

7th Grade Math Curriculum



Egg Harbor Township School District

State Board Adoption Date of Standards: 5/2016

Unit Overview (Standards Coverage)

Unit	Standards	Unit Focus	Standards for Mathematical Practice	Open Educational Resources
Unit 1 <i>The Number System</i> 7 weeks	<ul style="list-style-type: none"> 7.NS.A.1 7.NS.A.2 7.NS.A.3 	<ul style="list-style-type: none"> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers 	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively.	7.NS.A.1 Comparing Freezing Points 7.NS.A.1b-c Differences of Integers 7.NS.A.2 Why is a Negative Times a Negative Always Positive 7.NS.A.2d Equivalent fractions approach to non-repeating decimals 7.NS.A.2d Repeating decimal as approximation
Unit 2 <i>Expressions and Equations</i> 7 weeks	<ul style="list-style-type: none"> 7.EE.A.1 7.EE.A.2 7.EE.B.3 7.EE.B.4* 	<ul style="list-style-type: none"> Use properties of operations to generate equivalent expressions Solve real-life & math problems using numerical and algebraic expressions and equations 	MP.3 Construct viable arguments & critique the reasoning of others. MP.4 Model with mathematics.	7.EE.A.1 Writing Expressions 7.EE.A.2 Ticket to Ride 7.EE.B.3 Discounted Books 7.EE.B.3 Shrinking 7.EE.B.4 Fishing Adventures 2 7.EE.B.4, 7.NS.A.1 Bookstore Account 7.EE.B.4b Sports Equipment Set
Unit 3 <i>Ratios & Proportions</i> 6 weeks	<ul style="list-style-type: none"> 7.RP.A.1 7.RP.A.2 7.RP.A.3* 	<ul style="list-style-type: none"> Analyze proportional relationships and use them to solve real-world and mathematical problems 	MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	7.RP.A.1 Cooking with the Whole Cup 7.RP.A.2 Sore Throats, Variation 1 7.RP.A.2 Buying Coffee 7.RP.A.2c Gym Membership Plans 7.RP, 7.EE, 7.NS Drill Rig 7.RP.A.3, 7.EE.B.3.4 Gotham City Taxis
Unit 4 <i>Geometry</i> 4 weeks	<ul style="list-style-type: none"> 7.G.A.1 7.G.B.4 7.G.B.5 7.G.B.6 7.G.A.2 7.G.A.3 	<ul style="list-style-type: none"> Draw, construct, & describe geometric figures & describe relationships between them Solve real life math problems w/angle measure, area, surface area, & volume 	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning	7.G.A.1 Floor Plan 7.G.A.1 Map distance 7.G.B.4 Wedges of a Circle 7.G.B.4 Eight Circles 7.G.B.6, 7.RP.A.3 Sand under the Swing Set 7.G.A.2 A task related to 7.G.A.2 7.G.A.3 Cube Ninjas!
Unit 5 <i>Statistics & Probability</i> 5 weeks	<ul style="list-style-type: none"> 7.SP.A.1 7.SP.A.2 7.SP.B.3 7.SP.B.4 7.SP.C.5 7.SP.C.6 7.SP.C.7 7.SP.C.8 	<ul style="list-style-type: none"> Use random sampling to draw inferences about a population Draw informal comparative inferences about two populations Investigate chance processes and develop, use, and evaluate probability models 		7.SP.A.1 Mr. Briggs Class Likes Math 7.SP.A.2 Valentine Marbles 7.SP.B.3.4 College Athletes 7.SP.B.3.4 Offensive Linemen 7.SP.C.6 Heads or Tails 7.SP.C.7, 6 Rolling Dice 7.SP.C.7a How Many Buttons 7.SP.C.8 Tetrahedral Dice 7.SP.C.8 Waiting Times

This document outlines in detail the answers to following four questions:

1. What do we want our students to know?
2. How do we know if they learned it?
3. What do we do if they did not learn it?
4. What do we do when they did learn it?

Unit 1 MATH 7TH GRADE: RATIONAL NUMBERS

Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> ● NJSLS.Math.Content.7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. <ul style="list-style-type: none"> ● NJSLS.Math.Content.7.NS.A.1a Describe situations in which opposite quantities combine to make 0. ● NJSLS.Math.Content.7.NS.A.1b Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. ● NJSLS.Math.Content.7.NS.A.1c Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. ● NJSLS.Math.Content.7.NS.A.1d Apply properties of operations as strategies to add and subtract rational numbers. ● NJSLS.Math.Content.7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. <ul style="list-style-type: none"> ● NJSLS.Math.Content.7.NS.A.2a 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 	<p>Infused within the unit are connections to the NJSLS for Mathematics, Language Arts Literacy</p> <ul style="list-style-type: none"> - RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem. - SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience. - W6.10 Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline- specific tasks, purposes, and audiences. - WHST.11-12.10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. 	<ul style="list-style-type: none"> ● How to apply operations with integers and rational numbers ● Define the absolute value of a number ● Find absolute values of numbers ● How to compare and order rational numbers ● Show that the sum of a number and its opposite is 0 ● The concept of absolute value and distance ● How to use and justify the rules for integer operations ● Solve real life problems using integers and rational numbers ● Understand that a rational number is an integer divided by an integer ● Convert rational numbers to decimals ● Apply the four operations to rational numbers <ul style="list-style-type: none"> ○ Fractions and decimals ● Graph rational numbers by using a horizontal or vertical number line ● Use a horizontal or vertical number line to represent addition and subtraction ● Write fractions as terminating or repeating decimals ● Write decimals as fractions ● Add and subtract fractions ● Read and write integers, and find the absolute value of an integer ● Use commutative, associative, identity and distributive properties to solve problems.

<p>such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <ul style="list-style-type: none"> ● NJSLS.Math.Content.7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. ● NJSLS.Math.Content.7.NS.A.2c Apply properties of operations as strategies to multiply and divide rational numbers. ● NJSLS.Math.Content.7.NS.A.2d Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. ● NJSLS.Math.Content.7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers. 		
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Unit 1 MATH 7TH GRADE

Stage 1 – Desired Results

UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Apply and extend previous understandings of fractions to add, subtract, multiply, and divide rational numbers. Apply the concepts to solve real world problems including the four operations with rational numbers. Represent addition and subtraction on a horizontal and vertical number line diagram and learn rules for multiplying and dividing integers. Convert between fractions, decimals, and percents.</p>	<ul style="list-style-type: none"> ● Big Ideas Math Textbook and Website ● Linkit ● MobyMax

UNDERSTANDINGS

Students will understand that...

- Learning Goal 1: Describe real-world situations in which (positive and negative) rational numbers are combined, emphasizing rational numbers that combine to make 0. Represent sums of rational numbers ($p + q$) on horizontal and vertical number lines, showing that the distance along the number line is $|q|$ and including situations in which q is negative and positive.
- Learning Goal 2: Add and subtract (positive and negative) rational numbers, showing that the distance between two points on a number line is the absolute value of their difference and representing subtraction using an additive inverse.
- Learning Goal 3: Multiply and divide signed numbers, including rational numbers, and interpret the products and quotients using real-world contexts.
- Learning Goal 4: Convert a rational number to a decimal using long division and explain why the decimal is either a terminating or repeating decimal.
- Learning Goal 5: Apply properties of operations as strategies to add, subtract, multiply, and divide rational numbers.
- Learning Goal 6: Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of signed rational numbers.
- Learning Goal 7: Apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- Learning Goal 8: Rewrite algebraic expressions in equivalent forms to highlight how the quantities in it are related.

Students will know...

- Student will know how to add, subtract, multiply, and divide fractions.
- Student will know how to add and subtract integers as well as multiply and divide them.

Students will be able to...

- Student will be able to solve word problems involving fractions and integers.
- Student will be able to convert from fractions, decimals, and percents.

Stage 2 – Assessment Evidence

Performance Tasks:

What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?

Performance Tasks/Use of Technology

- 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
- A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations

Other Evidence:

Formative

- Teacher observation
- Exit slips/Check for Understanding
- Daily Classwork o Fluency Check
- Student Activity Pages
- Warm-up activities
- Task Cards
- Benchmark Assessments
- Homework
- Class Participation

Summative

- B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
- C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
- E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
- F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- On-Line textbook, teacher approved websites including bigideasmath.com
- Animations-Adding Integers
- Interactive Labs-Subtracting Positive & Negative Integers
- Game Zone-Integers Football
- www.bigideasmath.com
- BYOD (teacher directed use of wireless devices)
- www.Math.com
- www.math-drills.com
- www.helpingwithmath.com/resources/math_games.htm
- www.math-play.com
- www.quia.com/shared/math
- www.gamequarium.com/multiplication.html
- www.mrnussbaum.com/multiplication.htm
- www.xtramath.org

- Quizzes, Tests, MobyMax leveling, Link it Leveling, Benchmarks.

Stage 3 – Learning Plan

Suggested Activities Resources

7.NS.A.1 Comparing Freezing Points

7.NS.A.1b-c Differences of Integers**7.NS.A.2 Why is a Negative Times a Negative Always Positive****Falling Parachute**

This activity illustrates negative velocity.

● Ask students the following questions:

○ Do you see any pattern(s) in the table? Describe the patterns.

○ Is there a name for this collection of numbers: 90, 75, 60, 45, ...?

○ When will you land on the ground? Explain how you know. Discuss the difference between the speed of 15 feet per second and the velocity of -15 feet per second.

Work with a partner. You are gliding to the ground wearing a parachute. The table shows your height above the ground at different times.

a. Describe the pattern in the table. How many feet do you move each second? After how many seconds will you land on the ground?

b. What integer represents your speed? Give the units.

c. Do you think your velocity should be represented by a positive or negative integer? Explain your reasoning.

d. What integer represents your velocity? Give the units.

Adding Integers with the Same Sign

This activity illustrates adding two negative integers.

● Store integer counters in self-locking bags. Put 15–20 counters in each bag.

● Students should use counters even if they say they know the answer.

● A student volunteer could model Activity 1 at the overhead projector saying aloud what he or she is doing with the counters.

● Supplemental online resources:

[Illustrative Mathematics](#)

○ <https://www.khanacademy.org>

○ <http://www.coolmath.com>

○ <https://www.ixl.com/math>

- <https://www.mobymax.com>
- <http://www.quizletlive.com>
- <https://blog.freckle.com/say-hello-to-freckle-education>
- <http://www.quizlet.com>

1. Work with a partner. Draw a picture to show how you use integer counters to find .
2. Work with a partner. Draw a picture to show how you use integer counters to find .

Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)

- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

Tier I:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

Tier II:

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

Tier III:

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

ELL:

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.
- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

SPED:

- Menu Math (mostly for very low functioning students)
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Centers/Small Group Instruction
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis

504:

- Learning Ally (audio version for textbooks and other published materials)
- Extra help opportunities
- Reduce workload
- Partial credit
- Allow use of calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time

Curricular Framework MATH-7th Grade

- Provide guided notes and study guides as needed (use interactive notebook)
- Preferential Seating
- Extra Practice
- Directions repeated, clarified and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives

Unit 2 - EXPRESSIONS AND EQUATIONS - MATH 7TH GRADE

Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> • NJSLS.Math.Content.7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 	<ul style="list-style-type: none"> • 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. 	<p><i>Students Students will know... will be able to..</i></p> <ul style="list-style-type: none"> • How to apply operations with rational numbers. • Application of integers operations

Curricular Framework MATH-7th Grade

<ul style="list-style-type: none"> ● NJSLS.Math.Content.7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. ● NJSLS.Math.Content.7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. ● NJSLS.Math.Content.7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. <ul style="list-style-type: none"> ● NJSLS.Math.Content.7.EE.B.4a 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. ● NJSLS.Math.Content.7.EE.B.4b 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. 	<ul style="list-style-type: none"> ● C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. ● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. 	<ul style="list-style-type: none"> ● Solve real life problems using variables ● Add rational numbers ● Subtract rational numbers ● Multiply and divide rational numbers ● Understand “opposite” operations. ● Use commutative, associative, identity and distributive properties to solve problems. ● Students will be able to write and solve one and two-step linear equations involving adding, subtracting, multiplying, and dividing and realize they are undoing the existing operation to solve in reverse order of the order of operations. ● Students will know the following: $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”
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Unit 2- EXPRESSIONS AND EQUATIONS - MATH 7TH GRADE

Stage 1 – Desired Results

UNIT SUMMARY

CORE AND SUPPLEMENTAL MATERIALS/RESOURCES

Curricular Framework MATH-7th Grade

<ul style="list-style-type: none"> • Use properties of operations to generate equivalent expressions • Solve real-life and mathematical problems using numerical and algebraic expressions and equations 	<ul style="list-style-type: none"> • Big Ideas Math Textbook and Website • Linkit • MobyMax
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UNDERSTANDINGS

<ul style="list-style-type: none"> • Learning Goal 1: Students will understand to use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems. • Learning Goal 2: They will fluently solve equations; solve inequalities, graph the solution set of the inequality and interpret the solutions in the context of the problem (<i>Equations of the form $px + q = r$ and $p(x + q) = r$ and inequalities of the form $px + q > r$, $px + q \geq r$, $px + q \leq r$, or $px + q < r$, where p, q, and r are specific rational numbers</i>).

Students will know...	Students will be able to...
<ul style="list-style-type: none"> • Students will understand how to write algebraic equations and inequalities from real world situations. • Students will understand the relationship between inequalities and equalities. • Students will understand how to apply properties of operations. • Students will understand how to multi-step real life problems. 	<ul style="list-style-type: none"> • Students will be able to write and solve one and two-step linear equations involving adding, subtracting, multiplying, and dividing and realize they are undoing the existing operation to solve in reverse order of the order of operations. • Students will know the following: $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.” • Students will know the properties of operations and apply them to real world problems.

Stage 2 – Assessment Evidence

<p><u>Performance Tasks/Use of Technology</u></p> <p>Chrome book carts</p> <p>https://www.khanacademy.org</p> <p>http://www.coolmath.com</p> <p>https://www.mobymax.com</p> <p>www.quizzizz.com</p> <p>www.Math.com</p> <p>www.math-drills.com</p> <p>www.helpingwithmath.com/resources/math_games.htm</p>	<p><u>Other Evidence:</u></p> <p><u>Formative</u></p> <ul style="list-style-type: none"> • Teacher observation • Exit slips/Check for Understanding • Daily Classwork o Fluency Check • Student Activity Pages • Warm-up activities • Task Cards • Benchmark Assessments • Homework • Class Participation
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www.math-play.com
www.quia.com/shared/math
www.gamequarium.com/multiplication.html

www.xtramath.org

LINK IT Assessment Program

<https://eggharbortwsp.linkit.com/Account/LogOn?ReturnUrl=%2f>

Summative

Quizzes, Tests, Moby Max leveling, Link it Leveling, Benchmarks.

Stage 3 – Learning Plan

Model the Equations: Work with a partner. Use algebra tiles to model and solve the equation. a.

Model the equation . Draw a sketch of your tiles.

Your goal is to get one variable tile by itself. Because there are variable tiles, divide the tiles into equal groups.

Circle the groups. Keep one of the groups. This shows the value of x . Draw a sketch of the remaining tiles. Draw a sketch of your tiles.

To get the variable tile by itself, remove the ____ tiles on the left side by adding _____ tiles to each side. How many *zero pairs* can you remove from each side?

Circle them. The remaining tiles show the value of x .

Illustrative Mathematics

Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*

•*Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

Tier I:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping

- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

Tier II:

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

Tier III:

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

ELL:

- Big Ideas Math Student Editions are available online in Spanish

- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.
- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

SPED:

- Menu Math (mostly for very low functioning students)
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Centers/Small Group Instruction
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult

- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis

504:

- Learning Ally (audio version for textbooks and other published materials)
- Extra help opportunities
- Reduce workload
- Partial credit
- Allow use of calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed (use interactive notebook)
- Preferential Seating
- Extra Practice
- Directions repeated, clarified and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives

Unit 3 MATH 7TH GRADE Ratios and Proportions

Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> ● Analyze proportional relationships and use them to solve real-world and mathematical problems. ● Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.</i> ● Recognize and represent proportional relationships between quantities. ● 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. ● Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. ● Represent proportional relationships by equations. 	<p>Infused within the unit are connections to the NJSLs for Mathematics, Language Arts Literacy</p> <ul style="list-style-type: none"> ● Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem. ● Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience. ● Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline- specific tasks, purposes, and audiences. ● Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. 	<ul style="list-style-type: none"> ● Student will know what a unit rate is and apply it ● Student will know when to use a proportion to solve a problem. ● Student will be able to calculate a unit rate. ● Student will be able to recognize and represent proportional relationships.

Curricular Framework MATH-7th Grade

<p><i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i></p> <ul style="list-style-type: none"> • Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate. • Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i> 		
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Unit 3 MATH 7TH GRADE Ratios and Proportions

Stage 1 – Desired Results

UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Analyze proportional relationships and use them to solve real world and mathematical problems. Students will be able to use ratios and proportions to solve problems, including those with tables and graphs. Proportional relationships will also be used to solve multi-step ratio and percent problems..</p>	<ul style="list-style-type: none"> • Big Ideas Math Textbook and Website • Linkit • MobyMax

UNDERSTANDINGS

<p>Students will understand that...</p> <ul style="list-style-type: none"> • Students will understand how to compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $1/2 / 1/4$ miles per hour, equivalently 2 miles per hour.</i> • Students will be able to 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. • Students will understand that proportionality (unit rate) can be used in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. • Students will be able to represent proportional relationships by equations. <i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i> • Students will begin to understand the concept of slope and determine whether ratios pass through the origin. • Students will understand that simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error can be solved by using proportions.
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Students will know...	Students will be able to...
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Curricular Framework MATH-7th Grade

<p><i>What content will be covered that students must master?</i></p> <ul style="list-style-type: none"> • Student will know what a unit rate is and apply it • Student will know when to use a proportion to solve a problem. • Student will be able to calculate a unit rate. • Student will be able to recognize and represent proportional relationships. 	<p><i>What should students be able to accomplish to demonstrate understanding?</i></p> <ul style="list-style-type: none"> • Find ratio, rates and unit rates * • Identify proportional and nonproportional relationships • Use proportions to solve problems
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Stage 2 – Assessment Evidence

<p><u>Performance Tasks/Use of Technology</u></p> <ul style="list-style-type: none"> • Cooking with the Whole Cup http://www.khanacademy.org • Illustrative Mathematics 	<p>Other Evidence: <i>What other means of assessment will be used throughout this unit?</i></p> <p><u>Formative</u></p> <ul style="list-style-type: none"> • Mobymax <p><u>Summative</u></p> <ul style="list-style-type: none"> • Chapter Test • Common Assessments • Linkit
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Stage 3 – Learning Plan

[Illustrative Mathematics](#)

Work with a partner. A communications satellite in orbit travels about 18 miles every 4 seconds.

- Identify the rate in this problem.
- Recall that you can use *ratio tables* to find and organize equivalent ratios and rates. Complete the ratio table below.
- How can you use a ratio table to find the speed of the satellite in miles per minute? miles per hour?
- How far does the satellite travel in 1 second? Solve this problem (1) by using a ratio table and (2) by evaluating a quotient.
- How far does the satellite travel in second?

Work with a partner. Use a ratio table to answer each question. Then compare your answer to the estimate you found using the model.

Part 6

Whole 100 30

- a. What number is 6% of 30?
- b. What number is 65% of 30?

Part 65

Whole 100 30

Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)

- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

Tier I:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

Tier II:

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

Tier III:

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

ELL:

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.
- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

SPED:

- Menu Math (mostly for very low functioning students)
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Centers/Small Group Instruction
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis

504:

- Learning Ally (audio version for textbooks and other published materials)
- Extra help opportunities & Partial Credit
- Reduce workload
- Allow use of calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed (use interactive notebook)
- Preferential Seating
- Extra Practice

- Directions repeated, clarified and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives

Unit 4 - GEOMETRY MATH 7TH GRADE

Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> • NJSLS.Math.Content.7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. • NJSLS.Math.Content.7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. • NJSLS.Math.Content.7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. • NJSLS.Math.Content.7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. • NJSLS.Math.Content.7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. • NJSLS.Math.Content.7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects 	<p>Infused within the unit are connections to the NJSLS for Mathematics, Language Arts Literacy</p> <ul style="list-style-type: none"> • Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem. • Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience. • Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline- specific tasks, purposes, and audiences. • Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. 	<ul style="list-style-type: none"> • Student will know what a unit rate is and apply it • Student will know when to use a proportion to solve a problem. • Student will be able to calculate a unit rate. • Student will be able to recognize and represent proportional relationships.

Curricular Framework MATH-7th Grade

<p>composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>		
<p>Unit 4 GEOMETRY MATH 7TH GRADE</p>		
<p>Stage 1 – Desired Results</p>		
<p>UNIT SUMMARY</p>	<p>CORE AND SUPPLEMENTAL MATERIALS/RESOURCES</p>	
<p>Draw, construct, and describe geometrical figures and describe the relationships between them. Describe the result of slicing three-dimensional figures. Solve real life and mathematical problems involving angle measure, area, surface area, and volume.</p>	<ul style="list-style-type: none"> ● Big Ideas Math Textbook and Website ● Linkit ● MobyMax 	
<p>UNDERSTANDINGS</p>		
<ul style="list-style-type: none"> ● Students will understand that geometric properties and principals exist and provide solutions in everyday life. ● Students will understand that geometry is based on roles and relationships that exist on a micro and macro continuum. ● Students will understand that geometric shapes and their own specific formula for calculating area and perimeter as well as surface area and volume. 		
<p>Students will know...</p>	<p>Students will be able to...</p>	
<ol style="list-style-type: none"> 1. How do geometric properties and principals solve and apply to real world scenarios? 2. What is the relationship between angles and intersected arcs? 3. What is the difference between two dimensional and three dimensional figures? 4. How can I draw geometric figures with given conditions? 5. How can I use what I know about angles to solve real world problems? 	<ul style="list-style-type: none"> ● Students will use cubes and isometric dot paper to investigate the surface area and volume of solids. ● Students will develop an intuition about how to find the surface area of a prism. ● Students will develop an intuition about how to find the surface area of a cylinder. ● Students will develop an intuition about how to find the surface area of a pyramid. 	
<p>Stage 2 – Assessment Evidence</p>		
<p><u>Performance Tasks/Use of Technology</u></p> <ul style="list-style-type: none"> ● . On-Line textbook, teacher approved websites including bigideasmath.com ● www.bigideasmath.com 	<p>Other Evidence:</p> <p><u>Formative</u></p> <ul style="list-style-type: none"> ● Teacher observation 	

- BYOD (teacher directed use of wireless devices)
- www.Math.com
- www.math-drills.com
- www.helpingwithmath.com/resources/math_games.htm
- www.math-play.com
- www.quia.com/shared/math
- www.gamequarium.com/multiplication.html
- www.mrnussbaum.com/multiplication.htm
- www.xtramath.org

- Exit slips/check for understanding
- Games
- Oral Assessments/conferencing
- Portfolio/math journal
- Daily Classwork
- Pre-Assessment
- Fluency Check
- Quick Quiz
- Students Activity Pages

Summative

- Quick Quiz
- Performance Task
- Unit Test

Benchmark Assessments

Alternative Assessments

Stage 3 – Learning Plan

•**Find a Pattern Work with a partner. Describe the pattern of the perimeters. Use your pattern to find the perimeter of the tenth figure in the sequence. (Each small square has a perimeter of 4.**

Work with a partner. Cut different-colored straws to the lengths shown. Then construct a triangle with the specified straws, if possible. Compare your results with those of others in your class.

a. blue, green, purple **b.** red, green, purple **c.** red, blue, purple **d.** red, blue, green

Work with a partner. Use a geoboard to form a quadrilateral that fits the given description. Record your results on geoboard dot paper.

- a.** Form a quadrilateral with exactly one pair of parallel sides.
- b.** Form a quadrilateral with four congruent sides and four right angles.
- c.** Form a quadrilateral with four right angles that is *not* a square.

- d. Form a quadrilateral with four congruent sides that is *not* a square.
- e. Form a quadrilateral with two pairs of congruent adjacent sides and whose opposite sides are *not* congruent.
- f. Form a quadrilateral with congruent and parallel opposite sides that is *not* a rectangle.

Work with a partner. You know that the formula for the volume of a rectangular prism is .

- a. Write a formula that gives the volume in terms of the area of the base B and the height h .
- b. Use both formulas to find the volume of each prism. Do both formulas give you the same volume?

Work with a partner.

- Draw the two nets on cardboard and cut them out.
- Fold and tape the nets to form an open square box and an open pyramid.
- Both figures should have the same size square base and the same height.
- Fill the pyramid with pebbles. Then pour the pebbles into the box. Repeat this until the box is full. How many pyramids does it take to fill the box?
- Use your result to find a formula for the volume of a pyramid.

[Illustrative Mathematics](#)

Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax

- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

Tier I:

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- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
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- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)

- [Flash Card Math](#)
- [Math Fact Fluency](#)

Tier II:

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

Tier III:

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

ELL:

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
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- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software

- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

SPED:

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- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Centers/Small Group Instruction
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis

504:

- Learning Ally (audio version for textbooks and other published materials)
- Extra help opportunities
- Reduce workload
- Partial credit
- Allow use of calculator, when appropriate

Curricular Framework MATH-7th Grade

- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed (use interactive notebook)
- Preferential Seating
- Extra Practice
- Directions repeated, clarified and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives

Unit 5 MATH 7TH GRADE

Content & Practice Standards

Interdisciplinary Standards

Critical Knowledge & Skills

Curricular Framework MATH-7th Grade

<p>1) NJSLS.Math.Content.7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p> <p>2) NJSLS.Math.Content.7.SP.A.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</p> <p>3) NJSLS.Math.Content.7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.</p> <p>4) NJSLS.Math.Content.7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.</p> <p>5) NJSLS.Math.Content.7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, <i>cup will land open-end down. Do the outcomes for the spinning penny appear to be</i></p>	<p>Infused within the unit are connections to the NJSLS for Mathematics, Language Arts Literacy</p> <ul style="list-style-type: none"> ● Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem. ● Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience. ● Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline- specific tasks, purposes, and audiences. ● Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. 	<ul style="list-style-type: none"> ● Identify and count the outcomes of experiments ● data. ● How to make predictions based on theoretical probability of independent or dependent events. ● How to determine the outcomes of an experiment and predict whether events are likely or unlikely and fair or unfair. ● Chance events have a probability between 0 and 1. ● Understand the concept of probability ● Find probability of simple events ● Find the probability of compound events ● Find the probability of chance events ● Find sample spaces and probabilities ● Use multiplication to count outcomes and find probabilities ● Find and compare experimental and theoretical probabilities ● Find relative frequencies ● Identify independent and dependent events ● Use formulas to find probabilities of independent and dependent events ● Determine when samples are representative of populations ● Use data to make predictions about populations ● Use random samples to compare populations
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equally likely based on the observed frequencies?

- 6) **NJSLS.Math.Content.7.SP.C.8** Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- **NJSLS.Math.Content.7.SP.C.8a** Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
 - **NJSLS.Math.Content.7.SP.C.8b** Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.
 - **NJSLS.Math.Content.7.SP.C.8c** Design and use a simulation to generate frequencies for compound events.

Unit 5 STATISTICS AND PROBABILITY MATH 7TH GRADE

Stage 1 – Desired Results

UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Use random sampling to draw inferences about a population. Draw informal comparative inferences about two populations. Investigate change processes and develop, use, and evaluate probability models.</p>	<ul style="list-style-type: none"> ● Big Ideas Math Textbook and Website ● Linkit ● MobyMax

UNDERSTANDINGS

Students will know...	Students will be able to...
<p><i>What content will be covered that students must master?</i></p> <ul style="list-style-type: none"> ● Students will understand that statistics and probability are used to make predictions about the real world. 	<p><i>What should students be able to accomplish to demonstrate understanding?</i></p> <ul style="list-style-type: none"> ● Students will be able to gain information and draw inferences about a population by examining a sample of that population. ● Students will be able to use measures of central tendency and variability to draw conclusions. ● Students will be able to use probability to predict the likelihood of an event. ● Students will know that a sample can be used to make generalizations about a population. ● Students will know which central tendency is appropriate for a given situation. ● Students will know that the value of probability is greater than or equal to zero or less than or equal to 1.

Stage 2 – Assessment Evidence

<p><u>Performance Tasks/Use of Technology</u></p> <ul style="list-style-type: none"> ● . On-Line textbook, teacher approved websites including bigideasmath.com ● www.bigideasmath.com ● BYOD (teacher directed use of wireless devices) 	<p>Other Evidence: <i>What other means of assessment will be used throughout this unit?</i></p> <p><u>Formative</u></p> <ul style="list-style-type: none"> ● Teacher observation ● Exit slips/check for understanding ● Games ● Oral Assessments/conferencing ● Portfolio/math journal
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- www.Math.com
- www.math-drills.com
- www.helpingwithmath.com/resources/math_games.htm
- www.math-play.com
- www.quia.com/shared/math
- www.gamequarium.com/multiplication.html
- www.mrnussbaum.com/multiplication.htm
- www.xtramath.org

- Daily Classwork
- Pre-Assessment
- Fluency Check
- Quick Quiz
- Students Activity Pages

Summative

- Quick Quiz
- Performance Task
- Unit Test

Benchmark Assessments

Alternative Assessments

Stage 3 – Learning Plan

Illustrative Mathematics

Work with a partner.

a. Flip a quarter 20 times and record your results. Then complete the table.

- <https://blog.freckle.com/say-hello-to-freckle-education>

Are the relative frequencies the same as the probability of flipping heads or tails? Explain.

b. Compare your results with those of other students in your class. Are the relative frequencies the same? If not, why do you think they differ?

c. Combine all of the results in your class. Then complete the table again. Did the relative frequencies change? What do you notice? Explain experiment and you combine the results. How do you think the relative frequencies will change?

Work with a partner. You are buying a combination lock. You have three choices.

a. This lock has 3 wheels. Each wheel is numbered from 0 to 9.

The least three-digit combination possible is _____.

The greatest three-digit combination possible is _____.

How many possible combinations are there?

b. Use the lock in part (a).

There are _____ possible outcomes for the first wheel.

There are _____ possible outcomes for the second wheel. There are _____ possible outcomes for the third wheel.

How can you use multiplication to determine the number of possible combinations?

c. This lock is numbered from 0 to 39. Each combination uses three numbers in a right, left, right pattern. How many possible combinations are there

Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

Tier I:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet

- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

Tier II:

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

Tier III:

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

ELL:

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.
- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

SPED:

- Menu Math (mostly for very low functioning students)
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Centers/Small Group Instruction

- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis

504:

- Learning Ally (audio version for textbooks and other published materials)
- Extra help opportunities
- Reduce workload
- Partial credit
- Allow use of calculator, when appropriate
- Modified length and time frame of assignments
- Alternate assessments with extended time
- Provide guided notes and study guides as needed (use interactive notebook)
- Preferential Seating
- Extra Practice
- Directions repeated, clarified and reworded
- Breakdown task into manageable units
- Differentiated instruction
- Use of manipulatives