



TOMS RIVER REGIONAL SCHOOLS

Middle School Mathematics

Grade 7 Pinnacle/Advanced Math

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 pinnacle and advanced mathematics courses use a fun and innovative program that includes hands-on activities and scaffolded instruction.

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 and 8th 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.

UNITS	PACING GUIDE
1. Expressions and Equations	September through Mid-November (Days 1-45)
2. Equations with variables on both sides	September through Mid-November (Days 1-45)
3. Inequalities	September through Mid-November (Days 1-45)
4. Circles (circumference and area)	End-November through January (Days 46-90)
5. Composite Figures (perimeter and area)	End-November through January (Days 46-90)
6. Surface Area and Volume (prisms, pyramids, cylinders)	End-November through January (Days 46-90)
7. Ratios and Proportions including Constructions and Scale Drawings	February through Beg-April (Days 91-135)
8. Percents	February through Beg-April (Days 91-135)
9. Statistics and Probability	February through Beg-April (Days 91-135)
10. Writing and graphing linear equations (Find slope, Interpret slope, Slope Intercept form-solve for y)	April through June (Days 136-181)
11. Radicals and Integer Exponent Rules	April through June (Days 136-181)
12. Scientific Notation	April through June (Days 136-181)

Unit #1 Overview

Unit Summary: Students will use mathematical practices to explore equivalence and solutions to algebraic expressions and equations.

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

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.

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

- [NJSLSA.R4](#)

- [NJLSA.R7](#)
- [NJLSA.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.D.4** Distinguish between income and investment growth.
- **9.1.8.B.2** Construct a simple personal savings and spending plan based on various sources of income.
- **9.2.8.B.2** Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

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 the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
- WALT rewriting an expression in different forms can clarify the problem and how the quantities are related
- 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
- 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
- WALT solve 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
- WALT compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
- WALT 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

Skills:

- apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
- convert between forms (fractions, decimals, and whole numbers) as appropriate
- apply the properties of operations to calculate with numbers in any form

- compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach

Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<p>Big Ideas Math - Red Sections 3.1, 3.2, 3.3, 3.4, 3.5</p> <p>Big Ideas Math - Advanced Sections 1.1, 1.2</p>	<ul style="list-style-type: none"> • i-Ready • Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.EE.1 https://tasks.illustrativemathematics.org/content-standards/7/EE/A/1/tasks ○ 7.EE.2 https://tasks.illustrativemathematics.org/content-standards/7/EE/A/2/tasks ○ 7.EE.3 https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks ○ 7.EE.4 https://tasks.illustrativemathematics.org/content-standards/7/EE/B/4/tasks • Activities on the Team Drive: <ul style="list-style-type: none"> ○ • NJSLA Released Items • Khan Academy
<p>Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p>Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation</p> <p><i>English Language Learners</i></p> <ul style="list-style-type: none"> • Peer tutoring • Manipulatives • Use of Home Language • Limiting Concepts or Vocabulary • Providing Visuals <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> • Extended Time • Flexible Grouping • Small Group Instruction • Peer Buddies • Graphic Organizers • Chunking Information • Scaffolded Questioning • Tiered Activities • Centers in Academic Activity <p><i>Special Education</i></p> <ul style="list-style-type: none"> • Extension activities • Opportunities for Critical Thinking 	<p>Formative:</p> <ul style="list-style-type: none"> • Observation • Homework • Class participation • Whiteboards/communicators • Do-Now • Notebook • Exit passes <p>Summative:</p> <ul style="list-style-type: none"> • Chapter/Unit Test • Quizzes • Presentations • NJSLA <p>Benchmark:</p> <ul style="list-style-type: none"> • Beginning of Year i-Ready Diagnostic • Quarterly Portfolio • NJSLA

<ul style="list-style-type: none"> ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>504</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>Gifted & Talented</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities 	<p>Alternate:</p> <ul style="list-style-type: none"> ● Authentic Performance Tasks ● Unit Projects
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Unit Summary: Students will use mathematical practices to explore finding solutions to algebraic equations.

Enduring Understandings:

Students will understand that...

- Equation solving is working backwards and undoing operations.
- Like terms must be combined.
- The distributive property can be used to simplify expressions and solve equations.

Essential Questions:

- How can linear equations be used to represent real-life situations?

Standards

8.EE.C.7 Solve linear equations in one variable.

a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

8.EE.C.7 Solve linear equations in one variable.

b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

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](#)

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- [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.D.4** Distinguish between income and

Technology

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5. Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that

<p>investment growth.</p> <ul style="list-style-type: none"> ● 9.1.8.B.2 Construct a simple personal savings and spending plan based on various sources of income. ● 9.2.8.B.2 Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan. 	<p>leverage the power of technological methods to develop and test solutions.</p>
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<p>Unit Objectives:</p> <ul style="list-style-type: none"> ● WALT a linear equation in one variable can result in one solution, infinitely many solutions, or no solution ● WALT show which of these outcomes is the case by transforming the original equation into the form $x = a$, $a = a$, or $a = b$ ● WALT solve linear equations in one variable with rational number coefficients, including equations that require expanding expressions using the distributive property and combining like terms
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<p>Skills:</p> <ul style="list-style-type: none"> ● solve linear equations in one variable with rational number coefficients, including equations that require expanding expressions using the distributive property and combining like terms

<p style="text-align: center;">Student Learning</p>	
<p style="text-align: center;">Core Instructional Materials and Resources</p>	<p style="text-align: center;">Supplemental Instructional Materials and Resources</p>
<p>Big Ideas Math - Advanced 2 Sections 1.1, 1.2, 1.3, 1.4</p>	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 8.EE.7 https://tasks.illustrativemathematics.org/content-standards/8/EE/C/7/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
<p style="text-align: center;">Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p style="text-align: center;">Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation <i>English Language Learners</i></p> <ul style="list-style-type: none"> ● Peer tutoring ● Manipulatives ● Use of Home Language ● Limiting Concepts or Vocabulary ● Providing Visuals <p><i>Students at Risk of Failure</i></p>	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework ● Class participation ● Whiteboards/communicators ● Do-Now ● Notebook ● Exit passes

- 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
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Gifted & Talented

- Extension activities
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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 explore finding solutions to algebraic equations and inequalities.

Enduring Understandings:

Students will understand 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.

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

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- [CRP2](#) - Apply appropriate academic and technical skills.
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- **9.1.8.D.4** Distinguish between income 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:

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<p>Unit Objectives:</p> <ul style="list-style-type: none"> ● WALT solve word problems by reasoning about their quantities and constructing simple inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers ● WALT use variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities ● WALT describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem

<p>Skills:</p> <ul style="list-style-type: none"> ● use variables to represent unknown quantities in mathematical problems to construct and solve simple inequalities ● describe the solution of an inequality using a graph and inequality statement and interpret its meaning in the context of the problem
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Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ● Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 4.1, 4.2, 4.3, 4.4 ● Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 11.1, 11.2, 11.3, 11.4 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.EE.4 https://tasks.illustrativemathematics.org/content-standards/7/EE/B/4/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
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<p>Suggested Options for Differentiation <i>English Language Learners</i></p> <ul style="list-style-type: none"> ● Peer tutoring ● Manipulatives ● Use of Home Language ● Limiting Concepts or Vocabulary 	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework ● Class participation ● Whiteboards/communicators ● Do-Now ● Notebook

<ul style="list-style-type: none"> ● Providing Visuals <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> ● Extended Time ● Flexible Grouping ● Small Group Instruction ● Peer Buddies ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning ● Tiered Activities ● Centers in Academic Activity <p><i>Special Education</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>504</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>Gifted & Talented</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities 	<ul style="list-style-type: none"> ● Exit passes <p>Summative:</p> <ul style="list-style-type: none"> ● Chapter/Unit Test ● Quizzes ● Presentations ● NJSLA <p>Benchmark:</p> <ul style="list-style-type: none"> ● Beginning of Year i-Ready Diagnostic ● Quarterly Portfolio ● NJSLA <p>Alternate:</p> <ul style="list-style-type: none"> ● Authentic Performance Tasks ● Unit Projects
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Unit #4 Overview

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

Enduring Understandings:

Students will understand how to...

- find area and circumference of circles

Essential Questions:

- How do we find the circumference and area of a circle using the relationship between them?

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.

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](#)

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Technology

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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 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

Skills:

- 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
<ul style="list-style-type: none"> ○ Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 8.1, 8.3 ○ Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 13.1, 13.3 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.G.4 https://tasks.illustrativemathematics.org/content-standards/7/G/B/4/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
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- Technology Integration
- Student Choice Activities
- Student Driven Activities
- Group Projects
- Tiered Activities

504

- Extension activities
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Gifted & Talented

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- Authentic Performance Tasks
- Unit Projects

Unit #5 Overview

Unit Summary: Students will use mathematical practices to explore calculating the volume of a cone, cylinder, or sphere.

Enduring Understandings:

Students will understand how to/that...

- solve real-world and mathematical problems involving volume and surface area of three-dimensional objects.
- calculate the volume of a cone, cylinder, or sphere

Essential Questions:

- How do we solve real-world problems involving volume of cones, cylinders and spheres?

Standards

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.
8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

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](#)

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- [CRP12](#) - Work productively in teams while using cultural global competence.
- **9.1.8.D.4** Distinguish between income and investment growth.
- **9.1.8.B.2** Construct a simple personal savings and spending plan based on various sources of income.
- **9.2.8.B.2** Develop a Personalized Student

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.

Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

Unit Objectives:

- WALT solve real-world and mathematical problems involving volume and surface area of three-dimensional objects composed of cubes and right prisms
- WALT apply the formulas for volume of a cone, cylinder, or sphere in a real-world context
- WALT calculate the volume of a cone, cylinder, or sphere
- WALT find a missing dimension of a cone, cylinder or sphere given its volume

Skills:

- apply the formulas for volume of a cone, cylinder, or sphere in a real-world context
- calculate the volume of a cone, cylinder, or sphere
- find a missing dimension of a cone, cylinder or sphere given its volume

Student Learning

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red ○ Sections 8.2, 8.4 ○ Big Ideas Math - Advanced 2 ○ Sections 13.2, 13.4 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.G.6 https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks ○ 8.G.9 https://tasks.illustrativemathematics.org/content-standards/8/G/C/9/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
<p>Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p>Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation <i>English Language Learners</i></p> <ul style="list-style-type: none"> ● Peer tutoring ● Manipulatives ● Use of Home Language ● Limiting Concepts or Vocabulary ● Providing Visuals 	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework ● Class participation ● Whiteboards/communicators ● Do-Now ● Notebook ● Exit passes

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

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

Enduring Understandings:

Students will understand that...

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

Essential Questions:

- How can we describe the two-dimensional figures that result from slicing three-dimensional figures?
- How can we 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?

Standards

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.

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.

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.D.4** Distinguish between income and investment growth.

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

<ul style="list-style-type: none"> ● 9.1.8.B.2 Construct a simple personal savings and spending plan based on various sources of income. ● 9.2.8.B.2 Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan. 	develop and test solutions.
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<p>Unit Objectives:</p> <ul style="list-style-type: none"> ● 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 ● 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
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<p>Skills:</p> <ul style="list-style-type: none"> ● know the formulas for area and circumference of a circle ● solve problems using the formula for circumference of a circle and for the area of a circle ● informally derive the relationship between the circumference and area of a circle
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Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 9.1, 9.2, 9.3, 9.4, 9.5 ○ Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 14.1, 14.2, 14.3, 14.4, 14.5 ○ Big Ideas Math - Blue <ul style="list-style-type: none"> ○ Sections 8.1, 8.2, 8.3, 8.4 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.G.3 https://tasks.illustrativemathematics.org/content-standards/7/G/A/3/tasks ○ 7.G.6 https://tasks.illustrativemathematics.org/content-standards/7/G/B/6/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academ
<p>Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p>Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation <i>English Language Learners</i></p>	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework

- 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

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

Enduring Understandings:

Students will understand how to/that...

- Determine proportionality between two quantities and use that to solve real-world problems
- proportional relationships can be used to solve problems in the context of graphs, tables, lines, scale drawings, and percents
- Unique triangles can be constructed using three side and angle measures

Essential Questions:

- How do we use the proportional relationship between quantities to explore graphs, real-world use of percents, and scale drawings?
- How do we construct unique triangles using three side lengths or angle measures?
- How do we use facts about supplementary, complementary, vertical, and adjacent angles to find an unknown angle in a figure?

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

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.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.

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

1. Empowered Learner

Students leverage technology to take an active

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.D.4** Distinguish between income and investment growth.
- **9.1.8.B.2** Construct a simple personal savings and spending plan based on various sources of income.
- **9.2.8.B.2** Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

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
- 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 supplementary angles are two angles whose sum is 180 degrees and complementary angles are two angles whose sum is 90 degrees
- WALT vertical angles, the pairs of opposite angles made by two intersecting lines, have equal measures
- WALT adjacent angles are two angles that share a vertex and a side
- 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

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
- 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
- identify the constant of proportionality (unit rate) in equations and verbal descriptions of proportional relationships
- identify the constant of proportionality (unit rate) in tables, graphs, and diagrams
- 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
- 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
- Determine supplementary angles are two angles whose sum is 180 degrees and complementary angles are two angles whose sum is 90 degrees
- Determine vertical angles, the pairs of opposite angles made by two intersecting lines, have equal measures
- Identify adjacent angles are two angles that share a vertex and a side
- 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

Student Learning

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 7.5 ○ Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 3.4, 12.5 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.RP.1 https://tasks.illustrativemathematics.org/content-standards/7/RP/A/1/tasks ○ 7.RP.2 https://tasks.illustrativemathematics.org/content-standards/7/RP/A/2/tasks ○ 7.RP.3 https://tasks.illustrativemathematics.org/content-standards/7/RP/A/3/tasks ○ 7.G.1 https://tasks.illustrativemathematics.org/content-standards/7/G/A/1/tasks ○ 7.G.2 https://tasks.illustrativemathematics.org/content-standards/7/G/A/2/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ● NJSLA Released Items ● Khan Academy
<p style="text-align: center;">Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p style="text-align: center;">Assessment (All forms must be identified)</p>

Suggested Options for Differentiation

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
- 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

Formative:

- 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 #8 Overview

Unit Summary: Students will use mathematical practices to solve multistep ratio and percent problems using proportional relationships in different contexts.

Enduring Understandings:

Students will understand that...

- 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.

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.D.4** Distinguish between income and investment growth.
- **9.1.8.B.2** Construct a simple personal savings and spending plan based on various sources of income.

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.

- **9.2.8.B.2** Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

Unit Objectives:

- 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
- 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
- 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

Skills:

- solve multistep ratio and percent problems using proportional relationships
- solve multistep ratio and percent problems using proportional relationships involving simple interest and sales tax
- solve multistep ratio and percent problems using proportional relationships involving markups and markdowns
- solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees
- solve multistep ratio and percent problems using proportional relationships involving percent increase, percent decrease, and percent error
- 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

Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.EE.3 https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ Menu project ● NJSLA Released Items ● Khan Academy
Accommodations/Modifications	Assessment

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

Unit #9 Overview

Unit Summary: Students will use mathematical practices to explore probability and statistics.

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

8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

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

- [NJLSA.R4](#)
- [NJLSA.R7](#)
- [NJLSA.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"> ● 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.D.4 Distinguish between income and investment growth. ● 9.1.8.B.2 Construct a simple personal savings and spending plan based on various sources of income. ● 9.2.8.B.2 Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan. 	<p>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:</p> <p>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.</p> <p>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.</p>

<p>Unit Objectives:</p> <ul style="list-style-type: none"> ● 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
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- WALT design and use a simulation to generate frequencies for compound events
- WALT construct scatter plots
- WALT interpret scatter plots to investigate patterns of association between two quantities
- WALT describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association

Skills:

- solve multistep ratio and percent problems using proportional relationships
- solve multistep ratio and percent problems using proportional relationships involving simple interest and sales tax
- solve multistep ratio and percent problems using proportional relationships involving markups and markdowns
- solve multistep ratio and percent problems using proportional relationships involving gratuities, commissions, and fees
- solve multistep ratio and percent problems using proportional relationships involving percent increase, percent decrease, and percent error
- 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

Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red <ul style="list-style-type: none"> ○ Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 7.EE.3 https://tasks.illustrativemathematics.org/content-standards/7/EE/B/3/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ Menu project ● NJSLA Released Items ● Khan Academy
<p>Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p>Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation <i>English Language Learners</i></p> <ul style="list-style-type: none"> ● Peer tutoring ● Manipulatives ● Use of Home Language ● Limiting Concepts or Vocabulary ● Providing Visuals <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> ● Extended Time ● Flexible Grouping ● Small Group Instruction ● Peer Buddies 	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework ● Class participation ● Whiteboards/communicators ● Do-Now ● Notebook ● Exit passes <p>Summative:</p> <ul style="list-style-type: none"> ● Chapter/Unit Test ● Quizzes ● Presentations

<ul style="list-style-type: none"> ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning ● Tiered Activities ● Centers in Academic Activity <p><i>Special Education</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>504</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>Gifted & Talented</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities 	<ul style="list-style-type: none"> ● NJSLA <p>Benchmark:</p> <ul style="list-style-type: none"> ● Beginning of Year i-Ready Diagnostic ● Quarterly Portfolio ● NJSLA <p>Alternate:</p> <ul style="list-style-type: none"> ● Authentic Performance Tasks ● Unit Projects
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Unit #10 Overview

Unit Summary: Students will use mathematical practices to explore proportional relationships in different ways in graphs, lines and tables.

Enduring Understandings:*Students will understand that...*

- Proportional relationships are represented in different ways in graphs, lines and tables
- Equation solving is working backwards and undoing operations.
- Like terms must be combined.

Essential Questions:

- How can linear equations be used to represent real-life situations?
- What does a proportional relationship indicate happens in a table, graph and equation?

Standards

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

8.EE.C.7 Solve linear equations in one variable.

- a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
- b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

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

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- [CRP2](#) - Apply appropriate academic and technical skills.
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- [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.D.4** Distinguish between income and investment growth.
- **9.1.8.B.2** Construct a simple personal savings and spending plan based on various sources of income.
- **9.2.8.B.2** Develop a Personalized Student Learning Plan with the assistance of an adult

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.

mentor that includes information about career areas of interest, goals and an educational plan.

Unit Objectives:

- WALT graph proportional relationships represented in different ways (i.e. ordered pairs, table, equation, phrases, etc.)
- WALT recognize that for proportional relationships, the unit rate is the slope of the graph
- WALT compare the unit rates of two proportional relationships represented in different ways
- WALT a linear equation in one variable can result in one solution, infinitely many solutions, or no solution
- WALT show which of these outcomes is the case by transforming the original equation into the form $x = a$, $a = a$, or $a = b$
- WALT solve linear equations in one variable with rational number coefficients, including equations that require expanding expressions using the distributive property and combining like terms

Skills:

- graph proportional relationships represented in different ways
- compare the unit rates of two proportional relationships represented in different ways
- Recognize a linear equation in one variable can result in one solution, infinitely many solutions, or no solution

Student Learning

Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Red ○ Sections 5.5 ○ Big Ideas Math - Advanced 2 ○ Sections 4.1, 4.2, 4.3, 4.4, 4.6 ○ Big Ideas Math - Blue ○ Sections 4.1, 4.2, 4.3, 4.4, 4.6 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 8.EE.5 https://tasks.illustrativemathematics.org/content-standards/8/EE/B/5/tasks ○ 8.EE.7 https://tasks.illustrativemathematics.org/content-standards/8/EE/C/7/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
<p>Accommodations/Modifications (ELL, Students with IEPs, 504s, Gifted Learners, At Risk) <i>Each group must be listed separately</i></p>	<p>Assessment (All forms must be identified)</p>
<p>Suggested Options for Differentiation <i>English Language Learners</i></p> <ul style="list-style-type: none"> ● Peer tutoring ● Manipulatives ● Use of Home Language 	<p>Formative:</p> <ul style="list-style-type: none"> ● Observation ● Homework ● Class participation ● Whiteboards/communicators ● Do-Now

<ul style="list-style-type: none"> ● Limiting Concepts or Vocabulary ● Providing Visuals <p><i>Students at Risk of Failure</i></p> <ul style="list-style-type: none"> ● Extended Time ● Flexible Grouping ● Small Group Instruction ● Peer Buddies ● Graphic Organizers ● Chunking Information ● Scaffolded Questioning ● Tiered Activities ● Centers in Academic Activity <p><i>Special Education</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>504</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities <p><i>Gifted & Talented</i></p> <ul style="list-style-type: none"> ● Extension activities ● Opportunities for Critical Thinking ● Problem Solving/Design Challenges ● Technology Integration ● Student Choice Activities ● Student Driven Activities ● Group Projects ● Tiered Activities 	<ul style="list-style-type: none"> ● Notebook ● Exit passes <p>Summative:</p> <ul style="list-style-type: none"> ● Chapter/Unit Test ● Quizzes ● Presentations ● NJSLA <p>Benchmark:</p> <ul style="list-style-type: none"> ● Beginning of Year i-Ready Diagnostic ● Quarterly Portfolio ● NJSLA <p>Alternate:</p> <ul style="list-style-type: none"> ● Authentic Performance Tasks ● Unit Projects
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Unit #11 Overview

Unit Summary: Students will use mathematical practices to represent solutions to equations using square and cube roots.

Enduring Understandings:*Students will understand that...*

- There are several properties of exponents that can be used to simplify expressions.
- Square and cube roots can be used to represent solutions to equations

Essential Questions:

- How can we simplify expressions involving exponents?
- How do you add, subtract, multiply and divide very large and small numbers?
- How do you use square and cube roots to represent solutions to equations?

Standards**8.EE.A.1**

8.EE.A.2

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**

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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 properties of integer exponents.

- WALT determine whether two numerical expressions involving integer exponents are equivalent.
- WALT generate equivalent expressions using the properties of exponents.
- WALT use square root and cube root symbols to represent solutions to equations in the form $x^2 = p$ and $x^3 = p$
- WALT evaluate square roots of small perfect squares and cube roots of small perfect cubes
- $\sqrt{2}$ is an irrational number

Skills:

- know the properties of integer exponents.
- determine whether two numerical expressions involving integer exponents are equivalent.
- generate equivalent expressions using the properties of exponents.
- use square root and cube root symbols to represent solutions to equations in the form $x^2 = p$ and $x^3 = p$
- evaluate square roots of small perfect squares and cube roots of small perfect cubes
- $\sqrt{2}$ is an irrational number

Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Blue <ul style="list-style-type: none"> ○ Sections 10.1, 10.2, 10.3, 10.4 ○ Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 10.1, 10.2, 10.3, 10.4 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 8.EE.1 https://tasks.illustrativemathematics.org/content-standards/8/EE/A/1/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
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Unit #12 Overview

Unit Summary: Students will use mathematical practices to use scientific notation to compare magnitudes of numbers.

Enduring Understandings:*Students will understand that...*

- Scientific notation is used to make it easier to work with very large and very small numbers.

Essential Questions:

- How can we use scientific notation to compare magnitudes of numbers?

Standards

8.EE.A.3

8.EE.A.4

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

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

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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 estimate a very large or very small number as a single digit times an integer power of ten.
- WALT determine how many times larger one quantity is compared to another when written as a single digit times an integer power of ten.
- WALT add, subtract, multiply and divide numbers expressed in scientific notation.

- WALT add, subtract, multiply and divide numbers where one is expressed in decimal notation and the other is expressed in scientific notation.
- WALT choose appropriate units to represent measurements of very large or very small quantities.
- WALT interpret scientific notation generated by technology as a number multiplied by a power of ten.

Skills:

- estimate a very large or very small number as a single digit times an integer power of ten.
- determine how many times larger one quantity is compared to another when written as a single digit times an integer power of ten.
- add, subtract, multiply and divide numbers expressed in scientific notation.
- add, subtract, multiply and divide numbers where one is expressed in decimal notation and the other is expressed in scientific notation.

Student Learning	
Core Instructional Materials and Resources	Supplemental Instructional Materials and Resources
<ul style="list-style-type: none"> ○ Big Ideas Math - Blue <ul style="list-style-type: none"> ○ Sections 10.5, 10.6, 10.7 ○ Big Ideas Math - Advanced 2 <ul style="list-style-type: none"> ○ Sections 10.5, 10.6, 10.7 	<ul style="list-style-type: none"> ● i-Ready ● Illustrative Mathematics <ul style="list-style-type: none"> ○ 8.EE.3 https://tasks.illustrativemathematics.org/content-standards/8/EE/A/3/tasks ○ 8.EE.4 https://tasks.illustrativemathematics.org/content-standards/8/EE/A/4/tasks ● Activities on the Team Drive: <ul style="list-style-type: none"> ○ ● NJSLA Released Items ● Khan Academy
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- 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

Benchmark:

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

Alternate:

- Authentic Performance Tasks
- Unit Projects