## Belvidere Cluster Wide

## Mathematics Curriculum

6th grade
Updated Fall 2018

| All Belvidere Cluster curriculum and instruction areas are aligned to the New Jersey Student <br> Learning Standards (NJSLS) in accordance with the NJ Department of Education's curriculum <br> implementation requirements. |
| :--- |
| - English Language Arts Interdisciplinary Connections |
| - Science and Scientific Inquiry (Next Generation) |
| - Social Studies |
| - Technology |
| - Visual and Performing Arts |
| Technology Standards and Integration |
| iPads/Chromebooks |
| iXL |
| 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

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- Collaboration
- Information Literacy
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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 <br> Mathematics Curriculum

6th Grade

| Unit Plan 1 |  |  |
| :---: | :---: | :---: |
| Title: Numbers and Operations |  |  |
| Grade Level: 6 |  | Approximate Time: 2.5 weeks |
| Chapter Summary: This chapter extends previous knowledge of integers students have to the system of rational numbers. Students will be exploring absolute value, comparing and ordering integers, and evaluate exponential form. |  |  |
| Learning Targets |  |  |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: The Number System |  |  |
| Cluster: Apply and extend previous understandings of numbers to the system of rational numbers. |  |  |
| Standard \#: | Standard: |  |
| 6.NS. 5 | Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. |  |
| 6.NS. 6 | Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. |  |
| 6.NS. 7 | Understand ordering and absolute value of rational numbers. |  |
| Domain: Expressions \& Equations |  |  |
| Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions. |  |  |
| Standard \#: | Standard: |  |
| 6.EE. 1 | Write and evaluate numerical expressions involving whole-number exponents. |  |
| 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. |  |
| Chapter Essential Question: <br> - How are opposite and negative numbers used in real-world contexts? <br> - What is the difference between an integer and a rational number? <br> - How do powers affect numbers? |  | Chapter Enduring Understandings: <br> - More than integers are necessary to solve real-world applications. ie. negative, opposite, and rational numbers. <br> - Powers can simplify numbers. |
| Chapter Objectives: <br> - Students will become secure in the concepts of opposite numbers, negative numbers, and absolute value. <br> - Students will be able to compare and order integers and rational numbers. <br> - Students will practice and learn different powers. |  |  |
| Evidence of Learning |  |  |
| Possible For | tive Assessments: |  |


| - SMART Response questions used throughout the chapter. <br> - Quizzes <br> - Homework/classwork <br> - $Q$ and $A$ <br> - Labs/Projects <br> - IXL.com <br> - TenMarks.com <br> - Firstinmath.com |  |
| :---: | :---: |
| Summative Assessment: <br> - Chapter Test |  |
| Possible Benchmark Assessments: <br> - Unit Assessment |  |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit <br> - Demonstration <br> - Journaling <br> - Conferencing |  |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Topic \#1: Addition, Natural Numbers \& Whole Numbers | 0.5 day |
| Topic \#2 Addition Subtraction and Integers | 1.5 days |
| Topic \#3: Multiplication, Division and Rational Numbers | 0.5 day |
| Topic \#4: Absolute Value | 1.5 days |
| Topic \#5: Comparing Integers | 1 day |
| Topic \#6: Comparing and Ordering Rational Numbers <br> Lab: RAFT - Hi-Ho, Hi-Low | 3 days |
| Topic \#7: Exponents | 2 days |
| Topic \#8: Real Numbers | 0.5 day |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/numbers-and-operations-6th-grade/ <br> - http://www.raftbayarea.org/ideas/Hi\%20Ho\%20Hi\%20Low.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| $21^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> $21^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |

## 6th Grade

## Unit Plan 2

## Title: Factors and Multiples

Grade Level: 6
Approximate Time: 2 weeks
Chapter Summary: This chapter will explore factors and multiples allowing students to solve real world problems using factors and multiples.

| Learning Targets |  |  |
| :---: | :---: | :---: |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: The Number System |  |  |
| Cluster: Compute fluently with multi-digit numbers and find common factors and multiples. |  |  |
| Standard \#: | Standard: |  |
| 6.NS. 4 | Find the greatest common factor of least common multiple of two whole property to express a sum of two wh of a sum of two whole numbers with | wo whole numbers less than or equal to 100 and the numbers less than or equal to 12 . Use the distributive ole numbers 1-100 with a common factor as a multiple no common factor. |
| Domain: Standards for Math Practice |  |  |
| Standard \#: | Standard: |  |
| MP1 | Making sense of problems and perse | ere in solving them. |
| MP2 | Reason abstractly and quantitatively |  |
| MP3 | Construct viable arguments and critic | ue 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. |  |
| Chapter Essential Question: <br> - How do operations affect numbers? <br> - How do we solve real world application problems? |  | Chapter Enduring Understanding: <br> - Factors and multiples can be used to solve real world problems. |
| Chapter Objectives: <br> - Students will explore even and odd numbers. <br> - Students will review disability rules. <br> - Students will use factors and multiples to find both GCFs and LCMs. |  |  |
| Evidence of Learning |  |  |
| Possible Formative Assessments: <br> - SMART Response questions used throughout the chapter. <br> - Quizzes <br> - Homework/classwork <br> - Q and A <br> - Labs/Projects <br> - IXL.com <br> - TenMarks.com <br> - Firstinmath.com |  |  |
| Summative Assessment: <br> - Chapter Test |  |  |
| Possible Benchmark Assessments: <br> - Unit Assessment |  |  |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit |  |  |


| - Demonstration <br> - Journaling <br> - Conferencing |  |
| :---: | :---: |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Topic \#1: Even and Odd Numbers | 1 day |
| Topic \#2: Divisibility Rules for 3 and 9 | 1 day |
| Topic \#3: Greatest Common Factor | 2 days |
| Topic \#4: Least Common Multiple | 2 days |
| Topic \#5: GCF and LCM Word Problems | 2 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/factors-and-multiples/ <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| 21st Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> 21st Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |


| Unit Plan 3 |  |  |
| :---: | :---: | :---: |
| Title: Fraction and Decimal Computation |  |  |
| Grade Level: 6 |  | Approximate Time: 3 weeks |
| Chapter Summary: This chapter will help students to further their understanding of fractions. They will fully understand the concept of division of fractions. They will model fraction problems and solve problems involving real world situations. This chapter will review long division, as well as make sure students have a strong understanding of decimal computation. |  |  |
| Learning Targets |  |  |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: The Number System |  |  |
| Cluster: Apply and extend previous understandings of multiplication and division to divide fractions by fractions |  |  |
| Standard \#: | Standard: |  |
| 6.NS. 1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. |  |
| Cluster: Compute fluently with multi-digit numbers and find common factors and multiples. |  |  |
| Standard \#: | Standard: |  |
| 6.NS. 2 | Fluently divide multi-digit numbers using the standard algorithm. |  |
| 6.NS. 3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. |  |
| 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. |  |
| Chapter Essential Question: <br> - How do operations affect numbers? <br> - How do we solve real world application problems? <br> - What are the standard algorithms for long division and decimal computation? |  | Chapter Enduring Understanding: <br> - Decimal computation is necessary to solve real world application problems. |
| Chapter Objectives: <br> - Students will model and solve division of fractions. <br> - Students will review long division. <br> - Students will practice and learn the standard algorithms for decimal computation. <br> - Students will solve real world application problems with decimals. |  |  |
| Evidence of Learning |  |  |
| Possible Formative Assessments: <br> - SMART Response questions used throughout the chapter. <br> - Quizzes <br> - Homework/classwork <br> - Q and A <br> - Labs/Projects <br> - IXL.com |  |  |


| - TenMarks.com <br> - Firstinmath.com |  |
| :---: | :---: |
| Summative Assessment: <br> - Chapter Test |  |
| Possible Benchmark Assessments: <br> - Unit Assessment |  |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit <br> - Demonstration <br> - Journaling <br> - Conferencing |  |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Topic \#1: Fraction Division | 3 days |
| Topic \#2: Long Division Review | 2 days |
| Topic \#3: Adding Decimals | 1 day |
| Topic \#4:.Subtracting Decimals | 1 day |
| Topic \#5: Distributive Property \& Product of Decimals | 1 day |
| Topic \#6: Multiplying Decimals Lab: RAFT - Dizzy Decimals \& More | 2 days |
| Topic \#7: Dividing Decimals (Terminating) | 1 day |
| Topic \#8: Dividing Decimals (Repeating) | 1 day |
| Lab: RAFT - The Money You Will Save | 1 day |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/fraction-and-decimal-computation/ http://www.raftbayarea.org/ideas/Dizzy\%20Decimals\%20and\%20More.pdf <br> - http://www.raftbayarea.org/ideas/Money\%20You\%20Will\%20Save.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| $21^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> $21^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - ICT Literacy <br> - Life and Career Skills |  |
| BeIvidere Cluster Wide Mathematics Curriculum 6th Grade |  |


| Unit Plan 4 |  |  |
| :---: | :---: | :---: |
| Title: Ratios, Proportions \& Percents |  |  |
| Grade Level: 6 |  | Approximate Time: 6 weeks |
| Chapter Summary: This chapter will introduce formally the concepts of ratios, proportions, and percent problems. They will review definitions about ratios, develop a sense of converting between different measurements, and work with unit rate problems. They will then be able to solve problems involving percents and use that knowledge in real-world situations involving them. |  |  |
| Learning Targets |  |  |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: Ratios and Proportional Relationships |  |  |
| Cluster: Understand ratio concepts and use ratio reasoning to solve problems. |  |  |
| Standard \#: | Standard: |  |
| 6.RP. 1 | Understand the concept of a ratio between two quantities. For examp zoo was $2: 1$, because for every 2 received, candidate C received ne | d use ratio language to describe a ratio relationship , "The ratio of wings to beaks in the bird house at the gs there was 1 beak." "For every vote candidate A y three votes." |
| 6.RP. 2 | Understand the concept of a unit r rate language in the context of a rata 3 cups of flour to 4 cups of sugar, paid $\$ 75$ for 15 hamburgers, which | $\mathrm{a} / \mathrm{b}$ associated with a ratio $\mathrm{a}: \mathrm{b}$ with $\mathrm{b} \neq 0$, and use relationship. For example, "This recipe has a ratio of there is $3 / 4$ cup of flour for each cup of sugar." "We a rate of $\$ 5$ per hamburger." |
| 6.RP. 3 | Use ratio and rate reasoning to solv reasoning about tables of equivale or equations. <br> a. Make tables of equivalent measurements, find missing value coordinate plane. Use tables to co <br> b. Solve unit rate problems For example, if it took 7 hours to m mowed in 35 hours? At what rate <br> c. Find a percent of a quantily 30/100 times the quantity); solve p percent. <br> d. Use ratio reasoning to con units appropriately when multiplying | real-world and mathematical problems, e.g., by ratios, tape diagrams, double number line diagrams, <br> atios relating quantities with whole number in the tables, and plot the pairs of values on the pare ratios. <br> luding those involving unit pricing and constant speed. $w 4$ lawns, then at that rate, how many lawns could be re lawns being mowed? <br> as a rate per 100 (e.g., $30 \%$ of a quantity means blems involving finding the whole, given a part and the <br> ert measurement units; manipulate and transform or dividing quantities |
| Domain: Standards for Math Practice |  |  |
| Standard \#: | Standard: |  |
| MP1 | Making sense of problems and pers | ere in solving them. |
| MP2 | Reason abstractly and quantitatively |  |
| MP3 | Construct viable arguments and critiqu | ue 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 re | eated reasoning. |
| Chapter Essential Question: <br> - Is it important to know how to solve for unit rates? <br> - What is the connection between a ratio and a fraction/decimal? |  | Chapter Enduring Understanding: <br> - Reasoning about ratios and proportions will help solve real-world situations. |

- How are ratios used in the real world?
- Where can examples of ratios and rates be found?
- What does a percent represent?
- How can knowledge about percents aid me in real-world situations?
- The relationships between fractions, decimals, and percents are critical and needed to solve problems.


## Chapter Objectives:

- Students will be able to use ratios to describe proportional situations.
- Students will be able to represent ratios and percents with concrete models, fractions, and decimals.
- Students will be able to apply their knowledge of rations and proportions to percent problems.
- Students will be able to solve problems involving percents.
- Students will be able to make conversions between different measurements and unit ratios.


## Evidence of Learning

## Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com
- Chapter Project

Summative Assessment:

- Chapter Test

Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

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

| Suggested Lesson Plan |  |
| :--- | :---: |
| Topics | Approximate Timeframe |
| Topic \#1: Writing Ratios <br> Lab: RAFT - Salmon You Can Count On | 2 days |
| Topic \#2: Equivalent Ratios <br> Lab: PhET Proportion Playground | 3 days |
| Topic \#3: Rates \& Unit Rates <br> Select one of the labs below: <br> Lab: RAFT - Happy Trails Mix <br> Lab: PhET Unit Rate | 3 days |
| Lab: Design on a Dime Project | 2 days |
| Topic \#4: Using Ratios to Convert Measurements | 3 days |
| Topic \#5: Converting Unit Ratios | 3 days |
| Topic \#6: Percents \& Fractions | 3 days |


| Topic \#7: Percents \& Decimals | 2 days |
| :---: | :---: |
| Topic \#8: Using Percents | 4 days |
| Lab: Orange Soda Experiment | 3 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/ratios-proportions-percents/ <br> - http://www.raftbayarea.org/ideas/Salmon\%20You\%20Can\%20Count\%20On.pdf <br> - https://phet.colorado.edu/en/simulation/proportion-playground <br> - http://www.raftbayarea.org/ideas/Happy\%20Trails\%20Mix.pdf <br> - https://phet.colorado.edu/en/simulation/unit-rates <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| $21^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> $21^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |

## Belvidere Cluster Wide

Mathematics Curriculum

## 6th Grade

Unit Plan 5

| Title: Expressions |  |  |
| :---: | :---: | :---: |
| Grade Level: 6 |  | Approximate Time: 3 weeks |
| Chapter Summary: This chapter will introduce students to the concepts of powers and order of operations. Students will explore algebraic expressions, as well the use of the distributive property and to combine like terms. |  |  |
| Learning Targets |  |  |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: Expressions \& Equations |  |  |
| Cluster: Apply and extend previous understandings of arithmetic to algebraic expressions. |  |  |
| Standard \#: | Standard: |  |
| 6.EE. 1 | Write and evaluate numerical expre | ions involving whole-number exponents. |
| 6.EE. 2 | Write, read, and evaluate expressi | in which letters stand for numbers. |
| 6.EE. 3 | Apply the properties of operations | generate equivalent expressions. |
| 6.EE. 4 | Identify when two expressions are same number regardless of which | uivalent (i.e., when the two expressions name the ue is substituted into them). |
| Cluster: Reason about and solve one-variable equations and inequalities. |  |  |
| Standard \#: | Standard: |  |
| 6.EE. 6 | Use variables to represent number mathematical problem; understand depending on the purpose at hand | nd write expressions when solving a real-world or at a variable can represent an unknown number, or, ny number in a specified set. |
| Domain: Standards for Math Practice |  |  |
| Standard \#: | Standard: |  |
| MP1 | Making sense of problems and per | vere in solving them. |
| MP2 | Reason abstractly and quantitative |  |
| MP3 | Construct viable arguments and critar | ue 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 re | eated reasoning. |
| Chapter Essential Question: <br> - How do powers affect numbers? <br> - How can order of operations, the distributive property, and combing like terms help solve an algebraic equation? <br> - How can an algebraic expression help me solve a real-world application problem? |  | Chapter Enduring Understanding: <br> - Powers can simplify computation. <br> - Algebraic expressions and equations can help solve real-world application problems. |
| Chapter Objectives: <br> - Students will practice and learn different powers. <br> - Students will solve problems using order of operations. <br> - Students will differentiate between an algebraic expression and equation. <br> - Students will translate between words and expressions. <br> - Students will be able to evaluate expressions. <br> - Students will use the distributive property to combine like terms. |  |  |
| Evidence of Learning |  |  |
| Possible Formative Assessments: <br> - SMART Response questions used throughout the chapter. |  |  |


| - Quizzes <br> - Homework/classwork <br> - $Q$ and $A$ <br> - Labs/Projects <br> - IXL.com <br> - TenMarks.com <br> - Firstinmath.com |  |
| :---: | :---: |
| Summative Assessment: <br> - Chapter Test |  |
| Possible Benchmark Assessments: <br> - Unit Assessment |  |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit <br> - Demonstration <br> - Journaling <br> - Conferencing |  |
|  | Suggested Lesson Plans |
| Topics | Approximate Tim |
| Topic \#1: Mathematical Expressions | 0.5 day |
| Topic \#2: Order of Operations Lab: RAFT - Algebraic Horse | 2.5 days |
| Topic \#3: The Distributive Property <br> Lab: RAFT - Simple Expressions Bingo | 2 days |
| Topic \#4: Combining Like Terms Lab: RAFT - Algebra Rummy | 2 days |
| Topic \#5: Translating between Words and Expressions | 2.5 days |
| Topic \#6: Evaluating Expressions | 2.5 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/equations-inequalities/ http://www.raftbayarea.org/ideas/Algebraic\%20Horse.pdf <br> - http://www.raftbayarea.org/ideas/Simple\%20Expressions\%20Bingo.pdf <br> - http://www.raftbayarea.org/ideas/Algebra\%20Rummy.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| 21 ${ }^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> 21 ${ }^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |


| Belvidere Cluster Wide <br> Mathematics Curriculum <br> 6th Grade <br> Unit Plan 6 |  |  |  |
| :--- | :--- | :---: | :---: |
| Title: Equations and Inequalities |  |  |  |
| Grade Level: 6 | Approximate Time: 3 weeks |  |  |

Chapter Summary: This chapter will allow students to learn about inequalities. They will solve inequalities and equations using different operations. They will discover how to write, solve, and graph simple inequalities themselves.

|  | Learning Targets |
| :--- | :--- | :--- |
| PARCC $\square$ Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |

## Domain: Expressions \& Equations

Cluster: Reason about and solve one-variable equations and inequalities.

| Standard \#: | Standards: |
| :---: | :---: |
| 6.EE. 5 | Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. |
| 6.EE. 7 | Solve real-world and mathematical problems by writing and solving equations of the form x $+\mathrm{p}=\mathrm{q}$ and $\mathrm{px}=\mathrm{q}$ for cases in which $\mathrm{p}, \mathrm{q}$ and x are all nonnegative rational numbers. |
| 6.EE. 8 | Write an inequality of the form $\mathrm{x}>\mathrm{c}$ or $\mathrm{x}<\mathrm{c}$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $\mathrm{x}>\mathrm{c}$ or $\mathrm{x}<\mathrm{c}$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. |
| 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. |

Chapter Essential Question:
How are inequalities different than equality equations?
How will inequalities help model real world problems?

Chapter Enduring Understanding: Inequalities are used in real world problems. Inequalities can be modeled using number lines and solved using different operations Inequalities are manipulated similarly to equality equations.

## Chapter Objectives:

- Students will be able to determine solutions to different types of equations.
- Students will identify and manipulate inverse equations using different operations.
- Students will solve one step addition, subtraction, multiplication, and division equations.
- Students will write and solve simple inequalities.
- Students will develop the knowledge of how to graph solution sets to simple inequalities.
Evidence of Learning


## Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com


## Summative Assessment:

Chapter Test

## Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

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

| Suggested Lesson Plan |  |
| :---: | :---: |
| Topics | Approximate Timeframe |
| Topic \#1: Equations and Identities | 0.25 day |
| Topic \#2: Tables | 0.25 day |
| Topic \#3: Determining Solutions to Equations | 0.5 day |
| Topic \#4: Solving an Equation for a Variable | 2 days |
| Topic \#5: Solving One Step Addition \& Subtraction Equations | 2 days |
| Topic \#6: Solving One Step Multiplication \& Division Equations <br> Lab: RAFT - Occasions for an Equation | 2 days |
| Topic \#7: Writing Equations | 2 days |
| Topic \#8: Writing Simple Inequalities | 1 day |
| Topic \#9: Solutions to Simple Inequalities | 1 days |
| Topic \#10: Graphing Solution Sets to Simple Inequalities | 2 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/equations-inequalities/ <br> - http://www.raftbayarea.org/ideas/Occasions\%20for\%20an\%20Equation.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |


| Lesson Components |
| :--- |
| 21 $^{\text {st }}$ Century Skills |
| • Financial, Economic, Business, and Entrepreneurial Literacy |
| 21 $1^{\text {st }}$ Century Themes |
| • Critical Thinking and Problem Solving |
| - Communication and Collaboration |
| Life and Career Skills |

## Belvidere Cluster Wide <br> Mathematics Curriculum 6th Grade <br> Unit Plan 7

Title: Applications of Equations

| Chapter Summary: This chapter focuses on number fluency and facility with what numbers represent, It explores how numbers are related to each other and how each can best be used to describe a particular situation. The chapter will also explore factors and multiples as well as the distributive property. |  |  |
| :---: | :---: | :---: |
| Learning Targets |  |  |
| PARCC Major Clusters; $\square$ Supporting Clusters; Additional Clusters |  |  |
| Domain: The Number System |  |  |
| Cluster: Represent and analyze quantitative relationships between dependent and independent variables. |  |  |
| Standard \#: | Standard: |  |
| 6.EE. 9 | Use variables to represent two qua to one another; write an equation to variable, in terms of the other quan relationship between the dependen and relate these to the equation. For speed, list and graph ordered pairs represent the relationship between | ities in a real-world problem that change in relationship express one quantity, thought of as the dependent $y$, thought of as the independent variable. Analyze the and independent variables using graphs and tables, example, in a problem involving motion at constant distances and times, and write the equation $d=65 t$ to istance and time. |
| Domain: Standards for Math Practice |  |  |
| Standard \#: | Standard: |  |
| MP1 | Making sense of problems and per | vere in solving them. |
| MP2 | Reason abstractly and quantitatively. |  |
| MP3 | Construct viable arguments and critita | que 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 r | eated reasoning. |
| Chapter Essential Questions: <br> - How can equations, tables, and graphs be used to represent real-life scenarios? |  | Chapter Enduring Understandings: <br> - When the value of one variable depends on the value of another, it is called a dependent variable; when the value of one variable does not depend on the value of the other, it is called an independent variable. <br> - A table can show the relationship between a dependent and independent variable. |
| Chapter Objectives: <br> - Students will differentiate between dependent and independent variables. <br> - Students will represent the relationship between dependent and independent variables, found in real-life scenarios, with equations, tables, and graphs. |  |  |
| Evidence of Learning |  |  |
| Possible Formative Assessments: <br> - SMART Response questions used throughout the chapter. <br> - Quizzes <br> - Homework/classwork <br> - Q and A <br> - Labs/Projects <br> - IXL.com <br> - TenMarks.com <br> - Firstinmath.com |  |  |
| Summative Assessment: <br> - Chapter Test |  |  |


| Possible Benchmark Assessments: <br> - Unit Assessment |  |
| :---: | :---: |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit <br> - Demonstration <br> - Journaling <br> - Conferencing |  |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Topic \#1: Translating to Equations Lab: RAFT - Meet my Function Machine | 1 day |
| Topic \#2: Dependent and Independent Variables | 4 days |
| Topic \#3: Equations and Tables | 4 days |
| Topic \#4: Graphing Equations | 4 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/dependent/ <br> - http://www.raftbayarea.org/ideas/Meet\%20My\%20Function\%20Machine.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| 21st Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy 21st Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |


| Belvidere Cluster Wide <br> Mathematics Curriculum <br> 6th Grade <br> Unit Plan 8 |  |
| :--- | :--- |
| Title: Graphing |  |
| Grade Level: 6 | Approximate Time: 1.5 weeks |



## Possible Alternative Assessments:

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

| Suggested Lesson Plan |  |
| :---: | :---: |
| Topics | Approximate Timeframe |
| Topic \#1: Cartesian Plane | 1 day |
| Topic \#2: Graphing Ordered Pairs Lab: RAFT - Graphing Race to the Edge | 3 days |
| Topic \#3: Polygons in the Coordinate Plane | 1 day |
| Topic \#4: Cartesian Plane Applications | 1.5 days |
| Review, Chapter Test | 1.5 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/graphing-6th-grade/ <br> - http://www.raftbayarea.org/ideas/Graphing\%20Race\%20to\%20the\%20Edge.pdf <br> - https://www.khanacademy.org/ <br> - Approved class textbooks |  |
| Lesson Components |  |
| $21^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> $21^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |

## Belvidere Cluster Wide

## Mathematics Curriculum

6th Grade
Unit Plan 9

## Title: Geometry/Measurement

Grade Level: 6
Approximate Time: 4 weeks

Chapter Summary: This chapter will allow students to explore how to find the area of different figures. They will be introduced to 3-Dimensional figures, as well as learn to calculate their surface area and volume. Polygons will also be displayed on coordinate planes and irregular figures will be examined.


## Domain: Geometry

Cluster: Solve real-world and mathematical problems involving area, surface area, and volume.

| Standard \#s: | Standards: |
| :--- | :--- |
| 6.G.1 | Find the area of right triangles, other triangles, special quadrilaterals, and <br> polygons by composing into rectangles or decomposing into triangles and <br> other shapes; apply these techniques in the context of solving real-world and <br> mathematical problems. |
| 6.G.2 | Find the volume of a right rectangular prism with fractional edge lengths by <br> packing it with unit cubes of the appropriate unit fraction edge lengths, and <br> show that the volume is the same as would be found by multiplying the edge <br> lengths of the prism. Apply the formulas $V=I \mathrm{w}$ and $\mathrm{V}=\mathrm{b} h$ to find volumes <br> of right rectangular prisms with fractional edge lengths in the context of <br> solving real-world and mathematical problems. |
| 6.G.3 | Draw polygons in the coordinate plane given coordinates for the vertices; use <br> coordinates to find the length of a side joining points with the same first <br> coordinate or the same second coordinate. Apply these techniques in the <br> context of solving real-world and mathematical problems. |
| 6.G.4 | Represent three-dimensional figures using nets made up of rectangles and <br> triangles, and use the nets to find the surface area of these figures. Apply <br> these techniques in the context of solving real-world and mathematical <br> 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. |

Chapter Essential Question:
How is the area of a figure calculated?
How do irregular figures and shaded region affect the area of the figure?
What is a 3-Dimensional figure compared to a 2-Dimensional figure?
Are surface area and volume the same as area?

Chapter Enduring Understanding:
The area of different figures can be calculated using different, yet similar formulas.
3-Dimensional solids have unique properties and characteristics. Surface area and volume can be calculated using formulas.
Polygons can be represented in a coordinate plane.

## Chapter Objectives:

- Students will calculate the area of rectangles, parallelograms, triangles, and trapezoids.
- Students will solve for the area of irregular figures and shaded regions.
- Students will be introduced to 3-Dimensional solids.
- Students will determine the surface area and volume of different solids.
- Students will examine polygons in the coordinate plane .


## Evidence of Learning

## Possible Formative Assessments:

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/classwork
- Q and A
- Labs/Projects
- IXL.com
- TenMarks.com
- Firstinmath.com


## Summative Assessment:

Chapter Test
Possible Benchmark Assessments:

- Unit Assessment

Possible Alternative Assessments:

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

| Suggested Lesson Plan |  |
| :--- | :---: |
| Topics | Approximate Timeframe |
| Topic \#1: Area of Rectangles <br> Lab (to review): RAFT - Polygon Pursuit | 1 day |
| Topic \#2: Area of Parallelograms | 1.5 days |
| Topic \#3: Area of Right Triangles <br> Lab: Area of Right Triangles Exploratory Challenge | 1 day |
| Topic \#4: Area of Acute and Obtuse Triangles <br> Lab: Area of Acute and Obtuse Exploratory Challenge | 1 day |
| Topic \#5: Area of Trapezoids | 2 days |
| Topic \#6: Mixed Review: Area | 1 day |
| Topic \#7: Area of Irregular Figures | 1.5 days |
| Topic \#8: Area of Shaded Regions | 1 day |
| Topic \#9: 3-Dimensional Solids <br> Lab: RAFT - Shape Skeletons | 1 day |
| Topic \#10: Nets <br> Lab: Nets Exploratory Challenge Lab |  |


| Topic \#11: Surface Area | 2 days |
| :---: | :---: |
| Topic \#12: Volume Lab: RAFT - Chewed Food | 2 days |
| Topic \#13: Surface Area \& Volume Application Problems | 2 days |
| Topic \#14: More Polygons in the Coordinate Plane | 3 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/ <br> - http://www.raftbayarea.org/ideas/Polygon\%20Pursuit.pdf <br> - http://www.raftbayarea.org/ideas/Shape\%20Skeletons.pdf <br> - http://www.raftbayarea.org/ideas/Chewed\%20Food.pdf <br> - http://www.engageny.org/sites/default/files/resource/attachments/math-g6-m5-teacher-materia Is.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom text books |  |
| Lesson Components |  |
| 21st Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> 21st Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |


| Belvidere Cluster Wide <br> Mathematics Curriculum <br> 6th Grade <br> Unit Plan 10 |  |
| :--- | :--- |
| Title: Statistical Variability | Approximate Time: 2 weeks |
| Grade Level: 6 | Chapter Summary: In this chapter the students will explore and understand mean, median, and mode. The <br> students will then strengthen their understanding by working through some application problems. Then |



| - Homework/classwork <br> - $Q$ and $A$ <br> - Labs/Projects <br> - IXL.com <br> - TenMarks.com <br> - Firstinmath.com |  |
| :---: | :---: |
| Summative Assessment: <br> - Chapter Test |  |
| Possible Benchmark Assessments: <br> - Unit Assessment |  |
| Possible Alternative Assessments: <br> - Choice boards - projects <br> - Skit <br> - Demonstration <br> - Journaling <br> - Conferencing |  |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Chapter Intro: What is Statistics? | 0.5 day |
| Topic \#1: Measures of Center (Mean, Median, Mode) | 2.5 days |
| Topic \#2: Central Tendency Application Problems | 2 day |
| Topic \#3: Measures of Variation (Min-Max, Range, Quartiles, Outliers, Mean Absolute Deviation) <br> Lab: RAFT - Medi, Meany, Midi, Mode <br> Lab: RAFT - Who is the Outlier | 4 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/statistical-variability/ <br> - http://www.raftbayarea.org/ideas/Medi\%20Meany\%20Midi\%20Mode.pdf <br> - http://www.raftbayarea.org/ideas/Who\%20is\%20The\%200utlier.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| 21 ${ }^{\text {st }}$ Century Skills <br> - Financial, Economic, Business, and Entrepreneurial Literacy <br> $21^{\text {st }}$ Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |
| BeIvidere Cluster Wide Mathematics Curriculum 6th Grade Unit Plan 11 |  |
| Title: Data Displays |  |
| Grade Level: 6 | ApproximateTime: 2 weeks |



| - Journaling <br> - Conferencing |  |
| :---: | :---: |
| Suggested Lesson Plan |  |
| Topics | Approximate Timeframe |
| Topic \#1: Data Displays | 0.5 day |
| Topic \#2: Frequency Tables and Histograms | 1.5 days |
| Topic \#3: Box-and-Whisker Plots | 2 days |
| Topic \#4: Dot Plots | 1 days |
| Topic \#5: Analyzing Data Displays | 2 days |
| Review and Chapter Test | 2 days |
| Curriculum Development Resources: <br> - https://njctl.org/courses/math/6th-grade-math/data-displays/ <br> - http://www.raftbayarea.org/ideas/Medi\%20Meany\%20Midi\%20Mode.pdf <br> - http://www.raftbayarea.org/ideas/Who\%20is\%20The\%200utlier.pdf <br> - https://www.khanacademy.org/ <br> - Approved classroom textbooks |  |
| Lesson Components |  |
| 21st Century Skills <br> - Financial, Economic, Business, and E 21st Century Themes <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration <br> - Life and Career Skills |  |

