Hanover Township Public Schools

Mathematics Curriculum

Algebra 1

Algebra 1

Students will master the following topics:

First Two Weeks of School Review:

Patterns (10/15 Days)

1. **Language of Algebra**
   - **a.** Write Expressions — **N-Q.1 b.**
   - **b.** Represent Functions as Rules and Tables — **A-CED.2, A-CED.3, N-Q.1, F-IF.1 c.**
   - **c.** Represent Functions as Graphs — **N-Q.1, F-IF.5, F-LE.2, F-IF.1 d.**
   - **d.** Rewrite Equations and Formulas — **A-CED.4, A-REI.1, A-REI.3**

2. **Equations**
   - **a.** Solve One-Step Equations — **N-Q.1, A-CED.1, A-REI.1, A-REI.3, A-CED.1, A-REI.1, A-REI.3, N-Q.1**
   - **b.** Solve Multi-step Equations — **A-CED.1, A-CED.3, A-REI.1, A-REI.3**
   - **c.** Solve Equations with Variables on Both Sides — **A-CED.1, A-REI.1, A-REI.3**
   - **d.** Extension: Apply Properties of Equality — **Pgs 111-112**

3. **Functions**
   - **a.** Plot Points in a Coordinate Plane — **A-CED.4 b.**
   - **b.** Graph Linear Equations — **A-CED.2, F-IF.5, F-IF.7, A-REI.10**
   - **c.** Graph Using Intercepts — **N-Q.1, N-Q.2, A-CED.2, F-IF.4, F-IF.5, F-IF.7, F-IF.8**
   - **d.** Find Slope and Rate of Change — **A-CED.2, F-IF.4, F-IF.6, S-ID.7**
   - **e.** Graph Using Slope Intercept Form — **A-SSE.1, A-CED.2, F-IF.7, F-IF.8, S-ID.7, A-REI.11**
   - **f.** Graphing Linear Functions — **A-CED.2, F-IF.4, F-IF.5, F-IF.7, F-BF.3, A-REI.11, F-IF,1, F-IF.2**

First Marking Period:

g.	Write Linear Equations in Slope Intercept Form	**A-CED.2, A-CED.3, F-IF.8, F-BF.1, F-LE.5,F-LE.2**
h.	Use Linear Equations in Slope Intercept Form	**A-CED.2, F-IF.6, F-IF.8, F-BF.1, F-LE.5, F-LE.2**
i.	Write Linear Equations in Point Slope Form	**A-CED.2, F-IF.6, F-IF.7, F-IF.8, F-BF.1, F-LE.5, S-ID.7, F-LE.2, F-IF.3**
j.	Write Linear Equations in Standard Form	**A-CED.2, F-IF.4, F-IF.5, F-IF.7, F-IF.8, F-BF.1, F-LE.2**
k.	Write Equations of Parallel and Perpendicular Lines	**12.F-LE.2**

4. Proportion/Variation

a.	Write Ratios and Proportions	**A-REI.3, F-IF.1**
b.	Solve Proportions	**A-REI.1, A-REI.3**
c.	Model Direct Variation	**A-SSE.1, A-CED.2, F-IF.7**

5. Line of Best Fit

a.	Fit a Line to Data	**F-IF.6, F-BF.1, F-LE.5, S-ID.6, F-LE.2, F-IF.2**
b.	Predict with Linear Models	**N-Q.2, F-IF.4, F-BF.1, S-ID.6, S-ID.7, F-LE.2**

6. Linear Inequalities

a.	Solve Inequalities Using Addition and Subtraction	**A-CED.1, A-REI.3**
b.	Solve Inequalities Using Multiplication and Division	**A-CED.1, A-REI.3**
c.	Solve Multi-step Inequalities	**A-CED.1, A-REI.3**
d.	Solve Compound Inequalities	**A-CED.1, A-REI.3**
e.	Graph Linear Inequalities in Two Variables	**A-CED.3, A-REI.12**
f.	Solve Absolute Value Equation	**A-REI.3, F-IF.2, F-IF.7, F-IF.9**
g.	Solve Absolute Value Inequalities	**A-CED.1**
h.	Graph Absolute Value Functions	**(pg 338-339) F-IF.9, F-BF.3**

Second Marking Period:

7. Systems of Equations

a.	Solve Linear Systems by Graphing	**N-Q.1, A-REI.6**
b.	Solve Linear Systems by Substitution	**A-CED.3, A-REI.6**
c.	Solve Linear Systems by Adding or Subtracting	**A-REI.6**
d.	Solve Linear Systems by Multiplying First	**A-CED.3, A-REI.5, A-REI.6**
e.	Solve Special Types of Linear Systems	**A-REI.6, F-IF.7**
f.	Systems of Linear Inequalities	**A-CED.3, A-REI.12**

8. Quadratic Equations and Functions

a.	Graph $y=ax^2 + bx + c$ (**Technology)**	**F-IF.4, F-IF.5, F-IF.7, F-IF.9**
b.	Solve Quadratic Equations by Graphing	**A-SSE.3, F-IF.4, F-IF.7, A-REI.11**
c.	Use Square Roots to Solve Quadratic Equations	**A-REI.4, F-IF.4**
d.	Solve Quadratic Equations by the Quadratic Formula	**A-REI.4**

9. Exponents and Exponential Function

a.	Apply Exponent Properties Involving Products	**this is not in the curriculum but is necessary to do next sections**
b.	Apply Exponent Properties Involving Quotients	**this is not in the curriculum but is necessary to do next sections**
c.	Define and Use Zero and Negative Exponents	**this is not in the curriculum but is necessary to do next sections**
d.	Write and Graph Exponential Growth Functions	**A-SSE.3, F-IF.5, F-IF.7, F-IF.8, F-IF.9, F-BF.1, F-BF.3, F-LE.5, F-LE.1, F-LE.2**
e.	Write and Graph Exponential Decay Functions	**A-SSE.3, F-IF.7, F-IF.8, F-IF.9, F-BF.1, F-BF.3, F-LE.5, F-LE.1, F-LE.2, F-IF.3**

Third Marking Period:

10. Polynomials and Factoring

a.	Add and Subtract Polynomials	**A-SSE.2, A-APR.1**
b.	Multiply Polynomials	**A-SSE.2, A-APR.1**
c.	Find Special Products of Polynomials	**A-SSE.2, A-APR.1**
d.	Solve Polynomial Equations in Factored Form	**A-SSE.2, A-APR.1**
e.	Factor $x^2 + bx + c$	**A-REI.4b**
f.	Factor $ax^2 + bx + c$	**A-SSE.3a**
g.	Factor Special Products	**A-SSE.2**
h.	Factor Polynomials Completely	**A-SSE.3a**

11. Quadratics Equations and Functions

a.	Graph $y = ax^2 + c$	**F-BF.3**
b.	Graph $y = ax^2 + bx + c$	**F-IF.7a**
c.	Solve Quadratic Equations by Graphing	**F-IF.7a**
d.	Use Square Roots to Solve Quadratic Equations	**A-REI.4b**
e.	Solve Quadratic Equations by the Completing the Square	**A-REI.4b**
f.	Solve Quadratic Equations by the Quadratic Formula	**A-REI.4b**
g.	Solve Systems with Quadratic Equations	**A-REI.11**
h.	Compare Linear, Exponential, and Quadratic Models	**A-CED.2**
i.	Model Relationships	**F-IF.4**

Fourth Marking Period:

→NJSLA Review

→Final Review

→MP 4 Project

Standard

New Jersey Student Learning Standards: N-Q, A-CED, A-REI

Equations

Strand

N-Q: Quantities

Reason quantitatively and use units to solve problems.

1. Use units as a way to understand problems and to guide the solutions 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.

A-CED: Creating Equations*

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. 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.

A-REI: Reasoning with Equations and Inequalities

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.

Solve equations and inequalities in one variable

1. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Represent and solve equations and inequalities graphically.

1. 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 solutions approximately; e.g., using technology to graph 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.*

Essential Questions	**Activities, Investigation, and Student Experiences**
1. What is the difference between a variable and a constant? 2. How are the addition and subtraction properties of equality used to solve equations? 3. What steps need to be taken to isolate the variable? Why? 4. What is the difference between solving an equation that has all real numbers as solutions and solving an equation that has no solution?	**Task 1:** Last year, the area of Jamie's garden was 32 square feel. This year, she added a new rectangular-shaped section to her garden. The length of the new section of the garden is 12 feet. The TOTAL area of her garden now, last year's garden plus the new section is 116 square feet. ● Write an equation that can be used to determine the width (w) in feet of the garden. ● What is the width, in feet, of the new section of the garden? **Answer:** 32 + 12w = 116 7 feet
Essential Understanding	**Task 2:**
Students will understand.... ● Properties of equality ● Use inverse operations to solve equations containing variables. ● Write equations to represent situations. ● Simplify equations before solving. ● Solve equations graphically. ● Solve absolute-value equations and proportions. ● Precision and accuracy ● Environmental Literacy ● Cross-Cultural Understanding and Interpersonal Communications	a. $24 = \frac{2}{3}x + 12 \quad 24 = \frac{2}{3}x + 12$ b. $0.5(y + 12) = -2.5y - 80.5(y + 12) = -2.5y - 8$ c. $\frac{x-3}{5} = \frac{3xx-3}{7\ 5} = \frac{3x}{7}$ **Answer:** a. 18 b. -7 c. -2.625
	Task 3: SS A family rents a truck to move from Buffalo to Chicago. The rental has a base cost of $49.95, plus an additional cost of $1.19 per mile driven. The family also pays for gas, which costs $3.89 per gallon. The truck's average gas mileage is 18 miles per gallon. What is the total cost of the move? (Hint: Use the map to estimate the driving distance.) **Answer:**

	Find the distance driven by multiplying the measured distance on the map by the scale of the map. Find the gallons of gasoline needed by dividing the distance by the average gas mileage. Find the cost of gas by multiplying the gallons needed by the cost per gallon. Find the cost of the truck rental by multiplying the distance by the cost. Finally, add the cost of the gasoline and the cost of the truck rental. Final answer: $726.75

Content Statements

Students will know...

- How to translate between words and algebra.
- How to evaluate algebraic expressions.
- How to solve one-step equations in one variable by using addition or subtraction.
- How to solve one-step equations by using multiplication or division.
- How to solve equations in one variable that contain more than one operation.
- How to solve equations in one variable that contains variables on both sides.
- How to solve a formula for a given variable.
- How to solve an equation in two or more variables for one of the variables.
- How to solve equations in one variable that contains absolute-value expressions.
- How to write and use ratios, rates and proportions.
- How to use proportions to solve problems involving geometric figures and measure objects Indirectly.
- How to analyze and compare measurements for precision and accuracy.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment	● Environmental Literacy ● Cross-Cultural Understanding and Interpersonal Communications

IXL Diagnostic Benchmark
Homework / Classwork
Chapter Performance Task
Final Chapter Assessment
Think-Pair-Share
Small Group / Large Group Collaboration

Teacher Resources

Text:
Algebra 1 ~ Common Core
Structure and Method

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Variables and Expressions
- Solving Equations by Adding and Subtracting
- Solving Equations by Multiplying or Dividing
- Solving Two-Step and Multi-Step Equations
- Solving Equations with Variables on Both Sides
- Solving for a Variable
- Solving Absolute-Value Equations
- Rates, Ratios, and Proportions
- Applications of Proportions

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

Personal Finance Literacy 9.1 Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 20-22	**Career Awareness Exploration Preparedness and Training 9.2** Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 37-40	**Life Literacies and Key Skills 9.4** Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 43-52
The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. Early planning can provide more options to pay for postsecondary training and employment.	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).

There are strategies to increase your savings and limit debt 9.1.8.CDM.1: Compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each. 9.1.8.CDM.2: Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each. Credit management includes making informed choices about sources of credit and requires an understanding of the cost of credit. 9.1.8.CDM.3: Compare and contrast loan management strategies, including interest charges and total principal repayment costs. There are strategies to build and maintain a good credit history. 9.1.8.CP.1: Compare prices for the same goods or services.	9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. 9.2.8.CAP.8: Compare education and training requirements, income potential, and primary duties of at least two jobs of interest. There are a variety of resources available to help navigate the career planning process. 9.2.8.CAP.10: Evaluate how careers have evolved regionally, nationally, and globally. Employee benefits can influence your employment choices. 9.2.8.CAP.13: Compare employee benefits when evaluating employment interests and explain the possible impact on personal finances. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.15: Present how the demand for certain skills, the job market, and	Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated. 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem

9.1.8.CP.2: Analyze how spending habits affect one's ability to save. Taxes affect one's personal finances. 9.1.8.EG.1: Explain how taxes affect disposable income and the difference between net and gross income • 9.1.8.EG.2: Explain why various sources of income are taxed differently There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.5: Interpret how changing economic and societal needs influence employment trends and future education. 9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family security, and consumer decisions. 9.1.8.EG.8: Analyze the impact of currency rates over a period of time and the impact on trade, employment, and	credentials can determine an individual's earning power. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level There are resources to help an individual create a business plan to start or expand a business. 9.2.8.CAP.20: Identify the items to consider when estimating the cost of funding a business.	

income. There are a variety of factors that influence how well suited a financial institution and/or service will be in meeting an individual's financial needs. 9.1.8.FI.1: Identify the factors to consider when selecting various financial service providers. 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions 9.1.8.FP.5: Determine how spending, investing, and using credit wisely contributes to financial well-being. A budget aligned with an individual's financial goals can help prepare for life		

events. 9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process. 9.1.8.PB.3: Explain how to create a budget that aligns with financial goals. 9.1.8.PB.4: Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family) Goals (e.g., higher education, autos, homes, retirement), affect your finances. 9.1.8.PB.6: Construct a budget to save for short-term, long term, and charitable goals. Individuals can choose to accept some risk, to take steps to avoid or reduce risk, or to transfer risk to others through the purchase of insurance. 9.1.8.RM.2: Analyze the need for and value of different types of insurance and the impact of deductibles in protecting assets against loss. .		

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
● Provide a table of math facts for reference ● Tape a number line to the student's desk ● Read and explain word problems, or break problems into smaller steps ● Use pictures or graphics in directions and assignments ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Encourage turning lined paper sideways to maintain column alignment ● Create math vocabulary banks ● Utilize graphic organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class	● Pre Teach Vocabulary ● Create Math vocabulary banks with pictures ● Rephrase math problems when appropriate ● Build knowledge from real-world examples ● Provide manipulatives ● Teach Touch Math ● Have students relate an object they know with a unit of measure ● Encourage peer discussions regarding how students are thinking about math ● Provide margin notes ● Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	● Create a math journal that can be used during class, assignments, or assessments ● Assign a peer buddy who is high performing in math ● Create an interactive math notebook ● Allow students to complete an independent project as an alternative test	● Provide extension activities ● Conduct research and provide presentations of cultural topics. ● Design surveys to generate and analyze data to be used in discussions ● Utilize higher level questioning techniques ● Provide assessments at a higher level of thinking ● Provide opportunities for independent study/Genius Hour focus	● Create math vocabulary banks ● Tape a number line to student desk ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Provide a table of math facts for reference ● Read and explain story problems, or break problems into smaller steps ● Use pictures or graphics

notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard
New Jersey Student Learning Standards: N-Q, A-CED, A-REI
Inequalities

Strand
N-Q: Quantities
Reason quantitatively and use units to solve problems.
1. Use units as a way to understand problems and to guide the solutions of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
A-CED: Creating Equations*
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.
A-REI: Reasoning with Equations and Inequalities Solve equations and inequalities in one variable.
3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Essential Questions

1. What is the difference between simplifying and solving?
2. How do you write a compound inequality as two simple inequalities?
3. What is the difference between intersection and union?
4. How do you know whether a graph represents a compound inequality that involves And or Or?

Essential Understanding

Students will understand....

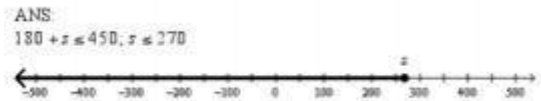
- Properties of inequality.
- Use inverse operations to solve inequalities.
- Write inequalities to represent situations.
- Simplify inequalities before solving.

Activities, Investigation, and Student Experiences

Task 1:

Sam earned $450 during winter vacation. He needs to save $180 for a camping trip over spring break. He can spend the remainder of the money on music. Write an inequality to show how much he can spend on music. Then, graph the inequality.

Answer:



Task 2:

Solve the compound inequality and graph the solutions.

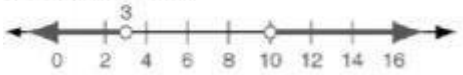
$-a + 8 < -2$ OR $-3a > -9$

- Solve compound and absolute value inequalities.

Answer:

ANS:

$a < 3$ OR $a > 10$



Task 3:

Solve the compound inequality.

$6 \leq x - 2 < 14$

Answers:

$8 \leq x < 16$

Task 4:

Solve the inequality.

$-3(x - 1) > -3x - 2$

Answer:

All Real Numbers

Task 5 SS:

Planning a trip on a budget - $200

- Students choose a place they would realistically like to visit.
- Students research the location to complete a spreadsheet including:
  - travel expenses (plane, train, rental car, gas)
  - lodging expenses
  - food expenses (breakfast, lunch, dinner, snack)
  - include at least 1 activity
- Complete the inequality: travel + lodging + food + activity(s) > or = $200
- Based on research and the inequality, students assign an amount of money for each event category.
- Students will write a word equations under each event category showing how the money will be

Content Statements
Students will know... ● How to identify solutions of inequalities with one variable. ● How to write and graph inequalities with one variable. ● How to solve one-step inequalities by using addition and subtraction. ● How to solve one-step equations by using multiplications and division. ● How to solve inequalities that contain more than one operation. ● How to solve inequalities that contain variable terms on both sides. ● How to solve compound inequalities with one variable. ● How to graph solution sets of compound inequalities with one variable. ● How to solve inequalities involving absolute value expressions. ● Curriculum aligned with: 2009 New Jersey Core Curriculum Content Standards for 21st Century Skills (9.1A-F)

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Financial, economic, business and entrepreneurial literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

Desired Results

- Graphing and Writing Inequalities
- Solving Inequalities by Adding or Subtracting
- Solving Inequalities by Multiplying or Dividing
- Solving Two-Step and Multi-Step Inequalities
- Solving Inequalities with Variables on Both Sides
- Solving Compound Inequalities
- Solving Absolute Value Inequalities

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

Personal Finance Literacy 9.1	**Career Awareness Exploration Preparedness and Training 9.2**	**Life Literacies and Key Skills 9.4**
Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 20-22	Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 37-40	Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 43-52

The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance. There are strategies to increase your savings and limit debt 9.1.8.CDM.1: Compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each. 9.1.8.CDM.2: Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. • 9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. Employee benefits can influence your employment choices. 9.2.8.CAP.13: Compare employee benefits when evaluating employment interests and explain the possible impact on personal finances. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.15: Present how the demand for certain skills, the job market, and credentials can determine an individual's earning power. 9.2.8.CAP.19: Relate academic	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1). Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated. 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
• Provide a table of math facts for reference • Tape a number line to the student's desk • Read and explain word problems, or break problems into smaller steps • Use pictures or graphics in directions and assignments • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Encourage turning lined paper sideways to maintain column alignment • Create math vocabulary banks • Utilize graphic	• Pre Teach Vocabulary • Create Math vocabulary banks with pictures • Rephrase math problems when appropriate • Build knowledge from real-world examples • Provide manipulatives • Teach Touch Math • Have students relate an object they know with a unit of measure • Encourage peer discussions regarding how students are thinking about math • Provide margin notes • Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	• Create a math journal that can be used during class, assignments, or assessments • Assign a peer buddy who is high performing in math • Create an interactive math notebook • Allow students to complete an independent project as an alternative test	• Provide extension activities • Conduct research and provide presentation of cultural topics. • Design surveys to generate and analyze data to be used in discussions • Utilize higher level questioning techniques • Provide assessments at a higher level of thinking • Provide opportunities for independent study/Genius Hour focus	• Create math vocabulary banks • Tape a number line to student desk • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Provide a table of math facts for reference • Read and explain story problems, or break problems into smaller steps • Use pictures or graphics

organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard

New Jersey Student Learning Standards: N-Q, A-CED, A-REI, F-IF
Functions

Strand

N-Q: Quantities

Reason quantitatively and use units to solve problems.

1, Use units as a way to understand problems and to guide the solutions of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

A-CED: Creating Equations*

Create equations that describe numbers or relationships.

2. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A-REI: Reasoning with Equations and Inequalities Represent and solve equations and inequalities graphically.

3. 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).

F-IF: Interpreting Functions

Understand the concept of a function and use function notation.

4. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain has 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).

1. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

2. Recognize 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 $n \geq 1$.

Interpret functions that arise in application in terms of the context.

3. 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 in 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.*

4. 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.

Analyze functions using different representations.

1. 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 intercept and end behavior, and trigonometric functions, showing period, midline, and amplitude.

F- BF: Building Functions

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. *

F-LE: Linear and Exponential Models*

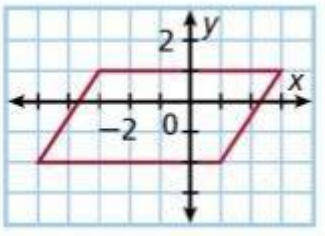
Construct and compare linear and exponential models and solve problems.

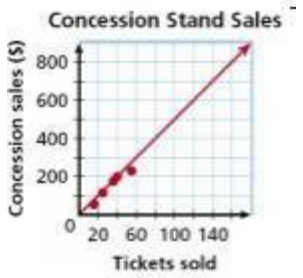
1. Construct linear and exponential functions, including arithmetic and geometric-sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

S-ID: Interpreting Categorical and Quantitative Data

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

2. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
a. Fit a function of the data; use a function fitted to data. Use given functions or choose a function suggested by the context. Emphasize linear 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.

Essential Questions	Activities, Investigation, and Student Experiences
1. What does the domain represent? Range represent? 2. What does a scatter plot like if there is no correlation between the data sets? Positive correlation? Negative correlation? 3. How is identifying an arithmetic sequence similar to identifying a function rule?	**Task 1:** Write a possible situation for the given graph.  **Answer:** Possible Situation: The level of water in a bucket stays constant. A steady rain raises the level. The rain slows down. Someone dumps the bucket. **Task 2:** Give the domain and range of the relation. Tell whether the relation is a function. Explain.  **Answer:** D: $-5 \le x \le 3$ R: $-2 \le y \le 1$ The relation is not a function. Nearly all domain values have more than one range value. **Task 3:** The scatter plot shows a relationship between the total amount of money collected at the concession stand and the total number of tickets sold at a movie theater. Based on this relationship, predict how much money will be collected at the concession stand when 150 tickets have been sold. Draw a trend line and use it to make a prediction.
Essential Understanding	
Students will understand…. ● Relationship between variables. ● Determine whether a relation is a function. ● Use function notation. ● Use trend lines on scatter plots to make a prediction. ● Arithmetic sequences.	



Answer:

o Draw a line that has about the same number of points above and below it. Your line may or may not go through data points.

o Find the point on the line whose x-value is 150. The corresponding y-value is 750.

o Based on the data, $750 is a reasonable prediction of how much money will be collected when 150 tickets have been sold.

Task 4:

Find the indicated term of the arithmetic sequence The 25th term: $a_1 = -5$; d = –2

Answer:

$a_n = a_1 + (n-1)d$ *Write a rule to find the nth term*

$a_{25} = -5 + (25-1)(-2)$ *Substitute –5 for a_1, 25 for n, and –2 for d.*

$= -5 + (24)(-2)$ *Simplify the expression in parentheses*

$= -53$

The 25th term is –53.

Task 5: SCI

A certain type of lily plant is growing in a pond in such a way that the number of plants is growing exponentially. The number of plants N in the pond at time t is modeled by the function N(t) = ab^t , where a and b are constants and t is measured in months. The table shows two values of the function.

Write an equation to model this function.

Answer:

$N(t) = 150(3)^t$

Content Statements
Students will know... ● How to match simple graphs with situations. ● How to graph a relationship. ● How to identify functions. ● How to find the domain and range of relations and functions. ● How to identify independent and dependent variables. ● How to write an equation in function notation and evaluate a function for given input values. ● How to graph functions given a limited domain. ● How to graph functions given a domain of all real numbers. ● How to create and interpret scatter plots. ● How to use trend lines and make predictions. ● How to recognize and extend an arithmetic sequence. ● Find a given term of an arithmetic sequence.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Environmental Literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Graphing Relationships
- Relations and Functions
- Writing Functions
- Graphing Functions
- Scatter plots and Trend Lines
- Arithmetic Sequences

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

Personal Finance Literacy 9.1 Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 20-22	**Career Awareness Exploration Preparedness and Training 9.2** Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 37-40	**Life Literacies and Key Skills 9.4** Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 43-52
The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. Early planning can provide more options to pay for postsecondary training and employment.	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).

There are strategies to increase your savings and limit debt 9.1.8.CDM.1: Compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each. 9.1.8.CDM.2: Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each. Credit management includes making informed choices about sources of credit and requires an understanding of the cost of credit. 9.1.8.CDM.3: Compare and contrast loan management strategies, including interest charges and total principal repayment costs. There are strategies to build and maintain a good credit history. 9.1.8.CP.1: Compare prices for the same goods or services.	• 9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. 9.2.8.CAP.8: Compare education and training requirements, income potential, and primary duties of at least two jobs of interest. There are a variety of resources available to help navigate the career planning process. 9.2.8.CAP.10: Evaluate how careers have evolved regionally, nationally, and globally. Employee benefits can influence your employment choices. 9.2.8.CAP.13: Compare employee benefits when evaluating employment interests and explain the possible impact on personal finances. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.15: Present how the demand	Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated. 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem

9.1.8.CP.2: Analyze how spending habits affect one's ability to save. 9.1.8.EG.1: Explain how taxes affect disposable income and the difference between net and gross income • 9.1.8.EG.2: Explain why various sources of income are taxed differently There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.5: Interpret how changing economic and societal needs influence employment trends and future education. 9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family security, and consumer decisions. 9.1.8.EG.8: Analyze the impact of currency rates over a period of time and the impact on trade, employment, and income. There are a variety of factors that influence how well suited	for certain skills, the job market, and credentials can determine an individual's earning power. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level There are resources to help an individual create a business plan to start or expand a business. 9.2.8.CAP.20: Identify the items to consider when estimating the cost of funding a business.	

a financial institution and/or service will be in meeting an individual's financial needs. 9.1.8.FI.1: Identify the factors to consider when selecting various financial service providers. 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions 9.1.8.FP.5: Determine how spending, investing, and using credit wisely contributes to financial well-being. A budget aligned with an individual's financial goals can help prepare for life events. 9.1.8.PB.1: Predict future expenses or opportunities that should be included in the		

budget planning process. 9.1.8.PB.3: Explain how to create a budget that aligns with financial goals. 9.1.8.PB.4: Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family) Goals (e.g., higher education, autos, and homes, retirement), affect your finances. 9.1.8.PB.6: Construct a budget to save for short-term, long term, and charitable goals. Individuals can choose to accept some risk, to take steps to avoid or reduce risk, or to transfer risk to others through the purchase of insurance. 9.1.8.RM.2: Analyze the need for and value of different types of insurance and the impact of deductibles in protecting assets against loss. .		

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
● Provide a table of math facts for reference ● Tape a number line to the student's desk ● Read and explain word problems, or break problems into smaller steps ● Use pictures or graphics in directions and assignments ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Encourage turning lined paper sideways to maintain column alignment ● Create math vocabulary banks ● Utilize graphic organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class	● Pre Teach Vocabulary ● Create Math vocabulary banks with pictures ● Rephrase math problems when appropriate ● Build knowledge from real-world examples ● Provide manipulatives ● Teach Touch Math ● Have students relate an object they know with a unit of measure ● Encourage peer discussions regarding how students are thinking about math ● Provide margin notes ● Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	● Create a math journal that can be used during class, assignments, or assessments ● Assign a peer buddy who is high performing in math ● Create an interactive math notebook ● Allow students to complete an independent project as an alternative test	● Provide extension activities ● Conduct research and provide presentation of cultural topics. ● Design surveys to generate and analyze data to be used in discussions ● Utilize higher level questioning techniques ● Provide assessments at a higher level of thinking ● Provide opportunities for independent study/Genius Hour focus	● Create math vocabulary banks ● Tape a number line to student desk ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Provide a table of math facts for reference ● Read and explain story problems, or break problems into smaller steps ● Use pictures or graphics

notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard

New Jersey Student Learning Standards: A-CED. F-IF, F-BF Linear Functions

Strand

A-CED: Creating Equations

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 modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

F-IF: Interpreting Functions

Understand the concept of a function and use function notation.

1. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Interpret functions that arise in application in terms of the context.

2. 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 in 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.*
3. 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.*
4. 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.

5. Graph functions expressed symbolically and show key features if the graph, by hand in simple cases and using technology for more complicated cases*
6. 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 functions and an algebraic expression for another, say which has the larger maximum.

F- BF: Building Functions

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 **Build new functions from existing functions.**

3. Identify the effect on the graph of replacing f(x) by f(x) + k, kf(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.*

F-LE: Linear and Exponential Models*

Construct and compare linear and exponential models and solve problems.

1. 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).

S-ID: Interpreting Categorical and Quantitative Data

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

2. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

a. Fit a function of the data; use a function fitted to data. Use given functions or choose a function suggested by the context. Emphasize linear 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.

3. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

4. Compute (using technology) and interpret the correlation coefficient of a linear fit.

5. Distinguish between correlation and causation.

Essential Questions	**Activities, Investigation, and Student Experiences**
1. What does rate of change mean and how do you find it? 2. What kind of slope represents a negative rate of change? A positive rate of change? 3. What is the first step when graphing a line given the slope and y-intercept? 4. What does the correlation coefficient indicate? 5. What is true about the slopes of perpendicular lines? Parallel line?	**Task 1** You are riding your bike at a constant speed of 30 ft./s. A friend uses a stopwatch to time you as you ride along a city block that is 264 ft. long. a. Make a graph to represent the situation, where the independent variable is time and the dependent variable is distance traveled. b. Make a second graph to represent the situation, where the independent variable is time and the c. Do both graphs represent functions? If so, are they linear or nonlinear? d. Find a reasonable domain and range for each graph. e. Write a function rule for each graph. dependent variable is speed 
Essential Understanding *Students will understand....* ● Write and graph linear functions. ● Identify and interpret the components of linear graphs, including slope and intercepts. ● Slope-intercept and point-slope forms. ● Parallel and perpendicular ● Transform linear functions. ● Lines of best fit.	

Content Statements

Students will know...

- How to identify linear functions and linear equations.
- How to graph linear functions that represents real-world situations and give their domain and range.
- How to find x and y intercepts and interpret their meaning in real world situations.
- How to use x and y intercepts to graph lines.
- How to find rates of change and slopes.
- How to relate constant rates of changes to the slope of a line.

- How to find the slope by using slope formula.
- How to identify, write and graph direct variation.
- How to write a linear

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Financial, economic, business and entrepreneurial literacy ● Environmental literacy ● Cross-Cultural Understanding and Interpersonal Communications ● Critical thinking & problem solving

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Identifying Linear Functions.
- Using Intercepts
- Rate of Change and Slope
- The Slope Formula
- Direct Variation
- Slope Intercept Form
- Point slope Form
- Line of Best Fit
- Slopes of Parallel and Perpendicular Lines
- Transforming Linear Functions

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

Personal Finance Literacy 9.1 Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 20-22	**Career Awareness Exploration Preparedness and Training 9.2** Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 37-40	**Life Literacies and Key Skills 9.4** Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 43-52
The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. Early planning can provide more options to pay for postsecondary training and employment.	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).

There are strategies to increase your savings and limit debt 9.1.8.CDM.1: Compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each. 9.1.8.CDM.2: Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each. Credit management includes making informed choices about sources of credit and requires an understanding of the cost of credit. 9.1.8.CDM.3: Compare and contrast loan management strategies, including interest charges and total principal repayment costs. There are strategies to build and maintain a good credit history. 9.1.8.CP.1: Compare prices for the same goods or services.	• 9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. 9.2.8.CAP.8: Compare education and training requirements, income potential, and primary duties of at least two jobs of interest. There are a variety of resources available to help navigate the career planning process. 9.2.8.CAP.10: Evaluate how careers have evolved regionally, nationally, and globally. Employee benefits can influence your employment choices. 9.2.8.CAP.13: Compare employee benefits when evaluating employment interests and explain the possible impact on personal finances. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.15: Present how the demand for certain skills, the job market, and	Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated. 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem

9.1.8.CP.2: Analyze how spending habits affect one's ability to save. Taxes affect one's personal finances. 9.1.8.EG.1: Explain how taxes affect disposable income and the difference between net and gross income • 9.1.8.EG.2: Explain why various sources of income are taxed differently There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.5: Interpret how changing economic and societal needs influence employment trends and future education. 9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family security, and consumer decisions. 9.1.8.EG.8: Analyze the impact of currency rates over a period of time and the impact on trade, employment, and	credentials can determine an individual's earning power. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level There are resources to help an individual create a business plan to start or expand a business. 9.2.8.CAP.20: Identify the items to consider when estimating the cost of funding a business.	

income. There are a variety of factors that influence how well suited a financial institution and/or service will be in meeting an individual's financial needs. 9.1.8.FI.1: Identify the factors to consider when selecting various financial service providers. 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions 9.1.8.FP.5: Determine how spending, investing, and using credit wisely contributes to financial well-being. A budget aligned with an individual's financial goals		

can help prepare for life events. 9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process. 9.1.8.PB.3: Explain how to create a budget that aligns with financial goals. 9.1.8.PB.4: Construct a simple personal savings and spending plan based on various sources of income and different stages of life (e.g. teenager, young adult, family) Goals (e.g., higher education, autos, and homes, retirement), affect your finances. 9.1.8.PB.6: Construct a budget to save for short-term, long term, and charitable goals. Individuals can choose to accept some risk, to take steps to avoid or reduce risk, or to transfer risk to others through the purchase of insurance. 9.1.8.RM.2: Analyze the need for and value of different types of insurance and the impact of deductibles in protecting assets against loss. .		

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
● Provide a table of math facts for reference ● Tape a number line to the student's desk ● Read and explain word problems, or break problems into smaller steps ● Use pictures or graphics in directions and assignments ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Encourage turning lined paper sideways to maintain column alignment ● Create math vocabulary banks ● Utilize graphic	● Pre Teach Vocabulary ● Create Math vocabulary banks with pictures ● Rephrase math problems when appropriate ● Build knowledge from real-world examples ● Provide manipulatives ● Teach Touch Math ● Have students relate an object they know with a unit of measure ● Encourage peer discussions regarding how students are thinking about math ● Provide margin notes ● Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	● Create a math journal that can be used during class, assignments, or assessments ● Assign a peer buddy who is high performing in math ● Create an interactive math notebook ● Allow students to complete an independent project as an alternative test	● Provide extension activities ● Conduct research and provide presentation of cultural topics. ● Design surveys to generate and analyze data to be used in discussions ● Utilize higher level questioning techniques ● Provide assessments at a higher level of thinking ● Provide opportunities for independent study/Genius Hour focus	● Create math vocabulary banks ● Tape a number line to student desk ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Provide a table of math facts for reference ● Read and explain story problems, or break problems into smaller steps ● Use pictures or graphics

organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard- New Jersey Student Learning Standards: A-CED, A-REI
System of Equation and Inequalities

Strand A-CED: Creating Equations

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 system of equations and/or inequalities, and interpret solutions as viable or nonviable options. In a modeling context. *Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in modeling context.* **A-REI: Reasoning with Equations and Inequalities**

Solve systems of equations

4. 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.

5. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Represent and solve equations and inequalities graphically

6. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half planes.

Essential Questions	**Activities, Investigation, and Student Experiences**
1. What does the solutions of the system represent? 2. What does the intersection of two lines represent? 3. How do you know if an ordered pair is not a solution of a linear inequality? 4. How do you determine which inequality symbol to use?	**Task 1:** Solve each using two different methods. Explain which method you found to be more efficient. 3x – 9y = 3 7x – 3y = 20 y = 1/2x - 6 6x – 3y = -24 5x + 3y = 16 2x + 6y = 19 Answer: (-5,-2) (3,1/3) (11,-1/2) **Task 2:** Solve. Show all your work and explain your steps. The triangle on the left has a perimeter of 14. The triangle on the right has a perimeter of 21. What are x and y? Answer: (2,6) **Task 3:** A town is organizing a Fourth of July parade. There will be two sizes of floats in the parade, as shown below. A space of 10ft. will be left after each float. a. The parade must be at least 150 ft. long, but less than 200 ft. long. What combinations of large and small floats are possible? b. Large floats cost $600 to operate. Small floats cost $300 to operate. The town has a budget of $2500 to operate the floats. How does this change your answer to part (a)? What combinations of large and small floats are possible? Answer: a. x: small y: large (1,4), (2,3), (3,2), (3,3), (4,2), (5,1), (6,1)
Essential Understanding	
Students will understand.... ● Find a solution that satisfies two linear equations. ● Graph one or more linear inequalities in the coordinate plane. ● Find the solutions that satisfy two linear inequalities.	

Content Statements
Students will know... ● How to identify solutions of systems of linear equations in two variables. ● How to solve systems of linear equations in two variables by graphing. ● How to solve systems of linear equations in two variables by substitution. ● How to solve systems of linear equations in two variables by elimination. ● How to compare and choose an appropriate method for solving systems of linear equations. ● How to solve special systems of linear equations in two variables. ● How to classify systems of linear equations and determine the number of solutions. ● How to graph and solve linear inequalities in two variables. ● How to graph and solve systems on linear inequalities in two variables.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Financial, economic, business and entrepreneurial literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources	
Text: Algebra 1 ~ Common Core **Classroom Materials:** Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo	**Digital:** Pearson/Savvas EasyBridge Brainpop.com KhanAcademy Illustrative Mathematics National Library of Virtual Manipulatives Gizmos IXL Kami Kahoot Blooket Quizlet Quizizz ClassKick Google Slides Edpuzzle Virtual Nerd Video Tutorials Kuta Math Delta Math
Desired Results	
● Solving systems by Graphing ● Solving Systems by Substitution ● Solving Systems by Elimination ● Solving Special Systems ● Solving Linear Inequalities ● Solving Systems of Linear Inequalities	

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The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.3: Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income. Early planning can provide more options to pay for postsecondary training and employment.	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).

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Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
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math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard - New Jersey Student Learning Standards: N-RN, A-APR
Exponents and Polynomials

Strand
N-RN: The Real Number System
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.
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
Use properties of rational and irrational numbers
1. 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.
A-APR: Arithmetic with Polynomials and Rational Expressions
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.

Essential Questions	**Activities, Investigation, and Student Experiences**
1. What is any number raised to the zero power equal? 2. How do you change fractional exponents to an nth root? 3. How do you identify like-terms? 4. How is multiplying a polynomial by a binomial similar to multiplying a binomial by a binomial? How is it different?	**Task 1: SCI** Medical X-rays, with a wavelength of about 10-10 m, can penetrate completely through your skin. a. Ultraviolet rays, which cause sunburn by penetrating only the top level of skin, have a wavelength about 1000 times the wavelength of an x-ray. Find the wavelength of ultraviolet rays. Show your work. b. The wavelengths of visible light are between 3.8 X 10^-7 m and 7.6 X 10^-7 m. Are these wavelengths longer or shorter than those of ultraviolet rays? Explain. **Answer:** a. 10^-7 b. They are longer than ultraviolet rays. **Task 2:**
Essential Understanding	
Students will understand.... ● Properties of exponents. ● Add, subtract, and multiply polynomials by using properties of exponents and	

combining like terms. ● Closure of polynomials.	Write each answer as a power of 2. Show your work and explain your steps. a. Computer capacity is often measured in bits and bytes. A bit is the smallest unit, which is 1 or 0, in the computer's memory. A byte is 2^3 bits. A megabyte (MB) is 2^20 bytes. How many bits are in a megabyte? a. A gigabyte (GB) is 2^30 bytes. How many megabytes are in a gigabyte? How many bits are in a gigabyte? **Answer:** a. 2^23 bits b. 2 ^ 33 bits **Task 3:** Disease can spread quickly without use of universal precautions. Suppose the spread of a direct contact disease in a stadium is modeled by the exponential equation P(t) = 10,000/(1 + e^3-t number of people infected after t hours. (Use the estimate for e (2.718) or the graphing calculator for e in your calculations.) 1. Estimate the initial number of people infected with the disease. Show how you found your answer. 2. Assuming the disease does not present symptoms for 24 hours, how many people will have been infected after 3 hours? Show how you found your answer. 3. What is the maximum number of people who can become infected? (Note: e^ (3-t) will approach 0 for very large values of t). **Answer**: 1. About 474 people 2. We would expect 5000 people after 3 hours 3. The maximum number of people who can become infected is 10,000

Content Statements
Students will know... ● How to evaluate expressions containing zero and integers exponents. ● How to simplify expressions containing zero and integers exponents. ● How to evaluate and simplify expressions containing rational exponents. ● How to classify polynomials and write polynomials in standard form. ● Evaluate polynomial expressions. ● How to add and subtract polynomials. ● How to multiply polynomials. ● How to find special products of binomials.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Environmental literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Integer Exponents
- Rational Exponents
- Polynomials
- Adding and Subtracting Polynomials
- Multiplying Polynomials
- Special Products of Binomials

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
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NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

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Philanthropic and charitable organizations play important roles in supporting the interests of individuals and local and global communities and the issues that affect them. 9.1.8.CR.1: Compare and contrast the role of philanthropy, volunteer service, and charities in community development and the quality of life in a variety	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5,	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. • 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4). 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem.

of cultures. The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance. 9.1.8.CR.4: Examine the implications of legal and ethical behaviors when making financial decisions. There are strategies to build and maintain a good credit history. 9.1.8.CP.1: Compare prices for the same goods or services. 9.1.8.CP.2: Analyze how spending habits affect one's ability to save. There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.5: Interpret how changing economic and	7.1.NH.IPERS.6, 8.2.8.ETW.4). 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2). An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful. 9.4.8.CT.3: Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome. Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation.	9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2). Digital footprints are publicly accessible, even if only shared with a select group. Appropriate measures such as proper interactions can protect online reputations. 9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences. Digital technology and data can be leveraged by communities to address effects of climate change. 9.4.8.DC.8: Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities). Sources of information are evaluated for accuracy and relevance when considering the use of information. 9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8). Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

societal needs influence employment trends and future education. 9.1.8.EG.6: Explain the economic principle of the circular flow of money in different situations regarding buying products or services from a local or national business and buying imported or domestic goods. 9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family security, and consumer decisions. There are procedures required to take advantage of consumer protection laws and assistance programs. 9.1.8.EG.9: Identify types of consumer fraud, the procedures for reporting fraud, the specific consumer protection laws, and the issues they address. There are a variety of factors that influence how well suited a financial institution and/or service will be in meeting an individual's financial needs. 9.1.8.FI.1: Identify the factors	Sources of information are evaluated for accuracy and relevance when considering the use of information. 9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8). There are ethical and unethical uses of information and media. 9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media (e.g., 1.5.8.CR3b, 8.2.8.EC.2). There is a need to produce and publish media that has information supported with quality evidence and is intended for authentic audiences. 9.4.8.IML.12: Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience. 9.4.8.IML.14: Analyze the role of media in delivering cultural, political, and other societal messages. Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic	

to consider when selecting various financial service providers An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being. 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions. 9.1.8.FP.4: Analyze how familial and cultural values influence savings rates, spending, and other financial decisions. Marketing techniques are designed to encourage individuals to purchase items they may not need or want. 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising. There are strategies to decrease and manage expenses. 9.1.8.PB.7: Brainstorm techniques that will help decrease expenses including	location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.	

comparison shopping, negotiating, and day-to-day expense management. Individuals can choose to accept some risk, to take steps to avoid or reduce risk, or to transfer risk to others through the purchase of insurance. 9.1.8.RM.2: Analyze the need for and value of different types of insurance and the impact of deductibles in protecting assets against loss.		

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
• Provide a table of math facts for reference • Tape a number line to the student's desk • Read and explain word problems, or break problems into smaller steps • Use pictures or graphics in directions and assignments • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Encourage turning lined paper sideways to maintain column alignment • Create math vocabulary banks • Utilize graphic	• Pre Teach Vocabulary • Create Math vocabulary banks with pictures • Rephrase math problems when appropriate • Build knowledge from real-world examples • Provide manipulatives • Teach Touch Math • Have students relate an object they know with a unit of measure • Encourage peer discussions regarding how students are thinking about math • Provide margin notes • Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	• Create a math journal that can be used during class, assignments, or assessments • Assign a peer buddy who is high performing in math • Create an interactive math notebook • Allow students to complete an independent project as an alternative test	• Provide extension activities • Conduct research and provide presentation of cultural topics. • Design surveys to generate and analyze data to be used in discussions • Utilize higher level questioning techniques • Provide assessments at a higher level of thinking • Provide opportunities for independent study/Genius Hour focus	• Create math vocabulary banks • Tape a number line to student desk • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Provide a table of math facts for reference • Read and explain story problems, or break problems into smaller steps • Use pictures or graphics

organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard- New Jersey Student Learning Standards: A-SSE
Factoring Polynomials

Strand
A-SSE: Seeing Structure in Expression
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 the function defines.
   c. Use the properties of exponents to transform expressions for exponential functions. For example the expression can be rewritten as ≈ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

Essential Questions	**Activities, Investigation, and Student Experiences**
1.How do you find a common factor? 2. What does the sign of c tell you about the factors? 3. What does the sign of b tell you about the factors? 4. How is factoring a trinomial in the form of $ax^2 + bx + c$ similar to factoring a trinomial $x^2 + bx + c$? How is it different?	**Task 1: PE** An archery target consist of a circular bulls-eye with radius x, surrounded by four rings with width y. What is the area of the outermost ring in terms of x and y? **Task 2:** You are painting the outside of a jewelry box, including the bottom. To find the surface area of the jewelry box, you can use the formula S.A = 2wl + 2lh + 2wh, where l is the length, w is the width, and h is the height. What is the surface area of the jewelry box in terms of x?

Essential Understanding	**Task 3:** The volume of a square prism is . What is an expression that could describe the perimeter of one of the prism's square faces? **Answer**: 12, 16x + 12, and 48x + 36
Students will understand.... ● Greatest common factors. ● Factor polynomials. ● Factor perfect-squares trinomials and difference of squares. ● Choose a factoring method.	

Content Statements
Students will know... ● How to write the prime factorization of numbers. ● How to find the GCF of monomials. ● How to factor polynomials by using the greatest common factor. ● How to factor quadratic trinomials of the form ● How to factor quadratic trinomials of the form . ● How to factor perfect square trinomials. ● How to factor the difference of two squares. ● How to choose an appropriate method for factoring a polynomial. ● How to combine methods for factoring a polynomial.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Financial, economic, business and entrepreneurial literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Factors and Greatest Common Factors
- Factoring by GCF
- Factoring $x^2 + bx + c$
- Factoring $ax^2 + bx + c$
- Factoring Special Products
- Choosing a Factoring Method

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

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The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance. There are government	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest. Early planning can provide more options to pay for postsecondary training and employment. 9.2.8.CAP.9: Analyze how a variety of activities related to career preparation (e.g., volunteering, apprenticeships,	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.2: Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3). 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which

agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.6: Explain the economic principle of the circular flow of money in different situations regarding buying products or services from a local or national business and buying imported or domestic goods. 9.1.8.EG.8: Analyze the impact of currency rates over a period of time and the impact on trade, employment, and income. An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions. Goals (e.g., higher education, autos, and homes, retirement), affect your finances. 9.1.8.PB.5: Identify factors that affect one's goals, including peers, culture,	structured learning experiences, dual enrollment, job search, scholarships) impacts postsecondary options. Employee benefits can influence your employment choices. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.16: Research different ways workers/ employees improve their earning power through education and the acquisition of new knowledge and skills. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level There are resources to help an individual create a business plan to start or expand a business. 9.2.8.CAP.20: Identify the items to consider when estimating the cost of funding a business.	one(s) are likely to be effective (e.g., MS-ETS1-2). An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful. 9.4.8.CT.3: Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome. Digital technology and data can be leveraged by communities to address effects of climate change. 9.4.8.DC.8: Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities). Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction. 9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal. Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated • 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b). Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.

location, and past experiences. Insurance can protect your personal finances. 9.1.8.RM.4: Explain the purpose of insurance products and the reasons for property product and liability insurance protection.		9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
● Provide a table of math facts for reference ● Tape a number line to the student's desk ● Read and explain word problems, or break problems into smaller steps ● Use pictures or graphics in directions and assignments ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Encourage turning lined paper sideways to maintain column alignment ● Create math vocabulary banks ● Utilize graphic organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class	● Pre Teach Vocabulary ● Create Math vocabulary banks with pictures ● Rephrase math problems when appropriate ● Build knowledge from real-world examples ● Provide manipulatives ● Teach Touch Math ● Have students relate an object they know with a unit of measure ● Encourage peer discussions regarding how students are thinking about math ● Provide margin notes ● Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	● Create a math journal that can be used during class, assignments, or assessments ● Assign a peer buddy who is high performing in math ● Create an interactive math notebook ● Allow students to complete an independent project as an alternative test	● Provide extension activities ● Conduct research and provide presentation of cultural topics. ● Design surveys to generate and analyze data to be used in discussions ● Utilize higher level questioning techniques ● Provide assessments at a higher level of thinking ● Provide opportunities for independent study/Genius Hour focus	● Create math vocabulary banks ● Tape a number line to student desk ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Provide a table of math facts for reference ● Read and explain story problems, or break problems into smaller steps ● Use pictures or graphics

notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard - New Jersey Student Learning Standards: A-SSE, A-APR, A-CED, A-REI, F-IF, F-BF
Quadratic Functions and Equations

Strand
A-SSE: Seeing Structure in Expression
Write expressions in equivalent forms to solve problems
1. 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. Complete the square in a quadratic expression.
   b. to reveal the maximum or minimum value the function defines.
   c. use the properties of exponents to transform expressions for exponential functions. For example the expression can be rewritten as ≈ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

A-APR: Arithmetic with Polynomials and Rational Expressions
Understand the relationship between zeros and factors of polynomials.
2.. 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.

A-CED: Creating Equations
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 modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
A-R EI: Reasoning with Equations and Inequalities Solve equations and inequalities in one variable
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 give complex solutions and write them as a + bi for real numbers a and b.

5. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A-S EI: Reasoning with Equations and Inequalities Solve equations and inequalities in one variable

6. Solve quadratic equations in one variable.
   c. 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.
   d. 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 give complex solutions and write them as a + bi for real numbers a and b.

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 $x^2 + y^2 =3$.

Represent and solve equations and inequalities graphically

6. 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 solutions approximately; e.g., using technology to graph 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.*

7. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half planes

F-IF: Interpreting Functions

Interpret functions that arise in application in terms of the context.

8. 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.*

Analyze functions using different representations.

9. Graph functions expressed symbolically and show key features if 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 intercept and end behavior, and trigonometric functions, showing period, midline, and amplitude.

10. 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 = (1.02)12t, y = (1.2)t/10, and classify them as representing exponential growth and decay.

F- BF: Building Functions

Build a function that models a relationship between two quantities

11. 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

Build new functions from existing functions.

Identify the effect on the graph of replacing f(x) by f(x) + k, kf(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.

Essential Questions	**Activities, Investigation, and Student Experiences**
1.What is the relationship between a minimum or maximum, the vertex, and the range of a quadratic function? 2. What do the zeros of the quadratic function represent? 3. Which intercepts do you look for when looking for the zeros of functions? 4. How do you know whether the parabola opens upward or downward? 5. What does the discriminant tell you about the quadratic function?	**Task 1:** Show your work and explain your steps. Suppose you have a quadratic function: $y = ax^2 + bx + c$, where $a < -1$, $b = 2a$, and $c = -b$ What do you know about the graph of this function? Justify each detail. **Answer**: $x = -1$ is the axis of symmetry $c = -2a$ is the y-intercept $(-1,-3a)$ is the vertex Parabola opens downwards because $a < 0$ **Task 2: ART** A manufacturer makes 50-cm lengths of steel pope. A pipe uses 400 centimeters of steel and has an inner radius of 2 cm. What is the thickness x of the pipe? **Answer**: The thickness of the pipe is approximately 0.56 cm. **Task 3:** Suppose you draw chords to divide each circle into as many regions as possible. The maximum number of regions R you can make is a quadratic function of the number of chords x you draw. The values of R for $x = 0$, $x = 1$, and $x = 2$ are shown. What function models this situation? How many regions can you make with 10 chords?
Essential Understanding	
Students will understand.... ● Identify and graph quadratic functions ● Transform quadratic functions. ● Use various methods to solve quadratic equations, systems with one linear and one quadratic equation, and nonlinear systems.	

Content Statements
Students will know... ● How to identify quadratic functions and determine whether they have a minimum or maximum. ● How to graph a quadratic function and give its domain and range. ● How to find the zeros of a quadratic function from its graph. ● How to find the axis of symmetry and the vertex of a parabola. ● How to graph a quadratic function in the form of $ax^2+ bx +c$. ● How to graph and transform a quadratic function. ● How to solve quadratic functions by graphing. ● How to solve quadratic functions by factoring ● How to solve quadratic equations by completing the square. ● How to solve quadratic equations by using the quadratic formula. ● How to determine the number of solutions to a quadratic equation by using the discriminant. ● How to solve systems of equations with two variables in which one equation is linear and the other is quadratic.

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Environmental literacy ● Cross-Cultural Understanding and interpersonal communication

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Identifying Quadratic Functions
- Characteristics of Quadratic Function
- Graphing Quadratic Functions
- Transforming Quadratic Functions
- Solving Quadratic Equations by Graphing
- Solving Quadratic Equations by Factoring
- Solving Quadratic Equations by Factoring
- Solving Quadratic Equations by Using Square Roots
- Completing the Square
- The Quadratic Formula and the Discriminant
- Nonlinear Systems

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

Integration of Career Readiness, Life Literacies, and Key Skills. Evidence must include explicit citations of Standards 9.1 Personal Finance, 9.2 Career Awareness, Exploration, Preparation and Training, and 9.4 Life Literacies and Key Skills. The citations for each unit must include links to the standards for NJSLS CLKS (Career, Life, Key Skills).

https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf

NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

Personal Finance Literacy 9.1 Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 20-22	**Career Awareness Exploration Preparedness and Training 9.2** Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 37-40	**Life Literacies and Key Skills 9.4** Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy https://www.nj.gov/education/cccs/2020/2020%20NJSLS-CLKS.pdf PAGES 43-52
The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.	An individual's strengths, lifestyle goals, choices, and interests affect employment and income 9.2.8.CAP.2: Develop a plan that includes information about career areas of interest. Early planning can provide more options to pay for postsecondary training and employment. 9.2.8.CAP.9: Analyze how a variety of	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking. 9.4.8.CI.2: Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3). 9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2). Multiple solutions often exist to solve a problem. 9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of

There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.6: Explain the economic principle of the circular flow of money in different situations regarding buying products or services from a local or national business and buying imported or domestic goods. 9.1.8.EG.8: Analyze the impact of currency rates over a period of time and the impact on trade, employment, and income. An individual's values and emotions will influence the ability to modify financial behavior (when appropriate), which will impact one's financial well-being 9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions. Goals (e.g., higher education, autos, and homes, retirement), affect your finances. 9.1.8.PB.5: Identify factors that affect one's goals,	activities related to career preparation (e.g., volunteering, apprenticeships, structured learning experiences, dual enrollment, job search, scholarships) impacts postsecondary options. Employee benefits can influence your employment choices. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.16: Research different ways workers/ employees improve their earning power through education and the acquisition of new knowledge and skills. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level There are resources to help an individual create a business plan to start or expand a business. 9.2.8.CAP.20: Identify the items to consider when estimating the cost of	individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2). An essential aspect of problem solving is being able to self-reflect on why possible solutions for solving problems were or were not successful. 9.4.8.CT.3: Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome. Digital technology and data can be leveraged by communities to address effects of climate change. 9.4.8.DC.8: Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities). Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction. 9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal. Digital tools make it possible to analyze and interpret data, including text, images, and sound. These tools allow for broad concepts and data to be more effectively communicated • 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b). Digital tools allow for remote collaboration and rapid sharing of ideas unrestricted by geographic location or time. 9.4.8.TL.5: Compare the process and effectiveness of synchronous

including peers, culture, location, and past experiences. Insurance can protect your personal finances. 9.1.8.RM.4: Explain the purpose of insurance products and the reasons for property product and liability insurance protection.	funding a business.	collaboration and asynchronous collaboration. 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
● Provide a table of math facts for reference ● Tape a number line to the student's desk ● Read and explain word problems, or break problems into smaller steps ● Use pictures or graphics in directions and assignments ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Encourage turning lined paper sideways to maintain column alignment ● Create math vocabulary banks ● Utilize graphic organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class	● Pre Teach Vocabulary ● Create Math vocabulary banks with pictures ● Rephrase math problems when appropriate ● Build knowledge from real-world examples ● Provide manipulatives ● Teach Touch Math ● Have students relate an object they know with a unit of measure ● Encourage peer discussions regarding how students are thinking about math ● Provide margin notes ● Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	● Create a math journal that can be used during class, assignments, or assessments ● Assign a peer buddy who is high performing in math ● Create an interactive math notebook ● Allow students to complete an independent project as an alternative test	● Provide extension activities ● Conduct research and provide presentations of cultural topics. ● Design surveys to generate and analyze data to be used in discussions ● Utilize higher level questioning techniques ● Provide assessments at a higher level of thinking ● Provide opportunities for independent study/Genius Hour focus	● Create math vocabulary banks ● Tape a number line to student desk ● Provide use of calculator ● Utilize Touch Math ● Provide graph paper/ offer large graph paper option ● Provide enlarged print problems ● Provide a table of math facts for reference ● Read and explain story problems, or break problems into smaller steps ● Use pictures or graphics

notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				

Standard - New Jersey Student Learning Standards: A-SSE, A-CED, A-REI, F-IF. F-BF, F-LE Exponential Functions

Strand

A-R SE: Seeing Structure in Expression

Write expressions in equivalent forms to solve problems

1. 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 the function defines.
    c. Use the properties of exponents to transform expressions for exponential functions. For example the expression can be rewritten as ≈ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

A-CED: Creating Equations

Create equations that describe numbers or relationships.

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 modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A-REI: Reasoning with Equations and Inequalities Represent

and solve equations and inequalities graphically

1. 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 solutions approximately; e.g., using technology to graph 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.*

F-IF: Interpreting Functions

Understand the concept of a function and use function notation.

2. Recognize 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 ≥ 1.

Interpret functions that arise in application 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 in 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. 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.

6. Graph functions expressed symbolically and show key features if 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 intercept and end behavior, and trigonometric functions, showing period, midline, and amplitude

7. 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 functions and an algebraic expression for another, say which has the larger maximum.

F- BF: Building Functions

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. *

F-LE: Linear and Exponential Models*

Construct and compare linear 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.

Interpret expressions for functions in terms of the situation they model

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

Essential Questions	Activities, Investigation, and Student Experiences
1. How do you find r when given part of a geometric sequence? 2. How do you know the exponent applies to b and not ab? 3. How is the formula for exponential growth similar to the standard form of an exponential function? 4. How can you use the function to predict other data values?	**Task 1: SS** Elephant Population Estimates – Namibia Combined estimates for Etosha National Park and the Northwestern Population Year Base Year Estimated Number of Elephants 1998 3 3,218 2000 5 3,628 2002 7 3 ,721 2004 9 3,571 The elephant population in northwestern Namibia and the Etosha National Park can be predicted by the expression , which is the number of years since 1995. What does the value 2,649 represent? **Answer:** Predicted number in 1995. **Task 2:** The population of the popular town of Smithville in 2003 was estimated to be 35,000 people with an annual rate of increase (growth) of about 2.4%. What is the growth factor for Smithville? Write an equation to model future growth. Use your equation to estimate the population in 2007 to the nearest hundred people. **Answer:** 24% P = 35,000(1.0024)^t 38,500 people **Task 3:** Matt bought a new car at a cost of $25,000. The car depreciates approximately 15% of its value each year. What is the decay factor for the value of this car? Write an equation to model the decay value of this car. What will the car be worth in 10 years? **Answer:** 15 % V + 25,000(.85)^t $4,921.86
Essential Understanding	
Students will understand.... ● Geometric sequences ● Exponential Functions. ● Compare functions and rate of changes. ● How to give a set of data, decide which type of function models the data and write an equation to describe the function. ● How to compare functions in different representations. ● How to estimate and compare rates of change.	

Content Statements
Students will know... ● How to recognize and extend geometric sequences. ● How to find the nth term of a geometric sequence. ● How to evaluate exponential functions. ● How to identify and graph exponential functions. ● How to solve problems involving exponential growth and decay. ● How to compare linear, quadratic, and exponential models

Assessments	**Interdisciplinary Connection**
Teacher Observations / Exit Tickets Entry-Level Assessment Get Ready! Assessment Mid-Chapter Checkpoint Chapter Review Self - Assessment IXL Diagnostic Benchmark Homework / Classwork Chapter Performance Task Final Chapter Assessment Think-Pair-Share Small Group / Large Group Collaboration	● Environmental literacy ● Cross-Cultural Understanding and Interpersonal Communications

Teacher Resources

Text:
Algebra 1 ~ Common Core

Classroom Materials:
Math manipulatives, Interactive whiteboard, Reference Charts, Academic Math Vocabulary, Chromebooks, Google Classroom, Google Drive, Elmo

Desired Results

- Geometric Sequences
- Exponential Functions
- Exponential Growth and Decay
- Linear, Quadratic, and Exponential Models
- Comparing Functions

Digital:
Pearson/Savvas EasyBridge
Brainpop.com
KhanAcademy
Illustrative Mathematics
National Library of Virtual Manipulatives
Gizmos
IXL
Kami
Kahoot
Blooket
Quizlet
Quizizz
ClassKick
Google Slides
Edpuzzle
Virtual Nerd Video Tutorials
Kuta Math
Delta Math

NJSLS – Career Readiness, Life Literacies, and Key Skills

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NJSLS – Career Readiness, Life Literacies, and Key Skills (21st Century Themes and Skills)

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Philanthropic and charitable organizations play important roles in supporting the interests of individuals and local and global communities and the issues that affect them. 9.1.8.CR.1: Compare and contrast the role of philanthropy, volunteer service, and charities in community development and the quality of life in a variety	Early planning can provide more options to pay for postsecondary training and employment. 9.2.8.CAP.6: Compare the costs of postsecondary education with the potential increase in income from a career of choice. 9.2.8.CAP.7: Devise a strategy to minimize costs of postsecondary education.	Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions. 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7). The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills. 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).

of cultures. The potential for building and using personal wealth includes responsibility to the broader community and an understanding of the legal rights and responsibilities of being a good citizen. 9.1.8.CR.4: Examine the implications of legal and ethical behaviors when making financial decisions. There are strategies to build and maintain a good credit history. 9.1.8.CP.2: Analyze how spending habits affect one's ability to save. There are government agencies and policies that affect the financial industry and the broader economy. 9.1.8.EG.3: Explain the concept and forms of taxation and evaluate how local, state and federal governments use taxes to fund public activities and initiatives. 9.1.8.EG.7: Explain the effect of the economy (e.g., inflation, unemployment) on personal income, individual and family	There are a variety of resources available to help navigate the career planning process. 9.2.8.CAP.11: Analyze potential career opportunities by considering different types of resources, including occupation databases, and state and national labor market statistics. Employee benefits can influence your employment choices. 9.2.8.CAP.14: Evaluate sources of income and alternative resources to accurately compare employment options. Communication skills and responsible behavior in addition to education, experience, certifications, and skills are all factors that affect employment and income. 9.2.8.CAP.19: Relate academic achievement, as represented by high school diplomas, college degrees, and industry credentials, to employability and to potential level	9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3). Digital tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate. 9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources). Digital tools can be used to modify and display data in various ways that can be organized to communicate ideas. 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3). Specific situations require the use of relevant sources of information. 9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions (e.g., RI.5.7, 6.1.5.HistoryCC.7, 7.1.NM. IPRET.5). Different digital tools have different purposes. 9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

security, and consumer decisions. There are a variety of factors that influence how well suited a financial institution and/or service will be in meeting an individual's financial needs. 9.1.8.FI.2: Determine the most appropriate use of various financial products and services to borrow and access money for making purchases (e.g., ATM, debit cards, credit cards, check books, online/mobile banking). 9.1.8.FI.3: Evaluate the most appropriate financial institutions to assist with meeting various personal financial needs and goals. 9.1.8.FI.4: Analyze the interest rates and fees associated with financial products. Marketing techniques are designed to encourage individuals to purchase items they may not need or want. 9.1.8.FP.6: Compare and contrast advertising messages to understand what they are trying to accomplish. Goals (e.g., higher education,		

autos, and homes, retirement), affect your finances. 9.1.8.PB.6: Construct a budget to save for short-term, long term, and charitable goals. There are strategies to decrease and manage expenses. 9.1.8.PB.7: Brainstorm techniques that will help decrease expenses including comparison shopping, negotiating, and day-to-day expense management. Individuals can choose to accept some risk, to take steps to avoid or reduce risk, or to transfer risk to others through the purchase of insurance. 9.1.8.RM.3: Evaluate the need for different types of warranties.		

Math – Accommodations and Modifications

Special Education Students	English Language Learners	At-Risk Students	Gifted and Talented Students	Students with 504s
• Provide a table of math facts for reference • Tape a number line to the student's desk • Read and explain word problems, or break problems into smaller steps • Use pictures or graphics in directions and assignments • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Encourage turning lined paper sideways to maintain column alignment • Create math vocabulary banks • Utilize graphic	• Pre Teach Vocabulary • Create Math vocabulary banks with pictures • Rephrase math problems when appropriate • Build knowledge from real-world examples • Provide manipulatives • Teach Touch Math • Have students relate an object they know with a unit of measure • Encourage peer discussions regarding how students are thinking about math • Provide margin notes • Utilize "Can Do" Descriptors https://wida.wisc.edu/teach/can-do/descriptors	• Create a math journal that can be used during class, assignments, or assessments • Assign a peer buddy who is high performing in math • Create an interactive math notebook • Allow students to complete an independent project as an alternative test	• Provide extension activities • Conduct research and provide presentations of cultural topics. • Design surveys to generate and analyze data to be used in discussions • Utilize higher level questioning techniques • Provide assessments at a higher level of thinking • Provide opportunities for independent study/Genius Hour focus	• Create math vocabulary banks • Tape a number line to student desk • Provide use of calculator • Utilize Touch Math • Provide graph paper/ offer large graph paper option • Provide enlarged print problems • Provide a table of math facts for reference • Read and explain story problems, or break problems into smaller steps • Use pictures or graphics

organizer to plan ways to solve math problems ● Provide math manipulatives ● Provide a copy of mathematical equations, class notes and examples for math notebooks ● Highlight or underline key words in word problems ● Use place value blocks ● Provide reteach pages if necessary ● Display anchor charts ● Provide margin notes				