

**Belvidere Cluster Wide  
Mathematics Curriculum  
7th 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

iXL

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
- Teacher 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

|  |  |
|--|--|
| <b>Title:</b> 2D Geometry  |  |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade  | <b>Approximate Time:</b> 3 weeks   |
| <b>Chapter Summary:</b> This chapter will allow students to solve for area and perimeter of different 2D geometrical shapes. They will calculate the area of rectangles, parallelograms, triangles, trapezoids, circles, irregular figures, and shaded figures. They will also explore special pairs of angles and the relationships they hold.  |  |
| <b>Learning Targets</b>  |  |
| PARCC ■ Major Clusters; ■ Supporting Clusters; ● Additional Clusters   |  |
| Domain: Geometry   |  |
| <b>Cluster:</b> Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.   |  |
| <b>Standard #s:</b>  | <b>Standards:</b>  |
| 7.G.4  | Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.   |
| 7.G.5  | Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.  |
| 7.G.6  | Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.   |
| Domain: Expressions and Equations  |  |
| <b>Cluster:</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations.   |  |
| <b>Standard # :</b>  | <b>Standard:</b>   |
| 7.EE.3   | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. |
| 7.EE.4   | Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.  |
| <b>Chapter Essential Question:</b><br>· What is difference between area and perimeter?   | <b>Chapter Enduring Understandings:</b><br>· Formulas can be determined and used to calculate the area of both regular and irregular shapes.   |
| <b>Chapter Objectives:</b> <ul style="list-style-type: none"> <li>· Students will calculate the perimeter of different 2D geometrical figures.</li> <li>· Students will calculate the circumference and area of different circles.</li> <li>· Students will be able to determine whether a triangle is possible or not.</li> <li>· Students will discover special pairs of triangles and the relationships they yield.</li> <li>· Students will calculate the area of rectangles, parallelograms, triangles and trapezoids.</li> <li>· Students will use previous knowledge of area formulas to calculate the area of irregular and shaded figures.</li> </ul> |  |
| <b>Evidence of Learning</b>  |  |

**Possible Formative Assessments:**

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/Classwork
- Q and A
- Labs/Projects
- IXL
- First in Math
- TenMarks Education

**Summative Assessment:**

- Unit Test

**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

**Suggested Lesson Plan**

| Topics  | Approximate Time frame |
|---|------------------------|
| Topic #1: Special Pairs of Angles                                       | 1.5 days               |
| Topic #2: Perimeter & Circumference<br>Suggested Lab: RAFT – Finding Pi | 2 days                 |
| Topic #3: Area of Rectangles  | 1 day                  |
| Topic #4: Area of Parallelograms  | 1.5 days               |
| Topic #5: Area of Triangles   | 1 day                  |
| Topic #6: Area of Trapezoids  | 1 day                  |
| Topic #7: Area of Circles   | 1.5 days               |
| Topic #8: Mixed Review  | 1 day                  |
| Topic #9: Area of Irregular Figures                                     | 2 day                  |
| Topic #10: Area of Shaded Regions                                       | 1.5 days               |
| Review and Unit Test  | 2 days                 |

**Curriculum Resources:**

- <https://njctl.org/courses/math/7th-grade/>
- <http://www.raftbayarea.org/ideas/Finding%20Pi.pdf>
- <https://www.khanacademy.org/>
- Approved Classroom Textbooks

**Belvidere Cluster Wide  
Mathematics Curriculum  
7th Grade  
Unit Plan**

**Title:** 3-D Geometry

**Grade Level:** 7<sup>th</sup> Grade

**Approximate Time:** 4 weeks

**Chapter Summary:** This chapter will introduce students to different properties of 3D figures. They will be able to compute the surface area of 3D figures, as well as their volume. The Chapter will also provide problems of how 3D figures are found in everyday life.

**Learning Targets**

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

|   |  |
|---|--|
| Domain: Geometry  |  |
| Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.   |  |
| Standard #:   | Standard:  |
| 7.G.3   | Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.  |
| Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.   |  |
| 7.G.6   | Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.   |
| Domain: Expressions and Equations   |  |
| Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.   |  |
| 7.EE.3  | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. |
| 7.EE.4  | Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.  |
| Chapter Essential Questions:  | Chapter Enduring Understandings:   |
| <ul style="list-style-type: none"> <li>· How are 3D figures different from 2D figures?</li> <li>· What is a cross section of a figure and how will that help compute properties of the figure?</li> <li>· How are surface area and volume found for a 3D figure?</li> </ul>             | <ul style="list-style-type: none"> <li>· 3D figures have unique characteristics and properties.</li> <li>· Perimeter and area of 2D figures are useful when finding volume and surface area of 3D figures.</li> </ul>  |
| Chapter Objectives:   |  |
| <ul style="list-style-type: none"> <li>· Students will be introduced to 3D solids and cross sections of 3D figures.</li> <li>· Students will learn how to compute the volume of different 3D figures.</li> <li>· Students will compute surface area of different 3D figures.</li> </ul> |  |
| Evidence of Learning  |  |
| Possible Formative Assessments:   |  |
| <ul style="list-style-type: none"> <li>· SMART Response questions used throughout the chapter.</li> <li>· Quizzes</li> <li>· Homework/Classwork</li> <li>· Q and A</li> <li>· Labs/Projects</li> <li>· Facts in Math</li> <li>· ixl</li> <li>· TenMarks Education</li> </ul>            |  |



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: 3D Solids<br>Suggested Lab: RAFT – Making 3D Shapes   | 2 days                |
| Topic #2: Cross Sections of 3D Figures  | 2 days                |
| Topic #3: Volume: Prisms & Cylinders<br>Suggested Lab: Volume Activity<br>Suggested Lab: RAFT – The Long and the Short of It  | 2 days                |
| Topic #4: Volume: Pyramids, Cones & Spheres   | 2 days                |
| Topic #5: Surface Area – Prisms<br>Lab: Surface Area Activity   | 2 days                |
| Topic #6: Surface Area – Pyramids   | 2 days                |
| Topic #7: Surface Area – Cylinders  | 2 days                |
| Topic #8: Surface Area – Spheres  | 2 days                |
| Topic #9: More Practice   | 2 days                |
| Topic #10: Review & Chapter Test  | 2 days                |
| Curriculum Resources:<br>· <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a><br>· <a href="http://www.raftbayarea.org/ideas/Making%203D%20Shapes.pdf">http://www.raftbayarea.org/ideas/Making%203D%20Shapes.pdf</a><br>· <a href="http://www.raftbayarea.org/ideas/Long%20and%20Short%20of%20It.pdf">http://www.raftbayarea.org/ideas/Long%20and%20Short%20of%20It.pdf</a><br>· <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a><br>· Approved Classroom Textbooks |                       |

| Belvidere Cluster Wide<br>Mathematics Curriculum<br>7th Grade<br>Unit Plan  |                                 |
|---|---------------------------------|
| <b>Title:</b> Drawing Geometric Figures   |                                 |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade   | <b>Approximate Time:</b> 1 week |
| <b>Chapter Summary:</b> This chapter will have students determining if a triangle can be created using the given conditions. Students will also create some simple geometric constructions. |                                 |
| Learning Targets  |                                 |
| PARCC <span style="color: green;">■</span> Major Clusters; <span style="color: blue;">■</span> Supporting Clusters; <span style="color: yellow;">■</span> Additional Clusters               |                                 |

|  |   |
|--|---|
| Domain: Geometry   |   |
| Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.  |   |
| Standard #s:   | Standards:  |
| 7.G.2  | Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. |
| Chapter Essential Questions:<br>· Can we determine if three side lengths would create a triangle?  | Chapter Enduring Understandings:<br>· Geometric figures can be drawn based on given conditions.   |
| Chapter Objectives:<br>· Students will be able to determine if a triangle is possible.<br>· Students will be able to draw triangles freehand, with ruler and protractor and with technology.           |   |
| Evidence of Learning   |   |
| Possible Formative Assessments:<br>· SMART Response questions used throughout the chapter.<br>· Quizzes<br>· Homework/Classwork<br>· Labs/Projects<br>· IXL<br>· First in Math<br>· TenMarks Education |   |
| Summative Assessment: Quiz   |   |

**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

| Suggested Lesson Plan   |                       |
|---|-----------------------|
| Topics  | Approximate Timeframe |
| Topic #1: Determining if a Triangle is Possible   | 2 days                |
| Topic #2: Geometric Constructions: The Basics   | 2.5 days              |
|   | 0.5 day               |
| Curriculum Resources:<br>· <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a><br>· <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a><br>· Approved Classroom Textbooks |                       |

**Belvidere Cluster Wide  
Mathematics Curriculum  
7th Grade  
Unit Plan**

**Title:** Equations & Inequalities

**Grade Level:** 7<sup>th</sup> Grade

**Approximate Time:** 4 weeks

**Chapter Summary:** This chapter will introduce students to different properties equations can have. They will be able to combine like terms, solve multi-step equations, and deal with inequalities. Also, they will identify what the associative, commutative, and distributive properties are.

**Learning Targets**

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

Domain: Expressions and Equations

**Cluster:** Use properties of operations to generate equivalent expressions

|  |   |
|--|---|
| Standard #:  | Standard:   |
| 7.EE.1   | Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.  |
| 7.EE.2   | Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, <math>a + 0.05a = 1.05a</math> means that "increase by 5%" is the same as "multiply by 1.05."</i>   |
| Cluster:   | Solve real-life and mathematical problems using numerical and algebraic expressions and equations.  |
| Standard #s:   | Standards:  |
| 7.EE.3   | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.  |
| 7.EE.4   | Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.<br>a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?<br>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions |
| <b>Domain:</b> Standards for Math Practice   |   |
| <b>Standard#:</b>  | <b>Standard:</b>  |
| 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 Questions:<br><ul style="list-style-type: none"> <li>· How are equations solved?</li> <li>· What are different properties of equations and how can they help solve them?</li> <li>· What happens when two sides of an equation are not equal?</li> </ul> | Chapter Enduring Understandings:<br><ul style="list-style-type: none"> <li>· Equations can be solved using different properties.</li> <li>· Sometimes there is more than one step to solve in an equation.</li> <li>· Inequalities are used when solving for real life application problems.</li> </ul>   |

**Chapter Objectives:**

- Students will examine commutative and associative properties of different equations.
- Students will combine like terms within an equation and learn to use the distributive property to solve equations.
- Students will solve multi-step equations involving different techniques.
- Students will graph and solve inequalities involving addition, subtraction, multiplication, and division.

**Evidence of Learning****Possible Formative Assessments:**

- SMART Response questions used throughout the chapter.
- Quizzes
- Homework/Classwork
- Labs/Projects
- IXL
- First in Math
- TenMarks Education

**Summative Assessment:**

- Chapter tests

**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

**Suggested Lesson Plan**

| Topics  | Approximate Timeframe |
|---|-----------------------|
| Topic #1: Equations & Identities  | 0.5 day               |
| Topic #2: Solving an Equation for a Variable  | 1.5 days              |
| Topic #3: One Step Equations  | 2 days                |
| Topic #4: Two Step Equations<br>Suggested Lab: RAFT – Shape up with Algebra   | 2 days                |
| Topic #5: Multi-Step Equations<br>Suggested Lab: RAFT – Modeling Simple Equations   | 2 days                |
| Topic #6: Distributing Fractions in Equations   | 1 day                 |
| Topic #7: Writing & Solving Algebraic Equations<br>Suggested Lab: RAFT – Dive into Square Pools                                   | 3 days                |
| Topic #8: Graphing & Writing Inequalities with One Variable   | 3 days                |
| Topic #9: Simple Inequalities Involving Addition & Subtraction  | 1 day                 |
| Topic #10: Simple Inequalities involving Multiplication & Division<br>Suggested Lab: Multiplying or Dividing by a Negative Number | 2 days                |

|  |        |
|--|--------|
| Review & Unit Test   | 2 days |
| Curriculum Resources:  |        |
| <ul style="list-style-type: none"> <li>· <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Shape%20Up%20with%20Algebra.pdf">http://www.raftbayarea.org/ideas/Shape%20Up%20with%20Algebra.pdf</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Modeling%20Simple%20Equations.pdf">http://www.raftbayarea.org/ideas/Modeling%20Simple%20Equations.pdf</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Dive%20into%20Square%20Pools.pdf">http://www.raftbayarea.org/ideas/Dive%20into%20Square%20Pools.pdf</a></li> <li>· <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a></li> <li>· Approved Classroom Textbook</li> </ul> |        |
| <b>Lesson Components</b>   |        |
| <p><b>21<sup>st</sup> Century Skills</b></p> <ul style="list-style-type: none"> <li>● Financial, Economic, Business, and Entrepreneurial Literacy</li> </ul> <p><b>21<sup>st</sup> Century Themes</b></p> <ul style="list-style-type: none"> <li>● Critical Thinking and Problem Solving</li> <li>● Communication and Collaboration</li> <li>● Life and Career Skills</li> <li>● Information Literacy</li> <li>● ICT Literacy</li> </ul>   |        |

|   |                                  |
|---|----------------------------------|
| <b>Belvidere Cluster Wide<br/>Mathematics Curriculum<br/>7th Grade<br/>Unit Plan</b>  |                                  |
| <b>Title:</b> Expressions   |                                  |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade   | <b>Approximate Time:</b> 3 weeks |
| <p><b>Chapter Summary:</b> This chapter will introduce students to different properties expressions can have. They will be able to combine like terms, write expressions when given a verbal phrase, and evaluate both numeric and algebraic expressions.</p> |                                  |
| <b>Learning Targets</b>   |                                  |
| PARCC <span style="color: green;">■</span> Major Clusters; <span style="color: blue;">■</span> Supporting Clusters; <span style="color: yellow;">●</span> Additional Clusters   |                                  |
| Domain: Number System   |                                  |

|   |  |
|---|--|
| <b>Cluster:</b> Apply and extend previous understandings of operations with fractions.  |  |
| <b>Standard #:</b>  | <b>Standard:</b>   |
| <b>7.NS.1</b>   | Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.<br>d. Apply properties of operations as strategies to add and subtract rational numbers.  |
| <b>7.NS.2</b>   | Apply and extend previous understandings of multiplication and division to multiply and divide rational numbers.<br>c. Apply properties of operations as strategies to multiply and divide rational numbers  |
| <b>7.NS.3</b>   | Solve real-world and mathematical problems involving the four operations with rational numbers.  |
| <b>Cluster:</b> Use properties of operations to generate equivalent expressions   |  |
| <b>Standard #:</b>  | <b>Standard:</b>   |
| <b>7.EE.1</b>   | Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.   |
| <b>7.EE.2</b>   | Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, <math>a + 0.05a = 1.05a</math> means that "increase by 5%" is the same as "multiply by 1.05."</i>  |
| <b>Cluster:</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations.  |  |
| <b>Standard #s:</b>   | <b>Standards:</b>  |
| <b>7.EE.3</b>   | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. |
| <b>Domain: Standards for Math Practice</b>  |  |
| <b>Standard#:</b>   | <b>Standard:</b>   |
| 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 Questions:<br><ul style="list-style-type: none"> <li>What is a numeric expression &amp; how is it evaluated?</li> <li>What is an algebraic expression &amp; how is it simplified?</li> <li>How is an algebraic expression evaluated?</li> </ul> | Chapter Enduring Understandings:<br><ul style="list-style-type: none"> <li>A numeric expression is an expression of numbers and operations. When evaluating them, there is a specific order, called the order of operations.</li> <li>An algebraic expression is an expression that contains both numbers and variables that is simplified using the distributive property and combining like terms.</li> </ul>  |

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|  | <ul style="list-style-type: none"> <li>An algebraic expression is evaluated using substitution followed by the order of operations.</li> </ul> |
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| <p>Chapter Objectives:</p> <ul style="list-style-type: none"> <li>Students will identify constants, coefficients, and variables in an algebraic expression.</li> <li>Students will evaluate a numerical expression using the correct order of operations.</li> <li>Students will use the distributive property to simplify algebraic expressions.</li> <li>Students will learn to simplify algebraic expressions by combine like terms.</li> <li>Students will translate verbal phrases into mathematical and algebraic expressions.</li> <li>Students will evaluate algebraic expressions when each variable is assigned a value using substitution and the order of operations.</li> </ul> |
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| <b>Evidence of Learning</b> |
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| <p>Possible Formative Assessments:</p> <ul style="list-style-type: none"> <li>SMART Response questions used throughout the chapter.</li> <li>Quizzes</li> <li>Homework/Classwork</li> <li>Labs/Projects</li> <li>IXL</li> <li>First in Math</li> <li>TenMarks Education</li> </ul> |
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| <p>Summative Assessment:</p> <ul style="list-style-type: none"> <li>Chapter test</li> </ul> |
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**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

| Suggested Lesson Plan   |                       |
|---|-----------------------|
| Topics  | Approximate Timeframe |
| Topic #1: Mathematical Expressions  | 1 day                 |
| Topic #2: Order of Operations   | 2 days                |
| Topic #3: The Distributive Property   | 2 days                |
| Suggested Lab – Comparing Cards<br>Topic #4: Like Terms<br>Suggested Lab – Ordering Combo Meals | 3 days                |
| Topic #5: Translating Words into Expressions  | 2 days                |
| Topic #6: Evaluating Expressions  | 2 days                |
| Review & Unit Test  | 2 days                |

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| <p>Curriculum Resources:</p> <ul style="list-style-type: none"> <li><a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a></li> <li><a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a></li> </ul> |
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| Approved Classroom Textbooks   |
| <b>Lesson Components</b>   |
| <p><b>21<sup>st</sup> Century Skills</b></p> <ul style="list-style-type: none"> <li>• Financial, Economic, Business, and Entrepreneurial Literacy</li> </ul> <p><b>21<sup>st</sup> Century Themes</b></p> <ul style="list-style-type: none"> <li>• Critical Thinking and Problem Solving</li> <li>• Communication and Collaboration</li> <li>• Life and Career Skills</li> </ul> |

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| <b>Belvidere Cluster Wide<br/>Mathematics Curriculum<br/>7th Grade<br/>Unit Plan</b>  |                                  |
| <b>Title:</b> Numbers & Operations  |                                  |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade   | <b>Approximate Time:</b> 5 weeks |
| <p><b>Chapter Summary:</b> This chapter will allow students to further their understanding of the number system. They will explore rational numbers and perform numerous operations using them. They will add, subtract, multiply, and divide rational numbers when solving equations. They will also extend their knowledge of rational numbers to decimals and real world applications.</p> |                                  |
| Learning Targets  |                                  |

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| PARCC <span style="color: green;">■</span> Major Clusters; <span style="color: blue;">■</span> Supporting Clusters; <span style="color: yellow;">■</span> Additional Clusters  |   |
| Domain: The Number System  |   |
| <b>Cluster:</b> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers  |   |
| Standard #s:   | Standards:  |
| <b>7.NS.1</b>  | Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.  |
| <b>7.NS.2</b>  | Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.   |
| <b>7.NS.3</b>  | Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.  |
| Chapter Essential Question:<br><ul style="list-style-type: none"> <li>· How do operations affect rational numbers?</li> <li>· How can we use rational numbers to solve real world application problems?</li> </ul>   | Chapter Enduring Understandings:<br><ul style="list-style-type: none"> <li>· Previous understanding of operations of numbers can be directly applied to rational numbers.</li> <li>· Rational numbers can be used to solve real word problems.</li> </ul> |
| Chapter Objectives:<br><ul style="list-style-type: none"> <li>· Students will be applying their prior knowledge of the number system to problems involving rational numbers.</li> <li>· Students will be able to add, subtract, multiply and divide rational numbers.</li> <li>· Students will transform rational numbers into decimals.</li> <li>· Students will solve real world problems using rational numbers.</li> </ul> |   |
| <b>Evidence of Learning</b>  |   |
| Possible Formative Assessments:<br><ul style="list-style-type: none"> <li>· SMART Response questions used throughout the chapter.</li> <li>· Quizzes</li> <li>· Homework/Classwork</li> <li>· Labs/Projects</li> <li>· IXL</li> <li>· First in Math</li> <li>· TenMarks Education</li> </ul>   |   |
| Summative Assessment:<br><ul style="list-style-type: none"> <li>· Chapter test</li> </ul>  |   |

**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

| Suggested Lesson Plan  |                       |
|--|-----------------------|
| Topics   | Approximate Timeframe |
| Topic #1: Addition, Natural Numbers & Whole Numbers  | 0.5 day               |
| Topic #2: Addition Subtraction and Integers<br>Suggested Lab: RAFT – The Absolutely Valuable Game  | 3.5 days              |
| Topic #3: Addition and Subtraction of Integers   | 3.5 days              |
| Topic #4: Multiplication and Division of Integers  | 2.5 days              |
| Topic #5: Operations with Rational Numbers<br>Suggested Lab: RAFT – Fraction Action Game   | 3 days                |
| Topic #6: Addition and Subtraction of Rational Numbers<br>Suggested Lab: RAFT – Above and Below Zero Game<br>Suggested Lab: RAFT – Graphing Race to the Edge   | 3.5 days              |
| Topic #7: Multiplication and Division of Rational Numbers  | 2.5 days              |
| Topic #8: Converting Rational Numbers to Decimals  | 1.5 days              |
| Topic #9: Exponents  | 2 days                |
| Topic #10: Real Numbers  | 0.5 day               |
| Review and Unit Test   | 2 days                |
| Curriculum Resources:  |                       |
| <ul style="list-style-type: none"> <li>• <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a></li> <li>• <a href="http://www.raftbayarea.org/ideas/Fraction%20Action%20Game.pdf">http://www.raftbayarea.org/ideas/Fraction%20Action%20Game.pdf</a></li> <li>• <a href="http://www.raftbayarea.org/ideas/Absolutely%20Valuable%20Game.pdf">http://www.raftbayarea.org/ideas/Absolutely%20Valuable%20Game.pdf</a></li> <li>• <a href="http://www.raftbayarea.org/ideas/Above%20and%20Below%20Zero%20Game.pdf">http://www.raftbayarea.org/ideas/Above%20and%20Below%20Zero%20Game.pdf</a></li> <li>• <a href="http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf">http://www.raftbayarea.org/ideas/Graphing%20Race%20to%20the%20Edge.pdf</a></li> <li>• <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a></li> <li>• Approved Classroom Textbooks</li> </ul> |                       |

| Belvidere Cluster Wide<br>Mathematics Curriculum<br>7th Grade<br>Unit Plan  |                                  |
|---|----------------------------------|
| <b>Title:</b> Percents  |                                  |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade   | <b>Approximate Time:</b> 2 weeks |
| <b>Chapter Summary:</b> This chapter will introduce students to percents. They will learn the different types of percent problems and how to represent the percent equations algebraically. They will also learn how to solve real world application problems involving percents. |                                  |
| Learning Targets  |                                  |
| PARCC <span style="color: green;">■</span> Major Clusters; <span style="color: blue;">■</span> Supporting Clusters; <span style="color: yellow;">●</span> Additional Clusters   |                                  |

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| Domain: Ratios and Proportional Relationships  |  |
| <b>Cluster:</b> Analyze proportional relationships and use them to solve real-world and mathematical problems.   |  |
| Standard #:  | Standard:  |
| <b>7.RP.3</b>  | Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.   |
| Domain: Expressions and Equations  |  |
| <b>Cluster:</b> Use properties of operations to generate equivalent expressions  |  |
| Standard # :   | Standard:  |
| <b>7.EE.2</b>  | Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.  |
| <b>Cluster:</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations.   |  |
| Standard #:  | Standard:  |
| <b>7.EE.3</b>  | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. |
| Chapter Essential Question:<br><ul style="list-style-type: none"> <li>· How are percents used to help solve real world application problems?</li> <li>· What are the different ways percent problems are represented?</li> </ul>   | Chapter Enduring Understandings:<br><ul style="list-style-type: none"> <li>· Percents are used in real world problems.</li> <li>· Percents can be applied to problems in different ways.</li> </ul>  |
| Chapter Objectives:<br><ul style="list-style-type: none"> <li>· Students will be able to relate fractions, decimals, and percents to each other.</li> <li>· Students will solve three different types of percent problems.</li> <li>· Students will represent percent equations in an algebraic context.</li> <li>· Students will apply percent of increase and percent of decrease when solving problems.</li> <li>· Students will use their knowledge of percents to help them solve real world problems.</li> </ul> |  |
| <b>Evidence of Learning</b>  |  |
| Possible Formative Assessments:<br><ul style="list-style-type: none"> <li>· SMART Response questions used throughout the chapter.</li> <li>· Quizzes</li> <li>· Homework/Classwork</li> <li>· Labs/Projects</li> <li>· IXL</li> <li>· First in Math</li> <li>· TenMarks Education</li> </ul>   |  |
| Summative Assessment:  |  |

· Chapter test

**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

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

| Suggested Lesson Plans  |                       |
|---|-----------------------|
| Lessons   | Approximate Timeframe |
| Lesson #1: Relating Fractions, Decimals and Percents  | 1 days                |
| Lesson #2: Three Types of Percent Problems  | 2 days                |
| Lesson #3: Percent of Change  | 1 days                |
| Lesson #4: Representing Percent Equations Algebraically   | 1 days                |
| Lesson #5: Applied Percent of Decrease  | 0.5 day               |
| Lesson #6: Applied Percent of Increase  | 0.5 day               |
| Lesson #7: Real-life Application Problems   | 2 days                |
| Review & Unit Test  | 2 days                |
| Curriculum Resources:   |                       |
| · <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a> |                       |
| · <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a>                           |                       |
| · Approved Classroom Textbooks  |                       |

| Belvidere Cluster Wide<br>Mathematics Curriculum<br>7th Grade<br>Unit Plan  |                                  |
|---|----------------------------------|
| <b>Title:</b> Ratios & Proportions  |                                  |
| <b>Grade Level:</b> 7 <sup>th</sup> Grade   | <b>Approximate Time:</b> 4 weeks |
| <b>Chapter Summary:</b> This chapter will give students the opportunity to analyze proportional relationships to solve ratios, proportions, and real-world math problems.     |                                  |
| Learning Targets  |                                  |
| PARCC <span style="color: green;">■</span> Major Clusters; <span style="color: blue;">■</span> Supporting Clusters; <span style="color: yellow;">●</span> Additional Clusters |                                  |
| <b>Domain:</b> Ratios and Proportional Relationships  |                                  |

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| <b>Cluster:</b> Analyze proportional relationships and use them to solve real-world and mathematical problems.   |  |
| <b>Standard #:</b>   | <b>Standard:</b>   |
| <b>7.RP.1</b>  | Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.   |
| <b>7.RP.2</b>  | Recognize and represent proportional relationships between quantities.<br>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.<br>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.<br>c. Represent proportional relationships by equations. <i>For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</i><br>d. Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where $r$ is the unit rate. |
| <b>Domain: Geometry</b>  |  |
| <b>Cluster:</b> Draw, construct, and describe geometrical figures and describe the relationships between them.   |  |
| <b>Standard # :</b>  | <b>Standard:</b>   |
| <b>7.G.1</b>   | Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.  |
| <b>Chapter Essential Questions:</b><br><ul style="list-style-type: none"> <li>How do you recognize and represent proportional relationships between quantities?</li> <li>How do you apply proportions?</li> </ul>  | <b>Chapter Enduring Understandings:</b><br><ul style="list-style-type: none"> <li>Utilize proportional relationships to solve real-world problems.</li> </ul>  |
| <b>Chapter Objectives:</b> <ul style="list-style-type: none"> <li>Students will be able to write ratios for various situations.</li> <li>Students will be able to determine if ratios are equivalent as well as how to determine an unknown in an equivalent ratio.</li> <li>Students will be able to calculate unit rates to solve word problems.</li> <li>Students will use proportions to solve problems.</li> <li>Students will use proportions to determine the relationship in a table and graph, determine the constant of proportionality, write equations and understand graphs or proportions.</li> <li>Students will use proportions to solve problems involving scale drawings and similar figures.</li> </ul> |  |
| <b>Evidence of Learning</b>  |  |
| <b>Possible Formative Assessments:</b> <ul style="list-style-type: none"> <li>SMART Response questions used throughout the chapter.</li> <li>Quizzes</li> <li>Homework/Classwork</li> <li>Labs/Projects</li> <li>IXL</li> <li>First in Math</li> <li>TenMarks Education</li> </ul>   |  |
| <b>Summative Assessment:</b> <ul style="list-style-type: none"> <li>Chapter test</li> </ul>  |  |
| <b>Possible Benchmark Assessments:</b> <ul style="list-style-type: none"> <li>Unit Assessment</li> </ul>   |  |
| <b>Possible Alternative Assessments:</b> <ul style="list-style-type: none"> <li>Choice boards - projects</li> <li>Skit</li> </ul>  |  |

- Demonstration
- Journaling
- Conferencing

**Suggested Lesson Plan**

| Topics  | Approximate Timeframe |
|---|-----------------------|
| Topic #1: Writing Ratios  | 1 days                |
| Topic #2: Equivalent Ratios   | 1 days                |
| Topic #3: Rates   | 2.5 days              |
| Topic #4: Proportions   | 1.5 days              |
| Topic #5: Direct & Indirect Relationships in Tables and Graphs  | 1 days                |
| Topic #6: Constant of Proportionality   | 2 days                |
| Topic #7: Writing Equations for Proportions   | 1.5 days              |
| Topic #8: Understanding Graphs of Proportions   | 1 days                |
| Topic #9: Problem Solving   | 1 days                |
| Topic #10: Scale Drawings<br>Suggested Lab: RAFT – Planet Beads<br>Suggested Lab: RAFT – Sun and Planets to Scale | 4 days                |
| Topic #11: Similar Figures<br>Suggested Lab: RAFT – Building it Bigger  | 2 days                |
| Chapter Review and Chapter Test   | 2 days                |

**Curriculum Resources:**

- <https://njctl.org/courses/math/7th-grade/>
- <http://www.raftbayarea.org/ideas/Planet%20Beads.pdf>
- <http://www.raftbayarea.org/ideas/Sun%20and%20Planets%20to%20Scale.pdf>
- <http://www.raftbayarea.org/ideas/Building%20it%20Bigger.pdf>
- <https://www.khanacademy.org/>
- Approved Classroom Textbooks

**Belvidere Cluster Wide  
Mathematics Curriculum  
7th Grade  
Unit Plan**

**Title:** Statistics & Probability

**Grade Level:** 7<sup>th</sup> Grade

**Approximate Time:** 4 weeks

**Chapter Summary:** This chapter will introduce students to the concept of solving problems that involve different types of events. They will examine sampling, compare two populations, and distinguish properties of events. Permutations, combinations, and probability will be learned to help solve problems. The fundamental counting principle will also be utilized throughout the chapter. Students will also work with statistical measures.

Learning Targets

| PARCC ■ Major Clusters; ■ Supporting Clusters; ■ Additional Clusters                            |   |
|---|---|
| Domain: Statistics and Probability  |   |
| <b>Cluster:</b> Use random sampling to draw inferences about a population.                      |   |
| Standard #s:  | Standards:  |
| 7.SP.1  | Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences   |
| 7.SP.2  | Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.  |
| <b>Cluster:</b> Draw informal comparative inferences about two populations.                     |   |
| Standard #s :   | Standards:  |
| 7.SP.3  | Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.   |
| 7.SP.4  | Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book   |
| <b>Cluster:</b> Investigate chance processes and develop, use, and evaluate probability models. |   |
| Standard #s:  | Standards:  |
| 7.SP.5  | Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.   |
| 7.SP.6  | Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.  |
| 7.SP.7  | Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. <ul style="list-style-type: none"> <li>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</li> <li>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</li> </ul> |



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| 7.SP.8 | <p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?</p> |
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| <p>Chapter Essential Questions:</p> <ul style="list-style-type: none"> <li>· How does probability relate to real world application problems?</li> <li>· How can measures of center and variation be used to compare two sets of data?</li> <li>· How are different events classified and what can I use to solve them?</li> </ul> |
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| <p>Chapter Enduring Understandings:</p> <ul style="list-style-type: none"> <li>· Events are classified into different types. This determines the route to solving the problem.</li> <li>· Probability, measures of center, and measures of variation all are used to help solve real world application problems.</li> </ul> |
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| <p>Chapter Objectives:</p> <ul style="list-style-type: none"> <li>· Students will be introduced to the concept of sampling.</li> <li>· Students will be able to draw inferences about a population based off a sample.</li> <li>· Students will be able to compare two populations and solve real world application problems with them.</li> <li>· <i>Students will be able to measure the difference between the centers by expressing it as a multiple of a measure of variability.</i></li> <li>· <i>Students will understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.</i></li> <li>· Students will be able to use experimental and theoretical probability to determine the likelihood of an event occurring.</li> <li>· Students will use the fundamental counting principle to solve problems.</li> <li>· <i>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</i></li> </ul> |
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| Evidence of Learning |
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| <p>Possible Formative Assessments:</p> <ul style="list-style-type: none"> <li>· SMART Response questions used throughout the chapter.</li> <li>· Quizzes</li> <li>· Homework/Classwork</li> <li>· Labs/Projects</li> <li>· IXL</li> <li>· First in Math</li> <li>· TenMarks Education</li> </ul> |
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| <p>Summative Assessment:</p> <ul style="list-style-type: none"> <li>· Chapter test</li> </ul> |
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**Possible Benchmark Assessments:**

- Unit Assessment

**Possible Alternative Assessments:**

- Choice boards - projects
- Skit
- Demonstration
- Journaling

- Conferencing

| Suggested Lesson Plan  |                       |
|--|-----------------------|
| Topics   | Approximate Timeframe |
| Topic #1: Introduction to Probability  | 1 days                |
| Topic #2: Experimental and Theoretical   | 2 days                |
| Topic #3: Sampling<br>Suggested Lab: RAFT – Ample Samples  | 3 days                |
| Topic #4: Word Problems  | 2 days                |
| Topic #5: Probability of Compound Events<br>Suggested Lab: RAFT – Adventures in Probability<br>Suggested Lab: RAFT – Monty Hall Makes a Deal   | 4 days                |
| Topic #6: Measures of Center   | 2 days                |
| Topic #7: Measures of Variation  | 2 days                |
| Topic #8: Mean Absolute Deviation  | 2 days                |
| Review & Unit Test   | 2 days                |
| Curriculum Resources:  |                       |
| <ul style="list-style-type: none"> <li>· <a href="https://njctl.org/courses/math/7th-grade/">https://njctl.org/courses/math/7th-grade/</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Ample%20Samples.pdf">http://www.raftbayarea.org/ideas/Ample%20Samples.pdf</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Adventures%20in%20Probability.pdf">http://www.raftbayarea.org/ideas/Adventures%20in%20Probability.pdf</a></li> <li>· <a href="http://www.raftbayarea.org/ideas/Monty%20Hall%20Makes%20a%20Deal.pdf">http://www.raftbayarea.org/ideas/Monty%20Hall%20Makes%20a%20Deal.pdf</a></li> <li>· <a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a></li> <li>· Approved Classroom Textbook</li> </ul> |                       |