Belvidere Cluster Wide
Mathematics Curriculum
5th 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/Chromebooks
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

Grade 5
Unit Plan #1

Title: Decimal Concepts

Grade Level: 5	**Approximate Length of Time:** 4 weeks

Unit Summary: This unit will allow all students to extend number sense by understanding decimals and place value to the thousandths.

Learning Targets

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

Domain: Number and Operations in Base Ten

Cluster:

Understand the place value system.

Standard #'s:	**Standard:**
5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.3	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names and expanded form. b. Compare two decimals to thousandths based on the meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
5.NBT.4	Use place value understanding to round decimals 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 Question:	**Unit Enduring Understanding:**
● How can we compare/contrast numbers?	● A quantity can be represented numerically in various ways.

Unit Objectives:

- *Students will identify place value.*
- *Students will compare decimals to thousandths.*
- *Students will round decimals to any place within thousandths.*

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: What is a Decimal? Lab: Decimals in the Real World	1 day
Topic #2: Identify Place Values	3 days
Topic #3: Read and Write Decimals **Possible Quiz #1**	4 days
Topic #4: Compare and Order Decimals (with an understanding of place value, through the thousandths) Lab: Standing Long Jump and Hanging Numbers Out to Dry **Possible Quiz #2**	5 days
Topic #5: Round Numbers to Designated Place Values Lab: RAFT – Round Jack **Possible Quiz #3**	6 days
Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/decimal-concepts/attachments/grade-5-math-unit-plan-1/
- http://www.raftbayarea.org/ideas/Round%20Jack.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 5
Unit Plan #2

Title: Decimal Computation

Grade Level: 5 | **Approximate Length of Time:** 4.5 weeks

Unit Summary: This unit will allow all students to apply and extend previous understandings of addition, subtraction and multiplication as it applies to decimals.

Learning Targets

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

Domain: Number and Operations in Base Ten

Cluster:

- Perform operations with multi-digit whole numbers and decimals to hundredths.

Standard #:	Standard:
NBT.5	Fluently multiply multi-digit whole numbers using the standard algorithm.
NBT.7 (add, subtract, multiply only)	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

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 operations affect numbers?
- What makes a computation on strategy both effective & efficient?

Unit Enduring Understandings:

- The magnitude of numbers affects the outcome of operations on them.
- There are multiple algorithms for finding a mathematical solution.

Unit Objectives:

- Students will add, subtract, multiply decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operation and/or the relationship between addition and subtraction.
- Students will fluently multiply multi-digit numbers using the standard algorithm.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: Decimal Addition Lab: Decimal Cross Number Puzzles Lab: Decimal Addition to 500 Lab: RAFT – Easy Piecy Decimals **Possible Quiz #1**	5 days
Topic #2: Decimal Subtraction Lab: Decimal Subtraction to Zero **Possible Quiz #2**	5 days
Topic #2: Review multiplication of multi-digit whole numbers **Possible Quiz #3**	4 days
Topic #3: Decimal Multiplication Lab: Dungeon Floor Plans **Possible Quiz #4**	4 days
Topic #4: Real Life Application: Mixed Word Problems	2 days
Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/decimal-computation/
- http://www.raftbayarea.org/ideas/Easy%20Piecy%20Decimals.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 5 Unit Plan #3	
Title: Division	
Grade Level: 5	**Approximate Length of Time:** 5 weeks
Unit Summary: This unit will allow all students to apply and extend previous understandings of multiplication and division of whole numbers as it applies to decimals.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Number and Operations in Base Ten	
Cluster: Understand place value system	
Standard #:	**Standard:**
NBT.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
Cluster: Perform operations with multi-digit whole numbers and decimals to hundredths.	
Standard #:	**Standard:**
NBT.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.
NBT.7 (division)	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
Domain: Number and Operations – Fractions	
Cluster: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
Standard #:	**Standard:**
5.NF.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or 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 Questions:	**Unit Enduring Understandings:**
● How do operations affect numbers? ● What makes a computation on strategy both effective & efficient?	● The magnitude of numbers affects the outcome of operations on them. ● There are multiple algorithms for finding a mathematical solution.

Unit Objectives:

- Students will interpret patterns when multiplying and dividing by powers of ten.
- Students will represent powers of 10 as exponents.
- Students will divide whole numbers and decimals by up to two digit divisors and up to four digit divisors.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: Divisibility Rules **Possible Quiz #1**	2 days
Topic #2: Patterns in Multiplication and Division by powers of ten **Possible Quiz #2**	1.5 week
Topic #3: Division of whole numbers (up to 4 digit dividend and 2 digit divisor) **Possilbe Quiz #3&4**	2.5 weeks
Topic #4: Division of decimals to the hundredths Lab – More Bang for Your Buck **Possible Quiz #5**	1 week

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/division/
- **Approved Classroom Texts**

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 5 Unit Plan #4	
Title: Algebraic Concepts	
Grade Level: 5	**Approximate Length of Time:** 5 weeks
Unit Summary: This unit will allow students to write and interpret numerical expressions in addition to analyzing patterns and relationships.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Operations and Algebraic Thinking	
Cluster: Write and interpret numerical expressions	
Standard #:	**Standard:**
5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expression with these symbols.
5.OA.2	Write simple expressions with numbers, and interpret numerical expressions without evaluating them.
Cluster: Analyze patterns and relationships	
Standard #:	**Standard:**
5.OA.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the coordinate pairs on the coordinate plane.
Cluster: Graph points on the coordinate plane to solve real-world and mathematical problems. *(Introduced in this unit in order to prepare students for the graphing in standard 5.OA.3. Mastery will be assessed in the Geometry unit.)*	
Standard #:	**Standard:**
5.G.1 *(Not directly assessed)*	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate). *(Introduced in this unit in order to prepare students for the graphing in standard 5.OA.3. Mastery will be assessed in the Geometry unit.)*
5.G.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate

	plane, and interpret coordinate values of points in the context of the situation.
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 a situation be best represented as an algebraic expression? ● What numerical patterns can be identified in real-life scenarios? ● How can patterns be represented on the coordinate grid?	● Algebra provides language through which we communicate the patterns in mathematics. ● The use of algebra requires the ability to represent data in graphs, expression and rules.

Unit Objectives:

- Students will be able to use parentheses, brackets, or braces in numerical expressions and evaluate.
- Students will write simple expressions & interpret numerical expressions.
- Students will use two numerical patterns using two given rules, “in & out”.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- 4 Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

Possible Summative Assessment:

- Unit Test

Possible Benchmark Assessments:

- Go Math Benchmark
- Unit Assessment

Possible Alternative Assessments:

- Choice boards - projects
- Skit
- Demonstration
- Journaling
- Conferencing
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Suggested Lesson Plan

Topics	Approximate Timeframe

Intro: What is Algebra?	½ day
Topic #1: Order of Operations	1 day
Topic #2: Grouping Symbols Lab: Rules **Possible Quiz #1**	1 week
Topic #3: Writing and Interpreting Expressions	2 days
Topic #4: Writing and Interpreting Expressions Application Problems **Possible Quiz #2**	2 days
Topic #5: Function Tables Lab: RAFT – Meet my Function Machine Lab: Ribbons **Possible Quiz #3**	1 week
Topic #6: Graphing Patterns and Relationships in the Coordinate Plane Lab - Salary **Possible Quiz #4**	2 weeks

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/algebraic-concepts/
- http://www.raftbayarea.org/ideas/Meet%20My%20Function%20Machine.pdf
- **Approved Classroom Textbooks**

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

Grade 5 Unit Plan #5	
Title: Measurement and Data	
Grade Level: 5	**Approximate Length of Time:** 4 weeks
Unit Summary: This unit will develop an understanding of the conversion within systems of measurements. The volume of rectangular prisms will be determined by layering unit cubes, leading to the formula.	
Learning Targets	
PARCC ■ Major Clusters; ■ Supporting Clusters; ○ Additional Clusters	
Domain: Measurement and Data	
Cluster: Convert like measurement units within a given measurement system.	
Standard #:	**Standard:**
5.MD.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Cluster: Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.	
Standard #:	**Standard:**
5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5.MD.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
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 measurement be used to solve problems?	● Measurements can be represented in various ways. ● The volume can be determined by using unit cubes.

Unit Objectives:

- Students will convert measurements within a given system.
- Students will develop an understanding of volume of solids through solving word problems.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: Standard Measurement Conversions Lab: Hands on Measurement Stations **Possible Quiz # 1**	3 days
Topic #2: Metric Measurement Conversions Lab: Hands on Measurement Stations **Possilbe Quiz # 2**	3 days
Topic #3: Volume of a solid with unit cubes Lab: RAFT – Taking Up Space	1 week
Topic #4: Volume problem solving/ **Quiz # 3**	0.5 week

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/measurement-and-data/
- http://www.raftbayarea.org/ideas/Taking%20Up%20Space.pdf
- **Approved Classroom Textbooks**

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 5
Unit Plan #6

Title: Fraction Operations Part 1

Grade Level: 5 | **Approximate Length of Time:** 4 weeks

Unit Summary: This unit will allow students to further their understanding of fractions. Using equivalence they will add and subtract fractions with unlike denominators.

Learning Targets

PARCC ■ Major Clusters; ■ Supporting Clusters; □ Additional Clusters

Domain: Number and Operations – Fractions

Cluster:
Use equivalent fractions as a strategy to add and subtract fractions.

Standard #:	Standard:
5.NF.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
5.NF.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

Cluster:
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Standard #:	Standard:
5.NF.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or 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 Questions:

- How do operations affect numbers?
- How are physical models used to clarify relationships?

Unit Enduring Understandings:

- A fraction is really a division problem.
- An understanding of equivalent fractions is needed to add and subtract fractions.
- The magnitude of numbers affects the outcome of operations on them.

Unit Objectives:

- Students will understand that a fraction is another representation of a division problem.
- Students will add and subtract fractions with unlike denominators, including mixed numbers.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: Fractions as a form of division	1 day
Topic #2: Finding Common Denominators	1 day
Topic #3: Comparing Fractional Numbers Lab: RAFT – Fraction Race **Possible Quiz #1**	2 days
Topic #2: Addition of fractions Lab: RAFT – Fraction Action Plus (use positive rational numbers only)	2 days
Topic #3: Subtraction of Fractions **Possible Quiz #2**	3 days
Topic #4: Addition of Mixed Numbers	2 days
Topic #5: Subtraction of Mixed Numbers **Possible Quiz #3**	3 days
Topic #6: Multi-Step Word Problems	2 days
Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/fraction-operations-part-1-addition-subtraction/
- http://www.raftbayarea.org/ideas/Fraction%20Race.pdf
- 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
Unit Plan #7
Grade 5

Title: Fraction Operations Part 2

Grade Level: 5 | **Approximate Length of Time:** 4 weeks

Unit Summary: This unit will allow students to continue to further their understandings of fractions. They will understand the concepts of multiplication and division of fractions in real world situations.

Learning Targets

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

Domain: Number and Operations – Fractions

Cluster:
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Standard #:	Standard:
5.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5.NF.5	Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
5.NF.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
5.NF.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. b. Interpret division of a whole number by a unit fraction, and compute such quotients. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem

Domain: Measurement and Data

Cluster:

Represent and interpret data.	
Standard #:	**Standard:**
5.MD.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving 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 Questions:	**Unit Enduring Understanding:**
● How do operations affect numbers? ● How are physical models used to clarify relationships? ● How can the collection and display of data be used to solve problems?	● The magnitude of numbers affects the outcome of operations on them.

Unit Objectives:

- Students will develop an understanding for multiplication of whole numbers by fractions as well as fractions by fractions.
- Students will develop an understanding of division of a fraction by a unit fraction and a fraction by a unit fraction by using a concrete model.
- Students will create line plots involving fractional units.

Evidence of Learning

Possible Formative Assessments:

- SMART Response Questions used throughout unit
- Quizzes
- Homework
- Exit Slips
- White Board Participation
- Peer Review
- Graded Classwork

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: Multiplying Fractions Lab: Multiplication Game **Possible Quiz #1**	3 days
Topic #2: Multiplying Fractions and Whole Numbers Lab: Animal Adoption	1 day
Topic #3: Multiplying with Mixed Numbers **Possible Quiz #2**	2 days
Topic #4: Interpreting Multiplication of Fractions	2 days
Topic #5: Area of fractional side length rectangles **Possible Quiz #3**	3 days
Topic #6: Dividing Unit Fractions by Whole Numbers	1 day
Topic #7: Dividing Whole Numbers by Unit Fractions **Possible Quiz #4**	2 days
Topic #8: Line Plots using fractional measurements **Possible Quiz #5**	2 days
*All including multi-step word problems	(inclusive)
Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/fractions-operations-part-2-multiplication-division-with-unit-fractions-line-plots/
- **Approved Classroom Textbooks**

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 5
Unit Plan #8

Title: Geometry

Grade Level: 5 | **Approximate Length of Time:** 3 weeks

Unit Summary: This unit will allow students to develop spatial sense and make the connection between geometry and algebra.

Learning Targets

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Domain: Geometry

Cluster:

Graph points on the coordinate plane to solve real-world and mathematical problems.

Standard #:	Standard:
5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).
5.G.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Cluster:

Classify two-dimensional figures into categories based on their properties.

Standard #:	Standard:
5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
5.G.4	Classify two-dimensional figures in a hierarchy based on properties.

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Unit Essential Questions:

- How can spatial relationships be described using geometric language?
- How can geometric/ algebraic relationships best be represented and verified?

Unit Enduring Understandings:

- Geometric properties can be used to construct geometric figures.
- Coordinate geometry can be used to represent and verify geometric/algebraic relationships.

Unit Objectives:

- Students will graph points on the coordinate plane understanding that the first coordinate is the x value and the second coordinate is the second value.
- Students will use the coordinate grid to visualize algebraic relationships.
- Students will categorize and classify geometric figures.

Evidence of Learning

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- Homework
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Suggested Lesson Plan

Topics	Approximate Timeframe
Topic #1: Polygons Lab: RAFT – A Honey of a Shape	3 days
Topic #2: Triangles & Quadrilaterals Lab: RAFT – The Talents of Triangles Lab: RAFT – Triangle Tango **Possible Quiz #1**	4.5 days
Topic #3: Coordinate Plane	2 days
Topic #4: First Quadrant Lab: RAFT – Squirreling it Away **Possible Quiz #2**	3.5 days
Review & Unit Test	2 days

Curriculum Resources

- https://njctl.org/courses/math/5th-grade-math/geometry/
- http://www.raftbayarea.org/ideas/Honey%20of%20a%20Shape.pdf
- http://www.raftbayarea.org/ideas/Talents%20of%20Triangles.pdf
- http://www.raftbayarea.org/ideas/Triangle%20Tango.pdf
- http://www.raftbayarea.org/ideas/Squirreling%20it%20Away.pdf
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