F.O.I.L.?	of methods.		worksheets	
			Use cooperative learning activities		Anticipatory Sets/Do
A.APR.A.	What are the steps to			Mimio lessons	Now Problems
1	multiplying two		Use discovery based learning activities	Geometer's Sketchpad	
	polynomials that are		that require students to make		Diagnostic
	not both binomials?		conjectures and investigate patterns	GeoGebra	Assessments to
					determine readiness

What are the special	Use whiteboards to show immediate	TI Smart View with TI	Closure question/ Exit
cases of a polynomial	feedback on questions	84 Graphing	Slips
that involve		Calculators	
multiplying?			
		Desmos	
What is the greatest			
common factor and			
how do you find it in a			
polynomial?			
How do you factor a			
polynomial whose			
leading coefficient is 1?			
What steps do you take			
to factor a polynomial			
whose leading			
coefficient is not 1?			
How do you factor the			
previously defined			
special cases?			
How do you factor by			
grouping:			

Unit 9: Quadratic Functions and Equations

Enduring Understandings:	Essential Questions:		
• Students examine quadratic graphs and solve quadratic equations by	• What are the characteristics of a quadratic function?		
factoring, finding square roots, and applying the quadratic formula. They also	• How do you solve a quadratic equation?		
identify real-world data that can be modeled by this type of function.	• How can you use quadratic functions to model real-world situations?		
	• Given a quadratic function, which method is the most efficient to		
	find the solution(s)?		
	• Given a graph or set of data, determine whether it is linear, quadratic,		
	or exponential?		
Interdisciplinary	Connections		

ELA NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric. *Example:* Students will discuss different ways to solve the same problem, and determine the best method when appropriate

Guidin with	ng / Topical Questions n Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.B.4	What is a quadratic	Identify a graph as quadratic	Anticipatory sets to measure	Worksheets and sample	Written tests and
	function?		background knowledge and engage	problems to analyze	quizzes
F.IF.C.7			students	step-by-step solutions	
.A	What are the key	Identify how the parts of the equations shape the		of the problems	Worksheets
	characteristics of a	graph of the parabola (width, shift of vertex	Use guided and independent practice		
F.IF.C.8	quadratic function on a	etc.)	activities	Textbook & associated	Notebook assessments
.A	graph?			materials	
		Graph a quadratic function, identifying vertex,	Use the Mimeo, whiteboard, and		Response to discussion
F.LE.A.	How do you solve for	axis of symmetry, domain, and range	worksheets to reinforce the concepts	Teacher created	questions
3	the y-intercept and			worksheets	
	vertex of a quadratic?		Use cooperative learning activities		Anticipatory Sets/Do
S.ID.B.		Solve quadratic equations using square roots		Mimio lessons	Now Problems
6.A	What does it mean to		Use discovery based learning activities	Geometer's Sketchpad	
	solve a quadratic		that require students to make		Diagnostic
A.SSE.	equation?	Solve quadratic equations using factoring	conjectures and investigate patterns	GeoGebra	Assessments to
A.1.A					determine readiness

	How do you solve a		Use whiteboards to show immediate	TI Smart View with TI	
A SSE	quadratic by factoring?	Solve quadratic equations by completing the	feedback on questions	84 Graphing	Closure question / Exit
B 3 A	quadratic by metoring.	souare		Calculators	Slips
D.0.11	How do you find	oquire		Galediatoro	onpo
A SSE	x-intercepts of a			Desmos	
R3R	quadratic through the	Solve quadratic equations by using the quadratic		Desinos	
D.J.D	process of completing	formula			
AADR	the square?	Iormula			
R 3	the square:				
D.J	What is the discriminant	Identify how many solutions a quadratic equation			
A CED	and how is it useful?	would have by using the discriminant			
Λ 1	and now is it userui!	would have by using the discriminant			
./ 1. 1	What is the quadratic	Identify the difference between a linear guadratic			
A CED	formula and what are	and exponential function based on a graph			
Λ 2	the stops to solve a	and exponential function based on a graph			
.Π.Ζ	me steps to solve a				
A CED	for any log				
A.CED	Iormula:				
.A.3					
	what are the similarities				
A.KEI.	and differences between				
D.4	different representations				
	of linear, quadratic, and				
A.KEI.	exponential functions?				
B.4.A	TT (* 1.1				
A DET	How can you find the				
A.REI.	solution to a				
B.4.B	linear-quadratic system				
	ot equations?				
A.RED.					
D.10					

Unit 10: Radical Expressions and Equations

Enduring Understandings:	Essential Questions:
• The students will extend their understanding of solving equations while	• What is the criterion to determine if a radical is completely simplified
working with square roots and the	• How does adding and subtracting radicals differ from multiplying and
	dividing radicals?
	• How can you solve radical equations?
	• What are the characteristics of the graph of a square root function?
Interdisciplinary	Connections

9.3.12.ED.2 Demonstrate effective oral, written, and multimedia communication in multiple formats and contexts. *Example:* Students will work together to explore the effects of radicals on the types of solutions and domain of a function.

Guiding with S	/ Topical Questions Specific Standards	Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.C.7.B	What is the	Identify right triangles	Anticipatory sets to measure	Worksheets and sample	Written tests and
	pythagorean theorem		background knowledge and engage	problems to analyze	quizzes
A.SSE.A.1.	and how is it used?		students	step-by-step solutions	
А		Apply the Pythagorean Theorem to find		of the problems	Worksheets
	How can you tell if a	missing side lengths of right triangles	Use guided and independent practice		
A.SSE.A.1.	triangle is obtuse,		activities	Textbook & associated	Notebook assessments
В	acute, or right?	Simplify radicals		materials	
			Use the Mimeo, whiteboard, and		Response to discussion
A.SSE.A.2	How do you simplify	Perform mathematical operations on radical	worksheets to reinforce the concepts	Teacher created	questions
	radicals?	expressions		worksheets	
A.SSE.B.3			Use cooperative learning activities		Anticipatory Sets/Do
	How can you combine	Solve radical equations		Mimio lessons	Now Problems
A.CED.A.2	radicals through		Use discovery based learning activities	Geometer's Sketchpad	
	addition and		that require students to make		Diagnostic
A.CED.A.3	subtracting?		conjectures and investigate patterns	GeoGebra	Assessments to
					determine readiness
A.REI.A.2					

	What are the steps to	Use whiteboards to show immediate	TI Smart View with TI	Closure question/ Exit
A.REI.D.1	multiplying or dividing	feedback on questions	84 Graphing	Slips
0	radicals?		Calculators	
8.G.B.6	How do you solve an		Desmos	
	equation with one or			
8.G.B.7	more radical?			
8.G.B.8	What does the graph			
	of a square root			
	function look like?			
	How do you			
	determine the domain			
	of a radical equation?			
	What are the			
	trigonometric ratio and			
	how can we use them			
	to solve problems?			

Unit 11: Rational Expressions and Functions

Enduring Understandings:	Essential Questions:			
• Rational expressions will allow the students to further develop their	• How is the simplified form of a rational expression like the simplified			
understanding of equivalence. They will also extend their prior knowledge of	form of a numerical fraction?			
operations on fractions to those involving rational expressions.	• What are the characteristics of rational functions?			
	• Compare/contrast the process of performing operations on rational			
	expressions with those involving numerical fractions.			
Interdisciplinary Connections				

Tech 8.2.12.A.3 The relationships among technologies and the connections between technology and other fields of study *Example:* Students will use technology to graph functions and then key information such as x-intercepts and y-intercepts.

Guiding / Topical Questions with Specific Standards		Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
F.IF.C.7.C	What does it mean to	Simplify rational expressions	Anticipatory sets to measure	Worksheets and sample	Written tests and
	simplify a rational		background knowledge and engage	problems to analyze	quizzes
F.IF.C.7.	expression?	Multiply and divide rational expressions	students	step-by-step solutions	
D				of the problems	Worksheets
	How do you use	Divide polynomials	Use guided and independent practice		
A.SSE.A.	factoring and fractions		activities	Textbook & associated	Notebook assessments
1.A	to simplify a rational	Add and subtract rational expressions		materials	
	expression?		Use the Mimeo, whiteboard, and		Response to discussion
A.SSE.A.		Solve rational equations.	worksheets to reinforce the concepts	Teacher created	questions
1.B	How is multiplying and			worksheets	
	dividing rational	Identify inverse variation functions.	Use cooperative learning activities		Anticipatory Sets/Do
A.SSE.A.	expressions similar to			Mimio lessons	Now Problems
2	multiplying and dividing	Graph rational functions.	Use discovery based learning activities	Geometer's Sketchpad	
	fractions?		that require students to make		Diagnostic
A.SSE.B.3			conjectures and investigate patterns	GeoGebra	Assessments to
	How can you divide				determine readiness
A.APR.D.	polynomials?		Use whiteboards to show immediate	TI Smart View with TI	
6			feedback on questions	84 Graphing	Closure question/ Exit
				Calculators	Slips

A.APR.D.	What are the steps to			
7	adding and subtracting		Desmos	
	rational expressions?			
A.CED.A	_			
.2	How do you solve a			
	rational equation?			
A.CED.A				
.3	What is an inverse			
	variation function?			
A.REI.A.				
2	How do you find key			
	characteristics of a			
A.REI.D.	rational function and			
10	use them to graph?			

Unit 12: Data Analysis and Probability

Essential Questions:		
• How can you use mean, median, and mode to determine the outcome		
of a real life situation?		
• How can you use a sample space to predict future results?		
• How can collecting and analyzing data help you make decisions and		
predictions?		
• How can you make and interpret different representations of data?		
• How is probability related to real world events?		

Interdisciplinary Connections

HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

Example: Represent data with plots on the real number line.

Tech 8.2.12.EC.3: Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience.

Example: Analyze data through different representations

Guiding / Topical Questions with Specific Standards		Content, Themes, Concepts, and Skills	Teaching Strategies	Instructional Resources and Materials	Assessment Strategies
S.ID.A.1	How do you identify	Make and interpret frequency tables and	Anticipatory sets to measure	Worksheets and sample	Written tests and
	frequency of data?	histograms	background knowledge and engage	problems to analyze	quizzes
S.ID.A.2			students	step-by-step solutions	
	What is a histogram and	Use the measures of central tendency and		of the problems	Worksheets
S.ID.A.3	how do you create one	dispersion to interpret and compare sets of	Use guided and independent practice		
	using data?	data	activities	Textbook & associated	Notebook assessments
S.IC.B.3				materials	
	What are the measures	Create and interpret box and whisker plots	Use the Mimeo, whiteboard, and		Response to discussion
S.CP.A.1	of central tendency?		worksheets to reinforce the concepts	Teacher created	questions
		Analyze samples and surveys		worksheets	
S.CP.A.2	How are measures of		Use cooperative learning activities		Anticipatory Sets/Do
	central tendency	Calculate permutations and combinations		Mimio lessons	Now Problems
S.CP.A.3	affected by an outlier?		Use discovery based learning activities	Geometer's Sketchpad	
		Calculate theoretical and experimental	that require students to make		
S.CP.A.5		probabilities	conjectures and investigate patterns	GeoGebra	

	How do you create a				Diagnostic
S.CP.B.6	box and whisker plot?	Find the probabilities of mutually exclusive and	Use whiteboards to show immediate	TI Smart View with TI	Assessments to
		overlapping events	feedback on questions	84 Graphing	determine readiness
S.CP.B.7	What is a permutation?			Calculators	
		Find the probabilities of independent and			Closure question/ Exit
S.CP.B.9	What is a combination?	dependent events		Desmos	Slips
	How can you find				
	permutations and				
	combinations?				
	Harry da array Guid				
	now do you inid				
	probability!				
	What is the difference				
	between theoretical				
	probability and				
	experimental				
	probability?				
	1 2				
	How can you use				
	experimental probability				
	to make predictions?				
	How do you find the				
	probability of				
	compound events?				

General Differentiated Instruction Strategies				
• Leveled texts	Repeat, reword directions			
Chunking texts	• Brain breaks and movement breaks			
• Choice board	• Brief and concrete directions			
Socratic Seminar	• Checklists for tasks			
Tiered Instruction	• Graphic organizers			
Small group instruction	• Assistive technology (spell check, voice to type)			
Guided Reading	• Study guides			
• Sentence starters/frames	• Tiered learning stations			
Writing scaffolds	Tiered questioning			
• Tangible items/pictures	• Data-driven student partnerships			
• Adjust length of assignment	• Extra time			

Possible Additional Strategies for Special Education Students, 504 Students, At-Risk Students, and English Language Learners (ELLs)					
Time/General	Processing	Comprehension	Recall		
 Extra time for assigned tasks Adjust length of assignment Timeline with due dates for reports and projects Communication system between home and school Provide lecture 	 Extra Response time Have students verbalize steps Repeat, clarify or reword directions Mini-breaks between tasks Provide a warning for transitions Reading partners 	 Precise step-by-step directions Short manageable tasks Brief and concrete directions Provide immediate feedback Small group instruction Emphasize multi-sensory 	 Teacher-made checklist Use visual graphic organizers Reference resources to promote independence Visual and verbal reminders Graphic organizers 		

notes/outline		learning	
Assistive Technology	Assessments and Grading	Behavior/Attention	Organization
 Computer/whiteboard Tape recorder Spell-checker Audio-taped books 	 Extended time Study guides Shortened tests Read directions aloud 	 Consistent daily structured routine Simple and clear classroom rules Frequent feedback 	 Individual daily planner Display a written agenda Note-taking assistance Color code materials

Enrichment

The goal of Enrichment is to provide learners with the opportunity to participate in extension activities that are differentiated and enhance the curriculum. All enrichment decisions will be based upon individual student needs.

- Show a high degree of intellectual, creative and/or artistic ability and demonstrate this ability in multiple ways.
- Pose questions and exhibit sincere curiosity about principles and how things work.
- The ability to grasp concepts and make real world and cross-curricular connections.
- Generate theories and hypotheses and pursue methods of inquiry.
- Produce products that express insight, creativity, and excellence.
- Possess exceptional leadership skills.
- Evaluate vocabulary
- Elevate Text Complexity
- Inquiry based assignments and projects
- Independent student options
- Tiered/Multi-level activities
- Purposeful Learning Center
- Open-ended activities and projects
- Form and build on learning communities
- Providing pupils with experiences outside the 'regular' curriculum
- Altering the pace the student uses to cover regular curriculum in order to explore topics of interest in greater depth/breadth within their own grade level
- A higher quality of work than the norm for the given age group.
- The promotion of a higher level of thinking and making connections.
- The inclusion of additional subject areas and/or activities (cross-curricular).

• Using supplementary materials in addition to the normal range of resources.

English Language Learner (ELL) Resources

- Learning style quiz for students- http://www.educationplanner.org/students/self-assessments/learning-styles-quiz.shtml
- "Word clouds" from text that you provide-http://www.wordle.net/
- Bilingual website for students, parents and educators: http://www.colorincolorado.org/
- Learn a language for FREE-www.Duolingo.com
- Time on task for students-http://www.online-stopwatch.com/
- Differentiation activities for students based on their Lexile-www.Mobymax.com
- WIDA-http://www.wida.us/
- Everything ESL http://www.everythingESL.net
- ELL Tool Box Suggestion Site http://www.wallwisher.com/wall/elltoolbox
- Hope4Education http://www.hope4education.com
- Learning the Language http://blogs.edweek.org/edweek/learning-the-language/
- FLENJ (Foreign Language Educators of NJ) 'E-Verse' wiki: http://www.flenj.org/Publications/?page=135
- OELA http://www.ed.gov/offices/OBEMLA
- New Jersey Department of Education-Bilingual Education information http://www.state.nj.us/education/bilingual/

Special Education Resources

- Animoto -Animoto provides tools for making videos by using animation to pull together a series of images and combining with audio. Animoto videos or presentations are easy to publish and share. https://animoto.com
- Bookbuilder -Use this site to create, share, publish, and read digital books that engage and support diverse learners according to their individual needs, interests, and skills. http://bookbuilder.cast.org/
- CAST -CAST is a non-profit research and development organization dedicated to Universal Design for Learning (UDL). UDL research demonstrates that the challenge of diversity can and must be met by making curriculum flexible and responsive to learner differences. http://www.cast.org
- CoSketch -CoSketch is a multi-user online whiteboard designed to give you the ability to quickly visualize and share your ideas as images. http://www.cosketch.com/
- Crayon -The Crayon.net site offers an electronic template for students to create their own newspapers. The site allows you to bring multiple

sources together, thus creating an individualized and customized newspaper. http://crayon.net/ Education Oasis -Education Oasis offers a collection of graphic organizers to help students organize and retain knowledge – cause and effect, character and story, compare and contrast, and more! http://www.educationoasis.com/printables/graphic-organizers/

- Edutopia -A comprehensive website and online community that increases knowledge, sharing, and adoption of what works in K-12 education. We emphasize core strategies: project-based learning, comprehensive assessment, integrated studies, social and emotional learning, educational leadership and teacher development, and technology integration. <u>http://www.edutopia.org/</u>
- Glogster -Glogster allows you to create "interactive posters" to communicate ideas. Students can embed media links, sound, and video, and then share their posters with friends. http://edu.glogster.com/?ref=personal
- Interactives Elements of a Story -This interactive breaks down the important elements of a story. Students go through the series of steps for constructing a story including: Setting, Characters, Sequence, Exposition, Conflict, Climax, and Resolution. http://www.learner.org/interactives/story/index.html
- National Writing Project (NWP) -Unique in breadth and scale, the NWP is a network of sites anchored at colleges and universities and serving teachers across disciplines and at all levels, early childhood through university. We provide professional development, develop resources, generate research, and act on knowledge to improve the teaching of writing and learning in schools and communities. http://www.nwp.org
- Pacecar -Vocab Ahead offers videos that give an active demonstration of vocabulary with audio repeating the pronunciation, definition, various uses, and synonyms. Students can also go through flash cards which give a written definition and visual representation of the word. http://pacecar.missingmethod.com/