# PITTSGROVE TOWNSHIP SCHOOL DISTRICT

Pittsgrove Township
School District
P.R.I.D.E. Patience Respect Integrity Diligence Empathy

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| **Course Name: Math 8** | **Grade Level(s): 8** |
| **Department: Math** | **Credits:** |
| **BOE Adoption Date: October 17, 2019** | **Revision Date(s): June 18, 2020** |

**Course Description**

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

(1) Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ($y/x = m$ or $y = mx$) as special linear equations ($y = mx + b$), understanding that the constant of proportionality ($m$) is the slope, and the graphs are lines through the origin. They understand that the slope ($m$) of a line is a constant rate of change, so that if the input or $x$-coordinate changes by an amount $A$, the output or $y$-coordinate changes by the amount $m \cdot A$. Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and $y$-intercept) in terms of the situation.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

## Mission Statement

***The Pittsgrove Township School District believes in growing all learners to thrive.*** *The district offers an intellectually rigorous, dynamic curriculum aligned to state and national standards coupled with research-based practices in classrooms. The Pittsgrove Township School District strives to highlight critical thinking, problem-solving, intercultural literacy, digital literacy, collaboration, innovation, and a growth mindset as part of the instructional core of learning. The district provides high quality resources to provide young people the knowledge they need to approach the future as leaders and learners.*

## Curriculum & Instruction Goals

1. To ensure students are college and career ready upon graduation
2. To vertically and horizontally align curriculum PreK-12 to ensure successful transition of students at each grade level
3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and ongoing progress monitoring

## How to Read this Document

This curricular document contains both a *pacing guide* and *curriculum units*. The pacing guide serves to communicate an estimated timeframe as to *when* critical knowledge and skills will be taught throughout the year. The pacing, however, may differ slightly depending upon the unique needs of each learner. The *curriculum units* contain more detailed information as to the content, goals, objectives, instructional strategies, resources, and assessments.

| **NJ Administrative Code and Statutes Key** |
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| **^=Amistad Law**<br>**O=Diversity & Inclusion Law**<br>**<>=Holocaust**<br>**+=LGBT and Disabilities Law**<br>***=AAPI (Asian American and Pacific Islanders)**<br>**$=Financial Literacy**<br>**Use this key to understand where the NJ mandates are being implemented in the K-12 curriculum units.** |

**Pacing Guide**

**Course Title:** Math 8
**Prerequisite(s):** Math 7

| Unit Title | Duration/ Month(s) | Related Standards | Learning Goals | Critical Knowledge and Skills |
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| **Unit 1:** Expressions and Equations | 15 weeks ( September Thru Winter break ) | *Number System* **MA.8.8.NS.A.1** **MA.8.8.NS.A.2**<br><br>*Expressions* ***MA.8.8.EE.A.1*** ***MA.8.8.EE.A.2*** ***MA.8.8.EE.A.3*** ***MA.8.8.EE.A.4***<br><br>*Equations:* ***MA.8.8.G.C 9*** ***MA.8.8.EE.C.7*** ***MA.8.8.EE.C.7 a*** ***MA.8.8.EE.C.7 b***<br><br>**Mathematical Practices:** | Students will be learning to 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.<br><br>Students will be learning to 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 (e.g., π2 ). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.<br><br>Students will be learning to know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. | 1. Differentiate between rational and irrational numbers.<br>2. Approximate irrational numbers.<br>3. Convert repeating decimals into fractions.<br>**A:**<br>1. Convert from standard form to scientific notation.<br>2. Convert from scientific notation to standard form.<br>3. Perform operations with scientific notation.<br>4. Simplify expressions in exponential form using exponent rules.<br>5. Compare and contrast exponential expressions. |

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| | | NJSLS.MP.1<br>NJSLS.MP.2<br>NJSLS.MP.4<br>NJSLS.MP.6<br>NJSLS.MP.7<br>NJSLS.MP.8 | Students will be learning to know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27.<br><br>Students will be learning to use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.<br><br>Students will be learning to 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 × 108 and the population of the world as 7 × 109 , and determine that the world population is more than 20 times larger.<br><br>Students will be learning to 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 numbers.<br><br>Students will be learning to solve linear equations in one variable. | 6. Find square roots and cube roots of small perfect squares and cubes.<br><br>**B:**<br>1. Graph lines in the form of y=mx+b.<br>2. Determine the difference between proportional and nonproportional relationships.<br>3. Interpret the slope as a unit rate in real life scenarios.<br>4. Compare relationships represented in various ways.<br><br>**C:**<br>1. One step equations<br>2. Equations using the distributive property<br>3. Two step equations<br>4. Multi-step equations<br>5. Equations with variables on both sides<br>6. Equations with one solution, no solution and infinitely many solutions<br>7. Solve systems of linear equations using graphing, substitution and elimination. |

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| | | | Students will be learning to *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).*<br><br>Students will be learning to s*olve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.* | 8. Solve systems of linear equations with one solution, no solution and infinitely many solutions. |
| **Unit 2:** Functions, Equations, and Solutions | 2.5 months | Functions<br>**MA.8.8.F.A.1**<br>**MA.8.8.F.A.2**<br>**MA.8.8.F.A.3**<br>**MA.8.8.F.B**<br>**MA.8.8.F.B.4**<br>**MA.8.8.F.B.5**<br><br>Equations<br>**MA.8.8.EE.C.8**<br>**MA.8.8.EE.C.8 a**<br>**MA.8.8.EE.C.8 b**<br><br>**Mathematical Practices:**<br>NJSLS.MP.1 | Students will be learning to 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.1<br><br>Students will be learning to 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. | 1. Differentiate between a relation and a function.<br>2. Differentiate between linear and nonlinear functions.<br>3. Interpret slope as unit rate for linear functions.<br>4. Compare functions represented in various ways.<br>5. Interpret unit rate and intercepts in real life situations. |

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| | | NJSLS.MP.2<br>NJSLS.MP.4<br>NJSLS.MP.6<br>NJSLS.MP.7<br>NJSLS.MP.8 | Students will be learning to 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 = s2 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.<br><br>Students will be learning to c*onstruct 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.*<br><br>Students will be learning to d*escribe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.*<br><br>Students will be learning to 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. | |

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| | | | Students will be learning to solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.<br><br>Students will be learning to 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. | |
| **Unit 3:** Geometry: Pythagorean Theorem, Congruence and Similarity with Triangles and Transformations | 1.5 months | *Transformations*<br>MA.8.8.G.A.1<br>MA.8.8.G.A.1a<br>MA.8.8.G.A.1b<br>MA.8.8.G.A.1c<br>MA.8.8.G.A.2<br>MA.8.8.G.A.3<br>MA.8.8.G.A.4<br><br>*Triangles*<br>*MA.8.8.G.A.5*<br>*MA.8.8.G.B.6*<br>*MA.8.8.G.B.7*<br>*MA.8.8.G.B.8* | Students will be able to understand congruence and similarity using physical models, transparencies, or geometry software.<br><br>1. Verify experimentally the properties of rotations, reflections, and translations:<br>*a. Lines are transformed to lines, and line segments to line segments of the same length.*<br>*b. Angles are transformed to angles of the same measure.*<br>*c. Parallel lines are transformed to parallel lines.*<br><br>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, | 1. Determine volume for cones, spheres and cylinders.<br>2. Use volume to determine unknown measures for cones, spheres and cylinders.<br>3. Use transformations to explain congruence or similarity between two figures on a coordinate plane.<br>4. Use the Pythagorean Theorem to find unknown |

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| | | **Mathematical Practices:**<br>NJSLS.MP.1<br>NJSLS.MP.2<br>NJSLS.MP.4<br>NJSLS.MP.6<br>NJSLS.MP.7<br>NJSLS.MP.8 | and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.<br><br>Students will be able to describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.<br><br>Students will be able to 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.<br><br>Students will be able to 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.<br><br>Students will be able to understand and apply the Pythagorean Theorem.<br><br>Students will be able to explain a proof of the Pythagorean Theorem and its converse. | side lengths of right triangles.<br>5. Use the converse of the Pythagorean Theorem to prove that a triangle is right.<br>6. Use the Pythagorean Theorem to find distances on the coordinate plane. |

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| | | | Students will be able to apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real world and mathematical problems in two and three dimensions.<br><br>Students will be able to apply the Pythagorean Theorem to find the distance between two points in a coordinate system<br><br>Students will be able to solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.<br><br>Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. | |
| **Unit 4:**<br>**S**tatistics and Probability:<br>Scatter plots and Association | 1 Month | ***MA.8.8.SP.A.1***<br>***MA.8.8.SP.A.2***<br>***MA.8.8.SP.A.3***<br>***MA.8.8.SP.A.4***<br><br>**Mathematical Practices:**<br>NJSLS.MP.1<br>NJSLS.MP.2<br>NJSLS.MP.4<br>NJSLS.MP.6 | Students will be able to 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.<br><br>Students will be able to 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 | 1. Create, analyze and interpret scatter plots and two way tables.<br>2. Draw a line of best fit for scatter plots representing real world data.<br>3. Describe patterns that are shown within scatter plots. |

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| | | NJSLS.MP.7<br>NJSLS.MP.8 | informally assess the model fit (e.g. line of best fit) by judging the closeness of the data points to the line.<br><br>Students will be able to 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.<br><br>Students will be able to 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 association 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? | |

| Instructional Unit Map | | | | |
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| **Course Title: Math 8** | | | | |
| **Unit Title** | Expressions and Equations | | **Start Date:** | September |
| | | | **Length of Unit:** | 15 weeks |
| **Content Standards**<br>*What do we want them to know, understand, & do?* | **Power Standards:**<br><br>MA.8.8.EE.A.1<br>Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3–5 = 3–3 = 1/33 = 1/27.<br><br>MA.8.8.EE.A.2<br>Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.<br><br>MA.8.8.EE.A.3<br>Use numbers expressed in the form of a single digit | **Learning Goals** | Students will be able to:<br>● Know that there are numbers that are not rational, and approximate them by rational numbers<br>● Work with integer exponents<br>● Solve problems in Scientific Notation<br>● Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres<br>● Students will be able to solve equations in one variable. | |

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| | 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 × 108 and the population of the world as 7 × 109 , and determine that the world population is more than 20 times larger.<br><br>MA.8.8.EE.A.4<br>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.<br><br>8.EE.C.7. Solve linear equations in one variable. | | |

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| | 8EE.C.7a. 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).<br>8.EE.C.7b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.<br><br>**Supporting Standards:**<br>8.NS.A.1. Know that numbers that are not rational are called irrational. Understand | | |

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| | 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.<br><br>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 (e.g., π2 ). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.<br><br>8.G.C.9<br>Know the formulas for the volumes of cones, | | |

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| | cylinders, and spheres and use them to solve real-world and mathematical problems.<br><br>**Standards of Mathematical Practice:** 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning | | |
| **Essential Questions** | How do we express a relationship mathematically?<br>How can you use exponents to write numbers?<br>How can you perform operations with numbers written in scientific notation?<br>How can you find and compare the areas and volumes of similar solids?<br>How do we determine the value of an unknown quantity? | | |
| **Assessments**<br>*How will we know they have gained the knowledge &* | **Formative** | **Summative** | **Alternative** |

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| *skills?* | • Warmup/ Exit Tickets<br>• Classwork and Homework assignments<br>• Student self rating<br>• Communicator responses<br>• Quizzizs<br>• Desmos<br>• Class discussions<br>• IXL and Khan Academy<br>• Self Correcting Worksheets<br>• Walk arounds/ Scavenger hunts<br>• Spiral Review Quizzes | Order of Operations Test<br>Number System Test<br>Laws of Exponents Test<br>Scientific Notation Test<br>Solving 1 Variable Equations Test | |
| **Unit Pre-Assessment(s)**<br>*What do they already know?* | Beginning of year Math 8 Pre-assessment Test<br>Fall NWEA MAP Testing results (analyzed by standard, not overall score)<br>IXL Diagnostic | | |
| **Instructional Strategies/Student Activities** | • Guided Practice<br>• Modeling<br>• Direct Instruction<br>• Instructional Videos<br>• Cooperative Learning<br>• Turn-and-Talk<br>• Self correcting worksheets<br>• Walk arounds<br>• Reinforcing math skills through games: | | |
| **Instructional/Assessment Scaffolds** *(Modifications* | **English Language Learners** | **Special Education Learners** | **Struggling Learners** | **Advanced Learners** |

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| */Accommodations) – planned for prior to instruction* | Accommodations<br>Kinesthetic Movement to Model Like Terms Word wall – add pictures<br>Graph paper for tape diagrams<br>Manipulatives – like terms cards,<br>algebra tiles,<br>Calculator<br>Visual charts & Outlined Notes – Add Pictures<br>Provide written stems<br>Highlight/underline key words<br>Simplify language<br>Modifications<br>Use of a calculator for computation<br>Alternative objectives<br>Change level of complexity | Accommodations<br>Kinesthetic Movement to Model Like Terms Word wall – add pictures<br>Graph paper for tape diagrams<br>Manipulatives – like terms cards, algebra tiles, Calculator<br>Visual charts & Outlined Notes – Add Pictures<br>Provide written stems<br>Highlight/underline key words Simplify language<br><br>Modifications:<br>Use of a calculator for computation<br>Alternative objectives Change level of complexity<br><br>Differentiation:<br>Personalized tiered questions Enhanced directions | Accommodations<br>Word wall & Anchor Posters<br>Graph paper for tape diagrams<br>Manipulatives – like terms cards, algebra tiles, equation mat<br>Calculator<br>Differentiation<br>Kinesthetic Movement to Model Like Terms<br>Flexible Grouping<br>Learning Stations | Accommodations/Differentiation<br>Math Debates<br>Tiered assignments<br>Flexible Grouping<br>Graphing Calculator extension<br>Peer Coaching<br>Compare and Contrast Solution Paths<br>Advanced multi-step equations<br>Writing equations from real-world situations in multiple forms<br>Equations with variables on both sides<br>Independent Study ( i.e. Desmos Activities) |

| **Differentiated Instructional Methods:** *(Multiple means for students to access content and multiple modes for student to express understanding)* | **Access** (Resources and/or Process) | **Expression** (Products and/or Performance) |
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| | • Weekly Conference<br>• Assign Specific/ targeted IXL lesson based on progress<br>• Assign specific/ targeted khan Academy lessons based on progress | |
| **Vocabulary** *Highlight key vocabulary (both Tier II and Tier III words)* | Tier II- Solve, Analyze, Variable, Term, Constant, Coefficient, Isolate, Simplify,<br><br>Tier III- Product Rule, Quotient Rule, Power Rule, Rational, Irrational, Scientific Notation, Distributive property, Like terms, Solution, Inverse operations | |
| **Integration of Technology** SAMR | Scientific Calculator (A)<br>Khan Academy(S/A/M)<br>IXL (S/A)<br>Kahoot (A)<br>Desmos (S/A/M)<br>Google Forms ( S/A)<br>Quizziz (S/A) | |
| **Interdisciplinary Connections** NJ Student Learning Standards | ELA: NJSLSA.8.W1.C Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.<br>C. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.<br>Technology:<br>8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.<br>21st Century Life and Careers:<br>9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income.<br>CRP2. Apply appropriate academic and technical skills.<br>CRP4. Communicate clearly and effectively and with reason.<br>CRP6. Demonstrate creativity and innovation. | |

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| | CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. | |
| **21st Century Themes/Skills**<br>P21 Framework | Themes | Skills |
| | Financial, Economic,<br>Business, & Entrepreneurial<br>Literacy<br>Students are presented with real world tasks involving personal finance as well as business profits, expenses, supply & demand; students connect situations with in order to model situations with equations | Creativity & Innovation Students are exposed and expected to realize multiple paths to the solution of an equation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner They can consider suggestions as solutions to problems, and they seek new methods, practices.<br><br>Media Literacy<br><br>Critical Thinking and Problem Solving Students create and evaluate equivalent forms of expressions involving rational numbers to see structure, reveal characteristics, and make connections to context.<br><br>Communication & Collaboration<br>Students engage in partnered practice, peer review and peer coaching when solving equations. |
| **Resources/Materials** | IXL, Khan Academy, Desmos,Quizizz , Math is Fun, Released Items PARCC, Coach Books, Notebook, Pencil, Chromebook, | |

| Instructional Unit Map | | | |
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| **Course Title: Math 8** | | | |
| **Unit Title** | Functions, Equations, and Solutions | **Start Date:** | January |
| | | **Length of Unit:** | 10 weeks |
| **Content Standards**<br>*What do we want them to know, understand, & do?* | 8.F.A.1:<br>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.1<br><br>8.F.A.2:<br>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 | **Learning Goals** | Students will be able to compare and contrast proportional relationships, lines and linear equations and apply the concepts of slope to linear equations.<br><br>Students will be able to define a function and compare properties of two functions each represented in a different way, and interpret the equation y = mx + b as defining a linear relationship between the two quantities.<br><br>Students will be able to construct a function to model linear relationships and describe qualitatively the function relationship between two quantities by analyzing a graph.<br><br>Students will be able to Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6 |

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| | table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.<br><br>8.F.A.3<br>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 = s2 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.<br><br>8.F.B.4<br>Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a | | |

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| | 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.<br><br>8.F.B.5<br>Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.<br><br>8.EE.B.5<br>Graph proportional relationships, interpreting the unit rate as the slope | | |

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| | 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.<br><br>8.EE.B.6<br>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.<br><br>8.EE.C.8<br>a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of | | |

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| | their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6. 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.<br><br>Standards of Mathematical Practice: 1. | | |

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| | Make sense of problems and persevere in solving them.<br>2. Reason abstractly and quantitatively.<br>3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics.<br>5. Use appropriate tools strategically.<br>6. Attend to precision.<br>7. Look for and make use of structure.<br>8. Look for and express regularity in repeated reasoning | | |
| **Essential Questions** | What defines a function and how can it be represented?<br>What makes a function linear?<br>How can linear relationships be modeled and used in real-life situations?<br>What does the number of solutions (none, one or infinite) of a system of linear equations represent?<br>What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically?<br>How can systems of equations be used to represent situations and solve problems? | | |
| **Assessments**<br>*How will we know they have gained the knowledge & skills?* | **Formative** | **Summative** | **Alternative** |
| | ● Warmup/ Exit Tickets<br>● Classwork and Homework assignments<br>● Student self rating<br>● Communicator | Graphing Linear Equations Test 1<br>Extension of Linear Functions Test 2<br>Functions and Scatter Plot Test<br>System of Linear Equations Test | |

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| | responses<br>● Quizzizs<br>● Class discussions<br>● IXL and Khan Academy<br>● Self Correcting Worksheets<br>● Walk arounds/ Scavenger hunts<br>● Spiral Review Quizzes | | |

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| **Unit Pre-Assessment(s)**<br>*What do they already know?* | Solving 1 variable Equations Test<br>Fall NWEA MAP Testing results (analyzed by standard, not overall score)<br>IXL Diagnostic | | | |
| **Instructional Strategies/Student Activities** | ● Guided Practice<br>● Modeling<br>● Direct Instruction<br>● Instructional Videos<br>● Cooperative Learning<br>● Turn-and-Talk<br>● Reinforcing math skills through games: | | | |
| **Instructional/Assessment Scaffolds** *(Modifications /Accommodations) – planned for prior to instruction* | **English Language Learners** | **Special Education Learners** | **Struggling Learners** | **Advanced Learners** |
| | Accommodations Provide graphs with units & labels Slope Formula Reference Sheet<br>Word wall – add pictures<br>Visual charts & Outlined Notes – Add Pictures<br>Provide written stems | Accommodations<br>Provide graphs with units & labels Slope Formula Reference Sheet Enlarged Graph paper<br>Word wall & Anchor Posters | Accommodations<br>Word wall & Anchor Posters<br>Enlarged graph paper<br>Personalized Examples – Explicit instruction for word problems and numerous modeled examples | Accommodations Math Debates T<br>iered assignments<br>Flexible Grouping<br>Desmos – Graphing a lines art project<br>Desmos – Graphing FUNCTIONS art project |

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| | Highlight/underline key words<br>Simplify language<br><br>Modifications:<br>Alternative objectives<br>Change level of complexity<br>Differentiation<br>Personalized tiered questions Enhanced directions | Personalized Examples – Explicit instruction for word problems and numerous modeled examples<br>Modifications<br>Alternative objectives Change level of complexity<br><br>Differentiation<br>Flexible Grouping<br>Learning Stations | Differentiation<br>Provide graphs with units & labels<br>Slope Formula Reference Sheet<br>Flexible Grouping Learning Stations | |
| **Differentiated Instructional Methods:**<br>*(Multiple means for students to access content and multiple modes for student to express understanding)* | **Access** (Resources and/or Process) | | **Expression** (Products and/or Performance) | |
| | ● Weekly Conference<br>● Assign Specific/ targeted IXL lesson based on progress<br>● Assign specific/ targeted khan Academy lessons based on progress | | | |
| **Vocabulary**<br>*Highlight key vocabulary (both Tier II and Tier III words)* | Tier II- Solve, Analyze, Variable, Term, Constant, Coefficient, Coordinate Plane<br><br>Tier III: linear equation, solution, ordered pair, slope, rise, run, similar triangles, parallel, perpendicular, proportion, unit rate, x-intercept, y-intercept, slope-intercept form, standard form, Function, Graph of a function, input, output, linear, nom-linear, coordinates, | | | |

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| **Integration of Technology**<br>SAMR | Scientific Calculator (A)<br>Khan Academy(S/A/M)<br>IXL (S/A)<br>Kahoot (A)<br>Desmos (S/A/M)<br>Google Forms (S/A)<br>Quizziz (S/A) |
| **Interdisciplinary Connections**<br>NJ Student Learning Standards | ELA:<br>NJ SLS CCRA.R.1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.<br>NJ SLS CCRA.W.1: Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.<br><br>Science:<br>MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object<br><br>Technology:<br>8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.<br>8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities. 21st Century Life and Careers:<br>9.1.8.E.1 Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions.<br>9.1.8.E.6 Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.<br>9.1.8.F.1 Explain how the economic system of production and consumption may be a means to achieve significant societal goals.<br>9.1.8.D.5 Explain the economic principle of supply and demand.<br>CRP2. Apply appropriate academic and technical skills. |

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| | CRP3. Attend to personal health and financial well-being.<br>CRP4. Communicate clearly and effectively and with reason.<br>CRP5. Consider the environmental, social and economic impacts of decisions.<br>CRP6. Demonstrate creativity and innovation.<br>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. | |
| **21st Century Themes/Skills**<br>P21 Framework | Themes | Skills |
| | ____ Global Awareness Students apply reasoning to examine relationships between two quantities with global implications.<br>____ Civic Literacy Students are exposed to the economic impacts of their decisions on others and relate these impacts with mathematical reasoning in the context of positive and negative relationships.<br>____ Financial, Economic, Business, & Entrepreneurial Literacy Students work with cost of items to make responsible spending choices. Students will extend this reasoning to systems of equations and explore economic principles of supply and demand. | __ Critical Thinking and Problem Solving Students examine situations to determine if and how two quantities are related. Students study examples of relationships that have no impact on each other (comparing and contrasting no slope and zero slope)<br>____ Information & Communication Technologies Literacy Students use Desmos and/or Excel to investigate proportional relationships.<br>___ Communication & Collaboration Students work as a member of a team to complete a Unit project that requires comparing and contrasting proportional relationships as well as examining the work of group members to produce a quality product as a team. |
| **Resources/Materials** | IXL, Khan Academy, Desmos, Quizizz , Math is Fun, Released Items PARCC, Coach Books, Notebook, Pencil, Chromebook, | |

| **Instructional Unit Map** | | | |
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| **Course Title: Math 8** | | | |
| | Geometry | **Start Date:** | March |

| **Unit Title** | | | **Length of Unit:** | 6-7 weeks |
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| **Content Standards**<br>*What do we want them to know, understand, & do?* | MA.8.8.G.A.<br>A. Understand congruence and similarity using physical models, transparencies, or geometry software.<br>MA.8.8.G.A.1<br>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.<br>c. Parallel lines are transformed to parallel lines.<br><br>MA.8.8.G.A.2<br>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 | **Learning Goals** | Students will be able to :<br>• Understand and apply the Pythagorean Theorem<br>• Understand congruence and similarity using physical models, transparencies, or geometry software | |

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| | exhibits the congruence between them.<br><br>MA.8.8.G.A.3<br>Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.<br><br>MA.8.8.G.A.4<br>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.<br><br>MA.8.8.G.A.5<br>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 angleangle criterion for similarity of triangles. For example, arrange three | | |

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| | 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.<br><br>MA.8.8.G.B.6<br>Explain a proof of the Pythagorean Theorem and its converse<br><br>MA.8.8.G.B.7<br>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real world and mathematical problems in two and three dimensions.<br><br>MA.8.8.G.B.8<br>Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.<br><br>MA.8.8.G.C.9<br>Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. | | |

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| | Standards of Mathematical Practice: 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning | | |

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| **Essential Questions** | What changes do one- and two-dimensional figures undergo when rotated, reflected, or translated on the coordinate plane?<br>How can I tell if two figures are congruent or similar?<br>What special angles are formed from parallel lines cut by a transversal?<br>Why does the Pythagorean Theorem apply only to right triangles? | | |
| **Assessments**<br>*How will we know they have gained the knowledge & skills?* | **Formative** | **Summative** | **Alternative** |
| | • Warmup/ Exit Tickets<br>• Classwork and Homework assignments<br>• Student self rating<br>• Communicator | • Transformations Test<br>• Triangles Test<br>• Parallel Lines cut by a Transversal Test | |

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| | responses<br>● Quizzizs<br>● Class discussions<br>● IXL and Khan Academy<br>● Self Correcting Worksheets<br>● Walk arounds/ Scavenger hunts<br>● Spiral Review Quizzes | | |
| **Unit Pre-Assessment(s)**<br>*What do they already know?* | Geometry Pre-Test<br>Fall NWEA MAP Testing results (analyzed by standard, not overall score)<br>IXL Diagnostic | | |
| **Instructional Strategies/Student Activities** | ● Guided Practice<br>● Modeling<br>● Direct Instruction<br>● Instructional Videos<br>● Cooperative Learning<br>● Turn-and-Talk<br>● Self correcting worksheets<br>● Walk arounds<br>● Reinforcing math skills through games: | | |

| **Instructional/Assessment Scaffolds** *(Modifications /Accommodations) – planned for prior to instruction* | **English Language Learners** | **Special Education Learners** | **Struggling Learners** | **Advanced Learners** |
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| | Accommodations<br>Labeled graph paper<br>Formula sheet – Transformations with graphing<br>Highlight figures Enlarged | Accommodations<br>Labeled graph paper<br>Formula sheet – Transformations with graphing<br>Highlight figures | Accommodations<br>Labeled graph paper Formula sheet – Transformations with graphing<br>Highlight figures<br>Enlarged figures | Accommodations/Differentiation Tiered assessments<br>Transformations of complex figures |

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| | figures Enlarged Graph Paper Highlight/underline key words<br>Simplify language, Single step directions<br>Manipulatives – 2D shapes, rulers,<br><br>Modifications<br>Vertices/points of figures provided<br>Shortened assessment<br>Accept short answers<br>Personalized tiered questions | Enlarged figures Enlarged Graph Paper Work in-progress check (comments only marking)<br>Chunked assessments<br>Modifications<br>Vertices/points of figures provided<br>Graph paper for transformations without graph paper<br>Allow corrections for credit<br>Alternative objectives Change level of complexity | Enlarged Graph Paper<br>Work in-progress check (comments only marking)<br>Varying test format | |
| **Differentiated Instructional Methods:**<br>*(Multiple means for students to access content and multiple modes for student to express understanding)* | **Access** (Resources and/or Process) | | **Expression** (Products and/or Performance) | |
| | ● Weekly Conference<br>● Assign Specific/ targeted IXL lesson based on progress<br>● Assign specific/ targeted khan Academy lessons based on progress | | | |
| **Vocabulary**<br>*Highlight key vocabulary (both Tier II and Tier III words)* | Tier II- Solve, Analyze, Variable, Term, Constant, Coefficient, Isolate, Simplify,<br><br>Tier III- l: Legs of a triangle, Hypotenuse, Right triangle, Pythagorean Theorem, Pythagorean triple, Converse of | | | |

<table>
<tr><td></td><td colspan="2">Pythagorean Theorem, Square Root, Transversal, Same Side Interior, Same Side Exterior, Alternate Interior, Alternate Exterior, Transformation,</td></tr>
<tr><td>Integration of Technology<br>SAMR</td><td colspan="2">Scientific Calculator (A)<br>Khan Academy(S/A/M)<br>IXL (S/A)<br>Kahoot (A)<br>Desmos (S/A/M)<br>Google Forms (S/A)<br>Quizziz (S/A)</td></tr>
<tr><td>Interdisciplinary Connections<br>NJ Student Learning Standards</td><td colspan="2">ELA: NJSLSA.8.W1.C Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. C. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.<br>Art 1.3.8.D.1 Incorporate various art elements and the principles of balance, harmony, unity, emphasis, proportion, and rhythm/movement in the creation of two- and three dimensional artworks, using a broad array of art media and art mediums to enhance the expression of creative ideas (e.g., perspective, implied space, illusionary depth, value, and pattern).<br><br>Technology: 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.<br><br>21st Century Life and Careers: 9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income. CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.</td></tr>
<tr><td rowspan="2">21st Century Themes/Skills<br>P21 Framework</td><td>Themes</td><td>Skills</td></tr>
<tr><td>Financial, Economic, Business, & Entrepreneurial Literacy Students are presented with building design and cost in relationship to geometry standards.</td><td>Creativity & Innovation Students use multiple methods to derive area; compare and contrast methods.<br>Media Literacy<br>Critical Thinking and Problem Solving Students use</td></tr>
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| | | mathematical reasoning to explore properties of angles and justify solutions. Technologies Literacy Communication & Collaboration Students present transformations for peer review. |
| **Resources/Materials** | IXL, Khan Academy, Desmos, Quizizz , Math is Fun, Released Items PARCC, Coach Books, Notebook, Pencil, Chromebook, | |

| **Instructional Unit Map** | | | | | |
|---|---|---|---|---|---|
| **Course Title: Math 8** | | | | | |
| **Unit Title** | **S**tatistics and Probability: Scatter plots and Association | | | **Start Date:** | May |
| | | | | **Length of Unit:** | 4 weeks |
| **Content Standards** *What do we want them to know, understand, & do?* | 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 | **Learning Goals** | Students will be able to construct and interpret scatter plots and linear models to assess a line of best fit.<br>Students will be able to investigate patterns of association in bivariate data using two way tables. | | |

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| | function in terms of the situation it models, and in terms of its graph or a table of values.<br><br>Supportive<br>8.SP.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.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 by judging the closeness of the data points to the line.<br>8.SP.3 - Use the equation | | |

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| | 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.<br>8.SP.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 association between the two variables. For | | |

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| | example, collect data from students in your class on whether or not they have a curfew. Standards of<br><br>Mathematical Practice:<br><br>1. Make sense of problems and persevere in solving them.<br>2. Reason abstractly and quantitatively.<br>3. Construct viable arguments and critique the reasoning of others.<br>4. Model with mathematics.<br>5. Use appropriate tools strategically.<br>6. Attend to precision.<br>7. Look for and make use of structure.<br>8. Look for and express regularity in repeated reasoning. | | |
| **Essential Questions** | *Why is it important to organize data into visual representations?*<br>*How can you display data in a way that helps you make a decision?*<br>*What kind of patterns can be found in bivariate data?*<br>*How can you use data and lines of best fit to make predictions?* | | |

| **Assessments**<br>*How will we know they have gained the knowledge & skills?* | **Formative** | **Summative** | **Alternative** |
|---|---|---|---|
| | ● Warmup/ Exit Tickets<br>● Classwork and Homework assignments<br>● Student self rating<br>● Communicator responses<br>● Quizzizs<br>● Class discussions<br>● IXL and Khan Academy<br>● Self Correcting Worksheets<br>● Walk arounds/ Scavenger hunts<br>● Spiral Review Quizzes | ● Statistics Test | |
| **Unit Pre-Assessment(s)**<br>*What do they already know?* | Statistics Pre-Test<br>Fall NWEA MAP Testing results (analyzed by standard, not overall score)<br>IXL Diagnostic | | |
| **Instructional Strategies/Student Activities** | ● Guided Practice<br>● Modeling<br>● Direct Instruction<br>● Instructional Videos<br>● Cooperative Learning<br>● Turn-and-Talk<br>● Self correcting worksheets<br>● Walk arounds<br>● Reinforcing math skills through games: | | |

| **Instructional/Assessment Scaffolds** *(Modifications /Accommodations) – planned for prior to instruction* | **English Language Learners** | **Special Education Learners** | **Struggling Learners** | **Advanced Learners** |
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| | Accommodations<br>Data Formulas - Graphic Organizer Graph paper<br>Personalized Examples<br>Formula Sheets Outlined Notes – Add Pictures<br>Visual charts<br>Highlight/underline key words<br>Simplify language<br><br>Modifications Alternative objectives<br><br>Differentiation<br>Personalized tiered questions Enhanced directions | Accommodations<br>Data Formulas - Graphic Organizer<br>Graph paper<br><br>Modifications<br>Alternative objectives | Accommodations<br>Work in-progress check Data Formulas - Graphic Organizer<br>Graph paper<br>Personalized Examples Visual charts<br><br>Differentiation<br>Flexible Grouping<br>Learning Stations | Accommodations/Differentiation<br>Tiered assignments<br>Flexible Grouping<br>Graphing Calculator extensions…<br>Excel Applications |
| **Differentiated Instructional Methods:**<br>*(Multiple means for students to access content and multiple modes for student to express understanding)* | **Access** (Resources and/or Process) | | **Expression** (Products and/or Performance) | |
| | ● Weekly Conference<br>● Assign Specific/ targeted IXL lesson based on progress<br>● Assign specific/ targeted khan Academy lessons based on progress | | | |

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| **Vocabulary**<br>*Highlight key vocabulary (both Tier II and Tier III words)* | Tier II- modeling, data, coefficient, coordinates, solution, ordered pair, function<br><br>Tier III- scatter plot, two-way table, line of best fit, frequency, relative frequency, positive relationship, negative relationship, nonlinear relationship, no relationship (no correlation), linear equation, slope, rise, run, y-intercept, slope-intercept form |
| **Integration of Technology**<br>SAMR | Scientific Calculator (A)<br>Khan Academy(S/A/M)<br>IXL (S/A)<br>Kahoot (A)<br>Desmos (S/A/M)<br>Google Forms (S/A)<br>Quizziz (S/A) |
| **Interdisciplinary Connections**<br>NJ Student Learning Standards | ELA: NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.<br><br>NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.<br><br>Technology:<br>8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.<br>8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities.<br><br>21st Century & Careers<br>CRP2. Apply appropriate academic and technical skills.<br>CRP3. Attend to personal health and financial well-being.<br>CRP4. Communicate clearly and effectively and with reason.<br>CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. |
| **21st Century Themes/Skills** | Themes Skills |

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| P21 Framework | ____ Financial, Economic, Business, & Entrepreneurial Literacy Students apply data and statistics concepts to real-world business situations | ____ Media Literacy Student examine real-world statistical examples.<br>__ Critical Thinking and Problem Solving Students persevere in problem solving and use mathematical reasoning to construct viable arguments.<br>____ Information & Communication Technologies Literacy Students may be exposed to technologies that enhance communication and produce statistic models.<br>___ Communication & Collaboration Students interact with each other to communicate thoughts about statistical representations with others; focus on activing listening and speaking clearly and with purpose.<br>____ Information Literacy In the context statistics, communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. |
| **Resources/Materials** | IXL, Khan Academy, Desmos, Quizizz , Math is Fun, Released Items PARCC, Coach Books, Notebook, Pencil, Chromebook, | |