



# TOMS RIVER REGIONAL SCHOOLS

## Middle School Mathematics

### Grade 7 non-tracked

Date created: School Year 2017-2018  
Board Approval: August 21, 2019  
Revised: July / August 2019

## **Philosophy, Mission and Vision**

**Philosophy:** Our Middle School Mathematics Department is a family of educators dedicated to providing grades six through eight students of Toms River Regional schools with a learning experience in mathematics that is determined by individualized information about each student in terms of learner characteristics that include, but are not limited to, prerequisite skills, social and emotional development, learning styles, etc.

**Mission:** With this essential data, it is our mission to fill gaps and enrich student mathematics skills. We will deepen student understanding by incorporating critical thinking, problem solving techniques and exposing students to real world applications of mathematics.

**Vision:** It is our vision to create environments where students can grow in character, grit, and perseverance to prepare them for more challenging mathematics to come later in their school careers.

**Course description and/or program overview:** Our 7th grade non-tracked mathematics course uses a fun and innovative program that includes hands-on activities and scaffolded instruction. This allows for balanced lessons with built-in Response to Intervention that appeal to students and teachers alike.

**Learning targets and success criteria help to focus student learning and make learning visible to teachers and students. Explorations help students develop a growth mindset by engaging them in productive struggle, leading to conceptual understanding of 7th grade mathematical standards and concepts.**

**With a strong emphasis on problem solving in the classroom, students can transfer their mathematical knowledge to new concepts and apply their understanding to real-life situations. Through practice and problem solving, students become more comfortable with the problem-solving process to become strategic mathematical thinkers.**

<b>UNITS</b>	<b>PACING GUIDE</b>
1. Number Operation (Addition and Subtraction)	September through Mid-November (Days 1-45)
2. Number Operations (Multiplication and Division)	September through Mid-November (Days 1-45)
3. Multi-Step Expressions	End-November through January (Days 46-90)
4. Equations	End-November through January (Days 46-90)
5. Inequalities	End-November through January (Days 46-90)
6. Ratios and Proportions/Scale	February through Beg-April (Days 91-135)
7. Percents	February through Beg-April (Days 91-135)
8. Statistics and Probability	February through Beg-April (Days 91-135)
9. Circles and Area	April through June (Days 136-181)
10. Surface Area and Volume	April through June (Days 136-181)
11. Constructions and Scale Drawing	April through June (Days 136-181)

## Unit #1 Overview

**Unit Summary:** Students will use mathematical practices to explore adding and subtracting rational numbers and algebraic expressions.

### Enduring Understandings:

*Students will understand how to...*

- add and subtract rational numbers and algebraic expressions.
- use appropriate tools to solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals)
- extend previous understandings of addition and subtraction to add and subtract rational numbers.

### Essential Questions:

- How do we perform operations on rational numbers and algebraic expressions?
- How do we add and subtract positive and negative rational numbers in any form?

## Standards

**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.**

- Describe situations in which opposite quantities combine to make 0.
- 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.
- 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.
- Apply properties of operations as strategies to add and subtract rational numbers.

**7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.**

**7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.**

**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.**

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

21st Century Life and Careers	Technology
<p>Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:</p> <ul style="list-style-type: none"> <li>● <a href="#">CRP2</a> - Apply appropriate academic and technical skills.</li> <li>● <a href="#">CRP4</a> - Communicate clearly and effectively and with reason.</li> <li>● <a href="#">CRP8</a> - Utilize critical thinking to make sense of problems and persevere in solving them.</li> <li>● <a href="#">CRP11</a> - Use technology to enhance productivity.</li> <li>● <a href="#">CRP12</a> - Work productively in teams while using cultural global competence.</li> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p><b>1. Empowered Learner</b> Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:</p> <p><b>2. Digital Citizen</b> Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.</p> <p><b>5. Computational Thinker</b> Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>

### Unit Objectives:

- WALT apply previous understandings of addition to add rational numbers
- WALT describe situations in which opposites combine to make zero
- WALT show by modeling, a number and its opposite have a sum of zero (additive inverse)
- WALT  $p + q$  is the number located a distance  $|q|$  from  $p$ , in the positive or negative direction depending on whether  $q$  is positive or negative (e.g.  $5 + -4$  is 4 units in the negative direction from 5 and, similarly,  $5 + 4$  is also 4 units away in the positive direction)
- WALT represent addition and subtraction of signed rational numbers on a vertical or horizontal number line
- WALT interpret sums of rational numbers in real world situations
- WALT apply previous understandings of subtraction to subtract rational numbers
- WALT subtraction of rational numbers is the same as adding the additive inverse,  $p - q = p + (-q)$
- WALT show by modeling on a number line that the distance between two rational numbers is the absolute value of their differences and apply the concept in real world contexts
- WALT apply properties of operations as strategies to add and subtract rational numbers
- WALT solve real-world and mathematical problems involving the four operations with rational numbers in fraction form
- WALT solve real-world and mathematical problems involving the four operations with rational numbers in decimal form
- WALT apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
- WALT rewrite an expression in different forms can clarify the problem and how the quantities are related

**Skills:**

- apply previous understandings of addition to add rational numbers
- describe situations in which opposites combine to make zero
- represent addition and subtraction of signed rational numbers on a vertical or horizontal number line
- interpret sums of rational numbers in real world situations
- apply previous understandings of subtraction to subtract rational numbers
- apply properties of operations as strategies to add and subtract rational numbers
- apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients

**Student Learning**

<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
Big Ideas Math - Red Sections 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.NS.1  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks</a></li> <li>○ 7.NS.2  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks</a></li> <li>○ 7.NS.3  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/3/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive</li> <li>● PARCC Released Items</li> <li>● Khan Academy</li> </ul>
<p align="center"><b>Accommodations/Modifications</b>            (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i></p>	<p align="center"><b>Assessment</b>            (All forms must be identified)</p>
<p><b>Suggested Options for Differentiation</b>  <i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul>

- Centers in Academic Activity

*Special Education*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*504*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*Gifted & Talented*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

**Benchmark:**

- Beginning of Year i-Ready Diagnostic
- Quarterly Portfolio
- NJSLA

**Alternate:**

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- Authentic Performance Tasks
- Unit Projects

## Unit #2 Overview

**Unit Summary:** Students will use mathematical practices to explore multiplying and dividing rational numbers and algebraic expressions.

### Enduring Understandings:

*Students will understand how to...*

- multiply and divide rational numbers and algebraic expressions.
- use appropriate tools to solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals)
- extend previous understandings of multiplication and division to multiply and divide rational numbers.

### Essential Questions:

- How do you perform operations on rational numbers and algebraic expressions?
- How do we multiply and divide positive and negative rational numbers in any form?

## Standards

### **7.NS.A.2 Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers.**

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.

#### **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.

#### **7.NS.A.2**

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

#### **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.

### **7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.**

### **7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.**

**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.**

### **Interdisciplinary Connections**

[Other Cross-Curricular Opportunities](#)

Opportunities for [SEL](#)

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

### 21st Century Life and Careers

### Technology

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.E.6** Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
- **9.1.8.E.5** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

#### 1. Empowered Learner

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

#### 2. Digital Citizen

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

#### 5. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

### Unit Objectives:

- WALT apply previous understandings of multiplication of fractions to multiply signed rational numbers
- WALT operations on signed rational numbers continue to satisfy the properties of operations
- WALT the distributive property, leading to products such as  $(-1)(-1) = 1$  and the rules for multiplying signed numbers
- WALT interpret the products of signed rational numbers in real world situations
- WALT apply previous understandings of division of fractions to divide signed rational numbers
- WALT integers can be divided as long as the divisor is not zero
- WALT division of integers results in a signed rational number
- WALT If  $p$  and  $q$  are integers, then  $-(p/q) = (-p)/q = p/(-q)$
- WALT interpret quotients of signed rational numbers by describing real world contexts
- WALT apply properties of operations as strategies to multiply and divide signed rational numbers
- WALT convert a rational number to a decimal using long division
- WALT the decimal form of a rational number terminates in zeros or eventually repeats
- WALT solve real-world and mathematical problems involving the four operations with rational numbers in fraction form
- WALT solve real-world and mathematical problems involving the four operations with rational numbers in decimal form
- WALT apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
- WALT rewrite an expression in different forms can clarify the problem and how the quantities are related

**Skills:**

- apply previous understandings of multiplication of fractions to multiply signed rational numbers
- operations on signed rational numbers continue to satisfy the properties of operations
- interpret the products of signed rational numbers in real world situations
- apply previous understandings of division of fractions to divide signed rational numbers
- integers can be divided as long as the divisor is not zero
- division of integers results in a signed rational number
- convert a rational number to a decimal using long division
- WALT the decimal form of a rational number terminates in zeros or eventually repeats

**Student Learning**

<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
Big Ideas Math - Red Sections 1.4, 1.5, 3.1, 3.2, 3.2 extension	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.NS.1  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks</a></li> <li>○ 7.NS.2  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks</a></li> <li>○ 7.NS.3  <a href="https://tasks.illustrativemathematics.org/content-standards/7/NS/A/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/NS/A/3/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive:</li> <li>● PARCC Released Items</li> <li>● Khan Academy</li> </ul>
<p align="center"><b>Accommodations/Modifications</b>            (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i></p>	<p align="center"><b>Assessment</b>            (All forms must be identified)</p>
<p><b>Suggested Options for Differentiation</b>  <i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul>

- Centers in Academic Activity

*Special Education*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*504*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
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*Gifted & Talented*

- Extension activities
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- Student Choice Activities
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- Group Projects
- Tiered Activities

**Benchmark:**

- Beginning of Year i-Ready Diagnostic
- Quarterly Portfolio
- NJSLA

**Alternate:**

- Authentic Performance Tasks
- Unit Projects

## Unit #3 Overview

**Unit Summary:** Students will use mathematical practices to explore expressions that can be written in different forms and still be equivalent and writing an expression in a different form can shed light on the problem.

### Enduring Understandings:

*Students will understand that...*

- Expressions can be written in different forms and still be equivalent
- Writing an expression in a different form can shed light on the problem

### Essential Questions:

- How do we expand linear expressions with and without rational coefficients?
- When will a different form of an expression help us make more sense of a problem?

### Standards

**7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.**

**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.**

### Interdisciplinary Connections Other Cross-Curricular Opportunities *Opportunities for SEL*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

#### 21st Century Life and Careers

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [CRP2](#) - Apply appropriate academic and technical skills.
- [CRP4](#) - Communicate clearly and effectively and

#### Technology

#### **1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

#### **2. Digital Citizen**

<p>with reason.</p> <ul style="list-style-type: none"> <li>● <a href="#">CRP8</a> - Utilize critical thinking to make sense of problems and persevere in solving them.</li> <li>● <a href="#">CRP11</a> - Use technology to enhance productivity.</li> <li>● <a href="#">CRP12</a> - Work productively in teams while using cultural global competence.</li> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p>Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.</p> <p><b>5. Computational Thinker</b> Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>
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<p><b>Unit Objectives:</b></p> <ul style="list-style-type: none"> <li>● WALT apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients</li> <li>● WALT rewriting an expression in different forms can clarify the problem and how the quantities are related</li> </ul>
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<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>● apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients</li> </ul>
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Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<p>Big Ideas Math - Red Sections 3.1, 3.2</p>	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics <ul style="list-style-type: none"> <li>○ 7.EE.1 <a href="https://tasks.illustrativemathematics.org/content-standards/7/EE/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/EE/A/1/tasks</a></li> <li>○ 7.EE.2 <a href="https://tasks.illustrativemathematics.org/content-standards/7/EE/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/EE/A/2/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive: <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● PARCC Released Items</li> <li>● Khan Academy</li> </ul>
<p><b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p><b>Assessment</b> <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b></p>	<p>Formative:</p>

*English Language Learners*

- Peer tutoring
- Manipulatives
- Use of Home Language
- Limiting Concepts or Vocabulary
- Providing Visuals

*Students at Risk of Failure*

- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Tiered Activities
- Centers in Academic Activity

*Special Education*

- Extension activities
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*504*

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*Gifted & Talented*

- Extension activities
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- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

- Observation
- Homework
- Class participation
- Whiteboards/communicators
- Do-Now
- Notebook
- Exit passes

Summative:

- Chapter/Unit Test
- Quizzes
- Presentations
- NJSLA

Benchmark:

- Beginning of Year i-Ready Diagnostic
- Quarterly Portfolio
- NJSLA

Alternate:

- Authentic Performance Tasks
- Unit Projects

**Unit Summary:** Students will use mathematical practices to construct simple equations to solve problems by reasoning about the quantities.

**Enduring Understandings:**

*Students will understand how to/that...*

- construct simple equations to solve problems by reasoning about the quantities.
- solve simple equations of particular forms fluently and interpret solutions in the context of the problem.

**Essential Questions:**

- How do we solve real-world problems involving positive and negative rational numbers in any form and assess the reasonableness of our solution?
- How do we solve equations of the form  $px + q = r$  and  $p(x + q) = r$ , where  $p$ ,  $q$ , and  $r$  are specific rational numbers with accuracy and efficiency?
- How do we solve real-world problems by reasoning about their quantities and constructing simple equations of the form  $p(x + q) = r$ , where  $p$ ,  $q$ , and  $r$  are specific rational numbers?

**Standards**

**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.**

**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.**

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

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

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**21st Century Life and Careers**

**Technology**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

**1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating

<ul style="list-style-type: none"> <li>● <a href="#">CRP2</a> - Apply appropriate academic and technical skills.</li> <li>● <a href="#">CRP4</a> - Communicate clearly and effectively and with reason.</li> <li>● <a href="#">CRP8</a> - Utilize critical thinking to make sense of problems and persevere in solving them.</li> <li>● <a href="#">CRP11</a> - Use technology to enhance productivity.</li> <li>● <a href="#">CRP12</a> - Work productively in teams while using cultural global competence.</li> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p>competency in their learning goals, informed by the learning sciences. Students:</p> <p><b>2. Digital Citizen</b> Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.</p> <p><b>5. Computational Thinker</b> Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>
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<p><b>Unit Objectives:</b></p> <ul style="list-style-type: none"> <li>● WALT convert between forms (fractions, decimals, and whole numbers) as appropriate to solve multi-step real life and mathematical problems with positive and negative rational numbers in any form</li> <li>● WALT apply the properties of operations to calculate with numbers in any form when solving multi-step real-life and mathematical problems, and assess the reasonableness of answers using mental computation and estimation strategies</li> <li>● WALT solve real-world problems by reasoning about their quantities and constructing simple equations of the form <math>p(x + q) = r</math>, where p, q, and r are specific rational numbers</li> <li>● WALT compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.</li> <li>● WALT solve equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where p, q, and r are specific rational numbers with accuracy and efficiency</li> </ul>
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<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>● the properties of operations to calculate with numbers in any form when solving multi-step real-life and mathematical problems, and assess the reasonableness of answers using mental computation and estimation strategies</li> <li>● compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.</li> </ul>
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Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
Big Ideas Math - Red Sections 3.3, 3.4, 3.5	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.EE.3  <a href="https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks</a></li> <li>○ 7.EE.4  <a href="https://tasks.illustrativemathematics.org/c">https://tasks.illustrativemathematics.org/c</a></li> </ul> </li> </ul>

	<p style="text-align: right;"><a href="#">ontent-standards/7/EE/B/4/tasks</a></p> <ul style="list-style-type: none"> <li>● Activities on the Team Drive:</li> <li>● NJSLA Released Items</li>   <li>● Khan Academy</li> </ul>
<p style="text-align: center;"><b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p style="text-align: center;"><b>Assessment</b> <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b></p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul> <p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>504</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>●</li> <li>●</li> <li>●</li> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>

- |                     |  |
|---------------------|--|
| • Tiered Activities |  |
|---------------------|--|

**Unit #5 Overview**

**Unit Summary:** Students will use mathematical practices to construct simple inequalities to solve problems by reasoning about the quantities.

**Enduring Understandings:**

*Students will understand how to/that...*

- construct simple inequalities to solve problems by reasoning about the quantities.
- solve simple equations of particular forms fluently, graph the solution set of inequalities, and interpret solutions in the context of the problem.

**Essential Questions:**

- How do we solve real-world problems by constructing simple inequalities using rational numbers?
- How do we use variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities?
- How do we describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem?

**Standards**

**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.**

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.

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.

**Technology**

**1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

**2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and

<ul style="list-style-type: none"> <li>● <a href="#">CRP11</a> - Use technology to enhance productivity.</li> <li>● <a href="#">CRP12</a> - Work productively in teams while using cultural global competence.</li> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p>model in ways that are safe, legal and ethical.</p> <p><b>5. Computational Thinker</b> Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>
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<p><b>Unit Objectives:</b></p> <ul style="list-style-type: none"> <li>● WALT solve world problems by reasoning about their quantities and constructing simple inequalities of the form <math>px + q &gt; r</math> or <math>px + q &lt; r</math>, where p, q, and r are specific rational numbers</li> <li>● WALT use variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities</li> <li>● WALT describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem</li> </ul>
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<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>● variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities</li> <li>● describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem</li> </ul>
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Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
Big Ideas Math - Red Sections 4.1, 4.2, 4.3, 4.4	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.EE.4  <a href="https://tasks.illustrativemathematics.org/content-standards/7/EE/B/4/tasks">https://tasks.illustrativemathematics.org/content-standards/7/EE/B/4/tasks</a> </li> </ul> </li> <li>● Activities on the Team Drive:</li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<p><b>Accommodations/Modifications</b>            (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i></p>	<p><b>Assessment</b>  <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b>  <i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> </ul>

- Use of Home Language
- Limiting Concepts or Vocabulary
- Providing Visuals

*Students at Risk of Failure*

- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Tiered Activities
- Centers in Academic Activity

*Special Education*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*504*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*Gifted & Talented*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

- Whiteboards/communicators
- Do-Now
- Notebook
- Exit passes

**Summative:**

- Chapter/Unit Test
- Quizzes
- Presentations
- NJSLA

**Benchmark:**

- Beginning of Year i-Ready Diagnostic
- Quarterly Portfolio
- NJSLA

**Alternate:**

- Authentic Performance Tasks
- Unit Projects

**Unit #6 Overview**

**Unit Summary:** Students will use mathematical practices to construct simple inequalities to solve problems by reasoning about the quantities.

**Enduring Understandings:**

*Students will understand to/that...*

- recognize and represent proportional relationships in multiple ways, deciding whether two quantities are in a proportional relationship.
- identify the constant of proportionality in a variety of representations (e.g. tables, graphs, equations, diagrams, and verbal descriptions)
- represent proportional relationships by equations, interpret points on graphs of proportional relationships in context, and use proportional relationships to solve multi-step percent and ratio problems.

**Essential Questions:**

- How do we compute unit rates involving ratios of fractions?
- How do we decide whether two quantities show a proportional relationship by testing for equivalence in different ways?
- How do we solve multistep ratio and percent problems using proportional relationships in different contexts (sales tax, markups, markdowns, simple interest, gratuities, etc.)?

**Standards**

**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.**

**7.RP.A.2 Recognize and represent proportional relationships between quantities.**

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.

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

**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.*

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

**Technology**

Through well-planned, student-based instruction models,

**1. Empowered Learner**

students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.E.6** Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
- **9.1.8.E.5** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

**2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

**5. Computational Thinker**

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Unit Objectives:**

- WALT compute unit rates involving ratios of fractions (complex fractions) in quantities measured in like or different units
- WALT decide whether two quantities show a proportional relationship by testing for equivalent ratios in a table
- WALT decide whether two quantities show a proportional relationship by graphing on a coordinate plane and observing whether the graph is a straight line through the origin
- WALT identify the constant of proportionality (unit rate) in equations and verbal descriptions of proportional relationships
- WALT identify the constant of proportionality (unit rate) in tables, graphs, and diagrams
- WALT solve multistep ratio and percent problems using proportional relationships
- WALT solve multistep ratio and percent problems using proportional relationships involving simple interest and sales tax
- WALT solve multistep ratio and percent problems using proportional relationships involving markups and markdowns
- WALT solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees
- WALT solve multistep ratio and percent problems using proportional relationships involving percent increase, percent decrease, and percent error

**Skills:**

- compute unit rates involving ratios of fractions (complex fractions) in quantities measured in like or different units
- decide whether two quantities show a proportional relationship by testing for equivalent ratios in a table
- identify the constant of proportionality (unit rate) in tables, graphs, and diagrams
- multistep ratio and percent problems using proportional relationships

**Student Learning**

**Core Instructional Materials and Resources**

**Supplemental Instructional Materials and Resources**

<p>Big Ideas Math - Red Sections 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 7.5</p>	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics <ul style="list-style-type: none"> <li>○ 7.RP.1 <a href="https://tasks.illustrativemathematics.org/content-standards/7/RP/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/RP/A/1/tasks</a></li> <li>○ 7.RP.2 <a href="https://tasks.illustrativemathematics.org/content-standards/7/RP/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/RP/A/2/tasks</a></li> <li>○ 7.RP.3 <a href="https://tasks.illustrativemathematics.org/content-standards/7/RP/A/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/RP/A/3/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive: <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<p style="text-align: center;"><b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p style="text-align: center;"><b>Assessment</b> <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b></p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul> <p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>504</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>

<ul style="list-style-type: none"><li>● Student Driven Activities</li><li>● Group Projects</li><li>● Tiered Activities</li></ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"><li>● Extension activities</li><li>● Opportunities for Critical Thinking</li><li>● Problem Solving/Design Challenges</li><li>● Technology Integration</li><li>● Student Choice Activities</li><li>● Student Driven Activities</li><li>● Group Projects</li><li>● Tiered Activities</li></ul>	
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**Unit #7 Overview**

**Unit Summary:** Students will use mathematical practices to work with proportions as they use proportional relationships to solve multi-step percent and ratio problems..

**Enduring Understandings:**

*Students will understand how to...*

- work with proportions as they use proportional relationships to solve multi-step percent and ratio problems.

**Essential Questions:**

- How do we solve multistep ratio and percent problems using proportional relationships in different contexts (sales tax, markups, markdowns, simple interest, gratuities, etc.)?

**Standards**

**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.*

**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.**

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

**Technology**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.

**1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

**2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

**5. Computational Thinker**

Students develop and employ strategies for

<ul style="list-style-type: none"> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p>understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>
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<p><b>Unit Objectives:</b></p> <ul style="list-style-type: none"> <li>● WALT solve multistep ratio and percent problems using proportional relationships</li> <li>● WALT solve multistep ratio and percent problems using proportional relationships involving simple interest and sales tax</li> <li>● WALT solve multistep ratio and percent problems using proportional relationships involving markups and markdowns</li> <li>● WALT solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees</li> <li>● WALT solve multistep ratio and percent problems using proportional relationships involving percent increase, percent decrease, and percent error</li> <li>● WALT convert between forms (fractions, decimals, and whole numbers) as appropriate to solve multi-step real-life and mathematical problems with positive and negative rational numbers in any form</li> <li>● WALT apply the properties of operations to calculate with numbers in any form when solving multi-step real-life and mathematical problems, and assess the reasonableness of answers using mental computation and estimation strategies</li> </ul>
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<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>● solve multistep ratio and percent problems using proportional relationships</li> <li>● solve multistep ratio and percent problems using proportional relationships involving simple interest and sales tax</li> <li>● solve multistep ratio and percent problems using proportional relationships involving markups and markdowns</li> <li>● solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees</li> <li>● solve multistep ratio and percent problems using proportional relationships involving percent increase, percent decrease, and percent error</li> </ul>
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<b>Student Learning</b>	
<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
<p>Big Ideas Math - Red Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7</p>	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics <ul style="list-style-type: none"> <li>○ 7.RP.3 <a href="https://tasks.illustrativemathematics.org/content-standards/7/RP/A/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/RP/A/3/tasks</a></li> <li>○ 7.EE.3 <a href="https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive: <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> </ul>

	<ul style="list-style-type: none"> <li>● Khan Academy</li> </ul>
<p style="text-align: center;"><b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p style="text-align: center;"><b>Assessment</b> <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b></p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul> <p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>504</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>

## Unit #8 Overview

**Unit Summary:** Students will use mathematical practices to collect data to approximate the probability of a chance event. They will develop uniform and non-uniform probability models, use them to find probabilities, and compare probabilities from a model to observed frequencies.

### Enduring Understandings:

*Students will understand to/that...*

- the probability of a chance event is a number between 0 and 1, with larger numbers indicating greater likelihood and probabilities near 0 indicating an unlikely event.
- collect data to approximate the probability of a chance event.
- develop uniform and non-uniform probability models, use them to find probabilities, and compare probabilities from a model to observed frequencies.
- represent sample spaces and find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- that statistics can be used to gain information about a population by examining a sample of the population, and understand the role of random sampling in producing valid inferences.
- use data from a random sample to draw inferences about a population and generate multiple samples to gauge the variation in predictions.
- use measures of center and measures of variability for data from random samples to make informal inferences and compare two populations.

### Essential Questions:

- How do we use random samples of populations to make predictions?
- How do we compare two populations using measures of center and variability?
- How can we measure if an event is likely or not likely to occur?
- How can we develop statistical models to help to determine probabilities of events and reason about discrepancies?

### Standards

7.SP.A.1  
7.SP.A.2  
7.SP.3  
7.SP.4  
7.SP.5  
7.SP.6  
7.SP.7  
7.SP.8

### Interdisciplinary Connections Other Cross-Curricular Opportunities *Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

**Technology**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.E.6** Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
- **9.1.8.E.5** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

### **1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

### **2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

### **5. Computational Thinker**

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

### **Unit Objectives:**

- WALT statistics is used to gain information about a population by examining a sample of the population
- WALT generalizations about a population from a sample are valid only if the sample is representative of that population
- WALT random sampling tends to produce representative samples of the population and support valid inferences
- WALT use data from a random sample to make inferences about a population with an unknown characteristic
- WALT generate multiple samples, or simulated samples, of the same size to gauge variation in estimates or predictions
- WALT informally gauge the extent of visual overlap between two numerical distributions with similar variabilities, measure the difference between the centers and express the difference as a multiple of the measure of variability
- WALT draw informal comparative inferences about two populations by using the measures of center (mean and median) and measures of variability (interquartile range and mean absolute deviation) from random samples\*\*
- WALT 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
- WALT approximate the probability of a chance event by collecting data on the chance process that it produces observing long run relative frequency
- WALT predict the approximate relative frequency
- WALT develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events
- WALT develop a probability model, which may not be uniform, by observing frequencies in data generated from a chance process
- WALT compare probabilities from a model to observed frequencies and explain possible sources of the discrepancy if the agreement is not good
- WALT the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs
- WALT represent the sample space for a compound event using various methods such as, organized lists, tables, and tree diagrams
- WALT identify the outcomes in the sample space which compose an event that has been described in everyday language
- WALT design and use a simulation to generate frequencies for compound events

**Skills:**

- statistics is 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
- random sampling tends to produce representative samples of the population and support valid inferences
- generate multiple samples, or simulated samples, of the same size to gauge variation in estimates or predictions
- identify the outcomes in the sample space which compose an event that has been described in everyday language

**Student Learning**

<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
Big Ideas Math - Red Sections 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.SP.1 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/A/1/tasks</a></li> <li>○ 7.SP.2 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/A/2/tasks</a></li> <li>○ 7.SP.3 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/B/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/B/3/tasks</a></li> <li>○ 7.SP.4 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/B/4/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/B/4/tasks</a></li> <li>○ 7.SP.6 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/C/6/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/C/6/tasks</a></li> <li>○ 7.SP.7 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/C/7/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/C/7/tasks</a></li> <li>○ 7.SP.8 <a href="https://tasks.illustrativemathematics.org/content-standards/7/SP/C/8/tasks">https://tasks.illustrativemathematics.org/content-standards/7/SP/C/8/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive:               <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<p align="center"><b>Accommodations/Modifications</b>            (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i></p>	<p align="center"><b>Assessment</b>  <b>(All forms must be identified)</b></p>
<p><b>Suggested Options for Differentiation</b>  <i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> </ul>	Formative: <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> </ul>

<ul style="list-style-type: none"> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul> <p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>504</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul>	<ul style="list-style-type: none"> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>
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## Unit #9 Overview

**Unit Summary:** Students will use mathematical practices to find the area and circumference of circles.

**Enduring Understandings:**

*Students will understand to/that...*

- finding area and circumference of circles.
- solve real-world and mathematical problems involving area of two dimensional objects composed of triangles, quadrilaterals and polygons.
- return to writing and solving simple equations to conclude the unit, using facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems.

**Essential Questions:**

- How do we find circumference and area of a circle using the relationship between them?
- How do we solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons?
- What are supplementary angles, complementary angles, vertical angles, and adjacent angles?
- How can we use multi-step problems to write and solve simple equations for an unknown angle using figure facts about supplementary, complementary, vertical and adjacent angles?

**Standards**

**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.**

**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.**

**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.**

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.

**Technology**

**1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

**2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

**5. Computational Thinker**

Students develop and employ strategies for

<ul style="list-style-type: none"> <li>● <b>9.1.8.E.6</b> Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.</li> <li>● <b>9.1.8.E.5</b> Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.</li> </ul>	<p>understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.</p>
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<p><b>Unit Objectives:</b></p> <ul style="list-style-type: none"> <li>● WALT know the formulas for area and circumference of a circle</li> <li>● WALT solve problems using the formula for circumference of a circle and for the area of a circle</li> <li>● WALT informally derive the relationship between the circumference and area of a circle</li> <li>● WALT solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons</li> <li>● WALT supplementary angles are two angles whose sum is 180 degrees and complementary angles are two angles whose sum is 90 degrees</li> <li>● WALT vertical angles, the pairs of opposite angles made by two intersecting lines, have equal measures</li> <li>● WALT adjacent angles are two angles that share a vertex and a side</li> <li>● WALT 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</li> </ul>
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<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>● know the formulas for area and circumference of a circle</li> <li>● informally derive the relationship between the circumference and area of a circle</li> <li>● adjacent angles are two angles that share a vertex and a side</li> <li>● vertical angles, the pairs of opposite angles made by two intersecting lines, have equal measures</li> <li>● adjacent angles are two angles that share a vertex and a side</li> </ul>
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<b>Student Learning</b>	
<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
<p>Big Ideas Math - Red Sections 8.1, 8.2, 8.3, 8.4</p>	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics <ul style="list-style-type: none"> <li>○ 7.G.4 <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/B/4/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/B/4/tasks</a></li> <li>○ 7.G.6 <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive: <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<p><b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At</p>	<p><b>Assessment</b> <b>(All forms must be identified)</b></p>

<p style="text-align: center;">Risks) <i>Each group must be listed separately</i></p>	
<p><b>Suggested Options for Differentiation</b></p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul> <p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>504</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>

## Unit #10 Overview

**Unit Summary:** Students will use mathematical practices to solve real-world and mathematical problems involving volume and surface area of three-dimensional objects.

**Enduring Understandings:**

*Students will understand how to/that...*

- solve real-world and mathematical problems involving volume and surface area of three-dimensional objects.

**Essential Questions:**

- How do we find the circumference and area of a circle using the relationship between them?
- How do we solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons using area and surface area?

**Standards**

**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.**

**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.**

**Interdisciplinary Connections**  
[Other Cross-Curricular Opportunities](#)  
*Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

**21st Century Life and Careers**

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.E.6** Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
- **9.1.8.E.5** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

**Technology****1. Empowered Learner**

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

**2. Digital Citizen**

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

**5. Computational Thinker**

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Unit Objectives:**

- WALT know the formulas for area and circumference of a circle
- WALT solve problems using the formula for circumference of a circle and for the area of a circle
- WALT informally derive the relationship between the circumference and area of a circle

- WALT solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles, quadrilaterals, and polygons

**Skills:**

- know the formulas for area and circumference of a circle
- informally derive the relationship between the circumference and area of a circle
- solve problems using the formula for circumference of a circle and for the area of a circle

**Student Learning**

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
Big Ideas Math - Red Sections 9.1, 9.2, 9.3, 9.4, 9.5	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.G.4  <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/B/4/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/B/4/tasks</a></li> <li>○ 7.G.6  <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive:               <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<p align="center"><b>Accommodations/Modifications</b>            (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i></p>	<p align="center"><b>Assessment</b>            (All forms must be identified)</p>
<p><b>Suggested Options for Differentiation</b></p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> <li>● Peer tutoring</li> <li>● Manipulatives</li> <li>● Use of Home Language</li> <li>● Limiting Concepts or Vocabulary</li> <li>● Providing Visuals</li> </ul> <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> <li>● Extended Time</li> <li>● Flexible Grouping</li> <li>● Small Group Instruction</li> <li>● Peer Buddies</li> <li>● Graphic Organizers</li> <li>● Chunking Information</li> <li>● Scaffolded Questioning</li> <li>● Tiered Activities</li> <li>● Centers in Academic Activity</li> </ul>	<p>Formative:</p> <ul style="list-style-type: none"> <li>● Observation</li> <li>● Homework</li> <li>● Class participation</li> <li>● Whiteboards/communicators</li> <li>● Do-Now</li> <li>● Notebook</li> <li>● Exit passes</li> </ul> <p>Summative:</p> <ul style="list-style-type: none"> <li>● Chapter/Unit Test</li> <li>● Quizzes</li> <li>● Presentations</li> <li>● NJSLA</li> </ul> <p>Benchmark:</p> <ul style="list-style-type: none"> <li>● Beginning of Year i-Ready Diagnostic</li> </ul>

<p><i>Special Education</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p>504</p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul> <p><i>Gifted &amp; Talented</i></p> <ul style="list-style-type: none"> <li>● Extension activities</li> <li>● Opportunities for Critical Thinking</li> <li>● Problem Solving/Design Challenges</li> <li>● Technology Integration</li> <li>● Student Choice Activities</li> <li>● Student Driven Activities</li> <li>● Group Projects</li> <li>● Tiered Activities</li> </ul>	<ul style="list-style-type: none"> <li>● Quarterly Portfolio</li> <li>● NJSLA</li> </ul> <p>Alternate:</p> <ul style="list-style-type: none"> <li>● Authentic Performance Tasks</li> <li>● Unit Projects</li> </ul>
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## Unit #11 Overview

**Unit Summary:** Students will use mathematical practices to solve real-world and mathematical problems involving volume and surface area of three-dimensional objects.

**Enduring Understandings:**

*Students will understand how to/that...*

- use proportions to solve problems involving scale drawings of geometric figures.
- describe the two-dimensional figures that result from slicing three-dimensional figures and draw (with technology, with a ruler and protractor, as well as freehand) geometric shapes with given conditions.

- focus on constructing triangles and noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

### Essential Questions:

- How do we create scale drawings?
- How can we determine and create unique triangles using three side or angle measures?
- How can we describe the two-dimensional figures that result from slicing three-dimensional figures?

### Standards

- 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.**
- 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.**
- 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.**

### Interdisciplinary Connections Other Cross-Curricular Opportunities *Opportunities for [SEL](#)*

Infused within the unit are connections to the content standards for English Language Arts and Technology, specifically:

- [NJSLSA.R4](#)
- [NJSLSA.R7](#)
- [NJSLSA.R8](#)
- [8.1.8.D.4](#)
- [8.1.8.E.1](#)

### 21st Century Life and Careers

Through well-planned, student-based instruction models, students will develop the attributes that will prepare them for life as citizens and workers in the 21st century:

- [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.
- [CRP11](#) - Use technology to enhance productivity.
- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.E.6** Compare the value of goods or services from different sellers when purchasing large quantities and small quantities.
- **9.1.8.E.5** Analyze interest rates and fees associated with financial services, credit cards, debit cards, and gift cards.

### Technology

#### 1. Empowered Learner

Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences. Students:

#### 2. Digital Citizen

Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.

#### 5. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Unit Objectives:**

- WALT 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
- WALT draw geometric shapes with given conditions with technology, with rulers and protractors, as well as freehand
- WALT construct triangles from three measures of angles or sides using technology and notice when the conditions determine a unique triangle, more than one triangle, or no triangle
- WALT construct triangles from three measures of angles or sides using rulers and protractors and notice when the conditions determine a unique triangle, more than one triangle, or no triangle
- WALT describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids

**Skills:**

- 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
- draw geometric shapes with given conditions with technology, with rulers and protractors, as well as freehand
- construct triangles from three measures of angles or sides using technology and notice when the conditions determine a unique triangle, more than one triangle, or no triangle

<b>Student Learning</b>	
<b>Core Instructional Materials and Resources</b>	<b>Supplemental Instructional Materials and Resources</b>
Big Ideas Math - Red Sections 7.1, 7.2, 7.3, 7.4	<ul style="list-style-type: none"> <li>● i-Ready</li> <li>● Illustrative Mathematics               <ul style="list-style-type: none"> <li>○ 7.G.1 <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/A/1/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/A/1/tasks</a></li> <li>○ 7.G.2 <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/A/2/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/A/2/tasks</a></li> <li>○ 7.G.3 <a href="https://tasks.illustrativemathematics.org/content-standards/7/G/A/3/tasks">https://tasks.illustrativemathematics.org/content-standards/7/G/A/3/tasks</a></li> </ul> </li> <li>● Activities on the Team Drive:               <ul style="list-style-type: none"> <li>○</li> </ul> </li> <li>● NJSLA Released Items</li> <li>● Khan Academy</li> </ul>
<b>Accommodations/Modifications</b> (ELL, Students with IEPs, 504s, Gifted Learners, At Risk)  <i>Each group must be listed separately</i>	<b>Assessment</b> <b>(All forms must be identified)</b>
<b>Suggested Options for Differentiation</b> <i>English Language Learners</i>	Formative: <ul style="list-style-type: none"> <li>● Observation</li> </ul>

- Peer tutoring
- Manipulatives
- Use of Home Language
- Limiting Concepts or Vocabulary
- Providing Visuals

*Students at Risk of Failure*

- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Graphic Organizers
- Chunking Information
- Scaffolded Questioning
- Tiered Activities
- Centers in Academic Activity

*Special Education*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*504*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

*Gifted & Talented*

- Extension activities
- Opportunities for Critical Thinking
- Problem Solving/Design Challenges
- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

- Homework
- Class participation
- Whiteboards/communicators
- Do-Now
- Notebook
- Exit passes

Summative:

- Chapter/Unit Test
- Quizzes
- Presentations
- NJSLA

Benchmark:

- Beginning of Year i-Ready Diagnostic
- Quarterly Portfolio
- NJSLA

Alternate:

- Authentic Performance Tasks
- Unit Projects

