Wayne, New Jersey

Middle School Mathematics Department
Seventh Grade Mathematics Curriculum Guide
July 2022
Revised

Dr. Mark Toback, Superintendent
Mrs. Donna Reichman, Assistant Superintendent
Mrs. Nicole Rodriguez, Floating Assistant Principal - Mathematics & Science
Mr. David Kardos, Middle School Mathematics Teacher

This curriculum may be modified through varying techniques, strategies, and materials
as per an individual student's Individualized Educational Plan (IEP)

Approved by the Wayne Township Board of Education at the regular meeting held on
September 8, 2022

Wayne Township Public Schools - Mathematics - Grade 7 - Pacing Guide

Month	Sept				Oct				Nov				Dec				Jan				Feb/March				March/April				April/May				June		
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Unit 1: Number System	Launch	X	X	X	X	X	X																												
Unit 2: Ratio and Proportional Relationships									X	X	X	X	X	X	X																				
Unit 3: Expressions and Equations																X	X	X	X	X	X	X	X												
Unit 4: Geometry																								X	X	X	X	X							
Unit 5: Statistics and Probability																													X	X	X	X	X	Flex	Flex
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Month	Sept				Oct				Nov				Dec				Jan				Feb/March				March/April				April/May				June		

Wayne Township Public Schools
Grade 7 Mathematics Curriculum

Content Area/ Grade Level/ Course:	Mathematics/Grade 7
Unit Plan Title:	Unit 1 - The Number System
Time Frame	6 weeks (see pacing guide)

Anchor Standards/Domain

Anchor Standards for Mathematics
- 7.NS.A Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills

9.4 Life Literacies, and Key Skills
Technology Literacy
- Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

WIDA Standards
- ELD Standard 1: Social and Instructional Language
- ELD Standard 3: The Language of Mathematics

Unit Summary

In this unit, students develop a unified understanding of a number, recognizing fractions, decimals, and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers. Students use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

Standard Number(s)

7.NS.A.1 - Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*
b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
c. Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
d. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS.A.2 - Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real world contexts.
c. Apply properties of operations as strategies to multiply and divide rational numbers.
d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

7.NS.A.3 - Solve real-world and mathematical problems involving the four operations with rational numbers.

Mathematical Practices 1-8:
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.

Technology Standards:
- 9.4.8.TL.2   Gather data and digitally represent information to communicate a real-world problem

Essential Question(s)

- How can one use a number line to order rational numbers?
- Why does one need rational numbers?
- How are adding and subtracting integers related?
- How are an integer and its absolute value related?
- Is the sum of 2 integers positive, negative, or zero?
- Is the product of two integers positive, negative, or zero? How can one tell?
- In what real world contexts would negative numbers be used?

Enduring Understandings

- Rational numbers can be represented in multiple ways and are useful when examining situations involving numbers that are not whole.
- By applying the properties of rational numbers and by viewing negative numbers in terms of everyday contexts, students explain and interpret the rules for adding, subtracting, multiplying and dividing with negative numbers.

Interdisciplinary Connections

- Topic "STEM Project"
- Topic "3 ACT Math"
- MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
  Understanding of positive and negative numbers and 0 to describe and represent quantities will allow students to be successful in this science standard.
- MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

Understanding of positive and negative numbers and 0 to describe and represent quantities will allow students to be successful in this science standard.

In this unit plan, the following 21st Century themes and skills are addressed.		

In this unit plan, the following 21st Century themes and skills are addressed.

Check all that apply. **21st Century Themes**		*Check all that apply.* **21st Century Skills**	
	Global Awareness	x	Creativity and Innovation
	Environmental Literacy	x	Critical Thinking and Problem Solving
	Health Literacy	x	Communication
	Civic Literacy	x	Collaboration
x	Financial, Economic, Business, and Entrepreneurial Literacy		

Student Learning Targets/Objectives (Students will know/Students will understand)

- How to describe real-world situations where opposite quantities have a sum of zero.
- How to use a number line or positive/negative chips to show that an integer and its opposite will always have a sum of zero.
- How to use a number line to show addition as a specific distance from a particular number in one direction or the other, depending on the sign of the value being added.
- How to rewrite a subtraction problem as an addition problem by using the additive inverse.
- How to show that the distance between two integers on a number line is the absolute value of their difference.
- How to describe real-world situations represented by the addition, subtraction, multiplication, and division of integers and rational numbers.
- The use of the properties of operations to add and subtract rational numbers.
- The use of patterns and properties to explore and develop procedures for the multiplication of integers.
- The use of the relationship between multiplication and division to develop procedures for dividing integers.
- How to interpret the quotient in relation to the original problem.
- How to generalize the procedures for multiplying and dividing integers to all rational numbers.
- The use of long division to convert a rational number to a decimal.
- How to verify that a number is rational based on its decimal equivalent.

Assessments (Pre, Formative, Summative, Other)   *Denote required common assessments with an ***

Assessments (some can be in more than one category):
- *Pre-Assessment:* Beginning-of-the-Year Assessment, Topic Readiness Assessments, "Review What You Know" activities at the beginning of a new topic, classroom warm-up activities
- *Formative*: "Try It!," "Convince Me!," "Do You Understand?," and "Do You Know How?" activities throughout a topic, lesson quizzes, Mid-Topic Checkpoints, informal student questioning, communicator activities, homework, class participation, exit cards/tickets, use of digital assessment tools through, Chromebooks, smart phones, or other devices, Edulastic
- *Summative*: Topics 1 Assessment
- *Benchmark*: *District mid-year benchmark assessment

- *Alternative* (available for individual students as needed): Topic Performance Tasks, Student Self-Assessment Tool (Teacher's Resource Masters, Volume 2), evaluate student work using the Cognitive Rigor Matrix for Mathematics (Assessment Book), portfolio assessment of student work

| Teaching and Learning Activities	
Activities	- Lessons 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 1-9, 1-10, Topic 1 Review - Lessons 8-8, 8-9, Topic 8 Review "3-Act Math" activities - STEM projects "Solve & Discuss It"/""Explore It!"/"Explain It!" activities at the beginning of each lesson - students should be encouraged to: - Work productively in teams - Communicate clearly and effectively and with reason - Demonstrate creativity and innovation - Utilize critical thinking to make sense of problems and persevere in solving them - Use digital tools to enhance their group response - Utilize digital tools to present their work to the class, where appropriate - Ongoing use of NJSLA online tools, NJSLA online calculator, and reference sheet to gain comfort and familiarity - Equivalent fractions approach to non-repeating decimal https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks/604 - Repeating decimal as approximation https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks/593 - Sharing Prize Money https://tasks.illustrativemathematics.org/content-standards/7/NS/A/3/tasks/298
Differentiation Strategies	- enVision Differentiated Intervention: Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment, Math Tools and Games - Online enVision resources: (Today's Challenge, accessible student edition of text, Another Look activities and videos, reteaching activities) - Online enVision resources for student assistance/differentiation: digital tools, extra practice, interactive eText, glossary, games - Math Diagnosis and Intervention System - English Language Learners Toolkit - Differentiation Strategies for Special Education Students - Differentiation Strategies for Gifted and Talented Students - Differentiation Strategies for ELL Students - Differentiation Strategies for At Risk Students - Differentiation Strategies for Students with a 504 **Introducing Addition of Integers** - Introduce Chips: 1 red = -1 1 black = +1

1 red + 1 black = 0 (zero pair)

- Students will use the chips to model number sentences. They will use what they know about the chips and a zero pair to determine the answer to each question.
- Example: +8 + -12
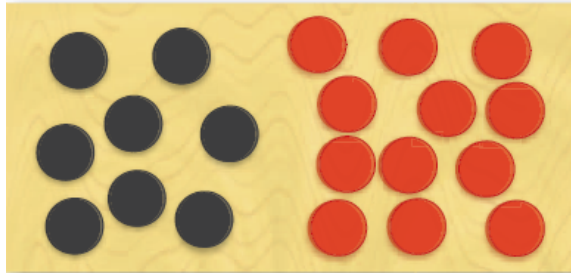
- Students can make 8 zero pairs (1 red and 1 black), leaving only red colored chips on their board. They can then determine that +8 + -12 = -4 or 4 red chips.

Resources

- enVision 2.0 Math Topic 1
- Communicators, graph boards, calculators
- Graph paper, colored pencils, rulers, 3-D manipulatives
- Projection System, Document Camera, Chromebooks, other student devices
- Websites
    - o http://nlvm.usu.edu/en/nav/vlibrary.html
    - o http://illuminations.nctm.org
    - o http://map.mathshell.org/materials/index.php
    - o www.IXL.com
    - o http://insidemathematics.org
    - o http://mathsnacks.com
    - o www.openmiddle.com
    - o https://nysed-prod.engageny.org/

Content Area/ Grade Level/ Course:	Mathematics/Grade 7
Unit Plan Title:	Unit 2 - Ratios and Proportional Relationships
Time Frame	7 weeks (see pacing guide)

Anchor Standards/Domain

Anchor Standards for Mathematics
- 7.RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems.

New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills
9.4 Life Literacies, and Key Skills
Technology Literacy
- Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

WIDA Standards
- ELD Standard 1: Social and Instructional Language
- ELD Standard 3: The Language of Mathematics

Unit Summary

In this unit, students extend their understandings of ratios and develop understanding of proportionality to solve real-life problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including discounts, tax, tips, and percent change. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line.

Standard Number(s)

7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*

7.RP.A.2 Recognize and represent proportional relationships between quantities.
a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*
d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate.

7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

Mathematical Practices 1-8:
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.

Technology Standards:
- 9.4.8.TL.2 Gather data and digitally represent information to communicate a real-world problem.

Essential Question(s)

- How can one extend prior knowledge of unit rates to include rational numbers?
- How can one write a proportion that solves a problem in real life?
- How can one use a graph/table to show the relationship between two variables that vary directly? How can one use an equation?

Enduring Understandings

- Ratios and proportional relationships are used to express how quantities are related and how quantities change in relation to each other.
- Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called slope.
- We can compute unit rates associated with ratios of fractional quantities measured in like or different units.
- The constant of proportionality (unit rate) can be identified in tables, graphs, equations, and verbal descriptions of proportional relationships
- Proportional relationships enable us to solve multi-step percent problems

Interdisciplinary Connections

- Topic "STEM Project"
- Topic "3 ACT Math"
- MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
  The understanding of ratio and ratio language to describe relationships between two quantities will allow students to be successful in this science standard.
- Being able to recognize and represent proportional relationships between two quantities will allow students to be successful in the following science standards:
  - o MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
  - o MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.
  - o MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
  - o MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

- o MS-ESS3-4.Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- o MS-LS4-4.Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- o MS-LS4-6.Use mathematical representation to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.
- o 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.
- o MS-PS3-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
- o MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

In this unit plan, the following 21st Century themes and skills are addressed.				
Check all that apply. **21st Century Themes**			*Check all that apply.* **21st Century Skills**	
	Global Awareness		x	Creativity and Innovation
	Environmental Literacy		x	Critical Thinking and Problem Solving
	Health Literacy		x	Communication
	Civic Literacy		x	Collaboration
x	Financial, Economic, Business, and Entrepreneurial Literacy			

Student Learning Targets/Objectives (Students will know/Students will understand)

- How to compute unit rate by iterating (repeating) or portioning a given rate and multiplying or dividing both quantities by the same factor.
- How to explain the relationship between using composed units and a multiplicative comparison to express a unit rate.
- How to determine whether two quantities are proportional by examining the relationship given in a table, graph, equation, diagram, or verbal description.
- How to identify the constant of proportionality when presented with a proportional relationship in the form of table, graph, equation, diagram, or verbal description.
- How to write an equation that represents a proportional relationship
- How to explain the relevance of a specific point on the graph of a proportional relationship, including but not limited to (0, 0) and (1, r).
- The use of proportional reasoning to solve real-world ratio and percent problems, including those with multiple steps.

Assessments (Pre, Formative, Summative, Other)   *Denote required common assessments with an ***

Assessments (some can be in more than one category):

- *Pre-Assessment:* Beginning-of-the-Year Assessment, Topic Readiness Assessments, "Review What You Know" activities at the beginning of a new topic, classroom warm-up activities
- *Formative*: "Try It!," "Convince Me!," "Do You Understand?," and "Do You Know How?" activities throughout a topic, lesson quizzes, Mid-Topic Checkpoints, informal student questioning, communicator activities, homework, class participation, exit cards/tickets, use of digital assessment tools through, Chromebooks, smart phones, or other devices, Edulastic
- *Summative*: Topics 2 and 3 Assessments
- *Benchmark*: *District mid-year benchmark assessment
- *Alternative* (available for individual students as needed): Topic Performance Tasks, Student Self-Assessment Tool (Teacher's Resource Masters, Volume 2), evaluate student work using the Cognitive Rigor Matrix for Mathematics (Assessment Book), portfolio assessment of student work

	Teaching and Learning Activities
Activities	- Lessons 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, Topic 2 Review - Lessons 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, Topic 3 Review - Lesson 6-2, Topic 6 Review - Lesson 7-2, Topic 7 Review "3-Act Math" activities - STEM projects "Solve & Discuss It"/""Explore It!"/"Explain It!" activities at the beginning of each lesson - students should be encouraged to: - Work productively in teams - Communicate clearly and effectively and with reason - Demonstrate creativity and innovation - Utilize critical thinking to make sense of problems and persevere in solving them - Use digital tools to enhance their group response - Utilize digital tools to present their work to the class, where appropriate - Ongoing use of NJSLA online tools, NJSLA online calculator, and reference sheet to gain comfort and familiarity - Increasing and Decreasing Quantities by a Percent https://www.map.mathshell.org/lessons.php?unit=7100&collection=8 - Discounts and Mark-Ups activity - Proportional Reasoning https://www.map.mathshell.org/lessons.php?unit=7215&collection=8
Differentiation Strategies	- enVision Differentiated Intervention: Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment, Math Tools and Games - Online enVision resources: (Today's Challenge, accessible student edition of text, Another Look activities and videos, reteaching activities) - Online enVision resources for student assistance/differentiation: digital tools, extra practice, interactive eText, glossary, games - Math Diagnosis and Intervention System - English Language Learners Toolkit - Differentiation Strategies for Special Education Students - Differentiation Strategies for Gifted and Talented Students - Differentiation Strategies for ELL Students

	● [Differentiation Strategies for At Risk Students](#) ● [Differentiation Strategies for Students with a 504](#)

Resources

- enVision 2.0 Math Topics 2 and 3, Lessons 6-2 and 7-2
- Communicators, graph boards, calculators
- Graph paper, colored pencils, rulers, 3-D manipulatives
- Projection System, Document Camera, Chromebooks, other student devices
- Websites
  - http://nlvm.usu.edu/en/nav/vlibrary.html
  - http://illuminations.nctm.org
  - http://map.mathshell.org/materials/index.php
  - www.IXL.com
  - http://insidemathematics.org
  - http://mathsnacks.com
  - www.openmiddle.com
  - https://nysed-prod.engageny.org/

Content Area/ Grade Level/ Course:	Mathematics/Grade 7
Unit Plan Title:	Unit 3-Expressions and Equations
Time Frame	8 weeks (see pacing guide)

Anchor Standards/Domain

Anchor Standards for Mathematics
- 7.EE.A Use properties of operations to generate equivalent expressions.
- 7.EE.B Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills
9.4 Life Literacies, and Key Skills
Technology Literacy
- Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

WIDA Standards
- ELD Standard 1: Social and Instructional Language
- ELD Standard 3: The Language of Mathematics

Unit Summary

Students use arithmetic of rational numbers as they develop expressions and equations using variables. They represent real-world situations using equations and inequalities. They use these equations and inequalities to solve problems by reasoning about the quantities.

Standard Number(s)

7.EE.A.1 - Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.A.2 - Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

7.EE.B.3 - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*

7.EE.B.4 - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*

b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*

Mathematical Practices 1-8:
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.

Technology Standards:
- 9.4.8.TL.2   Gather data and digitally represent information to communicate a real-world problem.

Essential Question(s)

- How can algebraic expressions and equations be used to model, analyze, and solve mathematical situations?
- Why would one need to find equivalent forms of an expression?
- What real world problems could be represented by equations?
- What real world problems could be represented by inequalities?

Enduring Understandings

- Students will understand that rewriting an expression in different forms in a problem context can clarify the problem.
- Students will understand that rewriting an expression can clarify how the quantities in the problem are related.
- Students will understand algebraic expressions and equations are used to model real-life problems.
- Students will understand algebraic expressions and equations are used to represent quantitative relationships, so that the numbers and symbols can be mindfully manipulated to reach a solution or make sense of the quantitative relationships.

Interdisciplinary Connections

- Topic "STEM Project"
- Topic "3 ACT Math"
- Being able to use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities will allow students to be successful in the following science standards:
  - MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
  - MS-ESS1-4.Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

- o MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
  - o MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
  - o MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distribution of Earth's mineral, energy, and groundwater resources are the rest of past and current geoscience processes.
  - o MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
  - o MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
  - o MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
  - o MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
  - o MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
  - o MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- Being able to solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), being able to use tools strategically, being able to apply properties of operations to calculate with numbers, being able to convert between forms as appropriate, and being able to assess the reasonableness of answers using mental computation and estimation strategies will allow students to be successful in the following science standards:
  - o MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
  - o MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
  - o MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

In this unit plan, the following 21st Century themes and skills are addressed.			
Check all that apply. **21st Century Themes**		*Check all that apply.* **21st Century Skills**	
	Global Awareness	x	Creativity and Innovation
	Environmental Literacy	x	Critical Thinking and Problem Solving
	Health Literacy	x	Communication
	Civic Literacy	x	Collaboration
x	Financial, Economic, Business, and Entrepreneurial Literacy		

Student Learning Targets/Objectives (Students will know/Students will understand)

- The use of the commutative and associative properties to add linear expressions with rational coefficients.
- The use of the distributive property to add and/or subtract linear expressions with rational coefficients.
- The use of the distributive property to factor a linear expression with rational coefficients.
- The use of the distributive property to expand a linear expression with rational coefficients.
- The use of equivalent expressions to understand the relationships between quantities.
- How to solve real-world problems using rational numbers in any form, including those problems involving multiple steps.
- How to apply the properties of operations to fluently compute with rational numbers in any form.
- The use of mental math and estimation strategies to determine if a solution is reasonable.
- The use of a variable to represent an unknown quantity and write a simple algebraic equation to represent a real world problem.
- How to solve a simple algebraic equation by using the properties of equality or mathematical reasoning, and show or explain my steps.
- How to compare an arithmetic solution to an algebraic solution.
- How to write and solve a simple algebraic inequality and graph the solution on a number line to represent a real-world problem and describe the solution to an inequality in relation to the problem.

Assessments (Pre, Formative, Summative, Other)   *Denote required common assessments with an ***

Assessments (some can be in more than one category):
- *Pre-Assessment:* Beginning-of-the-Year Assessment, Topic Readiness Assessments, "Review What You Know" activities at the beginning of a new topic, classroom warm-up activities
- *Formative*: "Try It!," "Convince Me!," "Do You Understand?," and "Do You Know How?" activities throughout a topic, lesson quizzes, Mid-Topic Checkpoints, informal student questioning, communicator activities, homework, class participation, exit cards/tickets, use of digital assessment tools through, Chromebooks, smart phones, or other devices, Edulastic
- *Summative*: Topic 4 and 5 Assessments
- *Benchmark*: *District mid-year benchmark assessment
- *Alternative* (available for individual students as needed): Topic Performance Tasks, Student Self-Assessment Tool (Teacher's Resource Masters, Volume 2), evaluate student work using the Cognitive Rigor Matrix for Mathematics (Assessment Book), portfolio assessment of student work

Teaching and Learning Activities

Activities	- Lessons 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, Topic 4 Review - Lessons 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, Topic 5 Review - Lessons 1-10, 4-1, 6-2, 7-1, 7-4, 8-5, 8-6, 8-8, 8-9 "3-Act Math" activities - STEM projects "Solve & Discuss It"/""Explore It!"/"Explain It!" activities at the beginning of each lesson - students should be encouraged to: - Work productively in teams - Communicate clearly and effectively and with reason - Demonstrate creativity and innovation - Utilize critical thinking to make sense of problems and persevere in solving them - Use digital tools to enhance their group response - Utilize digital tools to present their work to the class, where appropriate

	- Ongoing use of NJSLA online tools, NJSLA online calculator, and reference sheet to gain comfort and familiarity - www.illustrativemathematics.org: Writing Expressions, Miles to kilometers, Guess My Number, Discounted Books, Fishing Adventure 2, Sports Equipment Set - https://illuminations.nctm.org/Default.aspx: Pan Balance- Numbers, Pan Balance- Expressions, Algebra Tiles
Differentiation Strategies	- enVision Differentiated Intervention: Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment, Math Tools and Games - Online enVision resources: (Today's Challenge, accessible student edition of text, Another Look activities and videos, reteaching activities) - Online enVision resources for student assistance/differentiation: digital tools, extra practice, interactive eText, glossary, games - Math Diagnosis and Intervention System - English Language Learners Toolkit - Differentiation Strategies for Special Education Students - Differentiation Strategies for Gifted and Talented Students - Differentiation Strategies for ELL Students - Differentiation Strategies for At Risk Students - Differentiation Strategies for Students with a 504

Resources

- enVision 2.0 Math Topics 4 and 5
- Communicators, graph boards, calculators
- Graph paper, colored pencils, rulers, 3-D manipulatives
- Projection System, Document Camera, Chromebooks, other student devices
- Websites
    - http://nlvm.usu.edu/en/nav/vlibrary.html
    - http://illuminations.nctm.org
    - http://map.mathshell.org/materials/index.php
    - www.IXL.com
    - http://insidemathematics.org
    - http://mathsnacks.com
    - www.openmiddle.com
    - https://nysed-prod.engageny.org/

Content Area/ Grade Level/ Course:	**Mathematics/Grade 7**
Unit Plan Title:	**Unit 4-Geometry**
Time Frame	**5 weeks (see pacing guide)**

Anchor Standards/Domain

Anchor Standards for Mathematics
- 7.G.A Draw, construct, and describe geometrical figures and describe the relationships between them.
- 7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills

9.4 Life Literacies, and Key Skills
Technology Literacy
- Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

WIDA Standards
- ELD Standard 1: Social and Instructional Language
- ELD Standard 3: The Language of Mathematics

Unit Summary

Students reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions. They gain familiarity with the relationship between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve problems involving area and circumference of a circle. They also solve real-world problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Standard Number(s)

7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

7.G.A.3 Describe the two-dimensional figures that result from slicing three dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Mathematical Practices 1-8:
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.

Technology Standards:
- 9.4.8.TL.2   Gather data and digitally represent information to communicate a real-world problem.

Essential Question(s)

- How can one use a scale drawing and scale to compute lengths and areas?
- How can one draw three-dimensional figures?
- What happens to a solid when a plane intersects it?
- How would changing the radius or diameter of a circle affect its circumference and area?
- What is the difference between complementary and supplementary angles?
- What is the relationship between angles formed by intersecting lines?
- When would one want to find area of a figure?
- When would one want to find surface area of a figure?
- When would one want to find volume of a figure?

Enduring Understandings

- Students will be able to solve problems about scale drawings by relating corresponding lengths within objects or by using the fact that relationships of lengths within an object are preserved in similar objects.
- Students will understand the relationship between angles formed by lines.
- Students will be able to write a simple equation to find an unknown angle.
- Students will be able to solve real-world and mathematical problems involving two-and-three dimensional figures.

Interdisciplinary Connections

- Topic "STEM Project"
- Topic "3 ACT Math"

In this unit plan, the following 21ˢᵗ Century themes and skills are addressed.

Check all that apply. **21ˢᵗ Century Themes**		*Check all that apply.* **21ˢᵗ Century Skills**	
	Global Awareness	x	**Creativity and Innovation**

	Environmental Literacy		x	Critical Thinking and Problem Solving
	Health Literacy		x	Communication
	Civic Literacy		x	Collaboration
x	Financial, Economic, Business, and Entrepreneurial Literacy			

Student Learning Targets/Objectives (Students will know/Students will understand)

- How to use a scale drawing to determine the actual dimensions and area of a geometric figure.
- How to use a different scale to reproduce a similar scale drawing.
- How to draw a geometric shape with specific conditions.
- How to construct a triangle when given three measurements: 3 side lengths, 3 angle measurements, or a combination of side and angle measurements.
- How to determine when three specific measurements will result in one unique triangle, more than one possible triangle, or no possible triangles.
- How to name the two-dimensional figure that represents a particular slice of a three-dimensional figure
- How to state the formula for finding the area of a circle.
- How to state the formula for finding the circumference of a circle.
- How to use formulas to compute the area and circumference of a circle.
- How to determine the diameter or radius of a circle when the circumference is given.
- How to use a ratio and algebraic reasoning to compare the area and circumference of a circle.
- How to state the relationship between supplementary, complementary, and vertical angles.
- How to use angle relationships to write algebraic equations for unknown angles.
- How to use algebraic reasoning and angle relationships to solve multi-step problems.
- How to determine the area of two-dimensional figures.
- How to determine the surface area and volume of three-dimensional figures.
- How to solve real-world problems involving area, surface area, and volume.

Assessments (Pre, Formative, Summative, Other)   *Denote required common assessments with an ***

Assessments (some can be in more than one category):
- *Pre-Assessment:* Beginning-of-the-Year Assessment, Topic Readiness Assessments, "Review What You Know" activities at the beginning of a new topic, classroom warm-up activities
- *Formative*: "Try It!," "Convince Me!," "Do You Understand?," and "Do You Know How?" activities throughout a topic, lesson quizzes, Mid-Topic Checkpoints, informal student questioning, communicator activities, homework, class participation, exit cards/tickets, use of digital assessment tools through, Chromebooks, smart phones, or other devices, Edulastic
- *Summative*: Topic 8 Assessment
- *Benchmark*: *District mid-year benchmark assessment
- *Alternative* (available for individual students as needed): Topic Performance Tasks, Student Self-Assessment Tool (Teacher's Resource Masters, Volume 2), evaluate student work using the Cognitive Rigor Matrix for Mathematics (Assessment Book), portfolio assessment of student work

Teaching and Learning Activities

Activities	- Lessons 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 8-8, 8-9, Topic 8 Review - "3-Act Math" activities - STEM projects - "Solve & Discuss It"/""Explore It!"/"Explain It!" activities at the beginning of each lesson - students should be encouraged to:

	- o Work productively in teams - o Communicate clearly and effectively and with reason - o Demonstrate creativity and innovation - o Utilize critical thinking to make sense of problems and persevere in solving them - o Use digital tools to enhance their group response - o Utilize digital tools to present their work to the class, where appropriate - Ongoing use of NJSLA online tools, NJSLA online calculator, and reference sheet to gain comfort and familiarity "Most Square?" activity - https://illuminations.nctm.org/Default.aspx: Cube Nets, Scale Factor - www.illustrativemathematics.org : Floor Plan
Differentiation Strategies	- enVision Differentiated Intervention: Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment, Math Tools and Games - Online enVision resources: (Today's Challenge, accessible student edition of text, Another Look activities and videos, reteaching activities) - Online enVision resources for student assistance/differentiation: digital tools, extra practice, interactive eText, glossary, games - Math Diagnosis and Intervention System - English Language Learners Toolkit - Differentiation Strategies for Special Education Students - Differentiation Strategies for Gifted and Talented Students - Differentiation Strategies for ELL Students - Differentiation Strategies for At Risk Students - Differentiation Strategies for Students with a 504

Resources

- enVision 2.0 Math Topic 8
- Communicators, graph boards, calculators
- Graph paper, colored pencils, rulers, 3-D manipulatives
- Projection System, Document Camera, Chromebooks, other student devices
- Websites
  - o http://nlvm.usu.edu/en/nav/vlibrary.html
  - o http://illuminations.nctm.org
  - o http://map.mathshell.org/materials/index.php
  - o www.IXL.com
  - o http://insidemathematics.org
  - o http://mathsnacks.com
  - o www.openmiddle.com
  - o https://nysed-prod.engageny.org/

Wayne Township Public Schools
Grade 7 Mathematics Curriculum

Content Area/ Grade Level/ Course:	Mathematics/Grade 7
Unit Plan Title:	Unit 5 - Statistics and Probability
Time Frame	5 weeks (see pacing guide)

Anchor Standards/Domain

Anchor Standards for Mathematics
- 7.SP.A Use random sampling to draw inferences about a population.
- 7.SP.B Draw informal comparative inferences about two populations.
- 7.SP.C Investigate the chance process and develop, use, and evaluate probability models.

New Jersey Student Learning Standards for Career Readiness, Life Literacies, and Key Skills
9.1 Personal Financial Literacy
Planning and Budgeting
- There are strategies to decrease and manage expenses.

9.4 Life Literacies, and Key Skills
Technology Literacy
- Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

WIDA Standards
- ELD Standard 1: Social and Instructional Language
- ELD Standard 3: The Language of Mathematics

Unit Summary

Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences using measures of center and variability. They approximate probabilities by making predictions based on long-run relative frequencies. Students also find probabilities and identify sample spaces through models, organized lists, tables, tree diagrams, and simulations.

Standard Number(s)

7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*

7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*

7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*

7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*

7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

Mathematical Practices 1-8:
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.

21st Century Learning Standards: Life and Careers

- 9.1.8.PB.7 Brainstorm techniques that will help decrease expenses including comparison shopping, negotiating, and day-to-day expense management.
- 9.1.8.E.5 Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

Technology Standards:
- 9.4.8.TL.2 Gather data and digitally represent information to communicate a real-world problem

Essential Question(s)

- What is the relationship between a sample and a population?
- How can one use a random sample to make conclusions about the general population?
- What does the shape of data in a display tell one about the data?
- How can one use the mean or median and range to help understand and describe a data distribution?
- How can one determine and understand the meaning of the likelihood of an event?
- Why would one need to use a probability model?
- How can one use a simulation to predict the number of times an event will occur?
- What is the difference between dependent and independent events?

Enduring Understandings

- Students will understand that statistics can be used to gain information about a population by examining a sample of the populations.
- Students will be able to draw informal comparative inferences about two populations.
- Students will be able to use the rules of probability to make valid and reliable predictions about the likelihood of an event occurring.

Interdisciplinary Connections

- Topic "STEM Project"
- Topic "3 ACT Math"
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
  Being able to develop a probability model and use it to find probabilities of events and being able to compare probabilities from a model to observed frequencies will allow students to be successful in the following science standards.

In this unit plan, the following 21st Century themes and skills are addressed.

	Check all that apply. **21st Century Themes**			*Check all that apply.* **21st Century Skills**
x	Global Awareness		x	Creativity and Innovation
	Environmental Literacy		x	Critical Thinking and Problem Solving
	Health Literacy		x	Communication
	Civic Literacy		x	Collaboration

	Financial, Economic, Business, and Entrepreneurial Literacy	

Student Learning Targets/Objectives (Students will know/Students will understand)

- That inferences about a population can be made by examining a sample.
- Why the validity of a sample depends on whether the sample is representative of the population.
- That random sampling tends to produce representative samples.
- How to find the difference in the mean or median of two different data sets.
- How to draw inferences about the data sets by making a comparison of these differences relative to the mean absolute deviation or interquartile range of either set of data.
- How to demonstrate how two data sets that are very different can have similar variabilities.
- How to define probability as a ratio that compares favorable outcomes to all possible outcomes.
- How to recognize and explain that probabilities are expressed as a number between 0 to 1.
- How to interpret a probability near 0 as unlikely to occur and a probability near 1 as likely to occur.
- How to interpret a probability near ½, as being as equally to occur as to not occur.
- How to develop a simulation to model a situation in which all events are equally likely to occur.
- How to utilize a simulation to determine the probability of specific events.
- How to determine the probability of events that may not be equally likely to occur, by utilizing a simulation model.
- How to create a sample space of all possible outcomes for a compound event using an organized list, a table, or a tree diagram.
- How to use the sample space to compare the number of favorable outcomes to the total number of outcomes and determine the probability of the compound event.
- How to design and utilize a simulation to predict the probability of a compound event.

Assessments (Pre, Formative, Summative, Other)   *Denote required common assessments with an ***

Assessments (some can be in more than one category):
- *Pre-Assessment:* Beginning-of-the-Year Assessment, Topic Readiness Assessments, "Review What You Know" activities at the beginning of a new topic, classroom warm-up activities
- *Formative*: "Try It!," "Convince Me!," "Do You Understand?," and "Do You Know How?" activities throughout a topic, lesson quizzes, Mid-Topic Checkpoints, informal student questioning, communicator activities, homework, class participation, exit cards/tickets, use of digital assessment tools through, Chromebooks, smart phones, or other devices, Edulastic
- *Summative*: Topics 6 and 7 Assessments
- *Benchmark*: *District mid-year benchmark assessment
- *Alternative* (available for individual students as needed): Topic Performance Tasks, Student Self-Assessment Tool (Teacher's Resource Masters, Volume 2), evaluate student work using the Cognitive Rigor Matrix for Mathematics (Assessment Book), portfolio assessment of student work

Teaching and Learning Activities

Activities	- Lessons 6-1, 6-2, 6-3, 6-4, Topic 6 Review - Lessons 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7, Topic 7 Review "3-Act Math" activities - STEM projects "Solve & Discuss It"/""Explore It!"/"Explain It!" activities at the beginning of each lesson - students should be encouraged to: - Work productively in teams - Communicate clearly and effectively and with reason - Demonstrate creativity and innovation

	- o Utilize critical thinking to make sense of problems and persevere in solving them - o Use digital tools to enhance their group response - o Utilize digital tools to present their work to the class, where appropriate - Ongoing use of NJSLA online tools, NJSLA online calculator, and reference sheet to gain comfort and familiarity - Grade 7 Project - Better Money Habits - o Students will investigate the advantages and disadvantages of credit vs debit cards. - o Students will learn about the following economic/personal concepts: fraud protection, credit score, interest, and late fees. - Estimating: Counting Trees: http://map.mathshell.org/materials/lessons.php?taskid=422&subpage=problem - Evaluating Statements About Probability http://map.mathshell.org/materials/lessons.php?taskid=225&subpage=concept
Differentiation Strategies	- enVision Differentiated Intervention: Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment, Math Tools and Games - Online enVision resources: (Today's Challenge, accessible student edition of text, Another Look activities and videos, reteaching activities) - Online enVision resources for student assistance/differentiation: digital tools, extra practice, interactive eText, glossary, games - Math Diagnosis and Intervention System - English Language Learners Toolkit - Differentiation Strategies for Special Education Students - Differentiation Strategies for Gifted and Talented Students - Differentiation Strategies for ELL Students - Differentiation Strategies for At Risk Students - Differentiation Strategies for Students with a 504

Resources

- enVision 2.0 Math Topics 6 and 7
- Communicators, graph boards, calculators
- Graph paper, colored pencils, rulers, 3-D manipulatives
- Projection System, Document Camera, Chromebooks, other student devices
- Websites
  - o http://nlvm.usu.edu/en/nav/vlibrary.html
  - o http://illuminations.nctm.org
  - o http://map.mathshell.org/materials/index.php
  - o www.IXL.com
  - o http://insidemathematics.org
  - o http://mathsnacks.com
  - o www.openmiddle.com
  - o https://nysed-prod.engageny.org/