

Gr 8 - Mathematics Domain 1 : The Number System

Unit Overview

Content topic and skill focus: **The Number System**

New Jersey Student Learning Standards

Learning in this unit will focus on: Approximating Square Roots, Repeating Decimals

Standard MA.8.NS

Strand MA.8.NS.A.1, MA.8. NS.A.2

Content Statement: Students will understand 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. 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., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.

Instructional Focus

Lesson #: Section 9.4, 9.5

Essential Questions:

- How can you find decimal approximations of square roots that are not rational?
- How can you write terminating decimals as fractions.

Student Learning Objectives:

- MA.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.
- Section 9.4 Students will be able to convert between different forms of rational numbers.
 - Section 9.5 Students will be able to understand the concept of irrational numbers..
- MA.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.
- Section 9.5 Students will be able to understand the concept of irrational numbers.

Suggested Activities

- Introduction videos
- IXL
- Graphic Organizers
- Scavenger Hunt
- Vocabulary Flashcards
- Prodigy
- My DearAunt Sally Game
- Online textbook lesson
- STEM videos
- Online chapter review, practice test, online test, cumulative review, and benchmark tests

Instructional Materials/Resources

- Big Ideas Math Textbook copyright 2014
- Big Ideas record and practice journal
- Big Ideas resource by chapter workbook
- Big Ideas skills review handbook
- *Teacher made materials
- Instructional videos
- Online chapter review
- Online practice test
- Online test

**includes varied levels of text*

Pacing: approx # of class periods: 4 days

NJ Student Learning Standards for Mathematics
MA.8.NS.A.1, MA.8.NS.A.2

Interdisciplinary Connections

Language Arts Literacy LA.W.7.1.B, LA.W.7.1.C, LA.W.7.1.E, LA.W.7.2.A, LA.W.7.2.B,
LA. 7.2.C, LA.W.7.2.D, LA.W.7.2.F, LA.W.7.4, LA.L.7.2.B, LA.7.3.A, LA.L.7.4.C, LA.L.7.6

Career Readiness-Personal Financial Literacy PFL.9.1.8.CDM.1, PFL.9.1.8.CDM.2, PFL.9.1.8.CDM.3., PFL.9.1.8.CP.1,
PFL.9.1.8.CP.1, PFL.9.1.8.FI.4

Career Awareness, Exploration, and Training WRK.9.2.8.CAP.3

Life Literacy and Key Skills TECH.9.4.8.CT.1, TECH.9.4.8.IML.4, TECH.9.4.8.TL.1, TECH. 9.4.8.TL.2, TECH. 9.4.8.TL.3

Integration of Technology

Math instruction engages students in a variety of learning experiences using technology. The following standards will be addressed through the activities in this unit:

CS.6-8.8.1.8.DA.1, CS.6-8.8.1.8.DA.4,
CS.6-8.8.1.8.DA.5, CS.6-8.8.2.8.ED.2,
CS.6-8.8.2.8.ED.3, CS.6-8.8.2.8.ED.7

21st Century Life and Career Skills

	CRP1. Act as a responsible and contributing citizen and employee.
X	CRP2. Apply appropriate academic and technical skills.
	CRP3. Attend to personal health and financial well-being.
	CRP4. Communicate clearly and effectively and with reason.
	CRP5. Consider the environmental, social and economic impacts of decisions.
	CRP6. Demonstrate creativity and innovation.
	CRP7. Employ valid and reliable research strategies.
X	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
	CRP9. Model integrity, ethical leadership and effective management.
	CRP10. Plan education and career paths aligned to personal goals.
X	CRP11. Use technology to enhance productivity.
	CRP12. Work productively in teams while using cultural global competence.

Evidence of Learning

Summative Assessment	Formative Assessments and Alternative Activities	
Unit Pretest Unit Project Unit Test Performance Assessment BOY Benchmark Test Benchmark Every Trimester EOY Benchmark Test	Hand Signals Student Conference Fun and Games Class work/participation Critical Thinking Skill activity Writing Textbook Interactive Activities IXL Record and Practice Journal Content Videos Online Questions	Lesson Review questions Reading Check questions Share/Pair Skills Practice Study Guide Teacher Observation Unit Review Vocabulary Review Graphic Organizers Homework and Practice pages Writing Connection

Instructional Delivery

Student learning experiences will include a combination of instructional strategies appropriate to the content and skills being taught. Lessons may include (but are not limited to) the following:

- Direct instruction/demonstration
- Interactive/Guided math strategies
- Cooperative learning activities
- Digital activities including videos, games, assessments
- Research projects and Presentation projects
- Small Group Instruction
- Share Examples
- Visual Aids
- Learning Centers
- Modeled, Shared, and Independent Activities
- Active Learning
- Art Projects

Differentiated Instruction, Accommodations & Adaptations

Alternative Assessments	Cooperative Learning
Goal Setting with Students	Picture Vocabulary Wall
Homework Options	Anchor Charts of Concepts
Frequent Breaks	Change in Content, Process, Product
Tests Read Aloud	Flexible Grouping
Color Coded Books/Assignments/Notebooks/ Folders	Modified Class Assignments

IEP	504
Assessments/assignments read orally w/ extended time Concept chunking Graphic organizer concept maps Picture study guides Small group instruction Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts	Extended time for assignments Frequent breaks Sign agenda book daily Study guides Graphic organizers

ELL	Gifted
Picture study guides Video presentation/Audio presentation Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts Spanish pupil edition/assessment	Independent extension research projects Jigsaw cooperative learning activities Student choice Advanced activities Class grouping
At Risk/ I&RS	
<p>Presentation accommodations (changes the way information is presented)</p> <ul style="list-style-type: none"> ● Listen to audio recordings instead of reading text ● Learn content from videos, and digital media instead of reading print versions ● Work with fewer items per page or line ● Have a “designated reader”—someone who reads test questions aloud to ● Hear instructions spoken aloud ● Get class notes from teacher ● See an outline of a lesson ● Use visual presentations of verbal material, such as word webs ● Get a written list of instructions <p>Response accommodations (changes the way kids complete assignments or tests)</p> <ul style="list-style-type: none"> ● Give responses in a form (spoken or written) that’s easier for them ● Dictate answers to a scribe who writes or types ● Use a spelling dictionary or digital spell-checker ● Use a laptop to type notes or give answers in class ● Use a calculator or table of “math facts” <p>Setting accommodations</p> <ul style="list-style-type: none"> ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where they learn best (for example, near the teacher) ● Adjust lighting in the classroom ● Take a test in a small group setting <p>Timing accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a task or a test 	<p>Common Modifications</p> <p>Assignment modifications</p> <ul style="list-style-type: none"> ● Complete fewer or different homework problems than peers ● Write shorter answers to questions ● Answer fewer or different test questions ● Create alternate projects or assignments <p>Curriculum modifications</p> <ul style="list-style-type: none"> ● Learn different material (such as continuing to work on multiplication while classmates move on to fractions) ● Get graded or assessed using a different standard than other students ● Be excused from particular projects <p>Scheduling accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a project ● Take a test in several sessions or over several days ● Take sections of a test in a different order ● Take a test at a specific time of day <p>Organization skills accommodations</p> <ul style="list-style-type: none"> ● Mark notes with a highlighter ● Use a planner or organizer to help coordinate assignments ● Receive organizational skills instruction

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| <ul style="list-style-type: none">• Have extra time to process spoken information and directions• Take frequent breaks, such as after completing a worksheet | |
|---|--|

Internet Resources

Big Ideas Math <http://bigideasmath.com>

IXL <http://ixl.com>

National Atlas and Map Maker <http://nationalatlas.gov/>

United States Census Bureau http://factfinder.census.gov/home/saff/main.html?_lang=en

Prodigy <http://prodigy.com>

Interactive Math Games <http://www.math-play.com/Interactive-Math-Games.html>

Internet 4 Classrooms <https://www.internet4classrooms.com/>

Future Smart <https://everfi.com/offerings/listing/futuresmart/>

Gr 8 - Mathematics Domain 2 : Expressions and Equations

Unit Overview

Content topic and skill focus: *Expressions and Equations*

New Jersey Student Learning Standards

Learning in this unit will focus on: Exponents, Product and Quotient of Powers Property, Zero and Negative Exponents, Finding Square and Cube Roots, The Pythagorean Theorem, Reading and Writing Scientific Notation, Slope of a Line, Graphing Linear Equations, Graphing Proportional Relationships, Solving Simple and Multi-Step Equations, Solving Equations with Variables on Both Sides, Solving Systems of Linear Equations by Graphing, Solving Systems of Linear Equations by Graphing, Elimination, and Substitution

Standard MA.8.EE

Strand MA.8.EE.A.1, MA.8.EE.A.2, MA.8.EE.A.3, MA.8.EE.A.4, MA.8.EE.B.5, MA.8.EE.B.6, MA.8.EE.C.7, MA.8.EE.C.8

Content Statement: Students will be able to apply the properties of integer exponents to generate equivalent numerical expressions. 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. 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. 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

Students will be able to graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. 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 .

Students will be able to solve linear equations in one variable. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Analyze and solve pairs of simultaneous linear equations. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve real-world and mathematical problems leading to two linear equations in two variables.

Instructional Focus

Lesson #: Sections: 1.1, 1.2, 1.3, 1.4, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 9.1, 9.2, 9.3

Essential Questions:

- How can you use inductive reasoning to discover rules in mathematics? How can you test a rule? How can you check the reasonableness of your solution?
- How can you solve an equation that has variables on both sides?
- How can you use a formula for one measurement to write a formula for a different measurement?
- How can you recognize a linear equation? How can you draw its graph?
- How can you use the slope of a line to describe the line?
- How can you describe the graph of the equation $y = mx$?
- How can you describe the graph of the equation $ax + by = c$?
- How can you write an equation of a line when you are given the slope and the y -intercept of the line?
- How can you use substitution to solve a system of linear equations?
- How can you use elimination to solve a system of linear equations?

- Can a system of linear equations have no solution? Can a system of linear equations have many solutions?
- How can you find the dimensions of a square or a circle when you are given its area?
- How is the cube root of a number different from the square root of a number?
- How are the lengths of the sides of a right triangle related? In what other ways can you use the Pythagorean Theorem?
- How can you find decimal approximations of square roots that are not rational?
- How can you use exponents to write numbers?
- How can you multiply and divide two powers that have the same base?
- How can you evaluate a nonzero number with an exponent of zero? How can you evaluate a nonzero number with a negative integer exponent?
- How can you read numbers that are written in scientific notation?

Student Learning Objectives:

MA.8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

- Section 8.2 Students will be able to generate equivalent expressions involving products of powers
- Section 8.3 Students will be able to generate equivalent expression involving quotients of powers.
- Section 8.4 Students will be able to understand the concepts of zero and negative exponents

MA.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. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

- Section 9.1 Students will be able to understand the concept of a square root of a number
- Section 9.2 Students will be able to understand the Pythagorean Theorem
- Section 9.3 Students will be able to understand the concept of a cube root of a number.

MA.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

- Section 8.5 Students will be able to round and write the results as the product of a single digit and a power of 10.
- Section 8.6 Students will understand the concept of scientific notation.

MA.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. Interpret scientific notation that has been generated by technology.

- Section 8.7 Students will be able to perform operations with numbers written in scientific notation .

MA.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.

- Section 4.3 Students will be able to graph proportional relationships.

MA.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 .

- Section 4.2 Students will be able to find and interpret the slope of a line.
- Section 4.3 Students will be able to graph proportional relationships
- Section 4.4 Students will be able to graph linear equations in slope-intercept form..

MA.8.EE.C.7 Solve linear equations in one variable. 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). b.) Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

- Section 1.1 Students will be able to write and solve one-step equations
- Section 1.2 Students will be able to write and solve a multi-step equation
- Section 1.3 Students will be able to write and solve an equation that has variables on both sides.
- extension 1.4 Students will be able to solve literal equations for given variables and convert temperatures

MA.8.EE.C.8 Analyze and solve pairs of simultaneous linear equations. a.) Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the 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. c.) Solve real-world and mathematical problems leading to two linear equations in two variables.

- Section 5.1 Students will be able to understand how to solve a system of linear equations by graphing..
- Section 5.2 Students will be able to understand how to solve systems of linear equations by substitution.
- Section 5.3 Students will be able to understand how to solve systems of linear equations by elimination.
- Section 5.4 Students will be able to solve systems with different numbers of solutions.

Suggested Activities

- Introduction videos
- IXL
- graphic organizers
- scavenger hunts
- flash cards
- My Dear Aunt Sally Game
- Prodigy
- online textbook lesson
- Stem Videos

Instructional Materials/Resources

- Big Ideas Math Textbook copyright 2014
- Big Ideas record and practice journal
- Big Ideas resource by chapter workbook
- Big Ideas skills review handbook
- *Teacher made materials
- Instructional videos
- Online chapter review
- Online practice test
- Online test

**includes varied levels of text*

Pacing: approx # of class periods: 61 days

NJ Student Learning Standards for Mathematics

MA.8.EE.A.1, MA.8.EE.A.2, MA.8.EE.A.3, MA.8.EE.A.4, MA.8.EE.B.5, MA.8.EE.B.6, MA.8.EE.C.7, MA.8.EE.C.8

Interdisciplinary Connections

Language Arts Literacy LA.W.8.1.B, LA.W.8.1.C, LA.W.8.1.E, LA.W.8.2.A, LA.W.8.2.B, LA. 8.2.C, LA.W.8.2.D, LA.W.8.2.F, LA.W.8.4, LA.L.8.2.B, LA.8.3.A, LA.L.8.4.C, LA.L.8.6

Career Readiness-Personal Financial Literacy PFL.9.1.8.CDM.1, PFL.9.1.8.CDM.2, PFL.9.1.8.CDM.3., PFL.9.1.8.CP.1, PFL.9.1.8.CP.1, PFL.9.1.8.FI.4

Career Awareness, Exploration, and Training WRK.9.2.8.CAP.3

Life Literacy and Key Skills TECH.9.4.8.CT.1, TECH.9.4.8.IML.4, TECH.9.4.8.TL.1, TECH. 9.4.8.TL.2, TECH. 9.4.8.TL.3

Integration of Technology

Math instruction engages students in a variety of learning experiences using technology. The following standards will be addressed through the activities in this unit:

Computer Science and Design Thinking

CS.6-8.8.1.8.DA.1, CS.6-8.8.1.8.DA.4,
 CS.6-8.8.1.8.DA.5, CS.6-8.8.2.8.ED.2,
 CS.6-8.8.2.8.ED.3, CS.6-8.8.2.8.ED.7

21st Century Life and Career Skills

	CRP1. Act as a responsible and contributing citizen and employee.
X	CRP2. Apply appropriate academic and technical skills.
X	CRP3. Attend to personal health and financial well-being.
X	CRP4. Communicate clearly and effectively and with reason.
X	CRP5. Consider the environmental, social and economic impacts of decisions.
X	CRP6. Demonstrate creativity and innovation.
X	CRP7. Employ valid and reliable research strategies.
X	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
X	CRP9. Model integrity, ethical leadership and effective management.
X	CRP10. Plan education and career paths aligned to personal goals.
X	CRP11. Use technology to enhance productivity.
	CRP12. Work productively in teams while using cultural global competence.

Evidence of Learning

Summative Assessment	Formative Assessments and Alternative Activities	
Unit Pretest	Hand Signals	Lesson Review questions
Unit Project	Student Conference	Reading Check questions
Unit Test	Fun and Games	Share/Pair
Performance Assessment	Class work/participation	Skills Practice
BOY Benchmark Test	Critical Thinking Skill activity	Study Guide
Benchmark Every Trimester	Writing	Teacher Observation
EOY Benchmark Test	Textbook Interactive Activities	Unit Review
	IXL	Vocabulary Review

	Record and Practice Journal Content Videos Online Questions	Graphic Organizers Homework and Practice pages Writing Connection
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Instructional Delivery

Student learning experiences will include a combination of instructional strategies appropriate to the content and skills being taught. Lessons may include (but are not limited to) the following:

- Direct instruction/demonstration
- Interactive/Guided math strategies
- Cooperative learning activities
- Digital activities including videos, games, assessments
- Research projects and Presentation projects
- Small Group Instruction
- Share Examples
- Visual Aids
- Learning Centers
- Modeled, Shared, and Independent Activities
- Active Learning
- Art Projects

Differentiated Instruction, Accommodations & Adaptations

Alternative Assessments	Cooperative Learning
Goal Setting with Students	Picture Vocabulary Wall
Homework Options	Anchor Charts of Concepts
Frequent Breaks	Change in Content, Process, Product
Tests Read Aloud	Flexible Grouping
Color Coded Books/Assignments/Notebooks/ Folders	Modified Class Assignments

IEP	504
Assessments/assignments read orally w/ extended time Concept chunking Graphic organizer concept maps Picture study guides Small group instruction Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts	Extended time for assignments Frequent breaks Sign agenda book daily Study guides Graphic organizers
ELL	Gifted
Picture study guides Video presentation/Audio presentation Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts Spanish pupil edition/assessment	Independent extension research projects Jigsaw cooperative learning activities Student choice Advanced activities Class grouping
At Risk/ I&RS	

<p>Presentation accommodations (changes the way information is presented)</p> <ul style="list-style-type: none"> ● Listen to audio recordings instead of reading text ● Learn content from videos, and digital media instead of reading print versions ● Work with fewer items per page or line ● Have a “designated reader”—someone who reads test questions aloud to ● Hear instructions spoken aloud ● Get class notes from teacher ● See an outline of a lesson ● Use visual presentations of verbal material, such as word webs ● Get a written list of instructions <p>Response accommodations (changes the way kids complete assignments or tests)</p> <ul style="list-style-type: none"> ● Give responses in a form (spoken or written) that’s easier for them ● Dictate answers to a scribe who writes or types ● Use a spelling dictionary or digital spell-checker ● Use a laptop to type notes or give answers in class ● Use a calculator or table of “math facts” <p>Setting accommodations</p> <ul style="list-style-type: none"> ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where they learn best (for example, near the teacher) ● Adjust lighting in the classroom ● Take a test in a small group setting <p>Timing accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a task or a test ● Have extra time to process spoken information and directions ● Take frequent breaks, such as after completing a worksheet 	<p>Common Modifications</p> <p>Assignment modifications</p> <ul style="list-style-type: none"> ● Complete fewer or different homework problems than peers ● Write shorter answers to questions ● Answer fewer or different test questions ● Create alternate projects or assignments <p>Curriculum modifications</p> <ul style="list-style-type: none"> ● Learn different material (such as continuing to work on multiplication while classmates move on to fractions) ● Get graded or assessed using a different standard than other students ● Be excused from particular projects <p>Scheduling accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a project ● Take a test in several sessions or over several days ● Take sections of a test in a different order ● Take a test at a specific time of day <p>Organization skills accommodations</p> <ul style="list-style-type: none"> ● Mark notes with a highlighter ● Use a planner or organizer to help coordinate assignments ● Receive organizational skills instruction
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Internet Resources

Big Ideas Math <http://bigideasmath.com>

IXL <http://ixl.com>

National Atlas and Map Maker <http://nationalatlas.gov/>

United States Census Bureau http://factfinder.census.gov/home/saff/main.html?_lang=en

Prodigy <http://prodigy.com>

Interactive Math Games <http://www.math-play.com/Interactive-Math-Games.html>

Gr 8 - Mathematics Domain 3: Functions

Unit Overview

Content topic and skill focus: Function

New Jersey Student Learning Standards

Learning in this unit will focus on: Representations and Relations of Functions, Linear Functions, Comparing Linear and Nonlinear Functions, Writing Equations in Slope-Intercept and Point-Slope Form, Analyzing and Sketching Graphs

Standard MA.8.F

Strand MA.8.F.A.1, MA.8.F.A.2, MA.8.F.A.3, MA.8.F.B.4, MA.8.F.B.5

Content Statement: Students will be able 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. 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). 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.

Students will be able to 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. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).

Instructional Focus

Lesson #: Sections: 4.6, 4.7, 7.1, 7.2, 7.3, 7.4, 7.5

Essential Questions:

- How can you write an equation of a line when you are given the slope and the y-intercept of the line?
- How can you use a mapping diagram to show the relationship between two data sets?
- How can you represent a function in different ways?
- How can you use a function to describe a linear pattern?
- How can you recognize when a pattern in real life is linear or nonlinear?
- How can you use a graph to represent relationships between quantities without using numbers?

Student Learning Objectives:

- MA.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.
- Section 7.1 Students will be able to understand the concept of a function.
 - Section 7.2 Students will be able to represent a function in different ways.

<p>MA.8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</p> <ul style="list-style-type: none"> Section 7.3 Students will be able to use functions to model linear relationships. <p>MA.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.</p> <ul style="list-style-type: none"> Section 7.3 Students will be able to use functions to model linear relationships. Section 7.4 Students will be able to understand the difference between linear and nonlinear functions. <p>MA.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</p> <ul style="list-style-type: none"> Section 4.6 Students will be able to write an equation of lines in slope intercept form. Section 4.7 Students will be able to write an equation of lines in point slope form. Section 7.2 Students will be able to represent functions in a variety of ways. Section 7.3 Students will be able to use functions to model linear relationships. <p>MA.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.</p> <ul style="list-style-type: none"> Section 7.5 Students will be able to use a graph of functions to describe relationships between quantities. 	
<p>Suggested Activities</p> <ul style="list-style-type: none"> Introduction videos IXL graphic organizers scavenger hunts flash cards My Dear Aunt Sally Game Prodigy online textbook lesson Stem Videos 	<p>Instructional Materials/Resources</p> <ul style="list-style-type: none"> Big Ideas Math Textbook copyright 2014 Big Ideas record and practice journal Big Ideas resource by chapter workbook Big Ideas skills review handbook *Teacher made materials Instructional videos Online chapter review Online practice test Online test <p><i>*includes varied levels of text</i></p>
<p>Pacing: approx # of class periods: 8-9 days</p>	

NJ Student Learning Standards for Mathematics

MA.8.F.A.1, MA.8.F.A.2, MA.8.F.A.3, MA.8.F.B.4, MA.8.F.B.5

Interdisciplinary Connections

Language Arts Literacy LA.W.7.1.B, LA.W.7.1.C, LA.W.7.1.E, LA.W.7.2.A, LA.W.7.2.B, LA. 7.2.C, LA.W.7.2.D, LA.W.7.2.F, LA.W.7.4, LA.L.7.2.B, LA.7.3.A, LA.L.7.4.C, LA.L.7.6

Career Readiness-Personal Financial Literacy PFL.9.1.8.CDM.1, PFL.9.1.8.CDM.2, PFL.9.1.8.CDM.3., PFL.9.1.8.CP.1, PFL.9.1.8.CP.1, PFL.9.1.8.FI.4

Career Awareness, Exploration, and Training WRK.9.2.8.CAP.3

Life Literacy and Key Skills TECH.9.4.8.CT.1, TECH.9.4.8.IML.4, TECH.9.4.8.TL.1, TECH. 9.4.8.TL.2, TECH. 9.4.8.TL.3

Integration of Technology

Math instruction engages students in a variety of learning experiences using technology. The following standards will be addressed through the activities in this unit:

Computer Science and Design Thinking

CS.6-8.8.1.8.DA.1, CS.6-8.8.1.8.DA.4,
 CS.6-8.8.1.8.DA.5, CS.6-8.8.2.8.ED.2,
 CS.6-8.8.2.8.ED.3, CS.6-8.8.2.8.ED.7

21st Century Life and Career Skills

	CRP1. Act as a responsible and contributing citizen and employee.
X	CRP2. Apply appropriate academic and technical skills.
X	CRP3. Attend to personal health and financial well-being.
X	CRP4. Communicate clearly and effectively and with reason.
X	CRP5. Consider the environmental, social and economic impacts of decisions.
X	CRP6. Demonstrate creativity and innovation.
X	CRP7. Employ valid and reliable research strategies.
X	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
	CRP9. Model integrity, ethical leadership and effective management.
	CRP10. Plan education and career paths aligned to personal goals.
X	CRP11. Use technology to enhance productivity.
	CRP12. Work productively in teams while using cultural global competence.

Evidence of Learning

Summative and Benchmark Assessments	Formative Assessments and Alternative Activities
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Unit Pretest Unit Project Unit Test Performance Assessment BOY Benchmark Test Benchmark Every Trimester EOY Benchmark Test	Hand Signals Student Conference Fun and Games Class work/participation Critical Thinking Skill activity Writing Textbook Interactive Activities IXL Record and Practice Journal Content Videos Online Questions	Lesson Review questions Reading Check questions Share/Pair Skills Practice Study Guide Teacher Observation Unit Review Vocabulary Review Graphic Organizers Homework and Practice pages Writing Connection
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Instructional Delivery

Student learning experiences will include a combination of instructional strategies appropriate to the content and skills being taught. Lessons may include (but are not limited to) the following:

- Direct instruction/demonstration
- Interactive/Guided math strategies
- Cooperative learning activities
- Digital activities including videos, games, assessments
- Research projects and Presentation projects
- Small Group Instruction
- Share Examples
- Visual Aids
- Learning Centers
- Modeled, Shared, and Independent Activities
- Active Learning
- Art Projects

Differentiated Instruction, Accommodations & Adaptations

Alternative Assessments Goal Setting with Students Homework Options Frequent Breaks Tests Read Aloud Color Coded Books/Assignments/Notebooks/ Folders	Picture Vocabulary Wall Anchor Charts of Concepts Change in Content, Process, Product Flexible Grouping Modified Class Assignments Cooperative Learning
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IEP	504
Assessments/assignments read orally w/ extended time Concept chunking Graphic organizer concept maps Picture study guides Small group instruction Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts	Extended time for assignments Frequent breaks Sign agenda book daily Study guides Graphic organizers

ELL	Gifted
Picture study guides Video presentation/Audio presentation Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts Spanish pupil edition/assessment	Independent extension research projects Jigsaw cooperative learning activities Student choice Advanced activities Class grouping
At Risk/ I&RS	
<p>Presentation accommodations (changes the way information is presented)</p> <ul style="list-style-type: none"> ● Listen to audio recordings instead of reading text ● Learn content from videos, and digital media instead of reading print versions ● Work with fewer items per page or line ● Have a “designated reader”—someone who reads test questions aloud to ● Hear instructions spoken aloud ● Get class notes from teacher ● See an outline of a lesson ● Use visual presentations of verbal material, such as word webs ● Get a written list of instructions <p>Response accommodations (changes the way kids complete assignments or tests)</p> <ul style="list-style-type: none"> ● Give responses in a form (spoken or written) that’s easier for them ● Dictate answers to a scribe who writes or types ● Use a spelling dictionary or digital spell-checker ● Use a laptop to type notes or give answers in class ● Use a calculator or table of “math facts” <p>Setting accommodations</p> <ul style="list-style-type: none"> ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where they learn best (for example, near the teacher) ● Adjust lighting in the classroom ● Take a test in a small group setting <p>Timing accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a task or a test ● Have extra time to process spoken information and directions ● Take frequent breaks, such as after completing a worksheet 	<p>Common Modifications</p> <p>Assignment modifications</p> <ul style="list-style-type: none"> ● Complete fewer or different homework problems than peers ● Write shorter answers to questions ● Answer fewer or different test questions ● Create alternate projects or assignments <p>Curriculum modifications</p> <ul style="list-style-type: none"> ● Learn different material (such as continuing to work on multiplication while classmates move on to fractions) ● Get graded or assessed using a different standard than other students ● Be excused from particular projects <p>Scheduling accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a project ● Take a test in several sessions or over several days ● Take sections of a test in a different order ● Take a test at a specific time of day <p>Organization skills accommodations</p> <ul style="list-style-type: none"> ● Mark notes with a highlighter ● Use a planner or organizer to help coordinate assignments ● Receive organizational skills instruction

Internet Resources

Big Ideas Math <http://bigideasmath.com>

IXL <http://ixl.com>

National Atlas and Map Maker <http://nationalatlas.gov/>

United States Census Bureau http://factfinder.census.gov/home/saff/main.html?_lang=en

Prodigy <http://prodigy.com>

Interactive Math Games <http://www.math-play.com/Interactive-Math-Games.html>

Internet 4 Classrooms <https://www.internet4classrooms.com/>

Future Smart <https://everfi.com/offerings/listing/futuresmart/>

Gr 8 - Mathematics Domain 4: Geometry

Unit Overview

Content topic and skill focus: Geometry

New Jersey Student Learning Standards

Learning in this unit will focus on: Translations, Reflections, Rotations, Congruent Figures, Rotations, Similar Figures, Perimeters and Areas of Similar Figures, Parallel Lines and Transversals, Angles of Triangles and Polygons, The Pythagorean Theorem, Volumes of Cylinders, Cones, and Spheres, Surface Areas and Volumes of Similar Solids

Standard MA.8.G

Strand MA.8.G.A.1, MA.8.G.A.2, MA.8.G.A.3, MA.8.G.A.4, MA.8.G.A.5, MA.8.G.B.6, MA.8.G.B.7, MA.8.G.B.8, MA.8.G.C.9

Content Statement: Students will be able to verify experimentally the properties of rotations, reflections, and translations. 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. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. 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 criterion for similarity of triangles.

Students will be able to explain a proof of the Pythagorean Theorem and its converse. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real world and mathematical problems in two and three dimensions. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Students will be able to know the formula for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Instructional Focus

Lesson #: Sections: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.4, 9.2, 9.6, 10.1, 10.2, 10.3

Essential Questions:

- How can you identify congruent triangles?
- How can you arrange tiles to make a tessellation?
- What are the three basic ways to move an object in a plane?
- How can you use proportions to help make decisions in art, design, and magazine layouts?
- How can you enlarge or reduce the figure in the coordinate plane?
- How can you describe angles formed by parallel lines and transversals?
- How can you describe the relationships among the angles of a triangle?
- How can you find the sum of the interior angle measures and the sum of the exterior angle measures of a polygon?
- In what ways can you use the Pythagorean Theorem?
- How can you find the volume of a cylinder, cone, and sphere?
- When the dimensions of a solid increase by a factor of k , how does the surface area change? How does the volume change?

Student Learning Objectives:

MA.8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. a.) Lines are taken to lines and line segments to line segments of the same length. b.) Angles are taken to angles of the same measure. c.) Parallel lines are taken to parallel lines.

- Section 2.2 Students will be able to reflect figures in the coordinate plane.
- Section 2.3 Students will be able to rotate figures in the coordinate plane..
- Section 2.4 Students will be able to understand the concept of congruent figures.

MA.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.

- Section 2.1 Students will be able to translate figures in the coordinate plane.
- Section 2.2 Students will be able to reflect figures in the coordinate plane.
- Section 2.3 Students will be able to rotate figures in the coordinate plane.
- Section 2.4 Students will be able to understand the concept of congruent figures.

MA.8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

- Section 2.2 Students will be able to translate figures in the coordinate plane.
- Section 2.3 Students will be able to rotate figures in the coordinate plane
- Section 2.4 Students will be able to understand the concept of congruent figures
- Section 2.7 Students will be able to find perimeters and areas of similar figures.

MA.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.

- Section 2.5 Students will be able to dilate figures in the coordinate plane.
- Section 2.6 Students will be able to understand the concepts of similar figures.
- Section 2.7 Students will be able to find perimeters and areas of similar figures..

MA.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.

- Section 3.1 Students will be able to find missing angle measures created by the intersections of lines..
- Section 3.2 Students will be able to understand properties of interior angles of triangles.
- Section 3.3 Students will be able to find interior angles measures of polygons..
- Section 3.4 Students will be able to use similar triangles to find missing measures..

MA.8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.

- Section 9.2 Students will be able understand the Pythagorean Theorem

MA.8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

<ul style="list-style-type: none"> Section 9.2 Students will be able understand the Pythagorean Theorem MA.8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. Section 9.2 Students will be able to understand the Pythagorean Theorem. MA.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. Section 10.1 Students will be able to find the volume of a cylinder. Section 10.2 Students will be able to find the volume of a cone. Section 10.3 Students will be able to find the volume of a sphere. Section 10.4 Students will be able to find the surface areas and columns of similar solids. 	
<p>Suggested Activities</p> <ul style="list-style-type: none"> Introduction videos IXL graphic organizers scavenger hunts flash cards My Dear Aunt Sally Game Prodigy online textbook lesson Stem Videos 	<p>Instructional Materials/Resources</p> <ul style="list-style-type: none"> Big Ideas Math Textbook copyright 2014 Big Ideas record and practice journal Big Ideas resource by chapter workbook Big Ideas skills review handbook *Teacher made materials Instructional videos Online chapter review Online practice test Online test <p><i>*includes varied levels of text</i></p>
<p>Pacing: approx # of class periods: 46 days</p>	

NJ Student Learning Standards for Mathematics

MA.8.G.A.1, MA.8.G.A.2, MA.8.G.A.3, MA.8.G.A.4, MA.8.G.A.5, MA.8.G.B.6, MA.8.G.B.7, MA.8.G.B.8, MA.8.G.C.9

Interdisciplinary Connections

Language Arts Literacy LA.W.7.1.B, LA.W.7.1.C, LA.W.7.1.E, LA.W.7.2.A, LA.W.7.2.B, LA. 7.2.C, LA.W.7.2.D, LA.W.7.2.F, LA.W.7.4, LA.L.7.2.B, LA.7.3.A, LA.L.7.4.C, LA.L.7.6

Career Readiness-Personal Financial Literacy PFL.9.1.8.CDM.1, PFL.9.1.8.CDM.2, PFL.9.1.8.CDM.3., PFL.9.1.8.CP.1, PFL.9.1.8.CP.1, PFL.9.1.8.FI.4

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Integration of Technology

Math instruction engages students in a variety of learning experiences using technology. The following standards will be addressed through the activities in this unit:

Computer Science and Design Thinking

CS.6-8.8.1.8.DA.1, CS.6-8.8.1.8.DA.4,
CS.6-8.8.1.8.DA.5, CS.6-8.8.2.8.ED.2,
CS.6-8.8.2.8.ED.3, CS.6-8.8.2.8.ED.7

21st Century Life and Career Skills

	CRP1. Act as a responsible and contributing citizen and employee.
X	CRP2. Apply appropriate academic and technical skills.
X	CRP3. Attend to personal health and financial well-being.
X	CRP4. Communicate clearly and effectively and with reason.
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X	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
	CRP9. Model integrity, ethical leadership and effective management.
X	CRP10. Plan education and career paths aligned to personal goals.
X	CRP11. Use technology to enhance productivity.
	CRP12. Work productively in teams while using cultural global competence.

Evidence of Learning

Summative and Benchmark Assessments	Formative Assessments and Alternative Activities																						
Unit Pretest Unit Project Unit Test Performance Assessment BOY Benchmark Test Benchmark Every Trimester EOY Benchmark Test	<table border="0"> <tr> <td>Hand Signals</td> <td>Lesson Review questions</td> </tr> <tr> <td>Student Conference</td> <td>Reading Check questions</td> </tr> <tr> <td>Fun and Games</td> <td>Share/Pair</td> </tr> <tr> <td>Class work/participation</td> <td>Skills Practice</td> </tr> <tr> <td>Critical Thinking Skill activity</td> <td>Study Guide</td> </tr> <tr> <td>Writing</td> <td>Teacher Observation</td> </tr> <tr> <td>Textbook Interactive Activities</td> <td>Unit Review</td> </tr> <tr> <td>IXL</td> <td>Vocabulary Review</td> </tr> <tr> <td>Record and Practice Journal</td> <td>Graphic Organizers</td> </tr> <tr> <td>Content Videos</td> <td>Homework and Practice pages</td> </tr> <tr> <td>Online Questions</td> <td>Writing Connection</td> </tr> </table>	Hand Signals	Lesson Review questions	Student Conference	Reading Check questions	Fun and Games	Share/Pair	Class work/participation	Skills Practice	Critical Thinking Skill activity	Study Guide	Writing	Teacher Observation	Textbook Interactive Activities	Unit Review	IXL	Vocabulary Review	Record and Practice Journal	Graphic Organizers	Content Videos	Homework and Practice pages	Online Questions	Writing Connection
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Instructional Delivery

Student learning experiences will include a combination of instructional strategies appropriate to the content and skills being taught. Lessons may include (but are not limited to) the following:

- Direct instruction/demonstration
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- Small Group Instruction
- Share Examples
- Visual Aids
- Learning Centers
- Modeled, Shared, and Independent Activities
- Active Learning
- Art Projects

Differentiated Instruction, Accommodations & Adaptations

Alternative Assessments	Picture Vocabulary Wall
Goal Setting with Students	Anchor Charts of Concepts
Homework Options	Change in Content, Process, Product
Frequent Breaks	Flexible Grouping
Tests Read Aloud	Modified Class Assignments
Color Coded Books/Assignments/Notebooks/ Folders	Cooperative Learning

IEP	504
Assessments/assignments read orally w/ extended time Concept chunking Graphic organizer concept maps Picture study guides Small group instruction Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts	Extended time for assignments Frequent breaks Sign agenda book daily Study guides Graphic organizers
ELL	Gifted
Picture study guides Video presentation/Audio presentation Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts Spanish pupil edition/assessment	Independent extension research projects Jigsaw cooperative learning activities Student choice Advanced activities Class grouping
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<p>Presentation accommodations (changes the way information is presented)</p> <ul style="list-style-type: none"> ● Listen to audio recordings instead of reading text ● Learn content from videos, and digital media instead of reading print versions ● Work with fewer items per page or line ● Have a “designated reader”—someone who reads test questions aloud to ● Hear instructions spoken aloud ● Get class notes from teacher ● See an outline of a lesson 	<p>Common Modifications</p> <p>Assignment modifications</p> <ul style="list-style-type: none"> ● Complete fewer or different homework problems than peers ● Write shorter answers to questions ● Answer fewer or different test questions ● Create alternate projects or assignments <p>Curriculum modifications</p> <ul style="list-style-type: none"> ● Learn different material (such as continuing to work on multiplication while classmates move on to fractions)

<ul style="list-style-type: none"> ● Use visual presentations of verbal material, such as word webs ● Get a written list of instructions <p>Response accommodations (changes the way kids complete assignments or tests)</p> <ul style="list-style-type: none"> ● Give responses in a form (spoken or written) that's easier for them ● Dictate answers to a scribe who writes or types ● Use a spelling dictionary or digital spell-checker ● Use a laptop to type notes or give answers in class ● Use a calculator or table of "math facts" <p>Setting accommodations</p> <ul style="list-style-type: none"> ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where they learn best (for example, near the teacher) ● Adjust lighting in the classroom ● Take a test in a small group setting <p>Timing accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a task or a test ● Have extra time to process spoken information and directions ● Take frequent breaks, such as after completing a worksheet 	<ul style="list-style-type: none"> ● Get graded or assessed using a different standard than other students ● Be excused from particular projects <p>Scheduling accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a project ● Take a test in several sessions or over several days ● Take sections of a test in a different order ● Take a test at a specific time of day <p>Organization skills accommodations</p> <ul style="list-style-type: none"> ● Mark notes with a highlighter ● Use a planner or organizer to help coordinate assignments ● Receive organizational skills instruction
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Internet Resources

Big Ideas Math <http://bigideasmath.com>

IXL <http://ixl.com>

National Atlas and Map Maker <http://nationalatlas.gov/>

United States Census Bureau http://factfinder.census.gov/home/saff/main.html?_lang=en

Prodigy <http://prodigy.com>

Interactive Math Games <http://www.math-play.com/Interactive-Math-Games.html>

Internet 4 Classrooms <https://www.internet4classrooms.com/>

Future Smart <https://everfi.com/offerings/listing/futuresmart/>

Gr 8 - Mathematics Domain 5: Statistics and Probability

Unit Overview

Content topic and skill focus: **Statistics and Probability**

New Jersey Student Learning Standards

Learning in this unit will focus on: Scatter Plots, Lines of Fit, Choosing a Data Display, Two-Way Tables

Standard MA.8.SP

Strand MA.8.SP.A.1, MA.8.SP.A.2, MA.8.SP.A.3, MA.8.SP.A.4

Content Statement: 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. Know that straight lines are widely used to model relationships between two quantitative variables. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.

Instructional Focus

Lesson #: Sections: 6.1, 6.2, 6.3, 6.4

Essential Questions:

- How can you construct and interpret a scatter plot?
- How can you use data to predict an event?
- How can you read and make a two-way table?
- How can you display data in a way that helps you make decisions?

Student Learning Objectives:

- **MA.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.
- Section 6.1 Students will be able to use scatter plots to describe patterns and relationships between two quantities..
- Section 6.2 Students will be able to use lines of fit to model data.
- Extension 6.4 Students will be able to use data displays to represent situations.
MA.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 by judging the closeness of the data points to the line.
- Section 6.2 Students will be able to use lines of fit to model data.
MA.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.
- Section 6.2 Students will be able to use lines of fit to model data..
MA.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 association between the two variables.

<ul style="list-style-type: none"> Section 6.3 Students will be able to use two-way tables to represent data. 	
<p>Suggested Activities</p> <ul style="list-style-type: none"> Introduction videos IXL graphic organizers scavenger hunts flash cards My Dear Aunt Sally Game Prodigy online textbook lesson Stem Videos 	<p>Instructional Materials/Resources</p> <ul style="list-style-type: none"> Big Ideas Math Textbook copyright 2014 Big Ideas record and practice journal Big Ideas resource by chapter workbook Big Ideas skills review handbook *Teacher made materials Instructional videos Online chapter review Online practice test Online test <p><i>*includes varied levels of text</i></p>
<p>Pacing: approx # of class periods: 13 days</p>	

NJ Student Learning Standards for Mathematics
9.1, 9.2, 9.3, 9.4

Interdisciplinary Connections

Language Arts Literacy LA.W.7.1.B, LA.W.7.1.C, LA.W.7.1.E, LA.W.7.2.A, LA.W.7.2.B, LA. 7.2.C, LA.W.7.2.D, LA.W.7.2.F, LA.W.7.4, LA.L.7.2.B, LA.7.3.A, LA.L.7.4.C, LA.L.7.6
Career Readiness-Personal Financial Literacy PFL.9.1.8.CDM.1, PFL.9.1.8.CDM.2, PFL.9.1.8.CDM.3., PFL.9.1.8.CP.1, PFL.9.1.8.CP.1, PFL.9.1.8.FI.4
Career Awareness, Exploration, and Training WRK.9.2.8.CAP.3
Life Literacy and Key Skills TECH.9.4.8.CT.1, TECH.9.4.8.IML.4, TECH.9.4.8.TL.1, TECH. 9.4.8.TL.2, TECH. 9.4.8.TL.3

Integration of Technology

Math instruction engages students in a variety of learning experiences using technology. The following standards will be addressed through the activities in this unit:

Computer Science and Design Thinking
 CS.6-8.8.1.8.DA.1, CS.6-8.8.1.8.DA.4,
 CS.6-8.8.1.8.DA.5, CS.6-8.8.2.8.ED.2,
 CS.6-8.8.2.8.ED.3, CS.6-8.8.2.8.ED.7

21st Century Life and Career Skills

	CRP1. Act as a responsible and contributing citizen and employee.
	CRP2. Apply appropriate academic and technical skills.
	CRP3. Attend to personal health and financial well-being.
X	CRP4. Communicate clearly and effectively and with reason.

X	CRP5. Consider the environmental, social and economic impacts of decisions.
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X	CRP7. Employ valid and reliable research strategies.
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	CRP9. Model integrity, ethical leadership and effective management.
	CRP10. Plan education and career paths aligned to personal goals.
X	CRP11. Use technology to enhance productivity.
	CRP12. Work productively in teams while using cultural global competence.

Evidence of Learning

Summative and Benchmark Assessments	Formative Assessments and Alternative Activities																						
Unit Pretest Unit Project Unit Test Performance Assessment BOY Benchmark Test Benchmark Every Trimester EOY Benchmark Test	<table border="0"> <tr> <td>Hand Signals</td> <td>Lesson Review questions</td> </tr> <tr> <td>Student Conference</td> <td>Reading Check questions</td> </tr> <tr> <td>Fun and Games</td> <td>Share/Pair</td> </tr> <tr> <td>Class work/participation</td> <td>Skills Practice</td> </tr> <tr> <td>Critical Thinking Skill activity</td> <td>Study Guide</td> </tr> <tr> <td>Writing</td> <td>Teacher Observation</td> </tr> <tr> <td>Textbook Interactive Activities</td> <td>Unit Review</td> </tr> <tr> <td>IXL</td> <td>Vocabulary Review</td> </tr> <tr> <td>Record and Practice Journal</td> <td>Graphic Organizers</td> </tr> <tr> <td>Content Videos</td> <td>Homework and Practice pages</td> </tr> <tr> <td>Online Questions</td> <td>Writing Connection</td> </tr> </table>	Hand Signals	Lesson Review questions	Student Conference	Reading Check questions	Fun and Games	Share/Pair	Class work/participation	Skills Practice	Critical Thinking Skill activity	Study Guide	Writing	Teacher Observation	Textbook Interactive Activities	Unit Review	IXL	Vocabulary Review	Record and Practice Journal	Graphic Organizers	Content Videos	Homework and Practice pages	Online Questions	Writing Connection
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Instructional Delivery

Student learning experiences will include a combination of instructional strategies appropriate to the content and skills being taught. Lessons may include (but are not limited to) the following:

- Direct instruction/demonstration
- Interactive/Guided math strategies
- Cooperative learning activities
- Digital activities including videos, games, assessments
- Research projects and Presentation projects
- Small Group Instruction
- Share Examples
- Visual Aids
- Learning Centers
- Modeled, Shared, and Independent Activities
- Active Learning
- Art Projects

Differentiated Instruction, Accommodations & Adaptations

Alternative Assessments
 Goal Setting with Students
 Homework Options
 Frequent Breaks
 Tests Read Aloud
 Color Coded Books/Assignments/Notebooks/ Folders

Anchor Charts of Concepts
 Change in Content, Process, Product
 Flexible Grouping
 Modified Class Assignments
 Cooperative Learning

Picture Vocabulary Wall

IEP	504
Assessments/assignments read orally w/ extended time Concept chunking Graphic organizer concept maps Picture study guides Small group instruction Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts	Extended time for assignments Frequent breaks Sign agenda book daily Study guides Graphic organizers
ELL	Gifted
Picture study guides Video presentation/Audio presentation Tests modified to include a word bank, drawings, and Diagrams while still covering the essential concepts Spanish pupil edition/assessment	Independent extension research projects Jigsaw cooperative learning activities Student choice Advanced activities Class grouping
At Risk/ I&RS	
<p>Presentation accommodations (changes the way information is presented)</p> <ul style="list-style-type: none"> Listen to audio recordings instead of reading text Learn content from videos, and digital media instead of reading print versions Work with fewer items per page or line Have a “designated reader”—someone who reads test questions aloud to Hear instructions spoken aloud Get class notes from teacher See an outline of a lesson Use visual presentations of verbal material, such as word webs Get a written list of instructions <p>Response accommodations (changes the way kids complete assignments or tests)</p>	<p>Common Modifications</p> <p>Assignment modifications</p> <ul style="list-style-type: none"> Complete fewer or different homework problems than peers Write shorter answers to questions Answer fewer or different test questions Create alternate projects or assignments <p>Curriculum modifications</p> <ul style="list-style-type: none"> Learn different material (such as continuing to work on multiplication while classmates move on to fractions) Get graded or assessed using a different standard than other students Be excused from particular projects <p>Scheduling accommodations</p> <ul style="list-style-type: none"> Take more time to complete a project

<ul style="list-style-type: none"> ● Give responses in a form (spoken or written) that's easier for them ● Dictate answers to a scribe who writes or types ● Use a spelling dictionary or digital spell-checker ● Use a laptop to type notes or give answers in class ● Use a calculator or table of "math facts" <p>Setting accommodations</p> <ul style="list-style-type: none"> ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where they learn best (for example, near the teacher) ● Adjust lighting in the classroom ● Take a test in a small group setting <p>Timing accommodations</p> <ul style="list-style-type: none"> ● Take more time to complete a task or a test ● Have extra time to process spoken information and directions ● Take frequent breaks, such as after completing a worksheet 	<ul style="list-style-type: none"> ● Take a test in several sessions or over several days ● Take sections of a test in a different order ● Take a test at a specific time of day <p>Organization skills accommodations</p> <ul style="list-style-type: none"> ● Mark notes with a highlighter ● Use a planner or organizer to help coordinate assignments ● Receive organizational skills instruction
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Internet Resources

Big Ideas Math <http://bigideasmath.com>

IXL <http://ixl.com>

National Atlas and Map Maker <http://nationalatlas.gov/>

United States Census Bureau http://factfinder.census.gov/home/saff/main.html?_lang=en

Prodigy <http://prodigy.com>

Interactive Math Games <http://www.math-play.com/Interactive-Math-Games.html>

Internet 4 Classrooms <https://www.internet4classrooms.com/>

Future Smart <https://everfi.com/offerings/listing/futuresmart/>

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