

# Red Bank Charter School

## Grade 7 Mathematics Curriculum

Recommended Pacing Guide	
Unit 1: The Number System	30 Days
Unit 2: Expressions and Equations	55 Days
Unit 3: Ratios & Proportional Relationships	55 Days
Unit 4: Statistics and Probability	25 Days
Unit 5: Geometry	15 Days

Suggested Accommodations For All Units
<p><b>English Language Learners:</b></p> <ul style="list-style-type: none"><li>● Pair ELL student with student who speaks English and understands/ able to communicate with student's native language</li><li>● Simplify content</li><li>● Google Translator</li><li>● Multi - language word wall</li><li>● Provide extended time</li><li>● Speak clearly and slowly, avoid slang and idiomatic expressions</li></ul> <p><b>Special Education/504 Plans/Students with Disabilities:</b></p> <ul style="list-style-type: none"><li>● Follow specific students accommodations and modifications as listed in individual student IEP or 504 plan</li></ul> <p><b>Gifted and Talented:</b></p> <ul style="list-style-type: none"><li>● Provide appropriate challenges for a wide ranging skills and development.</li><li>● Participate in inquiry and project-based learning units of study.</li><li>● Provide options, alternatives and choices to differentiate and broaden the curriculum</li></ul> <p><b>Students at Risk of Failure:</b></p> <ul style="list-style-type: none"><li>● Students Motivation<ul style="list-style-type: none"><li>○ Interest</li><li>○ Build confidence</li><li>○ Independence</li><li>○ Enjoyment</li></ul></li></ul>

**Economically Disadvantaged:**

- Build a safe and nurturing atmosphere
- Providing needed academic resources (paper, pencils, computer time,)
- Be flexible with assignments

**Culturally Diverse:**

- Involve families in student learning
- Provide immediate praise and feedback
- Respect cultural traditions
- Provided students with necessary academic resources and materials
- Provide visuals

**Unit 1: The Number System****Duration: 30 Days****Standards/Learning Targets****New Jersey Student Learning Focus Standards: Apply and extend previous understandings of operations with fractions.****NJSLS.MATH.CONTENT.7.NS.A.1**

- 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.

**NJSLS.MATH.CONTENT.7.NS.A.1.A**

- Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged. For example, in the first round of a game, she lost 20 points. What is her score at the end of the second round?

**NJSLS.MATH.CONTENT.7.NS.A.1.B**

- Understand  $p + q$  as the number located a distance  $|q|$  from  $p$ , in the positive or negative direction depending on whether  $q$  is positive or negative.
- Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

**NJSLS.MATH.CONTENT.7.NS.A.1.C**

- Understand subtraction of rational numbers as adding the additive inverse,  $p - q = p + (-q)$ .
- Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

**NJSLS.MATH.CONTENT.7.NS.A.1.D**

- Apply properties of operations as strategies to add and subtract rational numbers.

**NJSLS.MATH.CONTENT.7.NS.A.2**

- Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

**NJSLS.MATH.CONTENT.7.NS.A.2.A**

- Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as  $(-1)(-1) = 1$  and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

**NJSLS.MATH.CONTENT.7.NS.A.2.B**

- Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If  $p$  and  $q$  are integers, then  $-(p/q) = (-p)/q = p/(-q)$ .
- Interpret quotients of rational numbers by describing real-world contexts.

#### **NJSLS.MATH.CONTENT.7.NS.A.2.C**

- Apply properties of operations as strategies to multiply and divide rational numbers.

#### **NJSLS.MATH.CONTENT.7.NS.A.2.D**

- Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

#### **NJSLS.MATH.CONTENT.7.NS.A.3**

- Solve real-world and mathematical problems involving the four operations with rational numbers.

### **Primary Interdisciplinary Connections:**

#### **Literacy Connection**

- NJSLSA.6.2. Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

#### **Science Connection**

- MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.
- MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. [Clarification Statement: Emphasis is on using mathematical models, probability]
- MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

### **Technology Standards:**

- 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools
- 8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities

## 21st Century Themes/Career Readiness:

### Career Ready Practices

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

### Personal Financial Literacy

- 9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income.
- 9.1.8.B.7 Construct a budget to save for long-term, short-term, and charitable goals.
- 9.1.8.D.1 Determine how saving contributes to financial well-being.

### Career Awareness Exploration and Preparation

- 9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

### Career and Technical Education

- 9.3.12.BM.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision-making in business.
- 9.3.12.FN.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision making in the finance industry.

## Evidence of Student Learning

### Formative Tasks:

- Teacher Observation
- Teacher Checklist
- Verbal question & answer
- Self-evaluation of performance and progress

### Alternative Assessments:

- End of unit project

### Summative Assessments:

- Student participation
- Rubric score
- Performance Test

### Benchmark Assessments:

- Baseline SGO
- Mid-year SGO
- End of year SGO

## Knowledge & Skills

### Enduring Understandings:

- Numbers can be represented in multiple ways.
- The same operations can be applied in problem situations that seem quite different from another.
- Being able to compute fluently means making smart choices about which tools to use and when to use them.

### Essential Questions:

- What makes an estimate reasonable?
- What makes an answer exact?
- What makes a strategy both effective and efficient?
- What makes a solution optimal?

- Knowing the reasonableness of an answer comes from using good number sense and estimation strategies.

**Core Instructional & Supplemental Materials**

**Suggested Activities/Resources:**

- STEAM Performance Tasks
- Activities
- Blackline Masters
- Virtual Manipulatives
- Interactive Explorations
- Digit Examples
- Skills Trainer
- Mini-Assessments
- STEAM videos
- Game Library
- Multi-language glossary
- Cross-Curricular Projects
- Graphic organizers
- Math Tool Paper
- Dry Erase Boards
- Smart Notebook
- Khan Academy
- IXL

**Varied Levels of Text/Resources:**

- Big Ideas Math Modeling Real Life - Teacher Resources
- <https://www.bigideasmath.com/BIM/login>
- Big Ideas Math Manipulative Kit
- Student Edition
- Teaching Edition
- Family Letters
- Warm-Ups
- Extra Practice
- Reteach
- Enrichment and Extension
- Puzzle Time
- Prerequisite Skills Practice
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- Chapter Assessments

<b>Unit 2: Expressions and Equations</b>	<b>Duration: 55 Days</b>
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**Standards/Learning Targets**

**New Jersey Student Learning Focus Standards: Use properties of operations to generate equivalent expressions.**

**NJSLS.MATH.CONTENT.7.EE.A.1**

- Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

**NJSLS.MATH.CONTENT.7.EE.A.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. For example,  $a + 0.05a = 1.05a$  means that “increase by 5%” is the same as “multiply by 1.05.”
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

**NJSLS.MATH.CONTENT.7.EE.B.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.

**NJSLS.MATH.CONTENT.7.EE.B.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.

**NJSLS.MATH.CONTENT.7.EE.B.4.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?

**NJSLS.MATH.CONTENT.7.EE.B.4.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.

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### **Technology Standards:**

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### **21st Century Themes/Career Readiness:**

#### **Career Ready Practices**

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#### **Personal Financial Literacy**



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**Career Awareness Exploration and Preparation**

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**Career and Technical Education**

- 9.3.12.BM.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision-making in business.
- 9.3.12.FN.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision making in the finance industry.

**Evidence of Student Learning**

**Formative Tasks:**

- Teacher Observation
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- Verbal question & answer
- Self-evaluation of performance and progress

**Alternative Assessments:**

- End of unit project

**Summative Assessments:**

- Student participation
- Rubric score
- Performance Test

**Benchmark Assessments:**

- Baseline SGO
- Mid-year SGO
- End of year SGO

**Knowledge & Skills**

**Enduring Understandings:**

- Change is fundamental to understanding functions.
- Numbers or objects that repeat in predictable ways can be described or generalized.
- An operation can be “undone” by its inverse.
- Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.

**Essential Questions:**

- How can change be described mathematically?
- How are patterns of change related to the behavior of functions?
- How do mathematical models/representations shape our understanding of mathematics?

**Core Instructional & Supplemental Materials**

**Suggested Activities/Resources:**

- STEAM Performance Tasks

**Varied Levels of Text/Resources:**

- Big Ideas Math Modeling Real Life -

- Activities
- Blackline Masters Virtual
- Manipulatives Interactive
- Explorations Digit
- Examples
- Skills Trainer
- Mini-Assessments
- STEAM videos
- Game Library
- Multi-language glossary
- Cross-Curricular Projects
- Graphic organizers
- Math Tool Paper
- Dry Erase Boards
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- Teacher Resources
- <https://www.bigideasmath.com/BIM/login>
- Big Ideas Math Manipulative Kit
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- Extra Practice
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- Enrichment and Extension
- Puzzle Time
- Prerequisite Skills Practice
- Pre and Post Course Assessments Course
- Benchmark Assessments Alternative
- Assessments
- Chapter Assessments

**Unit 3: Ratios & Proportional Relationships****Duration: 55 Days****Standards/Learning Targets**

**New Jersey Student Learning Focus Standards: Analyze proportional relationships and use them to solve real-world and mathematical problems.**

**NJSLS.MATH.CONTENT.7.RP.A.1**

- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks  $\frac{1}{2}$  mile in each  $\frac{1}{4}$  hour, compute the unit rate as the complex fraction  $\frac{1/2}{1/4}$  miles per hour, equivalently 2 miles per hour.

**NJSLS.MATH.CONTENT.7.RP.A.2**

- Recognize and represent proportional relationships between quantities.

**NJSLS.MATH.CONTENT.7.RP.A.2.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.

**NJSLS.MATH.CONTENT.7.RP.A.2.B**

- Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

**NJSLS.MATH.CONTENT.7.RP.A.2.C**

- Represent proportional relationships by equations. For example, if total cost  $t$  is proportional to the number  $n$  of items purchased at a constant price  $p$ , the relationship between the total cost and the number of items can be expressed as  $t = pn$ .

**NJSLS.MATH.CONTENT.7.RP.A.2.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.

**NJSLS.MATH.CONTENT.7.RP.A.3**

- 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.

**Primary Interdisciplinary Connections:****Literacy Connection**

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**Standards/Learning Targets****New Jersey Student Learning Focus Standards: Use random sampling to draw inferences about a population.****NJSLS.MATH.CONTENT.7.SP.A.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.

**NJSLS.MATH.CONTENT.7.SP.A.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. Draw informal comparative inferences about two populations.

**NJSLS.MATH.CONTENT.7.SP.B.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.

**NJSLS.MATH.CONTENT.7.SP.B.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.
- Investigate chance processes and develop, use, and evaluate probability models.

**NJSLS.MATH.CONTENT.7.SP.C.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  $\frac{1}{2}$  indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

**NJSLS.MATH.CONTENT.7.SP.C.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.

**NJSLS.MATH.CONTENT.7.SP.C.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.

**NJSLS.MATH.CONTENT.7.SP.C.7.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.

**NJSLS.MATH.CONTENT.7.SP.C.7.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?

**NJSLS.MATH.CONTENT.7.SP.C.8**

- Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

**NJSLS.MATH.CONTENT.7.SP.C.8.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.

**NJSLS.MATH.CONTENT.7.SP.C.8.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.

**NJSLS.MATH.CONTENT.7.SP.C.8.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?



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- 9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career

<b>Career and Technical Education</b> <ul style="list-style-type: none"> <li>● 9.3.12.BM.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision-making in business.</li> <li>● 9.3.12.FN.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision making in the finance industry.</li> </ul>	
<b>Evidence of Student Learning</b>	
<b>Formative Tasks:</b> <ul style="list-style-type: none"> <li>● Teacher Observation</li> <li>● Teacher Checklist</li> <li>● Verbal question &amp; answer</li> <li>● Self-evaluation of performance and progress</li> </ul>	<b>Alternative Assessments:</b> <ul style="list-style-type: none"> <li>● End of unit project</li> </ul>
<b>Summative Assessments:</b> <ul style="list-style-type: none"> <li>● Student participation</li> <li>● Rubric score</li> <li>● Performance Test</li> </ul>	<b>Benchmark Assessments:</b> <ul style="list-style-type: none"> <li>● Baseline SGO</li> <li>● Mid-year SGO</li> <li>● End of year SGO</li> </ul>
<b>Knowledge &amp; Skills</b>	
<b>Enduring Understandings:</b> <ul style="list-style-type: none"> <li>● The question to be answered determines the data to be collected and how best to collect it.</li> <li>● Basic statistical techniques can be used to analyze data in the workplace.</li> <li>● The probability of an event can be used to predict the probability of future events.</li> </ul>	<b>Essential Questions:</b> <ul style="list-style-type: none"> <li>● What is average?</li> <li>● What makes a data representation useful?</li> <li>● How does my sample affect confidence in my prediction?</li> <li>● What is fair?</li> </ul>
<b>Core Instructional &amp; Supplemental Materials</b>	
<b>Suggested Activities/Resources:</b> <ul style="list-style-type: none"> <li>● STEAM Performance Tasks</li> <li>● Activities</li> <li>● Blackline Masters</li> <li>● Virtual Manipulatives</li> <li>● Interactive Explorations</li> <li>● Digit Examples</li> <li>● Skills Trainer</li> <li>● Mini-Assessments</li> <li>● STEAM videos</li> <li>● Game Library</li> <li>● Multi-language glossary</li> <li>● Cross-Curricular Projects</li> <li>● Graphic organizers</li> </ul>	<b>Varied Levels of Text/Resources:</b> <ul style="list-style-type: none"> <li>● Big Ideas Math Modeling Real Life - Teacher Resources</li> <li>● <a href="https://www.bigideasmath.com/BIM/login">https://www.bigideasmath.com/BIM/login</a></li> <li>● Big Ideas Math Manipulative Kit</li> <li>● Student Edition</li> <li>● Teaching Edition</li> <li>● Family Letters</li> <li>● Warm-Ups</li> <li>● Extra Practice</li> <li>● Reteach</li> <li>● Enrichment and Extension</li> <li>● Puzzle Time</li> </ul>

- Math Tool Paper
- Dry Erase Boards
- Smart Notebook
- Khan Academy
- IXL

- Prerequisite Skills Practice
- Pre and Post Course Assessments
- Course Benchmark Assessments
- Alternative Assessments
- Chapter Assessments

**Unit 5: Geometry**

**Duration: 15 Days**

**Standards/Learning Targets**

**New Jersey Student Learning Focus Standards: Draw construct, and describe geometrical figures and describe the relationships between them.**

**NJSLS.MATH.CONTENT.7.G.A.1**

- 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.

**NJSLS.MATH.CONTENT.7.G.A.2**

- Draw (with technology, with ruler and protractor, as well as freehand) 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.

**NJSLS.MATH.CONTENT.7.G.A.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.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

**NJSLS.MATH.CONTENT.7.G.B.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.

**NJSLS.MATH.CONTENT.7.G.B.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.

**NJSLS.MATH.CONTENT.7.G.B.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.

**Primary Interdisciplinary Connections:**

**Literacy Connection**

- NJSLSA.6.2. Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical

inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

- NJLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- NJLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

### **Science Connection**

- MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.
- MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. [Clarification Statement: Emphasis is on using mathematical models, probability]
- MS-PS4-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave

### **Technology Standards:**

- 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools
- 8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results
- 8.1.P.C.1 Collaborate with peers by participating in interactive digital games or activities

### **21st Century Themes/Career Readiness:**

#### **Career Ready Practices**

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

#### **Personal Financial Literacy**

- 9.1.8.A.2 Relate how career choices, education choices, skills, entrepreneurship, and economic conditions affect income.
- 9.1.8.B.7 Construct a budget to save for long-term, short-term, and charitable goals.
- 9.1.8.D.1 Determine how saving contributes to financial well-being.

#### **Career Awareness Exploration and Preparation**

- 9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career

#### **Career and Technical Education**

- 9.3.12.BM.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision-making in business.

- 9.3.12.FN.1 Utilize mathematical concepts, skills and problem solving to obtain necessary information for decision making in the finance industry.

### Evidence of Student Learning

#### Formative Tasks:

- Teacher Observation
- Teacher Checklist
- Verbal question & answer
- Self-evaluation of performance and progress

#### Alternative Assessments:

- End of unit project

#### Summative Assessments:

- Student participation
- Rubric score
- Performance Test

#### Benchmark Assessments:

- Baseline SGO
- Mid-year SGO
- End of year SGO

### Knowledge & Skills

#### Enduring Understandings:

- Two- and three-dimensional objects can be described, classified, and analyzed by their attributes.
- Objects in a plane or in space can be oriented in an infinite number of ways while maintaining its size or shape.
- Object's location on a plane or in space can be described quantitatively.
- Linear measure, area, and volume are fundamentally different but may be related to one another in ways that permit calculation of one given the other.

#### Essential Questions:

- Why do we compare contrast and classify objects?
- How do decomposing and recomposing shapes help us build our understanding of mathematics?
- How can transformations be described mathematically?

### Core Instructional & Supplemental Materials

#### Suggested Activities/Resources:

- STEAM Performance Tasks
- Activities
- Blackline Masters
- Virtual Manipulatives
- Interactive Explorations
- Digit Examples
- Skills Trainer
- Mini-Assessments
- STEAM videos
- Game Library

#### Varied Levels of Text/Resources:

- Big Ideas Math Modeling Real Life - Teacher Resources
- <https://www.bigideasmath.com/BIM/login>
- Big Ideas Math Manipulative Kit
- Student Edition
- Teaching Edition
- Family Letters
- Warm-Ups
- Extra Practice

- Multi-language glossary
- Cross-Curricular Projects
- Graphic organizers
- Math Tool Paper
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