Belvidere Cluster Wide
Mathematics Curriculum
4th grade
Updated Fall 2018

All Belvidere Cluster curriculum and instruction areas are aligned to the New Jersey Student Learning Standards (NJSLS) in accordance with the NJ Department of Education's curriculum implementation requirements.

Interdisciplinary Connections

– English Language Arts
– Science and Scientific Inquiry (Next Generation)
– Social Studies
– Technology
– Visual and Performing Arts

Technology Standards and Integration
iPads
Go Math online resources
Xtra Math
Interactive SmartBoard activities

NJSLA Technology
8.1.2.A.2
Create a document using a word processing application.
8.1.2.A.4
Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
8.1.P.B.1
Create a story about a picture taken by the student on a digital camera or mobile device.
8.1.P.C.1
Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1
Use digital tools and online resources to explore a problem or issue.

CAREER EDUCATION (NJDOE CTE Clusters)

– Education & Training
– Finance
– Information Technology
– Science, Technology, Engineering & Mathematics (STEM)

21st Century Skills/ Themes

– Financial, Economic, Business and Entrepreneurial Literacy
– Creativity and Innovation
– Critical Thinking
– Problem Solving

– Communication
– Collaboration
– Information Literacy

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.

Integrated Accommodations and Modifications

Special Education

– Printed copy of board work/notes provided
– Additional time for skill mastery
– Assistive technology
– Behavior management plan
– Center-Based Instruction
– Check work frequently for understanding
– Computer or electronic device utilization
– Extended time on tests/ quizzes
– Have student repeat directions to check for understanding
– Highlighted text visual presentation
– Modified assignment format
– Modified test content
– Modified test format
– Modified test length
– Multiple test sessions
– Multi-sensory presentation
– Preferential seating
– Preview of content, concepts, and vocabulary
– Reduced/shortened written assignments
– Secure attention before giving instruction/directions
– Shortened assignments
– Student working with an assigned partner
– Teacher initiated weekly assignment sheet
– Use open book, study guides, test prototypes
– Cubing activities
– Exploration by interest
– Flexible grouping
– Goal setting with students
– Jigsaw
– Mini workshops to re-teach or extend skills Open-ended activities
– Think-Pair-Share
– Varied supplemental materials

ELL

– Allowing students to correct errors (looking for understanding)
– Teaching key aspects of a topic Eliminate nonessential information Using videos, illustrations, pictures, and drawings to explain or clarify
– allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
– Allowing students to correct errors (looking for understanding)
– Allowing the use of note cards or open-book during testing
– Decreasing the amount of work presented or required
– Having peers take notes or providing a copy of the teacher's notes
– Modifying tests to reflect selected objectives
– Providing study guides
– Reducing the number of answer choices on a multiple choice test
– Tutoring by peers
– Explain/clarify key vocabulary terms

At Risk
– Allowing students to correct errors (looking for understanding)
– Teaching key aspects of a topic Eliminate nonessential information allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slideshows, videos, etc.) to demonstrate student's learning
– Allowing students to select from given choices .
– Allowing the use of note cards or open-book during testing
– Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test
– decreasing the amount of work presented or required .
– Having peers take notes or providing a copy of the teacher's notes
– Marking students' correct and acceptable work, not the mistakes
– Modifying tests to reflect selected objectives
– Providing study guides
– Reducing the number of answer choices on a multiple choice test
– Tutoring by peers
– Using authentic assessments with real-life problem-solving
– Using true/false, matching, or fill in the blank tests in lieu of essay tests
– using videos, illustrations, pictures, and drawings to explain or clarify
– Flexible grouping
– Goal setting with students
– Jigsaw
– Mini workshops to re-teach or extend skills Open-ended activities
– Think-Pair-Share
– Varied supplemental materials

Gifted and Talented
– Alternative formative and summative assessments
– Choice boards
– Games and tournaments
– Group investigations
– Independent research and projects Interest groups for real world application
– Learning contracts
– Leveled rubrics
– Multiple intelligence options
– Personal agendas

– Project-based learning
– Problem-based learning
– Stations/centers
– Think-Tac-Toes
– Tiered activities/assignments
– Tiered products

504
– Printed copy of board work/notes provided
– Additional time for skill mastery
– Assistive technology
– Behavior management plan
– Center-Based Instruction
– Check work frequently for understanding
– Computer or electronic device utilization
– Extended time on tests/ quizzes
– Have student repeat directions to check for understanding
– Highlighted text visual presentation
– Modified assignment format
– Modified test content
– Modified test format
– Modified test length
– Multiple test sessions
– Multi-sensory presentation
– Preferential seating
– Preview of content, concepts, and vocabulary
– Reduced/shortened written assignments
– Secure attention before giving instruction/directions
– Shortened assignments
– Student working with an assigned partner
– Seacher initiated weekly assignment sheet
– Use open book, study guides, test prototype
– Exploration by interest
– Flexible grouping
– Goal setting with students
– Mini workshops to re-teach or extend skills Open-ended activities
– Think-Pair-Share
– Varied supplemental materials

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan # 1

Title: Number Sense & Algebraic Concepts

Grade Level: 4 | **Approximate Length of Time:** 4 weeks

Unit Summary: This unit will teach the basics of algebraic equations. Students will learn problem solving skills that will incorporate the use of algebraic equations and help students develop critical thinking skills. This unit will also give students an intuitive feel for numbers. It includes the important concept of place value and how it relates to comparison and rounding of numbers. Number lines and patterns are also explored.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Domain: Operations & Algebraic Thinking

Cluster: Use the four operations with whole numbers to solve problems.

Standard #:	Standard:
4.OA.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.

Cluster: Generate and analyze patterns.

Standard #:	Standard:
4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Domain: Numbers and Operations in Base Ten

Cluster: Generalize place value understandings for multi-digit whole numbers.

Standard #:	Standards:
4.NBT.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based in meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.

Domain: Standards for Math Practice

Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Questions:

- How do we solve/balance algebraic equations?
- How do we solve word/application problems?
- How do we compare and contrast numbers?
- How do you recognize and extend a pattern of shapes or numbers?

Unit Enduring Understanding:

- A quantity can be represented numerically in various ways.

Unit Objectives:

- *Students will use an organized procedure to solve word/application problems.*
- *Students will read and write multi-digit numbers in numerical, word, and expanded forms.*
- *Students will round multi-digit whole numbers.*
- *Students will recognize and extend a number or shape pattern.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Fluency Sprints
- Homework
- Classwork
- Peer Review
- Exit Slips

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Time Frame
Topic #1: Algebraic Equations/ Number Sentences	2 days
Topic #2: Problem Solving Fluency Sprint 1A & 1B **Possible Quiz #1**	2 days
Topic #3: Place Value/ Number Sense Through the Millions Fluency Sprint 3A & 3B	2 days
Topic #4: Read and represent multi-digit numbers Fluency Sprint 5A & 5B Lab: RAFT – Counting to a Million **Possible Quiz #2**	2 days
Topic #5:Analyze Number Lines Using Number Sense Fluency Sprint 8A & 8B	2 days
Topic #6: Compare numbers	1 day
Topic #7: Order numbers **Possible Quiz #3**	2 days
Topic #8: Round Numbers -Round to the Nearest 10 and 100 -Round to the Nearest 1,000 and 10,000 -Rounding Special Cases Fluency Sprint 10A & 10B **Possible Quiz #4**	3 days

Topic #9: Patterns Fluency Sprint 16A & 16B Lab: RAFT – Freaky Fractals **Possible Quiz #5**	2 days
Topic #10: Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/number-sense-algebraic-concepts/
- http://www.raftbayarea.org/ideas/Counting%20to%20a%20Million.pdf
- http://www.raftbayarea.org/ideas/Freaky%20Fractals.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan #2

Title: Multiplication and Division Relationship

Grade Level: 4	**Approximate Length of Time:** 3 weeks

Unit Summary: This unit will allow students to select and apply various computational methods, such as mental math, paper and pencil techniques, and the use of calculators in the areas of multiplication and division.

Learning Targets

PARCC Major Clusters; Supporting Clusters; Additional Clusters

Domain: Operations & Algebraic Thinking

Cluster: Use the four operations with whole numbers to solve problems

Standard #:	**Standard:**
4.OA.1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.
4.OA.2	Multiply or divide to solve work problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison for additive comparison.
4.OA.3	Solve multistep work 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.

Cluster: Gain familiarity with factors and multiples.

Standard #:	**Standard:**
4.OA.4	Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Domain: Numbers and Operations in Base Ten

Cluster: Generalize place value understanding for multi-digit whole numbers.

Standard #:	**Standard:**
4.NBT.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.

Domain: Standards for Math Practice

Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Question:	**Unit Enduring Understandings:**
● How do you factor a given number?	

● Is a number prime or composite and why? ● How do I find multiples of a given number? ● How do numbers relate to each other when using multiplication and division? ● How do I solve word problems with unknown variables?	● Understand and use the inverse relationships between multiplication and division. ● Continue to develop proficiency with basic multiplication and division facts.

Unit Objectives:

- *Students will identify and recognize the 5 multiplication properties and use them to solve equations.*
- *Students will find all factor pairs for a whole number in the range 1-100.*
- *Students will be able to define the terms: factors and multiples and prime and composite.*
- *Students will solve multi-step word problems involving multiplication and division of whole numbers.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Classwork
- Homwork
- Exit Slips
- White Board Participation

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Multiplication Review Lab: RAFT – Good Times Roll	2 days
Topic #2: Multiplication Properties **Possible Quiz #1**	2 days
Topic #3: Factors Lab: RAFT – Fit Together Factors	2 days
Topic #4: Prime and Composite Numbers **Possible Quiz #2**	2.5 days
Topic #5: Multiples Lab: Multiples number chart	2 days
Topic #6 Inverse Operations **Possible Quiz #3**	2.5 days
Review and Unit Test *All including multi-step word problems	2 days (inclusive)

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/multiplication-division-relationship/
- http://www.raftbayarea.org/ideas/Good%20Times%20Roll.pdf
- http://www.raftbayarea.org/ideas/Fit%20Together%20Factors.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide Mathematics Curriculum Grade 4 Unit Plan #3	
Title: Multiplication and Division of Multi-Digit Numbers	
Grade Level: 4	**Approximate Length of Time:** 6 weeks
Unit Summary: This unit will allow students to select and apply various computational methods, such as mental math, paper and pencil techniques, and the use of calculators in the areas of multiplication and division.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters	
Domain: Numbers and Operations in Base Ten	
Cluster: Use place value understanding and standard properties of operations to perform multi-digit arithmetic.	
Standard #:	**Standard**
4.NBT.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.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies base 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.
Domain: Operations & Algebraic Thinking	
Cluster: Use the four operations with whole numbers to solve problems.	
Standard #:	**Standard:**
4.OA.3	Solve multistep work 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.
Domain: Standards for Math Practice	
Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Questions:	**Unit Enduring Understandings:**
● Is my result of my computation reasonable? ● What makes a computational strategy reasonable? ● How do operations affect numbers? ● How can algorithmic thinking be used to solve problems?	● Computational fluency includes understanding not only the meaning, but also the appropriate use of numerical operations. ● Context is critical when using estimation.

Unit Objectives:

- *Students will fluently multiply and divide whole numbers using the standard algorithms.*
- *Students will solve multi-step word problems involving multiplication and division of whole numbers.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Homework
- Classwork
- Exit Slips

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Multiply by multiples of 10, 100 and 1,000	2 days
Topic #2: Use rounding to estimate products **Possible Quiz #1**	2 days
Topic #3: Multiply a whole number by up to four digits by one digit **Possible Quiz #2**	4 days
Topic #4: Multiply two digit numbers Lab: RAFT – Slide Rule **Possible Quiz #3**	5 days
Topic #5: Basics of Division & Estimating Quotients **Possible Quiz #4**	2 days
Topic #6: Division with and without remainders Lab: RAFT – Left Over Quilt Patches	3 days
Topic #7: Find whole number quotients and remainders with up to four-digit dividends and one-digit divisors	7 days
Topic #8: Quotients with zeros **Possible Quiz #5**	2 days

Review and Unit Test	2 days
*All including multi-step word problems	(inclusive)

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/multiplication-of-multi-digit-numbers/
- http://www.raftbayarea.org/ideas/Slide%20Rule.pdf
- http://www.raftbayarea.org/ideas/Leftover%20Quilt%20Patches.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan #4

Title: Addition and Subtraction

Grade Level: 4	**Approximate Length of Time:** 3 weeks

Unit Summary: This unit will allow students to select and apply various computational methods, such as mental math, paper and pencil techniques, and the use of calculators in the areas of addition and subtraction.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Domain: Operations & Algebraic Thinking

Cluster: Use the four operations with whole numbers to solve problems.

Standard #:	**Standard:**
4.OA.3	Solve multi step 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.

Domain: Numbers and Operations in Base Ten

Cluster: Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard #:	**Standard:**
4.NBT.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Domain: Standards for Math Practice

Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Questions:	**Unit Enduring Understandings:**
● What makes a computational strategy both effective and efficient? ● How do operations affect numbers?	● Computational fluency includes understanding not only the meaning, but also the appropriate use of numerical operations. ● Understand and use the inverse relationships between addition and subtraction.

Unit Objectives:

- *Students will fluently add and subtract multi-digit whole numbers using the standard algorithms.*
- *Students will solve multi-step word problems involving addition and subtraction of whole numbers.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests

- Classwork
- Homework
- Exit Slips
- White Board Participation

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Multi digit addition with and without regrouping Lab: RAFT – 9 Digits in a 3x3 Matrix Lab: RAFT – 1000 Wins **Possible Quiz #1**	3 days
Topic #2: Multi-digit subtraction with and without regrouping **Possible Quiz #2**	2 days
Topic #3: Subtraction across zeros **Possible Quiz #3**	4 days
Topic #4: Inverse operations of addition and subtraction **Possible Quiz #4**	4 days
Review and Unit Test	2 days
*All including multi-step word problems	(inclusive)

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/addition-subtraction-computation/
- http://www.raftbayarea.org/ideas/9%20Digits%20in%20a%203x3%20Matrix.pdf
- http://www.raftbayarea.org/ideas/1000%20Wins.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan #5

Title: Fraction/Decimal Concepts

Grade Level: 4	**Approximate Length of Time:** 4 weeks

Unit Summary: This unit will allow students to understand the relationship between fractions and decimals.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Domain: Numbers and Operations - Fractions

Cluster: Extend understanding of fraction equivalence and ordering.

Standard #:	**Standard:**
4.NF.1	Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
4.NF.2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fractions such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, <, and justify the conclusions, e.g., by using a visual fraction model.

Cluster: Understand decimal notation for fractions, and compare decimal fractions.

Standard #:	**Standard:**
4.NF.5	Express a fraction with denominator of 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
4.NF.6	Use decimal notation for fractions with denominators 10 or 100.
4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of the comparisons with the symbols >, =, <, and justify the conclusions, e.g., by using a visual model.

Domain: Standards for Math Practice

Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Questions:	**Unit Enduring Understandings:**
● How can we compare and contrast numbers? ● How do mathematical ideas interconnect and build on one another?	● One representation may sometimes be more helpful than another: and used together, multiple representations give a fuller understanding of a problem.

	● A quantity can be represented numerically in various ways. Problem solving depends upon choosing wise ways.

Unit Objectives:

- *Students will identify, read, write, and model fractions and equivalent fractions.*
- *Students will compare and order both fractions and decimals.*
- *Students will identify the direct relationship between fractions and decimals.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Classroom
- Homework
- Exit Slips
- White Board Participation

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Understanding Fractions	1 day
Topic #2: Mixed Numbers	3 days
Topic #3: Compare and Order Fractions **Possible Quiz #1**	2 days
Topic #4: Equivalent Fractions Lab: RAFT – Tangram Tactics Lab: RAFT – Fraction Action Game **Possible Quiz #2**	3 days
Topic #5: Convert Decimals to Fractions	1 day
Topic #6: Convert Fractions to Decimals	2 days
Topic #7: Number Line Location **Possible Quiz #3**	2 days
Review and Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/fraction-decimals-concepts/
- http://www.raftbayarea.org/ideas/Tangram%20Tactics.pdf
- http://www.raftbayarea.org/ideas/Fraction%20Action%20Game.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration/Life and Career Skills

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan #6

Title: Fraction Computation

Grade Level: 4	**Approximate Length of Time:** 4 weeks

Unit Summary: This unit will allow students to apply and extend their previous understandings of operations on whole numbers to fractions.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters

Domain: Numbers and Operations - Fractions

Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Standard #:	**Standards:**
4.NF.3	Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. 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. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
4.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. b. Understand the multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. c. Solve work problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

Domain: Standards for Math Practice

Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Question:	**Unit Enduring Understandings:**
● How can we visually represent and verify fractional computation?	● One representation may sometimes be more helpful than another; and, used together, multiple representations give a fuller understanding of a problem. ● A quantity can be represented numerically in various ways. Problem solving depends on wise choices.

Unit Objectives:

- *Students will use models to represent mixed numbers and improper fractions.*
- *Students will correctly add and subtract fractions with like denominators. They will also correctly multiply fractions by whole numbers.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Classwork
- Homework
- Exit Slips
- White Board Participation

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Adding Fractions with Common Denominators	2 days
Topic #2: Adding Mixed Numbers with Common Denominators Lab: RAFT – Fraction Action Plus (modify to have students only use common denominators) **Possible Quiz #1**	3 days
Topic #3:Subtracting Fractions with Common Denominators	2 days
Topic #3: Subtracting Mixed Numbers with Common Denominators **Possible Quiz#2**	4 days
Topic #4: Multiplying Fractions and Whole Numbers **Possible Quiz #3**	3 days
Review and Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/fraction-computation/
- http://www.raftbayarea.org/ideas/Fraction%20Action%20Plus.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide
Mathematics Curriculum
Grade 4
Unit Plan #7

Title: Measurement and Data

Grade Level: 4 | **Approximate Length of Time:** 3 weeks

Unit Summary: This unit will allow students to apply fraction concepts to create a line plot. They will also use various types of measurement to both perform conversion and solve related problems.

Learning Targets

PARCC Major Clusters; Supporting Clusters; Additional Clusters

Domain: Measurement and Data

Cluster

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Standard #:	Standards:
4.MD.1	Know relative sizes of measurement units with one system of units including km, m, cm,: kg, g: lb, oz.; l, ml: hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
4.MD.2	Use the four operations to solve work problems involving: distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Cluster: Represent and interpret data.

Standard #:	Standard:
4.MD.4	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Domain: Standards for Math Practice

Standard #:	Standard:
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Question:	Unit Enduring Understandings:
● How can measurements be used to solve problems?	● Measurement helps to describe our world using numbers.

	● A practical knowledge of measurement tools and techniques are critical for students' understanding of the world around them.

Unit Objectives:

- *Students will convert measurements within a system.*
- *Students will measure to collect data to make a fraction line plot.*
- *Students will solve problems involving various measurement situations.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes/Tests
- Homework
- Classwork
- Exit Slips
- White Board Participation

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing

Suggested Lesson Plan

Lessons	Approximate Timeframe
Topic #1: Make a line plot to display a data set of measurements in fractions of a unit **Possible Quiz #1**	4 days
Topic #2: Conversion of metric and standard measurements within one system **Possible Quiz #2**	4 days
Topic #3: Problem solving involving measurement concepts Lab: RAFT – Packing Peanut Punt (extend this activity to include measurements including fractions – students will then make a line plot of the data gathered) **Possible Quiz #3**	5 days
Review and Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/measurement-data/
- http://www.raftbayarea.org/ideas/Packing%20Peanut%20Punt.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills

Belvidere Cluster Wide **Mathematics Curriculum** **Grade 4** **Unit Plan #8**	
Title: Geometry	
Grade Level: 4	**Approximate Length of Time:** 4 weeks
Unit Summary: This unit will allow students to identify, describe and measure standard geometric shapes, describing the properties of geometric objects and making conjectures concerning them. Also included is the concept of symmetry.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Geometry	
Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	
Standard #:	**Standards:**
4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures.
4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
4.G.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
Domain: Measurement and Data	
Cluster: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Geometric measurement: Understand concepts of angle and measure angles.	
Standard #:	**Standard:**
4.MD.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
Cluster: Geometric measurement: understand concepts of angle and measure angles.	
Standard #:	**Standard:**
4.MD.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of 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.

	b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.
4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
4.MD.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Domain: Standards for Math Practice

Standard #:	**Standard:**
MP1	Making sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

Unit Essential Questions:	**Unit Enduring Understandings:**
● How can two-dimensional relationships be described by careful use of geometric language? ● How can measurements be used to solve geometric problems? ● What situations can be analyzed using symmetries.	● Identify, describe and classify two-dimensional figures, angles and objects. ● Use area and perimeter formulas for rectangles to solve real world problems.

Unit Objectives:
- *Students will use area and perimeter formulas for rectangles.*
- *Students will identify and describe parallel, perpendicular, and intersecting lines.*
- *Students will recognize and draw lines of symmetry.*

Evidence of Learning

Possible Formative Assessments:
- SMART Response Questions used throughout unit
- Quizzes/Tests
- Classwork
- Homework
- Exit Slips
- White Board Participation

Possible Summative Assessment:
- Unit Test

Possible Benchmark Assessments:
- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:
- Choice boards - projects
- Skit
- Demonstration
- Journaling

- Conferencing

Suggested Lesson Plan	
Topics	**Approximate Timeframe**
Topic #1: Use area and perimeter formulas for rectangles Lab: RAFT "Area Antics" **Possible Quiz #1**	5 days
Topic #2: Measure angles using a protractor **Possible Quiz #2**	5 days
Topic #3: Identify, describe and draw lines, line segments and rays **Possible Quiz #3**	4 days
Topic #4: Types of lines	2 days
Topic #5: Lines of symmetry **Possible Quiz #4**	2 days
Review and Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/4th-grade-math/geometry-geometric-measurement/
- http://www.raftbayarea.org/ideas/Area%20Antics.pdf
- **Approved Classroom Textbook**

Lesson Components

21st Century Skills

- Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Themes

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Life and Career Skills