



SPRINGFIELD PUBLIC SCHOOLS
ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Springfield Public Schools
Springfield, New Jersey 07081

Math 8

Curriculum Guide

2024

This curriculum may be modified through varying materials, techniques, and strategies as per an individual student's IEP.

*Springfield Board of Education
Approved August 26, 2024*



**Springfield Public Schools
Springfield, New Jersey**

**Rachel Goldberg
Superintendent of Schools**

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Curriculum Developed By:

Gregory Salmon ~ STEM Supervisor

Trish Collins ~ Math Teacher



Unit Overview Template

Content Area: Math 8	Grade Level: 8	Unit Title: Real Number System and Operations
Unit Summary: Students will be able to identify numbers based on the real number system, perform the order of operations, solve one, two, multi-step, and variables on both sides equations, and literal equations. Students will be able to calculate square roots and cube roots.		
Primary Interdisciplinary Connections: <i>Science and Engineering</i>		
21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ ICT Literacy ☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy		
Unit Rationale: This unit will lay the foundation for use in Algebra, Geometry, and Science.		
Career Readiness (Standard 9): 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). 9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations. 9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making. 9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).		

Learning Targets

Standards: 8.NS, 8.EE	
Content Statements: Know that there are numbers that are not rational and approximate them by rational numbers; work with radicals; analyze and solve linear equations.	
CPI#:	Cumulative Progress Indicator (CPI):
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.
8.NS.A.3	Understand that 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.
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number.



	a. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. b. Simplify numerical radicals, limiting to square roots (i.e. nonperfect squares). For example, simplify $\sqrt{8}$ to $2\sqrt{2}$.
8.EE.C.7.a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
8.EE.C.7.b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
9.1.8.C.2	Compare and contrast the financial products and services offered by different types of financial institutions.
MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Unit Essential Questions:

- What is a real number?
- How do you determine if a number is rational or irrational?
- How do you solve an equation with one variable?
- How do you solve a literal equation?
- How do you approximate a square root or a cube root?

Unit Enduring Understandings:

- Using correct terminology in Algebra.
- Solving multistep equations.
- Distinguish between the solution of an equation and inequality.
- Create and solve equations with real-life applications.

Unit Learning Targets:

Students will be able to create and solve multi-step equations.
 Students will be able to differentiate real number categories.



Evidence of Learning

Summative Assessment: 27 days

Equipment Needed: Mimio Software, smart-board, whiteboard, projector, scientific calculator

Teacher Resources: Mimio Software, smart-board, whiteboard, projector, scientific calculator, textbook, teacher-generated worksheets and assessments, IXL.com

Formative Assessments:

- Homework
- Classwork
- Class Discussions
- Quizzes
- Tests
- IXL.com



Lesson Plans

Lesson	Time Frame
Lesson 1 Order of Operations	3 days
Lesson 2 Evaluating Algebraic Expressions	2 days
Lesson 3 Solving one-step, two-step, and multi-step equations	6 days

Teacher Notes:

Utilize released NJSLA questions frequently throughout the year.

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

[www.IXL.com](http://www.ixl.com) Math 8; D.4, D.5, F.15, F.16, F.17, F.18, F.19, F.20, F.21, F.22, W.3, W.8, W.9, W.10, W.11, W.12, W.13, W.14, W.15, W.16

Big Ideas Math STEAM Videos

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



Lesson Plan 1 Template

Content Area: Math Lesson Title: Order of Operations Time Frame: 3 days

Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Fundamental terminology in all areas

Integration of Technology:

Projector, laptop, scientific calculator

Equipment Needed:

Whiteboard, laptop, scientific calculator, interactive notebook

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: Simplify numerical expressions using the order of operations (PEMDAS).	Lesson Sequence - Introduce the Order of Operations (PEMDAS). - Provide examples. - Provide guided practice. - Provide independent practice.	- Classwork - Class discussion - Students will create their own expression and ask a partner to evaluate it. - Homework - Exam - IXL.com
Differentiation: Utilizing color, underlining, or grouping symbols to clarify the order in which students should simplify the expression.		
Resources Provided: - Textbook - IXL.com - Worksheets - Big Ideas Math STEAM Videos		



Lesson Plan 2 Template

Content Area: Math 8	Lesson Title: Evaluating Algebraic Expressions	Time Frame: 2 days
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Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Fundamental terminology in all areas

Integration of Technology:

Projector, laptop, and scientific calculator

Equipment Needed:

Whiteboard, laptops, scientific calculators, interactive notebook, colored pencils

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Understand and recognize the difference between an expression and an equation. - Simplify expressions to their most simple forms. - Evaluate expressions.	Lesson Sequence - Define the terms expression and equation on the board. - Develop examples of expressions and examples of equations. - Discuss what the most simple form of an expression is. - Simplify expressions by combining like terms. - Using substitution, discuss how to evaluate an expression when a variable is assigned a value.	- Classwork - Class discussion - Homework - Worksheets - Exam
Differentiation: Utilize color in the presentation to highlight “like” terms.		



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Resources Provided:

- Textbook
- IXL.com
- Worksheets
- Big Ideas Math STEAM Videos



Lesson Plan 3 Template

Content Area: Math 8	Lesson Title: Solving one-step, two-step, and multi-step equations	Time Frame: 6 days
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Lesson Components

21st Century Themes

☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Basis for solving all math problems in physics, chemistry, and computer sciences.

Integration of Technology:

Projector, laptop, and scientific calculator.

Equipment Needed: Whiteboard, laptop and scientific calculators, interactive notebook.



Goals/Objective	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: • Solve one-step equations. • Solve two-step equations. • Solve multi-step equations.	Lesson Sequence 1. Introduce inverse (opposite) operations. 2. Solve one-step equations using addition and subtraction. 3. Solve one-step equations using multiplication and division. 4. Solve two-step equations, emphasizing the reverse of PEMDAS. 5. Introduce the Distributive Property. 6. Introduce multi-step equations. 7. Solve multi-step equations. 8. Introduce word problems integrating financial literacy, as in comparing cell phone plans, gym memberships, to compare the value of goods or services from different sellers when purchasing large quantities and small quantities.	• Class work • Class discussion • Homework • Worksheets • Exam • Have students present results to equations with no solution or infinite solutions.
Differentiation: Draw a vertical line to separate both sides of the equation Cross out terms that have been combined or canceled. Use the rainbow or box method for the Distributive Property.		
Resources Provided: • Textbook • Worksheets • IXL.com • Big Ideas Math STEAM Videos		



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly*, *Moderately* or *Weakly* meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher-order thinking and problem-solving skills	x		
Allow for student choice		x	
Provide scaffolding for acquiring targeted knowledge/skills	x		
Integrate global perspectives		x	
Integrate 21st-century skills		x	
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	x		
Foster student use of technology as a tool to develop critical thinking, creativity, and innovation skills		x	
Are varied to address different student learning styles and preferences	x		
Are differentiated based on student needs		x	
Are student-centered with the teacher acting as a facilitator and co-learner during the teaching and learning process	x		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	x		
Provide opportunities for student reflection and self- assessment	x		
Provide data to inform and adjust instruction to better meet the varying needs of learners	x		

Curriculum Design Template

Content Area: Mathematics - Math 8	Grade Level: 8	Unit Title: Real Number System and Operations
Created: 2024	Board Approved on:	



Unit Overview Template

Content Area: Math 8 **Grade Level:** 8 **Unit Title:** Linear Equations and Functions

Unit Summary: Students will be able to count or calculate the slope of a line, graph linear equations, write linear equations in 3 forms, write linear equations with real-life applications, solve systems of equations graphically and algebraically, by substitution and elimination, identify functions, and create scatter plots and lines of best fit.

Primary Interdisciplinary Connections: *Science and Engineering*

21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ ICT Literacy
☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy

Unit Rationale: This unit will lay the foundation for use in Algebra, Geometry, and Science.

Career Readiness (Standard 9):

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).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

Learning Targets

Standards: 8.EE, 8.F, 8.SP

Content Statements: Understand the connections between proportional relationships, lines, and linear equations; Analyze and solve linear equations and pairs of simultaneous linear equations; Define, evaluate, and compare functions; Use functions to model relationships between quantities; Investigate patterns of association in bivariate data.

CPI#:	Cumulative Progress Indicator (CPI):
8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .



8.EE.C.8.a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs because points of intersection satisfy both equations simultaneously.
8.EE.C.8.b	Solve systems of two linear equations in two variables using the substitution method and estimate solutions by graphing the equations. Solve simple cases by inspection. For example: by inspection, conclude that $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6. Solve $3x + y = 30$ and $y = 2x$ using the substitution method; Solve $y = 3x + 1$ and $y = -2x + 7$ using the substitution method.
8.EE.C.8.c	Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.
8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Clarification: Function notation is not required in Grade 8)
8.F.A.2	Compare properties (e.g. rate of change, intercepts, domain and range) of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.
8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4), and (3,9), which are not on a straight line.
8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.
8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit (e.g. line of best fit) by judging the closeness of the data points to the line.
8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.



8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible associations between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?
9.1.8.E.3	Compare and contrast product facts versus advertising claims.
9.1.8.E.4	Prioritize personal wants and needs when making a decision.
9.1.8.E.6	Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Unit Essential Questions:

- How do we determine the slope of a line?
- How is a function behaving in relationship to its slope?
- How do we graph a linear equation on the coordinate plane?
- How do we solve a system of linear equations graphically and algebraically?
- How do we determine if a relation is a function?
- How do we write equations of lines in 3 forms?
- What is a scatter plot?
- How do you find a line of best fit and write its equation?

Unit Enduring Understandings:

- Students will use proper algebra terminology.
- Students will graph linear equations and write linear equations from a graph.
- Students will solve systems of equations making connections to real-life applications.
- Students will create scatter plots using real life data and write lines of best fit to represent the data trend.
- Students will be able to identify a relation as a function from a graph and from data sets.
- Students will write linear equations in three forms.

Unit Learning Targets:

- Students will be able to graph relations and functions and write linear equations.
- Climate Change Example: Students may construct and interpret scatterplots of measurement data to investigate patterns of association in bivariate data involving the amount of greenhouse gas in the atmosphere and its effect on temperature.
- Climate Change Example: Students may use the equation of a linear model to interpret the slope when comparing local and global precipitation rates for rainfall in different regions.



Evidence of Learning

Summative Assessment: 60 days

Equipment Needed: Mimio Software, smart-board, whiteboard, projector, scientific calculator

Teacher Resources: Mimio Software, smart-board, whiteboard, projector, scientific calculator, text book, teacher generated worksheets and assessments, IXL.com

Formative Assessments:

- Homework
- Classwork
- Class Discussions
- Quizzes
- Tests
- IXL.com



Lesson Plans

Lesson	Time Frame
Lesson 1 Graph Linear Equations	3 days
Lesson 2 Solve Systems of Linear Equations by Graphing	3 days
Lesson 3 Solve Systems of Linear Equations Algebraically	4-5 days

Teacher Notes:

Utilize released NJSLA questions frequently throughout the year.

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

[www.IXL.com](http://www.ixl.com) Math 8 I.1- I.10; AA.1 - AA.11; Z.1 - Z.15, Z.20 - Z.21; Y.1 - Y.13; D.9

Big Ideas Math STEAM Videos

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



Lesson Plan 1 Template

Content Area: Math 8 Lesson Title: Graph Linear Equations Time Frame: 3 days

Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Functions and Slope

Integration of Technology:

Projector, laptop, scientific calculator, graphing calculator

Equipment Needed:

Whiteboard, laptop, graph paper, ruler, scientific calculator, graphing calculator, interactive notebook, colored pencils

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Graph linear equations from slope intercept form. - Write linear equations from a graph	Lesson Sequence - Introduce slope and y-intercept's role in graphing linear equations. - Identify the slope and y-intercept from a given linear equation provided in slope-intercept form. - Demonstrate how to graph a linear equation using the y-intercept and slope from the given linear equation. - Guided practice. - Independent practice. - Identify the y-intercept and count the slope of a linear graph.	- Classwork - Class discussion - Have students create their own linear equation and demonstrate how to graph - Collect student work to assess mastery. - Homework - Exam - IXL.com



7. Demonstrate how to write correct linear equations.

Differentiation:

Use of colored pencils, use of graphing calculator and/or use of DESMOS online graphing calculator to provide a visual comparison to paper and pencil graphs.

Resources Provided:

- Text
- IXL.com
- Worksheets
- Big Ideas Math STEAM Videos



Lesson Plan 2 Template

Content Area: Math 8 Lesson Title: Systems of Linear Equations by Graphing Time Frame: 3 days

Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:
 Functions

Integration of Technology:
 Projector, laptop, scientific calculator, graphing calculator.

Equipment Needed:
 Whiteboard, laptop, graph paper, ruler, scientific calculator, graphing calculator, interactive notebook, colored pencils

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: Solve a system of linear equations by graphing.	Lesson Sequence - Graph 2 lines on a coordinate plane. - Identify the intersection point, which is the solution. - Check the solution by substituting into both equations. - Have students try examples and compare with a partner. - Use the graphs of systems of equations to compare the value of goods or services from different sellers when purchasing	- Class work - Class discussion - Have students create their own system of linear equations and demonstrate how to graph to find the solution - Collect student work to assess mastery. - Homework - Exam - IXL.com



	large quantities and small quantities.	
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Differentiation:

Use of colored pencils to identify two different lines, use of graphing calculator and/or use of DESMOS online graphing calculator to provide a visual comparison to paper and pencil graphs.

Resources Provided:

- Textbook
- IXL.com
- Worksheets
- Big Ideas Math STEAM Videos



Lesson Plan 3 Template

Content Area: Math 8	Lesson Title: Solve Systems of Linear Equations Algebraically	Time Frame: 4-5 days
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Lesson Components

21st Century Themes

☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Functions

Integration of Technology:

Projector, laptop, scientific calculator

Equipment Needed:

Whiteboard, laptop, scientific calculator, interactive notebook

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Solve a system of linear equations using substitution. - Solve a system of linear equations using elimination.	Lesson Sequence - Introduce systems of linear equations, both in slope-intercept form. - Provide the written steps on how to solve a system of linear equations using the substitution method. - Demonstrate how to solve a system of linear equations using the substitution method. - Guided Practice - Independent Practice - Introduce systems of linear equations, both in standard form.	- Class work - Class discussion - Collect student work to assess mastery - Homework - Exam - IXL.com



- | | | |
|--|---|--|
| | <ol style="list-style-type: none">7. Provide the written steps on how to solve a system of linear equations using the elimination method.8. Demonstrate how to solve a system of linear equations using the elimination method.9. Guided Practice10. Independent Practice11. Compare the value of goods or services from different sellers when purchasing large quantities and small quantities. | |
|--|---|--|

Differentiation:

Provide problems with different levels of complexity.

Allow students to choose the method of their liking to solve the system of equations.

Resources Provided:

- Text
- IXL.com
- Worksheets
- Big Ideas Math STEAM Videos



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly*, *Moderately* or *Weakly* meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher order thinking and problem-solving skills	X		
Allow for student choice	X		
Provide scaffolding for acquiring targeted knowledge/skills	X		
Integrate global perspectives		X	
Integrate 21st-century skills	X		
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	X		
Foster student use of technology as a tool to develop critical thinking, creativity, and innovation skills	X		
Are varied to address different student learning styles and preferences	X		
Are differentiated based on student needs	X		
Are student-centered with the teacher acting as a facilitator and co-learner during the teaching and learning process	X		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	X		
Provide opportunities for student reflection and self-assessment	X		
Provide data to inform and adjust instruction to better meet the varying needs of learners	X		

Curriculum Design Template

Content Area: Mathematics - Math 8	Grade Level: 8	Unit Title: Linear Equations and Functions
Created: May 2024	Board Approved on:	



Unit Overview Template

Content Area: Math 8 **Grade Level:** 8 **Unit Title:** Geometry

Unit Summary: Students will be able to perform transformations, identify similar figures using scale factor, calculate the perimeter and area of similar figures, identify angles formed by parallel lines and transversals, calculate angles in polygons, find missing lengths of similar triangles, apply the Pythagorean Theorem and its converse in triangles and real-life applications, calculate the volume of cylinders, cones, and spheres, and calculate surface area and volume of similar solids.

Primary Interdisciplinary Connections:

21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ ICT Literacy
☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy

Unit Rationale: This unit will lay the foundation for use in Algebra, Geometry, and Science.

Career Readiness (Standard 9):

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).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

Learning Targets

Standards: 8.G

Content Statements: Understand congruence and similarity using physical models, transparencies, or geometry software; Understand and apply the Pythagorean Theorem; Solve real-world and mathematical problems involving the volume of cylinders, cones, and spheres.

CPI#:	Cumulative Progress Indicator (CPI):
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are transformed to lines, and line segments to line segments of the same length. b. Angles are transformed to angles of the same measure. c. Parallel lines are transformed to parallel lines.
8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.



8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.
8.G.B.6	6. Explain a proof of the Pythagorean Theorem and its converse.
8.G.B.7	7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8.G.B.8	8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
9.1.8.C.2	Compare and contrast the financial products and services offered by different types of financial institutions.

Unit Essential Questions:

- How do we determine if figures are similar?
- How do we calculate the area and volume of similar figures and solids?
- How do we calculate the angle measures formed by parallel lines and transversals?
- How do we calculate the angle measures of polygons?
- How do we perform translations, reflections, rotations, and dilations of figures on the coordinate plane?
- How do we apply the Pythagorean Theorem to right triangles and real-life problems?
- How do we find the volume of a cylinder, cone, and sphere?

Unit Enduring Understandings:

- What is the difference between congruent figures and similar figures?
- What are the types of transformations?
- How do you apply the Pythagorean Theorem to real-life applications?
- How do you apply the concept of similarity to find angles, lengths, areas, and volumes?

Unit Learning Targets:

- Students will be able to apply foundational concepts of geometry.
- Climate Change Example: Students may use the formula for the volume of a sphere to approximate the volume of hailstones to consider how climate change may affect the size of hailstones over time.



Evidence of Learning

Summative Assessment: 52 days

Equipment Needed: Mimio Software, smart-board, whiteboard, projector, scientific calculator

Teacher Resources: Mimio Software, smart-board, whiteboard, projector, scientific calculator, text book, teacher generated worksheets and assessments, IXL.com

Formative Assessments:

- Homework
- Classwork
- Class Discussions
- Quizzes
- Tests
- IXL.com



Lesson Plans

Lesson	Time Frame
Lesson 1 Angles Formed by 2 Parallel Lines and a Transversal	3 days
Lesson 2 The Interior Angles of a Triangle	3 days
Lesson 3 Line Reflections	2 days

Teacher Notes:

Utilize released NJSLA questions frequently throughout the year.

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

www.IXL.com Math 8 P.1 - P.16; Q.1 - Q.5; O.1 - O.18; R.1 - R.5; T.10, T.11, T.14

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



Lesson Plan 1 Template

Content Area: Math 8 Lesson Title: Angles formed by two parallel lines and a transversal Time Frame: 3 days

Lesson Components

21st Century Themes

☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Algebra - solving equations in one variable
 Geometry

Integration of Technology:

Projector, laptop, scientific calculator

Equipment Needed:

Whiteboard, laptop, scientific calculator, ruler, interactive notebook, colored pencils

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Name the types of angles formed by two parallel lines and a transversal. - Find missing angle measures.	Lesson Sequence - Introduce parallel lines. - Define transversal. - Introduce angle pairs formed by two parallel lines and a transversal. - Identify congruent and supplementary pairs of angles formed by two parallel lines and a transversal. - Find numerical angle measurements. - Write the algebraic equations that represent the congruent or	- Class work - Class discussion - Collect student work to assess mastery - Homework - Exam - IXL.com



supplementary angle
pairs and solve.

Differentiation:

Use colored pencils to draw the parallel lines and transversal, or to color code the angle pairs formed for visual distinction, create a star/dot pattern to delineate angle relationships.

Resources Provided:

- Text
- IXL.com
- Worksheets



Lesson Plan 2 Template

Content Area: Math 8 Lesson Title: Interior Angles of a Triangle Time Frame: 3 days

Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Algebra - solving equations in one variable
 Geometry

Integration of Technology:

Projector, laptop, scientific calculator

Equipment Needed:

Whiteboard, laptop, scientific calculator, ruler, interactive notebook, colored pencils

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Review that the sum of the interior angles of a triangle is 180 degrees. - Find numeric angle measurements. - Write an algebraic equation to represent the sum of the interior angles of a triangle and solve.	Lesson Sequence - Review sum of the interior angles of a triangle. - Demonstrate a problem with one missing angle measurement. - Guided practice. - Independent practice. - Demonstrate a problem with an algebraic equation. - Guided practice. - Independent practice.	- Class work - Class discussion - Collect student work to assess mastery - Homework - Exam - IXL.com
Differentiation: Colored pencils to color the interior angles of the triangle. Reinforce the difference between the sum of the angles and the perimeter.		



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Resources Provided:

- Textbook
- Worksheets
- IXL.com



Lesson Plan 3 Template

Content Area: Math 8 Lesson Title: Line Reflections Time Frame: 2 days

Lesson Components

21st Century Themes

- ☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Geometric figures on Euclidean space

Integration of Technology:

Projector, laptop

Equipment Needed: Projector, laptop, graph paper, rulers, colored pencils, interactive notebook, MIRA, patty paper

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: • Reflect a point over a given line using patty paper and/or MIRAs. • Reflect a figure over a given line using patty paper and/or MIRAs. • Reflect a point over a given line on the coordinate plane. • Reflect a figure over a given line on the coordinate plane.	Lesson Sequence 1. Introduce and demonstrate using patty paper or MIRAs how to reflect a point and figure over a line. 2. Introduce and demonstrate how to reflect a point and figure over a line on the coordinate plane.	• Class work • Class discussion • Collect student work to assess mastery • Homework • Exam • IXL.com
Differentiation: Use of MIRAs, patty paper, graph paper, colored pencils.		
Resources Provided: • Textbook • IXL.com • Worksheets		



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly*, *Moderately* or *Weakly* meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher-order thinking and problem-solving skills	x		
Allow for student choice		x	
Provide scaffolding for acquiring targeted knowledge/skills	x		
Integrate global perspectives		x	
Integrate 21st-century skills		x	
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	x		
Foster student use of technology as a tool to develop critical thinking, creativity, and innovation skills	x		
Are varied to address different student learning styles and preferences	x		
Are differentiated based on student needs	x		
Are student-centered with the teacher acting as a facilitator and co-learner during the teaching and learning process	x		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	x		
Provide opportunities for student reflection and self-assessment	x		
Provide data to inform and adjust instruction to better meet the varying needs of learners	x		

Curriculum Design Template

Content Area: Mathematics - Math 8	Grade Level: 8	Unit Title: Geometry
Created: May 2024	Board Approved on:	



Unit Overview Template

Content Area: Math 8 **Grade Level:** 8 **Unit Title:** Exponents and Scientific Notation

Unit Summary: Students will be able to apply the laws of exponents to simplify algebraic expressions.

Primary Interdisciplinary Connections:

21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ ICT Literacy
☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy

Unit Rationale: The unit will lay the foundations for use in Algebra, Geometry, and Science.

Career Readiness (Standard 9):

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).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

Learning Targets

Standards: 8.EE

Content Statements: Work with radicals and integer exponents.

CPI#:	Cumulative Progress Indicator (CPI):
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger.
8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MS-ETS1-2	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
9.8.1.C.2	Compare and contrast the financial products and services offered by different types of financial institutions.

Unit Essential Questions:



- What are the Laws of Exponents, and how do you apply them?
- How do you write numbers in scientific notation?
- How do you calculate using scientific notation?

Unit Enduring Understandings:

- When do we use the Laws of Exponents?
- When do we express numbers in scientific notation?

Unit Learning Targets:

Students will be able to apply the Laws of Exponents and rules for scientific notation to simplify algebraic expressions, laying the foundation for Algebra and Algebra II.

Evidence of Learning

Summative Assessment: 22 days

Equipment Needed: Mimio Software, smart-board, whiteboard, projector, scientific calculator

Teacher Resources: Mimio Software, smart-board, whiteboard, projector, scientific calculator, textbook, teacher-generated worksheets and assessments, IXL.com

Formative Assessments:

- Homework
- Classwork
- Class Discussions
- Quizzes
- Tests
- IXL.com



Lesson Plans

Lesson	Time Frame
Lesson 1 Law of Exponents - Multiplication Rule	2 days
Lesson 2 Law of Exponents - Product of Power Rule (Power to Power Rule)	2 days
Lesson 3 Law of Exponents - Quotient Rule and Zero Exponent	2 days

Teacher Notes:

Utilize released NJSLA questions frequently throughout the year.

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

www.IXL.com: Math 8: G.1 - G.4, F.1, F.2, F.4 - F.14

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



Lesson Plan 1 Template

Content Area: Math 8 Lesson Title: Laws of Exponents - Multiplication Rule Time Frame: 2 days

Lesson Components

21st Century Themes

☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Pre-Algebra

Integration of Technology:

Projector, laptop, scientific calculator

Equipment Needed:

Whiteboard, laptop, scientific calculator, interactive notebook

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: Apply the multiplication rules to simplify algebraic expressions involving exponents.	Lesson Sequence - Introduce the multiplication of variables or the same base number. - Demonstrate that expansion and simplifying of the power mean the same thing. - Mini-lesson providing numerous examples with explanations on how to use the Laws of Exponent multiplication rule rather than expanding to simplify. - Guided practice. - Independent practice.	- Class work - Class discussion - Collect student work to assess mastery - Students can create their own examples and teach their own mini lessons to classmates. - Homework - Exam - IXL.com



Differentiation:

Vary the level of difficulty of the expressions.

Resources Provided:

- Textbook
- IXL.com
- Worksheets



Content Area:	Math 8	Lesson Title:	Law of Exponents - Power to Power Rule	Time Frame:	2 days
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21st Century Themes

- ## 21st Century Skills

- ### Interdisciplinary Connections:

Integration of Technology:

Equipment Needed:

Whiteboard, laptop, scientific calculator, interactive notebook.

40



Differentiation:		
Various levels of difficulty of the expressions.		
Resources Provided:		
• Textbook • IXL.com • Worksheets		



Lesson Plan 3 Template

Content Area: Math 8 Lesson Title: Laws of Exponents - Quotient Rule Time Frame: 2 days

Lesson Components

21st Century Themes

☐ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☒ ICT Literacy

Interdisciplinary Connections:

Pre-Algebra

Integration of Technology:

Projector, laptop, scientific calculator.

Equipment Needed:

Whiteboard, laptop, scientific calculator, interactive notebook.

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: Apply the power to quotient and zero rule to simplify algebraic expressions involving exponents.	Lesson Sequence - Introduce the quotient & zero rule for variables or the same base number. - Demonstrate that expansion and simplifying of the power mean the same thing. - Mini-lesson provides numerous examples with explanations on how to use the Laws of Exponent quotient and zero rule rather than expanding to simplify. - Guided practice. - Independent practice.	- Class work - Class discussion - Collect student work to assess mastery - Students can create their own examples and teach their own mini lessons to classmates. - Homework - Exam - IXL.com



Differentiation:

Various level of difficulty of the expressions.

Resources Provided:

- Textbook
- IXL.com
- Worksheets



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly*, *Moderately* or *Weakly* meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher-order thinking and problem-solving skills	x		
Allow for student choice		x	
Provide scaffolding for acquiring targeted knowledge/skills	x		
Integrate global perspectives		x	
Integrate 21st-century skills		x	
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	x		
Foster student use of technology as a tool to develop critical thinking, creativity, and innovation skills	x		
Are varied to address different student learning styles and preferences	x		
Are differentiated based on student needs	x		
Are student-centered with the teacher acting as a facilitator and co-learner during the teaching and learning process	x		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	x		
Provide opportunities for student reflection and self-assessment	x		
Provide data to inform and adjust instruction to better meet the varying needs of learners	x		

Curriculum Design Template

Content Area: Mathematics - Math 8	Grade Level: 8	Unit Title: Exponents and Scientific Notation
Created: May 2024	Board Approved on:	



SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS

IEP AND 504 ACCOMMODATIONS AND MODIFICATIONS FOR EARLY CHILDHOOD AND ELEMENTARY SCHOOL STUDENTS:

Large print textbooks
Textbooks for at-home use
Additional time for assignments
Review of directions
Use of mnemonics
Have student restate information
Concrete examples
Adaptive writing utensils
Support auditory presentations with visuals
Use of a study carrel
Assistance in maintaining uncluttered space
Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
Space for movement or breaks
Study sheets and teacher outlines
Extra visual and verbal cues and prompts
Math sheets with highlighted instructions
Graph paper to assist in organizing or lining up math problems
Use of computers and calculators
Books on tape
Graphic organizers
Quiet corner or room to calm down and relax when anxious
Preferential seating
Alteration of the classroom arrangement
Reduction of distractions
Answers to be dictated
Hands-on activities
Use of manipulatives
No penalty for spelling errors or sloppy handwriting
Follow a routine/schedule
Alternate quiet and active time
Teach time management skills
Rest breaks
Verbal and visual cues regarding directions and staying on task
Agenda book and checklists
Adjusted assignment timelines
Visual daily schedule



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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Varied reinforcement procedures
Immediate feedback
Work-in-progress check
Personalized examples

TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:

Answers to be dictated
Frequent rest breaks
Additional time
Oral testing
Untimed tests
Choice of test format (multiple-choice, essay, true-false)
Alternate ways to evaluate (projects or oral presentations instead of written tests)
Accept short answers
Open-book tests
Read test and directions to student
Provide study outline prior to tests
Highlight key directions
Test in alternative site
Use of calculator
Extra credit option
Preview test procedures
Simplified test wording; rephrased test questions and/or directions

GENERAL ACCOMMODATIONS AND MODIFICATIONS:

Use of alternative books or materials on the topic being studied
Computerized spell-check support
Word bank of choices for answers to test questions
Provision of calculator and/or number line for math tests
Reworded questions in simpler language
Projects instead of written reports
Highlighting important words or phrases in reading assignments
Modified workload or length of assignments/tests
Modified time demands
Modified grades based on IEP

BEHAVIOR ACCOMMODATIONS MODIFICATIONS:



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GLOBAL SKILLS**

Breaks between tasks
Cue expected behavior
Daily feedback to student
Have contingency plans
Use de-escalating strategies
Use positive reinforcement
Use proximity/touch control
Use peer supports and mentoring
Model expected behavior by adults
Have parent sign homework
Have parent sign behavior chart
Set and post class rules
Chart progress and maintain data



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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS

IEP AND 504 ACCOMODATIONS AND MODIFICATIONS FOR MIDDLE AND HIGH SCHOOL STUDENTS:

Large print textbooks
Textbooks for at-home use
Additional time for assignments
A locker with adapted lock
Review of directions
Review sessions
Use of mnemonics
Have student restate information
Provision of notes or outlines
Concrete examples
Adaptive writing utensils
Support auditory presentations with visuals
Weekly or bi-weekly home-school communication
Space for movement or breaks
Study sheets and teacher outlines
Extra visual and verbal cues and prompts
Lab and math sheets with highlighted instructions
Graph paper to assist in organizing or lining up math problems
Use of tape recorder for lectures
Use of Interactive notebook
Use of a scribe
Use of computers and calculators
Books on tape
Graphic organizers
Quiet corner or room to calm down and relax when anxious
Preferential seating
Alteration of the classroom arrangement
Reduction of distractions
Answers to be dictated
Hands-on activities
Ability to type all assignments
Follow a routine/schedule
Teach time management and organizational skills
Rest breaks
Verbal and visual cues regarding directions and staying on task
Agenda book and checklists
Daily check-in with case manager or special education teacher
Adjusted assignment timelines
Visual daily schedule



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Varied reinforcement procedures
Immediate feedback
Work-in-progress check
Personalized examples

TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:

Answers to be dictated
Frequent rest breaks
Additional time
Oral testing
Choice of test format (multiple-choice, essay, true-false)
Alternate ways to evaluate (projects or oral presentations instead of written tests)
Accept short answers
Open-book or open-note tests
Read test and directions to student
Provide study guides prior to tests
Highlight key directions
Test in alternative site
Use of calculator
Extra credit option
Pace long-term projects
Preview test procedures
Simplified test wording; rephrased test questions and/or directions

GENERAL ACCOMMODATIONS AND MODIFICATIONS:

Allow outlining, instead of writing for an essay or major project
Use of alternative books or materials on the topic being studied
Computerized spell-check support
Word bank of choices for answers to test questions
Provision of calculator for math tests
Film or video supplements in place of reading text
Reworded questions in simpler language
Projects instead of written reports
Highlighting important words or phrases in reading assignments
Modified workload or length of assignments/tests
Modified time demands



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**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Pass/no pass option
Modified grades based on IEP

BEHAVIOR ACCOMMODATIONS FOR STUDENTS:

- Breaks between tasks
- Cue expected behavior
- Daily feedback to student
- Have contingency plans
- Use de-escalating strategies
- Use positive reinforcement
- Use proximity/touch control
- Use peer supports and mentoring
- Model expected behavior by adults
- Have parent sign homework
- Set and post class rules
- Chart progress and maintain data



SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS

Accommodations and Modifications for ESL Students

- Give tests orally
- Give instructions/directions in writing and orally
- Assign a peer tutor, same language or English speaking
- Allow use of bilingual/translation dictionary
- Provide summaries of text or study guides of particular chapters
- Allow errors in speaking
- Allow errors in writing
- Accept writing in first language
- Highlight key vocabulary
- Reduce amount of work required
- Assess comprehension through demonstration or other alternative means (gestures, drawings)
- Rephrase questions, directions, and explanations
- Reduce multiple choices on assessments
- Provide study guides and/ or outlines
- Shorten reading assignments
- Allow extended time for test/project completion
- Use of audio books
- Use of graphic organizers
- Use reduced text, so that print is not dense
- Use visuals/pictures throughout lesson/unit/assignment
- Adapt homework to reflect language proficiency/home support
- Adapt homework to reflect home support
- Provide hands-on activities and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Use of translation dictionaries to locate words in the native language
- Use anecdotal records and portfolio of work as forms of assessment
- Use story retellings to assess comprehension

What Does the Gifted and Talented Experience Look Like? *Springfield Public Schools*

Mission Statement

The Gifted and Talented Program of the Springfield Public Schools aims to provide a meaningful and rigorous education that instills the value of lifelong learning and empowers all students to reach their full potential and become self-fulfilled creative leaders in accordance with the comprehensive standards of our state. We accomplish this by offering challenging, real-world experiences in a student-centered environment.

We recognize that students come from diverse socioeconomic, cultural, and ethnic backgrounds, and the mission of the gifted and talented program is to provide opportunities for students to explore their intellectual, creative, and artistic gifts and talents within the classroom and with beyond-the-classroom experiences. It is essential to provide diverse, appropriate, and ongoing learning experiences and environments that incorporate students' academic, psychological, and social needs. Our responsibility is to provide students with educational alternatives that teach, challenge, and expand their knowledge, while simultaneously stressing the development of independent and self-directed learners who continuously generate questions, analyze, synthesize, and evaluate information and ideas.

New Jersey Administrative Code 6A:8-3.1 defines students who are gifted and talented as those students who possess or demonstrate high levels of ability in one or more content areas when compared to their chronological peers in the local district and who require modification of their educational program if they are to achieve in accordance with their capabilities.

Goals:

To support our mission, we have established the following goals to guide our work:

- To infuse into the general education program a broad range of activities for high-level learning that will challenge all students to perform at advanced levels, and provide extended opportunities, resources, and support in particular areas where student interest or talent is demonstrated.
- To provide a continuum of gifted education services that will strengthen the total school program, offer enriching and challenging learning opportunities for all students, and provide specialized learning experiences
- To promote achievement of students' best potentials and increased ability.

Through a productive and collaborative relationship among the building principals, classroom teachers, and the Gifted and Talented teacher, our schools can create programming that will enhance the learning experience for every student and serve the unique and specialized needs of students currently demonstrating gifted behaviors.

Elements of the Schoolwide Enrichment Model, W.I.N (What I Need), differentiated instruction, advanced classes, or individual programs into a student's regular instruction program are integral to this overarching framework for gifted education in the Springfield School District.

Reference Board Policy and Regulation 2464 – Gifted and Talented Pupils (M)

Early Childhood Center **Edward V. Walton**

Schoolwide Virtual Enrichment

All first and second grade students have access to the [Gifted and Talented Virtual Classroom](#). This virtual classroom is a space for students to complete various challenges and enrichment opportunities at their own pace. Students can receive feedback and additional adaptable resources to meet their individual learning needs. The virtual classroom design expands accessibility to enrichment resources and allows students to choose learning activities according to their unique interests and abilities. The purpose of the activities is to encourage problem-solving, develop critical thinking

skills, and expand curiosity and imagination. Activities are aligned to the New Jersey Student Learning Standards.

Gifted and Talented Teacher as a Resource

The Gifted and Talented teacher serves as a resource to all teachers within Edward V. Walton School. Teachers seeking resources for their high-ability learners will receive additional support from the Gifted and Talented teacher in various ways. This support may include additional units of study, challenging resources, and student projects.

Elementary Schools **James Caldwell** **Thelma L. Sandmeier**

The goal is to engage small groups of students in intensive learning experiences through standards-based, rigorous, and relevant units of study that supplement, not supplant, the grade-level curriculum and support students' unique learning needs.

Enrichment Experience Grade 3

Beginning in third grade, the G&T teacher will cycle through all classrooms to work on problem-solving and enrichment tasks with students. Driven by assessment data, academic performance, student interest, and teacher observation, small groups of students will meet with the G&T teacher during W.I.N. (What I Need) periods throughout the week that the teacher is assigned to their classroom teacher. Groupings will be flexible and monitored to best meet each student's needs throughout the school year. Activities will include brain teasers, puzzles, strategic thinking, problem-solving, and STEM challenges.

Targeted Gifted and Talented Programing Grades 4-5

Students may become identified as Gifted and Talented in fourth grade. Students that are identified may receive support from the G&T Teacher for up to five periods (200 minutes) a week during W.I.N. (What I Need) periods. Identified students will meet to explore grade-level content while incorporating depth and complexity in a student-centered, problem-based environment. The Gifted and Talented Program aims to provide students with various advanced and challenging learning experiences across content areas to promote independent thinking skills, refine critical thinking and communication skills, cultivate joy in learning, and expand student interests through problem-solving. The instruction that students receive incorporates 21st Century Skills and advanced content that is challenging, hands-on, and relevant to the real world.

Strategies and Practices that Support Gifted and Talented Students

- Adjusted Pace of Lessons
- Inquiry-Based Instruction
- Higher-Order Thinking Activities
- Interest-Based Content
- Real World Problem Solving/Problem Based Learning
- Independent Study/Passion Projects
- Units of Study with Like-Minded Peers

Schoolwide Virtual Enrichment

All JCS and TLS students have access to grade level-specific [Gifted and Talented Virtual Classrooms](#). These virtual classrooms are a space for students to complete various challenges and enrichment opportunities at their own pace. Students are able to receive feedback and additional opportunities based on their needs. The virtual classrooms have expanded the accessibility of enrichment resources directly to the students and allows for students to choose opportunities according to their interests and abilities. The purpose of the activities is to encourage problem solving, develop critical thinking skills, and expand curiosity and imagination in conjunction with the New Jersey Student Learning Standards.

Gifted and Talented Teacher as a Resource

In addition to classroom support, the Gifted and Talented teacher also serves as a resource to all teachers in the building. Teachers that are seeking resources for their high ability learners will receive additional support from the Gifted and Talented teacher in various ways. This may include additional units of study, challenging resources, student projects, and meeting with the G&T teacher as needed.

Additional Enrichment Opportunities

Across all grade levels 3-5, as recommended by the classroom teacher, students exhibiting a need for additional enrichment may have the opportunity to meet with the G&T teacher as the schedule allows. Groupings will be flexible and monitored to best meet the students' needs throughout the school year. Activities will include, brain teasers, puzzles, strategic thinking activities, problem-solving challenges, and STEM challenges. Students engage in an extended process of asking questions, using resources, and developing answers that lead to thinking about what and how they are learning. Students are held accountable for how they work and use their time by demonstrating their learning through products or presentations.

Students self-select to participate in individual and/or group projects based on interest and commitment. The classroom teacher and/or the enrichment teacher will help guide and monitor student exploration of chosen topics, facilitating their learning with resources and teaching of needed skills.

Secondary Schools
Florence M. Gaudineer Middle School
Jonathan Dayton High School

Grades 6-12: Access to specific content programs with higher levels of academic challenges (i.e. Pre-Algebra, Accelerated Communication Arts, and Advanced Placement Classes)

Dual Credit Courses provide students the opportunity to obtain high school credit, and college credit, simultaneously through partnerships with several institutions.

Project Lead the Way (PLTW) students become builders of technology by engaging in real world activities. Students are empowered as design thinkers collaborating on real world projects.

Gifted and Talented Identification Criteria

The Springfield Schools Gifted and Talented Program recognizes that students require differentiated learning experiences beyond the core curriculum being taught because of their advanced abilities in one or more content areas. These students may also have other cognitive qualities such as curiosity, creativity, motivation, leadership, and passion that require modifications to their academic experience.

Multiple Measures of Eligibility

Kindergarten through grade twelve identification process for gifted and talented students includes multiple measures. Multiple measures may include but are not limited to: achievement test scores; grades; student performance or products; intelligence testing; parent, student, and/or teacher recommendation; and other appropriate measures. The identification methodology is developmentally appropriate, non-discriminatory, and related to the programs and services offered by the Springfield School District. The identification procedures are reviewed annually.

According to N.J.A.C. 6A:8-3.1, all public school districts must have a board-approved gifted and talented identification process and provide services for identified students enrolled in the grades of that school district. The regulations require that identification and services be made available to students in grades K-12.

When students are recommended for the Gifted and Talented Program there are multiple measures that are considered to determine if services are necessary and appropriate. The assessments used are as follows:

- Cognitive Abilities Test (CogAT)
- Classroom Performance/Student Portfolios
- DRA2 Level
- iReady Diagnostic Scores
- Gifted Indicators Checklist
- Start Strong/NJSLA Assessment Data

The N.J.A.C. requires that students be compared to their chronological peers in the local school district. The New Jersey Department of Education has not established state-level criteria for identifying students who are gifted, such as mandated tests or assessments, grade point averages, or IQ scores. Local school districts must use multiple measures to identify students.

Procedures

<https://www.straussesmay.com/seportal/Public/DistrictPolicy.aspx?policyid=2464&id=b8a33a9f505e4998a6db3fb8e1de778b>

Gifted and Talented Program Identification Matrix

Minimum Score Required for Consideration: 14 Points

1 Point	2 Points	3 Points
Cogat Assessment Overall Stanine Score of a 7	Cogat Assessment Overall Stanine Score of an 8	Cogat Assessment Overall Stanine Score of a 9
iReady Math Assessment Just Below Current Grade Level	iReady Math Assessment On Grade Level	iReady Math Assessment ½ Year + Above Current Level
iReady ELA On Grade Level	iReady ELA ½ Year Above Current Level	iReady ELA One Full Grade Level + Above Current Level
NJSLA Math Approaching Expectations	NJSLA Math Met Expectations	NJSLA Math Exceed Expectations
NJSLA ELA Approaching Expectations	NJSLA ELA Met Expectations	NJSLA ELA Exceed Expectations
HOPE Teacher Rating Scale Raw Score: 11 - 29	HOPE Teacher Rating Scale Raw Score: 30 - 49	HOPE Teacher Rating Scale Raw Score: 50-66

Team meetings present the opportunity to review data and assess the educational needs of all students. Teacher provides examples of student work exhibiting above and beyond grade level expectations, creativity, leadership, critical and abstract thinking. Programs for gifted and talented students will be periodically evaluated for their continuing efficacy and adjusted accordingly. The parent of any student identified as gifted or talented shall be consulted regarding any program designed to address the student's particular needs.

Resource Links

https://riversideinsights.com/cognitive_abilities_test

<https://www.curriculumassociates.com/programs/i-ready-learning>

<https://www.nj.gov/education/assessment/resources/>

<https://www.routledge.com/HOPE-Teacher-Rating-Scale-Involving-Teachers-in-Equitable-Identification/Gentry-Pereira-Peters-McIntosh-Fugate/p/book/9781618214522#:~:text=The%20HOPE%20Teacher%20Rating%20Scale,making%20it%20easy%20to%20use.>

Gifted and talented student: The “*[Strengthening Gifted and Talented Education Act](#)*” defines a gifted and talented student as a “student who possesses or demonstrates a high level of ability in one or more content areas when compared to their chronological peers in the school district and who require modifications of their educational program if they are to achieve in accordance with their capabilities.”

Twice-exceptional (2E) students: A twice-exceptional (2E) student is defined as “a student who is both gifted and a student with a disability. These students may also be referred to as having dual exceptionalities or as being gifted with learning disabilities (GT/LD). This also applies to students who are gifted with ADHD or gifted with autism” (New Jersey Association for Gifted Children, www.nagc.org).

Instructional adaptation: An adjustment or modification to instruction enabling a student who is gifted and talented to participate in, benefit from, and demonstrate knowledge and application of the New Jersey Student Learning Standards in one or more content areas at the instructional level of the student, not just the student's grade level.

Identifying gifted and talented students: The focus of identification is to provide programming and services in which students' specific learning needs and potential are appropriately addressed and met. In every New Jersey school district, there are students who require modifications to the general education curriculum if they are to achieve in accordance with their abilities. By identifying a student's general intellectual ability, creativity, or specific academic area aptitudes, we are acknowledging that they need programming and services outside of the general education/grade level curriculum to advance their learning.

NJDOE Fast Facts

<https://www.nj.gov/education/standards/gifted/>

<https://www.nj.gov/education/standards/gifted/legislation.shtml>

Supplemental Resources/Programming for Gifted Students

Edward V. Walton

- PETS Program – Primary Education Thinking Skills
- Group Solutions/Group Solutions 2 – Cooperative Logic Activities
- Lollipop Logic
- Beginning Thinking Skills
- AIMS Education Programming

James Caldwell and Thelma L. Sandmeier

Math/ELA

- Project M3: Mentoring Mathematical Minds
- Junior Great Books
- AIMS Education Programming
- Borenson Hands on Equations
- BizWorld
- Perplexors
- Advanced Math Explorations grade 3-5
- Challenging Units for Gifted Learners (ELA and Math)
- Creative Curriculum Extenders
- Differentiated Lessons & Projects
- Challenge Math Grades 4+
- Differentiating Instruction with Menus (All Content Areas)
- Jacob's Ladder
- Genius Hour/Passion Project
- Spatial Reasoning
- Logic Puzzles, Brain Games, Analogies

STEM

- Engineering is Elementary
- Engineer Throughout the Year
- PBS Design Squad
- DefinedSTEM
- Project Lead the Way (PLTW)

Enrichment Events

Experience for all students to be enriched through events related to the curricular or extracurricular activities. Examples include after school clubs, PTA-sponsored events, leadership opportunities, visual and performing arts, and community service opportunities.