SPARTA TWP. PUBLIC SCHOOLS

Grade 3 Mathematics Curriculum

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Adapted from:
New Jersey Student Learning Standards

Reviewed by:
Mr. Patrick McQueeney, Assistant Superintendent
Katie Arbolino, K-12 Mathematics Supervisor

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Sparta Township School District

18 Mohawk Avenue
Sparta, NJ 07871
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VISION

The Sparta School district believes that the Sparta school system produces students who will exemplify mastery in mathematical practices. It is the responsibility of administrators, teachers, students, and parents to create learning opportunities to persevere in modeling mathematics precisely and strategically with reasoning, tools, and algebraic structure. Through this collaboration, students will develop into independent, competent, mathematical thinkers who are college and career ready.

BELIEF STATEMENTS

- Technology can enhance the learning process and prepare students to be 21st century learners.
- Student-centered learning activities will enable students to develop ownership for their education.
- A coherent K-12 curriculum will allow for authentic real-world learning opportunities.
- Our assessments will require students to demonstrate in-depth understanding rather than recalling simple facts and algorithms.
- Students will be confident in participating in higher level discussions that will assess and advance the understanding of concepts.
- The use of various resources, tools, and technology will engage students to solve mathematically rich, real-world problems that meet the needs of a diverse population of learners.
- Collaborative and hands-on learning activities will promote creative and critical thinking skills for all students.

COURSE OVERVIEW

The Sparta School District Grade 3 Mathematics program has been constructed within a multi-faceted, standards-based philosophy. In this program, students will focus on developing strategies for multiplication and division and developing an understanding of fractions. Students will use area models to support their understanding of multiplication and division as well as visual fraction models to represent parts of a whole. Students will continue to build upon their understanding of describing and analyzing two-dimensional shapes by using area to describe a figure.

COMPONENTS OF THE COURSE

The Components of a successful Math 3 program are:

- enVision 2.0

- Learnzillion

- Illustrative Mathematics

SCOPE AND SEQUENCE
(Pacing Guide)

Weeks Taught *(40 Total)*	Units of Study
2	Topic 1: Understand Multiplication and Division of Whole Numbers
2	Topic 2: Multiplication Facts: Use Patterns
2	Topic 3: Apply Properties: Multiplication Facts For 3, 4, 5, 6, 7, 8
3	Topic 4: Use Multiplication to Divide: Division Facts
3	Topic 5 Fluently Multiply and Divide Within 100
2	Topic 6: Connect Area to Multiplication and Addition
1	Topic 7: Represent and Interpret Data
3	Topic 8: Use Strategies and Properties to Add and Subtract
2	Topic: 9 Fluently Add and Subtract Within 1,000
1	Topic 10: Multiply by Multiples of 10
2	Topic 11: Use strategies and properties to add and subtract
2	Topic 12: Understand Fractions as Numbers
2	Topic 13: Understand Fractions as Numbers
3	Topic 14
1	Topic 15 Attributes of Two-Dimensional Shapes
2	Topic 16: Solve Perimeter Problems
2	Step Up to Grade 4

CONTENT AREA:	Math	**GRADE LEVEL**	3
UNIT 1:	Understand Multiplication and Division of Whole Numbers		

UNIT SUMMARY

Topics 1 & 2 focus on interpreting the meaning of multiplication and division, using patterns to begin to build fluency with multiplication facts. Multiplication Situations- Equal Group Situations and Arrays as well as Division Situations- Equal Groups: Group-Size Unknown and Equal Groups- Number of Groups Unknown is introduced.

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.OA.A.1: Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7.

  3.OA.A.3: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 1.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication. Repeated addition that involves joining equal groups is one way to think about multiplication. ● Some real-world problems that involve joining or separating equal groups or making	What are different meanings of multiplication and division? ● How can you find the total number of objects in equal groups? ● How can you use a number line to show multiplication? ● How does an array show multiplication? ● Does order matter when you multiply?

comparisons can be solved using multiplication. Multiplication on the number line can involve joining equal groups and is one way to think about multiplication.

- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication. An array involves displaying objects in equal rows and columns, and is one way to think about multiplication.
- Two numbers can be multiplied in any order and the product remains the same.
  Sharing involves separating equal groups and is one way to think about division.

- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication and division. Repeated subtraction involves separating equal groups and is one way to think about division.
  Good math thinkers know how to pick the right tools to solve math problems.

- How many are in each group?
- How can you divide using repeated subtraction?
  - How can you use appropriate tools to represent and solve problems?

UNIT LEARNING TARGETS (Students will know how to…)

- Use repeated addition to show the relationship between multiplication and addition
- Use number lines to join equal groups
- Use arrays as one way to think about and understand multiplication
- Understand and use the Commutative Property of Multiplication
- Use sharing to separate equal groups and to think about division
- Use repeated subtraction to show the relationship between division and subtraction
- Think strategically about available tools that can be used to solve problems

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere as they try to understand problems involving multiplication and division, and make connections to their knowledge of addition and subtraction
- Students use reasoning to analyze relationships between representations and equations
- Students critique strategies for illustrating products and quotients and they construct arguments arguments to justify answers.
- Students use the math that they have previously learned, such as expressions, equations, arrays, and bar diagrams, to represent problems involving multiplication or division

- Students consider how to use tools, such as counters and grid paper, to represent arrays
- Students attend to precision when they explain why a quantity can or cannot be shared equally
- Students explore the Commutative Property using arrays. They looked for and make use of structure when they explore the meanings of the Identity Property and the Zero Property
- Students use repeated reasoning when they look for patterns

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in the Visual Learning Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment	- Topic 1 Unit Test - Basic-facts timed tests	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
- Envision Math 2.0 - Google Classroom - Learn Zillion	- www.multiplication.com (create accounts for kids if you want or just visit) - www.xtramath.com (resource) - www.learnzillion.com (resource) - http://mrnussbaum.com/math-for-kids/ (resource) - http://www.snappymaths.com/multiplication/earlymult/interactive/arrays/arraysfra

	me.htm (arrays for kids to make and use)
	• http://www.learnalberta.ca/content/me3us/flash/lessonLauncher.html?lesson=lessons/08/m3_08_00_x.swf
	• https://learnzillion.com/lesson_plans/6565-understand-multiplication-problems-using-equal-groups (video instruction for students to watch)
	• http://www.3plearning.com/multiplicationdivisionequalgroups/ (explanations and examples for
	• teachers. Ideas for how to approach with students)
	• https://www.brainpop.com/math/numbersandoperations/commutativeproperty/ (Commutative Property video for kids)
	• http://mrnussbaum.com/math-printables/ (printable worksheets for review/practice)
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DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 2:	Multiplication Facts: Use Patterns		

UNIT SUMMARY

Topics 1 & 2 focus on interpreting the meaning of multiplication and division, using patterns to begin to build fluency with multiplication facts. Multiplication Situations- Equal Group Situations and Arrays as well as Division Situations- Equal Groups: Group-Size Unknown and Equal Groups- Number of Groups Unknown is introduced.

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.OA.A.1   Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5×7.*
- 3.OA.A.3   Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 3.OA.D.9 Identify arithmetic problems (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
- 3.OA.B.5 Apply properties of operations as strategies to multiply and divide. *Examples, if $6 x 4 = 24$ is known, then $4 x 6 = 24$ is also known. (Commutative property of multiplication.) $3 x 5 x 2$ can be found by $3 x 5 = 15$, then $15 x 2 = 30$, or by $5 x 2 = 10$, then $3 x 10 = 30$. (Associative property of multiplication.) Knowing that $8 x 5 = 40$ and $8 x 2 = 16$, one can find $8 x 7$ as $8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 + 56$. (Distributive property).*

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 2.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● There are patterns in the products for multiplication with factors of 2 or 5 ● There are patterns in the products for multiplication with a factor of 9 ● There are patterns in the products for multiplication facts with a factor of 0 or 1 The product of 0 and any number is that same number. ● Patterns can be used to solve multiplication problems with a factor of 10 ● Basic multiplication facts can be found by identifying patterns ● Good math thinkers choose and apply math they know to show and solve problems from everyday life	How can unknown multiplication facts be found using patterns and properties? ● How can you use patterns to multiply by 2 and 5? ● How can patterns be used to find 9s facts? ● What are the patterns in multiples of 1 and 0? ● What are the patterns in multiples of 10? ● How do you use multiplication facts to solve problems? ● How can you model with math?

UNIT LEARNING TARGETS (Students will know how to…)

- Gain fluency in multiplication when using 2 and 5 as factors
- Gain fluency in multiplication when using 9 as a factor
- Gain fluency in multiplication when multiplying by 10
- Use number relationships and patterns to develop reasoning strategies to support their recall of the basic multiplication facts
- Use previously learned concepts and skills to represent and solve problems

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere as they try to understand problems involving multiplication and division, and make connections to their knowledge of addition and subtraction
  - Students use reasoning to analyze relationships between representations and equations
  - Students critique strategies for illustrating products and quotients and they construct arguments arguments to justify answers.
  - Students use the math that they have previously learned, such as expressions, equations, arrays, and bar diagrams, to represent problems involving multiplication or division

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS

● Review What You Know (beginning of topic) 　● Quick Checks 　● Quick Check online 　● Questions in in the Visual Learning Animation Plus 　● Questions to use with the Visual Learning Bridge 　● Do You Understand? Convince Me! Guided Practice 　● Topic Performance Assessment 　● Fluency Practice 　● Vocabulary Review 　● Topic Assessment	● Topic 2 Unit Test ● Basic-facts timed tests	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities
INSTRUCTIONAL MATERIALS/RESOURCES		**TECHNOLOGY RESOURCES**
● Envision Math 2.0 ● Google Classroom ● Learn Zillion		● Click the links below to access additional resources used to design this unit: ● www.multiplication.com (create accounts for kids if you want or just visit) ● www.xtramath.com (resource) ● www.learnzillion.com (resource) ● http://mrnussbaum.com/math-for-kids (resource) ● http://mrnussbaum.com/gamc/ (interactive competitive facts game) ● http://mrnussbaum.com/math-printables/ (printable worksheets for review/practice)

| | ● http://www.abcya.com/interactive_100_number_chart.htm (interactive chart for showing patterns-can be done as a class) |
| | ● http://www.abcya.com/number_patterns.htm (multiplication pattern game-great!) |

DIFFERENTIATION:
Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	**GRADE LEVEL**	3
UNIT 3:	Topic 3: Apply Properties: Multiplication Facts For 3, 4, 5, 6, 7, 8		

UNIT SUMMARY

Topics 3 and 4 focus on using known facts and properties of multiplication to learn the multiplication facts with factors of 3, 4, 5, 6, 7, and 8 and using the relationship between multiplication and division to learn division facts

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.OA.B.5- Apply properties of operations as strategies to multiply and divide. Examples: if 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative Property of Multiplication) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30 (Associative Property of multiplication) Knowing the 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56 (Distributive Property)
- 3.OA.A.3- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 3.OA.D.9-Identify arithmetic problems (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

21st CENTURY LIFE AND CAREER READY PRACTICES

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CRP5. Consider the environmental, social and economic impacts of decisions.

CRP6. Demonstrate creativity and innovation.

CRP7. Employ valid and reliable research strategies.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 3.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that:	● How can unknown multiplication facts be found using known facts? ● How can you break up a multiplication fact?

● Use the distributive property to solve problems involving multiplication within 100.	● How can you break apart arrays to multiply with 3?
● Basic multiplication facts with 3 as a factor can be found by breaking apart the unknown fact into known facts. The answers to the known facts are added to get the final product.	● How can you use doubles to multiply with 4?
	● How can you break apart arrays to multiply?
● Basic multiplication facts with 4 as a factor can be found by breaking apart the unknown fact into known facts. The answers to the known facts are added to get the final product.	● How can you use doubles to multiply with 8?
	● How do you use strategies to multiply?
	● How can you multiply 3 numbers?
● Basic multiplication facts with 6 or 7 as a factor can be found by breaking apart the unknown fact into known facts. The answers to the known facts are added to get the final product.	● How can you use repeated reasoning when multiplying?
● Basic multiplication facts with 8 as a factor can be found by breaking apart the unknown facts into known facts. The answers to the known facts are added to get the final product.	
● Strategies such as bar diagrams and arrays with known facts can be used to solve multiplication problems.	
● Three or more numbers can be grouped and multiplied in any order.	
● Good math thinkers look for things that repeat, and they make generalizations.	

UNIT LEARNING TARGETS (Students will know how to…)

● Use the distributive property to solve problems involving multiplication within 100
● Use appropriate tools and Distributive Property to break apart unknown facts with 3 as a factor
● Use the Distributive Property to break apart unknown facts with 4 as a factor
● Use the Distributive Property to break apart unknown facts with 6 or 7 as a factor
● Use the Distributive Property and known facts to break apart unknown facts with 8 as a factor
● Use strategies such as bar diagrams and arrays with known facts to solve multiplication problems.
● Use the Associative Property of Multiplication to group 3 factors and multiply
● Use repeated reasoning with known facts to make generalizations when multiplying

LEARNING ACTIVITIES: (Students will be able to…)

- Students preserve as they try to understand problems involving multiplication and division, plan how to solve them, and determine if their solution makes sense.
- Students use reasoning to analyze relationships between quantities in problems involving multiplication facts
- Students critique strategies for finding products and quotients, and they construct arguments to justify answers
- Students model with math when they use expressions, equations, arrays, bar diagrams, and other math they know to represent problems involving multiplication or division
- Students use tools such as counters to represent and solve problems
- Students attend to precision when they explain strategies and solutions using correct vocabulary
- Students look for and make us of structure when they apply the Distributive Property to find a product
- Students use repeated reasoning when they look for patterns and generalize about products and quotients

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment	● Topic 2 Unit Test ● Basic-facts timed tests	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
● Envision Math 2.0 ● Google Classroom ● Learn Zillion	www.multiplication.com (create student accounts or use independently)

	www.xtramath.com (resource)
	www.learnzillion.com (resource)
	http://mrnussbaum.com/math-for-kids/
	https://www.ixl.com/math/grade-3/properties-of-multiplication (property choice game)
	http://www.softschools.com/quizzes/math/properties_of_multiplication/quiz3342.html (online quiz to review properties)
	https://www.brainpop.com/math/numbersandoperations/associativeproperty/ (video on associative property)
	https://www.brainpop.com/math/numbersandoperations/distributiveproperty/ (video on distributive property)
	http://mrnussbaum.com/multproperties/ (identification of all properties of multiplication)

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	**GRADE LEVEL**	3
UNIT 4:	Use Multiplication to Divide: Division Facts		

UNIT SUMMARY

Topics 3 and 4 focus on using known facts and properties of multiplication to learn the multiplication facts with factors of 3, 4, 5, 6, 7, and 8 and using the relationship between multiplication and division to learn division facts

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.OA.B.6 Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*
- 3.OA.A.3   Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 3.OA.D.9 Identify arithmetic problems (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
- 3.OA.B.5- Apply properties of operations as strategies to multiply and divide. *Examples: if 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative Property of Multiplication) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30 (Associative Property of multiplication) Knowing the 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56 (Distributive Property)*

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 4.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS

Students will understand that:

- Multiplication and division have an inverse relationship
- The inverse relationship between multiplication and division can be used to find division facts; every division fact has a related multiplication fact
- Factors and products can be identified by patterns as well as other characteristics, such as even or odd.
- Any number (except 0) divided by itself is equal to 1. Any number divided by 1 is that number.   0 divided by any number (except 0) is 0. 0 cannot be a divisor.

- How can unkown division facts be found using known multiplication facts?
- How can multiplication facts help you divide?
- What multiplication fact can you use?
- How do you divide with 6 and 7?
- What fact can you use?
- How do multiplication and division equations work?
- How can you make sense of a problem and persevere in solving it?

UNIT LEARNING TARGETS (Students will know how to…)

- Use multiplication facts to divide
- Use multiplication facts to find related division facts
- Use knowledge of even and odd numbers to identify multiplication patterns
- Use properties to understand division involving 0 and 1
- Use patterns and known facts to find unknown multiplication facts. Use multiplication facts to find related division facts
- Use multiplication and division facts to find unknown values in equations
- Use previously learned concepts to find and answer hidden questions to solve problems

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere as they try to understand problems involving multiplication and division, plan how to solve them, and determine if their solution makes sense
- Students use reasoning to analyze relationships between quantities in problems involving multiplication facts
- Students critique strategies for finding products and quotients, and they construct arguments to justify answers
- Students model with math when they use expressions, equations, arrays, bar diagrams, and other math they know to represent problems involving multiplication or division.
- Students use tools such as counters to represent and solve problems
- Students attend to precision when they explain strategies and solutions using correct vocabulary
- Students look for and make use of structure when they apply the Distributive Property to find a product
- Students use repeated reasoning when they look for patterns and generalize about products and quotients

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE

		ASSESSMENTS
Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment	● Topic 4 Unit Test ● Basic-facts timed tests	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities
INSTRUCTIONAL MATERIALS/RESOURCES		**TECHNOLOGY RESOURCES**
● Envision Math 2.0 ● Google Classroom ● Learn Zillion		● www.multiplication.com (create accounts or use independently) ● www.xtramath.com (resource) ● www.learnzillion.com (resource) ● http://mrnussbaum.com/math-for-kids/ (resource) ● http://www.eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/mw/help/eh_popup.thtml&grade=3&chapter=11&lesson=1&title=Divide+Using+a+Multiplication+Table&tm=tmfd1101e (Great explanation of using the multiplication

	table to divide-show to class) ● https://www.youtube.com/watch?v=WWNq8NODFUA (video on inverse operations and chart)

DIFFERENTIATION:
Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 5:	Topic 5 Fluently Multiply and Divide Within 100		

UNIT SUMMARY

Topic 5 focuses on applying strategies to achieve fluency with multiplication and division facts within 100. Fluency includes a strong focus on selecting and using appropriate strategies. The work in this topic moves students toward knowing from memory all products of two 1-digit numbers by the end of Grade 3.

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.OA.D.9 Identify arithmetic problems (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.
  3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers
- 3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 5.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● There are patterns in the factors and the products for multiplication facts	● What are strategies to solve multiplication and division facts?

- Any division problem can be thought of as a missing factor multiplication problem
- Strategies and reasoning can be used to recall mutiplication and division basic facts
- Strategies such as using properties and operations, drawings, and skip counting can be used to multiply
- Some real-world problems can be represented and solved using different multiplication and division strategies
- Some real-world problems that involve equal groups can be solved using multiplication
- Some real-world problems that involve equal groups can be solved using division
- Good math thinkers look for relationships in math to help solve problems

- How can you explain patterns in the Multiplication Chart?
- How can you use a multiplication table to solve division problems
- How can you find multiplication and division basic facts?
- How do you use strategies to multiply?
- How can you solve word problems using multiplication and division?
- How can you describe a multiplication fact?
- What is the main idea of a division story?
- How can you use the structure of mathematics?

UNIT LEARNING TARGETS (Students will know how to…)

- Use the multiplication table and the Distributive Property to find patterns in factors and products
- Use a multiplication table to find the missing factor in a division problem
- Use number sense and reasoning while practicing multiplication and division facts
- Use strategies such as skip counting and properties of operations to multiply
- Solve multiplication and division problems that involve different strategies and representations
- Use multiplication to write and solve real-world problems involving equal groups
- Use division to write and solve real-world problems involving equal groups
- Use the structures of multiplication and division to compare expressions

LEARNING ACTIVITIES: (Students will be able to…)

- Students make sense of problems as they write and interpret word problems
- Students use reasoning to apply known facts to find unknown facts and to write story situations
- Students critique strategies used by others for finding products and quotients
- Students interpret word problems and apply tables, equations and bar diagrams in order solve the problems
- Students select tools to represent and solve multiplication and division story situations
- Students attend to precision by considering the connections between factors, products, and quotients when explaining their reasoning
- Students apply the Distributive and Commutative Properties as strategies for solving multiplication and division problems
- Students use repeated reasoning to generalize about different situations that could be represented by the same equation

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in the Visual Learning - Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment	- Topic 5 Unit Test - Basic-facts timed tests	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
Teacher Instructional Resources: Envision Math 2.0 Google Classroom Learn Zillion	- www.multiplication.com (create an account or use independently) - www.xtramath.com (resource) - www.learnzillion.com (resource) - http://mrnussbaum.com/math-for-kids/ (resource) - http://www.eduplace.com/cgi-bin/schtemplate.cgi?template=/kids/mw/help/eh_popup.thtml&grade=3&chapter=11&lesson=1&title=Divide+Using+a+Multiplication+Table&tm=tmfd1101e (Great explanation of using the multiplication

	table to divide-show to class)
	● https://www.youtube.com/watch?v=WWNq8NODFUA (video on inverse operations and chart)
	●
	●

DIFFERENTIATION:
[Sparta Twp. Public Schools Differentiation Strategies](#)

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 6:	Topic 6: Connect Area to Multiplication and Addition		

UNIT SUMMARY

Topic 6 develops a deep understanding of the concept of area. Beginning with concrete models and then moving to pictorial and abstract models, students come to understand how area is related to multiplication and addition.

NEW JERSEY STUDENT LEARNING STANDARDS

- CCSS.MATH.CONTENT.3.MD.C.5.A

- A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

- CCSS.MATH.CONTENT.3.MD.C.5.B

- A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

- CCSS.MATH.CONTENT.3.MD.C.6

- Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

- CCSS.MATH.CONTENT.3.MD.C.7.A
- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

- CCSS.MATH.CONTENT.3.MD.C.7.B

- Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

- CCSS.MATH.CONTENT.3.MD.C.7.C

- Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

- CCSS.MATH.CONTENT.3.MD.C.7.D

- Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 6.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● The amount of space inside a shape is its area, and area can be found or estimated using unit squares ● Area can be measured using nonstandard units, including unit squares of different sizes. ● Standard measurement units are used for consistency in finding and communicating measurements ● The amount of space inside a region is its area, and area can be found by counting unit squares or by multiplying the side lengths.	● How do you measure area? ● How can you measure area using non-standard units? ● How can you measure area using standard units of length? ● How can you find the area of a figure? ● How can the area of rectangle represents the distributive property? ● How can you find the area of an irregular shape? ● How can you use structure to solve problems?

- The areas of rectangles can be used to model the Distributive Property of Multiplication - The area of some irregular shapes can be found by dividing the original shape into rectangles, finding the area of each rectangle, and adding all of the areas - Good math thinkers look for relationships in math to help solve problems	

UNIT LEARNING TARGETS (Students will know how to…)

- Use unit squares to find the area of a shape
- Use unit squares to find the area of a figure
- Use a standard units to measure the area of a shape
- Use unit squares and multiplication to find the areas of squares and rectangles
- Use areas of rectangles to model the Distributive Property of Multiplication
- Use areas of rectangles to find the area of irregular shapes
- Solve problems by breaking apart or changing the problem into simpler problems

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere as they try to understand problems involving area, plan how to solve them, and determine if their solution makes sense
- Students use reasoning to analyze relationships as they decompose rectilinear areas and explain their solutions
- Students critique strategies for finding area and they construct arguments to justify their results.
- Students model with math when they write equations using math they know that can be used to find area.
- Students use tools such as square tiles and grids to help them understand the concept of area.
- Students attend to precision when they consider what size unit squares will cover a geometric figure without overlap.
- Students use structure when they use the Distributive Property the break apart an area.
- Students use repeated reasoning when they generalize about shortcuts they can use to find areas.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Review What You Know (beginning of topic) - Quick Checks	- Topic 6 Unit Test - Basic-facts timed tests	- IXL - Student Presentation - Teacher Observation

● Quick Check online ● Questions in in the Visual Learning ● Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! ● Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment ●		● Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
● Envision Math 2.0 ● Google Classroom ● Learn Zillion	● www.learnzillion.com (resource) ● www.xtramath.com (resource) ● http://mrnussbaum.com/math-for-kids/ (resource) ● https://www.khanacademy.org/math/basic-geo/basic-geo-area-and-perimeter/basic-geo-unit-squares-area/v/introduction-to-area-and-unit-squares (khan academy intro video to area) ● https://learnzillion.com/resources/64162-developing-conceptual-understanding-of-area (Tons of area videos and lessons) ● https://www.youtube.com/watch?v=otBUNw0xIN0 (video of area of a shape on top of grid paper-no squares on it)

	● https://www.youtube.com/watch?v=9CnswQfTU9k (video using multiplication to get area)
	● http://www.math-salamanders.com/area-worksheets.html (area worksheets)
	● https://www.brainpop.com/games/areabuilder/ (area game)
	● https://jr.brainpop.com/math/measurement/area/ (video on area)

DIFFERENTIATION:

[Sparta Twp. Public Schools Differentiation Strategies](#)

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 7:	Represent and Interpret Data		

UNIT SUMMARY

Topic 7 focuses on reading and making scaled picture graphs and scaled bar graphs that represent a data set with several categories. Students also solve problems involving the data represented in the graphs.

NEW JERSEY STUDENT LEARNING STANDARDS

CCSS.MATH.CONTENT.3.MD.B.3

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

CCSS.MATH.CONTENT.3.OA.A.3

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

CCSS.MATH.CONTENT.3.OA.D.8

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.3

21st CENTURY LIFE AND CAREER READY PRACTICES

 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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 7.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● Certain types of graphs are appropriate for certain kinds of data. Picture graphs and bar graph make it easy to compare data ● The type of graph used is based on the data being presented. The key for a picture graph determines the number of pictures needed to represent the data ● The type of graph used is based on the data being presented. In a scaled bar graph, the scale determines how long each bar needs to be to represent every number in the data set. ● Some problems can be solved by making, reading, and analyzing a graph ● Good math thinkers are careful about what they write and say, so their ideas about math are clear	● How can data be represented, interpreted, and analyzed? ● How can you read picture graphs? ● How do you make a picture graph? ● How do you make a bar graph? ● How can you solve problems using graphs? ● How can you be precise when solving math problems?

UNIT LEARNING TARGETS (Students will know how to…)

● Use graphs to compare and interpret data
● Use frequency tables and picture graphs to compare and interpret data
● Use scaled bar graphs to represent data sets
● Use graphs to solve problems
● Use words, symbols, and numbers to accurately and precisely solve math problems

LEARNING ACTIVITIES: (Students will be able to…)

● Students make sense of problems and persevere as the represent and interpret data in graphs
● Students use reasoning to analyze and compare values in a bar graph
● Students critique the reasoning of other students to consider if the scales and pictures in a graph are accurate
● Students use a variety of graphs throughout the topic to model mathematical situations
● Students consider what tools are appropriate in order to create accurate graphs and solve problems
● Students attend to precision as they accurately interpret the meaning of pictures representing data in picture graphs
● Students look for structure when they use a scale to determine quantities of data represented in a graph
● Students use repeated reasoning when the generalize and look for shortcuts in how a scaled graph relates to its scale

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning ● Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! ● Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment	● Topic 7 Test ● Basic Facts Timed Tests	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
● Envision Math 2.0 ● Google Classroom ● Learn Zillion ●	www.learnzillion.com www.xtramath.com http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 8:	Topic 8: Use Strategies and Properties to Add and Subtract		

UNIT SUMMARY

Topics 8 and 9 focus on fluency with addition and subtraction within 1,000.

NEW JERSEY STUDENT LEARNING STANDARDS

- 3.NBT.A.1: Use place value understanding to round whole numbers to the nearest 10 or 100
- 3.NBT.A.2: Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 3.OA.D.9: Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 8.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

	NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that: ● Some real world problems that involve joining, separating, part-part, whole, or comparing can be solved using addition. Two or more numbers can be added in any order and the sum of any number and 0 is that number ● Generalizations about how addition works emerge from investigating patterns and reasoning about mathematical relationships. ● Rounding is a process for finding multiples of 10 and 100, closest to a given number. ● There is more than one way to do mental math. Techniques involve changing the numbers or the expressions so that calculations are easy to do mentally. ● There is more than one way to do mental math. Techniques involve changing the numbers or the expressions so that calculations are easy to do mentally. ● There is more than one way to estimate a sum. Two ways to estimate are rounding and using compatible numbers. ● There is more than one way to estimate a difference. Two ways to estimate are rounding and using compatible numbers. ● Addition and Subtraction have an inverse relationship. That relationship can be used to solve problems. ● Good math thinkers choose and apply math they know to show and solve problems from everyday life.	● What are some properties of addition? ● How can you find addition patterns? ● How can you round numbers? ● How can you add with Mental Math? ● How can you subtract with Mental Math? ● How can you estimate sums? ● How can you estimate differences? ● How can the relationship between addition and subtraction help you solve problems? ● How can you model with Math?
UNIT LEARNING TARGETS (Students will know how to…)	
● Solve real-world problems using properties of addition ● Identify patterns in the addition table and explain them using algebraic thinking	

- Use place value and a number line to round numbers
- Use mental math to add
- Use mental math to subtract
- Use rounding or compatible numbers to estimate a sum
- Use rounding or compatible numbers to estimate a difference
- Solve one-step and multi-step problems using strategies based on the relationship between addition and subtraction
- Solve one-step and multi-step problems by modeling with math

LEARNING ACTIVITIES: (Students will be able to…)

- Students make sense of problems as they plan how to solve problems involving addition, subtraction and multiplication.
- Students use reasoning to understand how quantities are related and apply mental math strategies to solve addition, subtraction, and multiplication problems.
- Students critique strategies for addition and subtraction.
- Students apply addition and subtraction strategies to solve word problems.
- Students use place value blocks to represent addition and subtraction strategies
- Students attend to precision as they specify and use units of measurement appropriately when solving multiplication problems.
- Students use place value properties to decompose numbers when adding and subtracting
- Students use repeated reasoning when they use a shortcut to multiply by multiples of 10.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Addition/Subtraction Questions - Rounding questions - Online games/questions	- Topic 8 test - Basic facts timed test	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
- Envision Math 2.0 - Google Classroom - Learn Zillion	- www.learnzillion.com - www.xtramath.com - http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

[Sparta Twp. Public Schools Differentiation Strategies](#)

TEACHER NOTES:

CONTENT AREA:	Math	**GRADE LEVEL**	3
UNIT 9:	Topic: 9 Fluently Add and Subtract Within 1,000		

UNIT SUMMARY

Topics 8 and 9 focus on fluency with addition and subtraction within 1,000.

NEW JERSEY STUDENT LEARNING STANDARDS

- CCSS.MATH.CONTENT.3.NBT.A.2

- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 9.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that: ● The expanded algorithm for adding 3-digit numbers breaks the addition problem into a series of easier problems based on place value. Answers to the simpler problems are then used to find the final sum. ● The standard algorithm for adding 3-digit numbers is an extension to the standard algorithm for adding 2-digit numbers ● The addition of three or more numbers is an extension of adding two numbers ● The expanded algorithm for subtracting multi-digit numbers breaks a larger subtraction	● What are standard procedures for adding and subtracting whole numbers? ● How can you break large addition problems into smaller ones ● How can you use addition to solve problems? ● How can you add more than 2 numbers? ● How can you break large subtraction problems into smaller ones? ● How can you subtract from a number with one or more zeros? ● How can you construct arguments?

problem into a series of easier problems based on place value. Answers to the simpler problems are then used to find the final difference ● Good math thinkers use math to explain why they are right. They can talk about the math that other do, too	

● Add two 3-digit numbers by breaking apart problems into simpler problems
● Add 3-digit numbers using the standard algorithm
● Add three or more numbers using the standard algorithm
● Subtract multi-digit numbers using the expanded algorithm
● Subtract a 3-digit number from another 3-digit number with one or more zeros by using the standard algorithm
● Use addition and subtraction to justify a conjecture.

LEARNING ACTIVITIES: (Students will be able to…)

- plan how to solve problems involving addition, subtraction and multiplication.
- Students use reasoning to understand how quantities are related and apply mental math strategies to solve addition, subtraction, and multiplication problems
- Students critique strategies for addition and subtraction
- Students apply addition and subtraction strategies to solve word problems
- Students use place value blocks to represent addition and subtraction strategies
- Students attend to precision as they specify and use units of measurement appropriately when solving multiplication problems
- Students use place value properties to decompose numbers when adding and subtracting
- Students use repeated reasoning when they use a shortcut to multiply by multiples of 10

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
● Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning ● Animation Plus	● Topic 9 Test ● Basic facts timed tests	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

- Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment		

INSTRUCTIONAL MATERIALS/RESOURCES		TECHNOLOGY RESOURCES
- Envision Math 2.0 - Google Classroom - Learn Zillion		- www.learnzillion.com - www.xtramath.com - http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL	3
UNIT 10:	Multiply by Multiples of 10		

UNIT SUMMARY

Topic 10 explores place-value patterns when multiplying by a multiple of 10

NEW JERSEY STUDENT LEARNING STANDARDS

- CCSS.MATH.CONTENT.3.NBT.A.3
- Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 10.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
- An open number line can be used to find products when one factor is a multiple of 10 - Basic multiplication can be used to find products when on factor is a multiple of 10 - Different strategies can be used to find products when one factor is a multiple of 10 - Good math thinkers look for relationships in math to help solve problems - Use the structure of multiplication and place value to find products when one factor is a multiple of 10	- What are ways to multiply by multiples of 10? - How can you multiply on an open number line? - How can you use properties to multiply by multiply by multiples of 10? - What is a rule for multiplying by a multiple of 10? - How can I use structure to multiply with multiples of 10?

UNIT LEARNING TARGETS (Students will know how to…)

● Use an open number line to find products when on factor is a multiple of 10
● Use properties of multiplication to find products when one factor is a multiple of 10
● Use different strategies can be used to find products when one factor is a multiple of 10

LEARNING ACTIVITIES: (Students will be able to…)

- Students make sense of problems as they plan how to solve problems involving addition, subtraction and multiplication.
- Students use reasoning to understand how quantities are related and apply mental math strategies to solve addition, subtraction, and multiplication problems.
- Students critique strategies for addition and subtraction.
- Students apply addition and subtraction strategies to solve word problems.
- Students use place value blocks to represent addition and subtraction strategies
- Students attend to precision as they specify and use units of measurement appropriately when solving multiplication problems.
- Students use place value properties to decompose numbers when adding and subtracting
- Students use repeated reasoning when they use a shortcut to multiply by multiples of 10.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in in the Visual Learning - Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment	- Topic 10 Test - Basic Facts Timed Tests	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
- Envision Math 2.0 - Google Classroom - Learn Zillion	- www.learnzillion.com - www.xtramath.com - http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL:	3
UNIT 11:	Topic 11: Use strategies and properties to add and subtract		

UNIT SUMMARY
Topic 11 focuses on how to solve two-step problems involving whole numbers.

NEW JERSEY STUDENT LEARNING STANDARDS
3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding

21st CENTURY LIFE AND CAREER READY PRACTICES
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.
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.
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.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 11.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● Bar diagrams show relationships in a two-step problem and help identify the operation or operations needed to solve the problem. ● The way quantities in a two-step problem are related determines the operations used to solve the problem. Equations show these relationships. ● Good math thinkers use math to explain why they are right. They can talk about the math that others do too.	● How can you use diagrams to solve 2-step problems? ● How can you solve 2-step problems? ● How can you critique the reasoning of others?

UNIT LEARNING TARGETS (Students will know how to…)

- Draw diagrams and write equations to solve two-step problems involving addition and subtraction of whole numbers
- Draw diagrams and write equations to solve two-step problems involving multiplication and division of whole numbers
- Examine relationships between quantities in a two-step word problem by writing equations. Choose and apply the operations needed to find the answer.
- Critique the reasoning of others by asking questions, identifying mistakes and providing suggestions for improvement

LEARNING ACTIVITIES: (Students will be able to…)

- Students use estimation to help decide if the answer to a two-step problem makes sense.
- Student use reasoning to select operations by analyzing the relationships between quantities.
- Students critique the reasoning of others by analyzing the arguments used to support each step of a two-step problem.
- Students model with mathematics when they complete bar diagrams and write equations to solve problems.
- Students consider how tools such as place value blocks can support reasoning in two-step problems.
- Students attend to precision as they calculate efficiently and accurately in two-step problems.
- Students use the order of operations to understand how different equations represent different contexts.
- Students generalize when they use multiplication and division to simplify problems in which there is repeated addition or subtraction.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in in the Visual Learning - Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice	- Topic 11 Test - Basic Facts Timed Tests	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment		
INSTRUCTIONAL MATERIALS/RESOURCES		**TECHNOLOGY RESOURCES**
● Envision Math 2.0 ● Google Classroom ● Learn Zillion		● www.learnzillion.com ● www.xtramath.com ● http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL:	3
UNIT 12:	Topic 12: Understand Fractions as Numbers		

UNIT SUMMARY

Topic 12 focuses on understanding that fractions are numbers that can represent a portion of a whole or a point on the number line.

NEW JERSEY STUDENT LEARNING STANDARDS

- CCSS.MATH.CONTENT.3.NF.A.1
- Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
-
- CCSS.MATH.CONTENT.3.NF.A.2.A
- Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.
-

- CCSS.MATH.CONTENT.3.NF.A.2.B

- Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line

- CCSS.MATH.CONTENT.3.NF.A.3.C

- Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*

- CCSS.MATH.CONTENT.3.G.A.2
- Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

- CCSS.MATH.CONTENT.3.MD.B.4
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 12.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas

NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that: ● A unit fraction represents on part of a whole that has been divided into equal parts. A fraction can represent multiple copies of a unit fraction ● The whole can be found given a fractional part ● Points on a number line can represent fractions. The denominator represents the number of equal parts between o and 1, and the numerator represents the number of parts between 0 and the point ● A number line can be used to represent fractions greater than 1 ● A line plot is a way to organize data on a number line ● Good math thinkers make sense of problems and think of ways to solve them. If they get stuck, they don't give up	● What are different interpretations of a fraction? ● How can you name the equal parts of a whole? ● How can you show and name parts of a region? ● How can you use a fractional part to find the whole? ● How can you record fractions on a number line? ● How can you use a number line to represent fractions greater than 1? ● How can you make and use line plots? ● How can you measure lengths and use line plots to show the data? ● How can you make sense of a problem and persevere in solving it?

UNIT LEARNING TARGETS (Students will know how to…)

● Understand how to read and write unit fractions for equal-size parts of a region
● Use a fraction to represent multiple copies of a unit fraction
● Determine and draw the whole (unit) given one part (unit fraction)
● Represent fractions on a number line
● Represent fractions greater than 1 on a number line
● Measure length to the nearest fourth inch and show the data on a line plot
● Measure length to the nearest half inch and show the data on a line plot
● Determine when a problem has either extra or missing information

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere in solving problems that may have missing or extra information
- Students reason about the relative size of fractions and use various strategies to compare of find equivalencies
- Students construct arguments to justify conjectures about equivalent fractions
- Students apply what they know about fractions to model problems involving equal-size parts
- Students decide how fraction strips or other tools can help them solve problems
- Students attend to precision as they use number lines to help communicate their conclusions clearly
- Students look for structure as they consider the meaning of numerators and denominators
- Students generalize as they evaluate the conditions under which fractions are equivalent

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in in the Visual Learning Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment	- Topic 12 Test - Basic Facts Timed Tests	- IXL - Student Presentation - Teacher Observation - Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
- Envision Math 2.0 - Google Classroom - Learn Zillion	- www.learnzillion.com - www.xtramath.com - http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:
Sparta Twp. Public Schools Differentiation Strategies
TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL:	3
UNIT 13:	Topic 13: Understand Fractions as Numbers		

UNIT SUMMARY

Topic 13 focuses on using models and number sense to understand fraction equivalence and comparison.

NEW JERSEY STUDENT LEARNING STANDARDS

3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

3.NF.A.2a Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

3.NF.A.2b Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3.NF.A.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*

3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape*

3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 13.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● The same fractional amount can be represented by an infinite set of different but equivalent fractions ● There are a limitless number of fraction names for each point on a number line. These points can be used to name equivalent fractions ● If two fractions have the same denominator, the fraction with the greater numerator is the greater fraction ● If two fractions have the same numerator, the fraction with the greater denominator is less than the other fraction ● Benchmark numbers such as 0, ½, and 1 can be used to compare fractions ● You can use a number line to compare fractions ● Whole numbers can be represented by many different fraction names ● Good math thinkers use math to explain why they are right. They can talk about the math that others do, too	● What are different ways to compare fractions? ● How can different fractions name the same part of a whole? ● How can you use number lines to find equivalent fractions? ● How can you compare fractions with the same denominator? ● How can you compare fractions with the same numerator? ● How can benchmark numbers be used to compare fractions? ● How can you compare fractions using the number line? ● How can you use fractions names to represent whole numbers? ● How can you construct arguments?

UNIT LEARNING TARGETS (Students will know how to…)

● Find equivalent fractions that name the same part of the whole
● Represent equivalent fractions on a number line
● Use models such as fraction strips to compare fractions that refer to the same whole and have the same numerator
● Use benchmark numbers to compare fractions
● Use a number line to compare fractions
● Use fraction names to represent whole numbers
● Construct math arguments using fractions

LEARNING ACTIVITIES: (Students will be able to…)

● Students persevere in solving problems that may have missing or extra information
● Students reason about the relative size of fractions and use various strategies to compare of find equivalencies
● Students construct arguments to justify conjectures about equivalent fractions
● Students apply what they know about fractions to model problems involving equal-size parts
● Students decide how fraction strips or other tools can help them solve problems
● Students attend to precision as they use number lines to help communicate their conclusions clearly
● Students look for structure as they consider the meaning of numerators and denominators

- Students generalize as they evaluate the conditions under which fractions are equivalent

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning ● Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! ● Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment	● Topic 13 Test ● Basic Facts Timed Test	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
● Envision Math 2.0 ● Google Classroom ● Learn Zillion	● www.learnzillion.com ● www.xtramath.com ● http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL:	3
UNIT 14:	Topic 14		

UNIT SUMMARY

Topic 14 focuses on extending students' understanding of time and developing understanding of liquid volume (capacity) and mass.

NEW JERSEY STUDENT LEARNING STANDARDS

3.MD.A.1: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.MD.A.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 14.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that: ● Clocks can be used to tell time to the nearest minute.	● How do you tell time to the nearest minute? ● How can you find elapsed time?

● Elapsed time can be found by finding the total amount of time that passes between a starting time and an ending ● Time intervals can be added or subtracted to solve problems ● Solve word problems involving addition and subtraction to measure quantities of time. ● Benchmarks can be used to estimate capacity (liquid volume) ● Capacity (liquid volume) is a measure of the amount of liquid a container can hold ● Mass is a measure of the quantity of matter in an object. ● Problems involving mass and volume can often be solved with a picture or a diagram ● Good math thinkers know how to think about words and numbers to solve problems.	● How can you add and subtract time intervals? ● What metric units are used to estimate and measure liquid volume? ● How do you measure capacity? ● How can you use reasoning to estimate mass? ● How do you measure mass? ● How do you use drawings to solve problems? ● How can you use reasoning to solve problems?

UNIT LEARNING TARGETS (Students will know how to…)

● Show and tell time to the nearest minute minute using analog and digital clocks.
● Tell and write time to the nearest minute and measure time intervals in minutes.
● Solve word problems involving addition and subtraction to measure quantities of time.
● Use standard units to estimate liquid volume.
● Use standard units to estimate liquid volume.
● Use standard units to estimate the masses of solid objects.
● Use a pan balance with metric weights to measure the mass of objects in grams and kilograms.
● Use pictures to help solve problems about mass and volume
● Make sense of quantities and relationships in problems.

LEARNING ACTIVITIES: (Students will be able to…)

● Students persevere as they understand problems involving measurements, plan how to solve them, and determine if their solution makes sense.
● Students use reasoning to analyze relationships between hours and minutes in elapsed time problems.
● Students critique the reasoning of others in measurement situations.
● Students model with math when they use bar diagrams, equations, and number lines to represent and solve problem situations.
● Students select and use appropriate tools such as clock faces, beakers, or pan balances when considering measurement situations.
● Students attend to precision as they use clock faces to tell time using the appropriate units.
● Students look for relationships between measurements in different metric units.
● Students generalize when they develop their own referents for metric units.

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**
- Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in in the Visual Learning Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice - Topic Performance Assessment - Fluency Practice - Vocabulary Review - Topic Assessment	Topic 14 Test	- IXL - Student Presentation - Teacher Observation - Problem Based Activities
INSTRUCTIONAL MATERIALS/RESOURCES		**TECHNOLOGY RESOURCES**
- Envision Math 2.0 - Google Classroom - Learn Zillion		- www.learnzillion.com - www.xtramath.com - http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math		GRADE LEVEL:	3
UNIT 15:	Topic 15 Attributes of Two-Dimensional Shapes			

UNIT SUMMARY

  Topic 15 focuses on attributes of two-dimensional shapes, especially quadrilaterals. Students learn that shapes in different categories may share attributes that place them in a larger category. Topic 15 focuses on 3.GA.1 Lessons 12-1 and 12-2 developed 3.G.A.2, which relates fractions to partitioned shapes.

NEW JERSEY STUDENT LEARNING STANDARDS

CCSS.MATH.CONTENT.3.G.A.1
Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

21st CENTURY LIFE AND CAREER READY PRACTICES

 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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS
8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. 8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS
Science: Students will make connections based on topics presented in unit 15.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● Quadrilaterals can be described and classified by their sides and angles. ● Shapes can be classified by their attributes. ● Quadrilaterals can be classified by their attributes. ● Shapes can be classified by their attributes. ● Quadrilaterals can be classified by their attributes.	● How can two-dimensional shapes be described, analyzed, and classified? ● What are some attributes of quadrilaterals? ● How can you describe different groups of shapes? ● How can you analyze and compare shapes? ● How can you be precise when solving math problems?

● Good math thinkers are careful about what they write and say, so their ideas about math are clear.	

- Identify quadrilaterals and use attributes to describe them.
- Classify shapes according to their attributes.
- Analyze and compare quadrilaterals and group them by their attributes.
- Analyze and compare quadrilaterals and group them by their attributes.
- Solve math problems precisely, efficiently, and accurately by using appropriate tools and mathematical vocabulary.

LEARNING ACTIVITIES: (Students will be able to…)

- Students persevere as they make sense of the attributes of polygons and create examples and non-examples of quadrilaterals.
- Students use reasoning to analyze and compare the attributes of quadrilaterals.
- Students construct arguments to explain attributes that define a shape and to classify the shape based on those attributes.
- Students use what they know about polygons to create drawings that represent a different type of quadrilateral shape.
- Students consider what tools can be used to create different shapes.
- Students attend to precision by creating shapes that can be classified based on specific attributes.
- Students analyze relationships among shapes as they identify shapes based on given attributes.
- Students look for patterns as they generalize about given attributes and classify shapes based on those known attributes.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
● Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning ● Animation Plus ● Questions to use with the Visual Learning Bridge	● Topic 15 Test ● Basic Facts Timed Test	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

● Do You Understand? Convince Me! ● Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment		

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES
● Envision Math 2.0 ● Google Classroom ● Learn Zillion	● www.learnzillion.com ● www.xtramath.com ● http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:
Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	GRADE LEVEL:	3
UNIT 16:	Topic 16: Solve Perimeter Problems		

UNIT SUMMARY
Topic 16 focuses on recognizing perimeter as an attribute of polygons, finding perimeter using addition and multiplication, and finding an unknown side length. Students distinguish the attribute of perimeter from the attribute of area by analyzing rectangles with the same perimeter and in different areas or with the same area and different perimeters.

NEW JERSEY STUDENT LEARNING STANDARDS

3,MD.D.8: Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters

3.MD.C.7b: Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 16.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that: ● The distance around a figure is its perimeter. ● To find the perimeter of a polygon, add the lengths of the sides. ● To find the perimeter of a polygon, add the lengths of the sides. ● Polygons with the same perimeter may have different areas. ● Polygons with the same area may have different perimeters. ● Good math thinkers know how to think about words and numbers to solve problems.	● How can perimeter be measured and found? ● How do you find perimeter? ● How can you find the perimeters of common shapes? ● How can you find an unknown side length from the perimeter? ● Can rectangle have different areas but the same perimeter? ● How can you use reasoning to solve problems?

UNIT LEARNING TARGETS (Students will know how to…)
● Find the perimeter of different polygons. ● Find the perimeter of different polygons with common shapes. ● Use the given sides of a polygon and the known perimeter to find the unknown side length. ● Understand the relationship of shapes with the same perimeter and different areas. ● Understand the relationship of shapes with the same area and different perimeters.

● Understand the relationship between numbers in order to simplify and solve problems involving perimeter.	

LEARNING ACTIVITIES: (Students will be able to…)

- Students plan how to solve problems involving perimeter, persevere as they find missing side lengths, and determine if their solution makes sense.
- Students use reasoning to determine how to use addition and multiplication to find perimeters of shapes.
- Students critique the reasoning used in procedures for finding perimeter.
- Students apply what they know about perimeter and area to solve problems.
- Students select appropriate tools to solve problems that involve comparing the areas and perimeters of different shapes.
- Students attend to precision as they use words, numbers, and symbols to explain their solutions to problems involving perimeter.
- Students use properties of shapes to solve problems involving perimeter.
- Students use repeated reasoning to draw conclusions about rectangles with the same area but different perimeters, or the same perimeter but different areas.

EVIDENCE OF LEARNING:

FORMATIVE ASSESSMENTS	SUMMATIVE ASSESSMENTS	ALTERNATIVE ASSESSMENTS
● Review What You Know (beginning of topic) ● Quick Checks ● Quick Check online ● Questions in in the Visual Learning Animation Plus ● Questions to use with the Visual Learning Bridge ● Do You Understand? Convince Me! ● Guided Practice ● Topic Performance Assessment ● Fluency Practice ● Vocabulary Review ● Topic Assessment	● Topic 16 Test ● Basic Facts Timed Test	● IXL ● Student Presentation ● Teacher Observation ● Problem Based Activities

INSTRUCTIONAL MATERIALS/RESOURCES	TECHNOLOGY RESOURCES

● Envision Math 2.0 ● Google Classroom ● Learn Zillion	● www.learnzillion.com ● www.xtramath.com ● http://mrnussbaum.com/math-for-kids/ ●

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES:

CONTENT AREA:	Math	**GRADE LEVEL:**	3
UNIT 17:	Step Up to Grade 4		

UNIT SUMMARY

Step up to Grade 4 lessons will help prepare students for the next grade. The lessons preview for students some important content from the next grade. These lessons are intended to be used at the end of the school year.

NEW JERSEY STUDENT LEARNING STANDARDS

4.NBT.A.1: Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*

4.NBT.A.2: Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons

4.NBT.B.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.OA.A.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess

the reasonableness of answers using mental computation and estimation strategies including rounding

4.NBT.B.6: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NF.B.3a: Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

4.NF.B.3b: Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8*.

4.MD.C.5: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement

4.G.A.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4. MD.C.5a: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.

21st CENTURY LIFE AND CAREER READY PRACTICES

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.

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.

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.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

TECHNOLOGY STANDARDS

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

CROSS CURRICULAR CONNECTIONS

Science: Students will make connections based on topics presented in unit 17.

READING ACROSS CONTENT AREAS	WRITING ACROSS CONTENT AREAS
NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
ENDURING UNDERSTANDINGS	**ESSENTIAL QUESTIONS**
Students will understand that: ● Connect prior knowledge to new ideas.	● How are the digits in a multi-digit number related to each other? ● How can you multiply by multiples of 10, 100 and 1,000 ● How can you multiply by multiples of 10? ● How can you use an array or an area model to multiply? ● After dividing, what do you do with the remainder?

	• How can you use tools to add fractions? • How can you represent a fraction in a variety of ways? • What are some common geometric terms? • What is the unit used to measure angles? • How can you describe pairs of lines?

UNIT LEARNING TARGETS (Students will know how to…)

• Recognize the relationship between adjacent digits in a multi-digit number
• Multiply multiples of 10, 100, and 1.000 using mental math and place-value strategies.
• Use mental-math strategies to multiply 2-digit by 2-digit multiples of ten.
• Use models and properties of operations to multiply 2-digit numbers by multiples of ten.
• Solve division problems and interpret remainders.
• Use fraction strips and number lines to add fractions.
• Decompose a fraction or mixed number into a sum of fractions in more than one way.
• Recognize and draw lines, rays and angles with different measures.
• Find the measure of an angle that turns through a fraction of a circle.
• Draw and identify perpendicular, parallel and intersecting lines.

LEARNING ACTIVITIES: (Students will be able to…)

- Students use their knowledge of place value to relate two repeated, adjacent digits in a number.
- Students multiply by multiples of 10, 100, 1,000 using mental math and look for relationships in the products.
- Students multiply multiples of 10 using basic facts, place-value patterns, or other previously learned strategies.
- Students multiply a 2-digit number by 10 using tools such as place-value blocks or grid paper.
- Students use properties of operations to break apart one of the factors to help solve a problem.
- Students find and interpret remainders when solving a real-world division problem.
- Students model addition of fractions with like denominators by using appropriate tools and models, including fraction strips, drawings, and number lines.
- Students use their knowledge of decomposing whole numbers, as in making 10, to decompose a fraction.
- Students use their knowledge of the attributes of shapes to draw angles with measures less than the measure of a right angle.
- Students use what they know about telling time and about right angles to describe the smaller angle formed by the hands of a clock at 3:00.
- Students use what they know about lines, using a number line as an example, to draw several pairs of lines or tell why the cannot draw a line with the given relationship.

EVIDENCE OF LEARNING:		
FORMATIVE ASSESSMENTS	**SUMMATIVE ASSESSMENTS**	**ALTERNATIVE ASSESSMENTS**

Review What You Know (beginning of topic) - Quick Checks - Quick Check online - Questions in in the Visual Learning - Animation Plus - Questions to use with the Visual Learning Bridge - Do You Understand? Convince Me! - Guided Practice	● Unit 17 Test	- IXL - Student Presentation - Teacher Observation - Problem Based Activities
INSTRUCTIONAL MATERIALS/RESOURCES		**TECHNOLOGY RESOURCES**
- Envision Math 2.0 - Google Classroom - Learn Zillion		- http://mrnussbaum.com/math-for-kids/

DIFFERENTIATION:

Sparta Twp. Public Schools Differentiation Strategies

TEACHER NOTES: