Huntsville City Schools
2020 - 2021 Pacing Guide
7th Grade Math Accelerated

Math Practices:

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Important Notes:

- Since this is an accelerated course, certain topics have been grouped together that may be taught separately in a grade level course.
- Alabama Course of Study objectives are given by number
- This curriculum map's standards are aligned to the **2016** Alabama Course of Study.
- Resources and Instructional Strategies are suggestions for the topic studied; teachers are not required to use all resources listed and can supplement their teaching with additional resources that support the Course of Study Standards.
- The number of days listed are approximate and are padded to allow a little extra time for review and tests
- The problems listed for each section are suggested types of problems. Teachers can still assign even, odd, or selected problems from each type of problem.
- Students will be allowed to use scientific or graphing calculators on midterm & final exams, and most tests (teacher's discretion).
    - Please reference the ACAP Math Item Specifications Grade 7 for information about which standards will have access to a calculator on the ACAP assessment.

Online Resources:

- Freckle, Math – Freckle math not only offers additional practice for students, but also Inquiry Based Lessons, and Constructed Response passages by Common Core State Standards: Accessible through Clever
- MARS - Mathematics Assessment Resource Service – formative assessments and group activities: http://map.mathshell.org/lessons.php
- Geogebra – In addition to offering powerful calculators and graphing tools, Geogebra offers many interactive activities by Common Core State Standard: https://www.geogebra.org/
- Khan Academy – Example videos and practice activities that may be of additional help to students: https://www.khanacademy.org/
- Shmoop – Teachers and students can use Shmoop to view videos and practice on various math topics searchable by Common Core State Standard: https://www.shmoop.com/
- Dan Meyer's Ted Talk about teaching math: https://youtu.be/qocAoN4jNwc
  - Links to Dan Meyer's 3-act activities, sorted by standard: https://docs.google.com/spreadsheet/ccc?key=0AjIqyKM9d7ZYdEhtR3BJMmdBWnM2YWxWYVM1UWowTEE#gid=0
- Granite City Math Vocabulary: http://www.graniteschools.org/mathvocabulary/
- Open Curriculum - activities from all over the internet sorted by standard: www.opencurriculum.org
- Illustrative Mathematics: https://im.kendallhunt.com/
  - Teachers must use their school email address to create a free account to access the teacher-only resources
- MARS - Mathematics Assessment Resource Service – formative assessments and group activities: http://map.mathshell.org/lessons.php
- Desmos – free online calculator – excellent for working with linear equations, scatterplots, and best-fit lines : www.desmos.com
  - Teacher version includes lessons and activities: https://teacher.desmos.com/
- Illuminations – lessons developed by NCTM: http://illuminations.nctm.org/
- Create a MyMathLab instructors course using the book: It is a good resource for material on all the topics in this course. You can pull problems from it in MyMathLab also.

Instructional Strategies:

ELLevation: **Note**: Be sure to check the "Math Collection" for specific topic resources.

Build Background:
* Brainstorm Walk   * I Notice, I Wonder

Clarify Input:
* "5 and 2"   * Anchor Charts   * Essential Questions   * Guided Notes   * "Teach! Teach!"   * TPR

Fortify Output:
* Find Your Match   * Clock Buddies   * Think, Write, Pair Share   * Which Corner?

Foster Interactions:
* "Don't Mention it"   * Find the Fib

Develop Academic Language:
* 360 Words   * Word Walls

Assess Language and Learning:
* Wordless Books   * Whiteboard Checkpoints   * Differentiated Question Prompts

ARI/Instructional Strategies (Alabama Reading Initiative)

ARI represents the Alabama Reading Initiative. Below are ARI/Instructional strategies that can be easily adapted to work well with mathematics. Some of the strategies can be interchangeable between before, during, and after in lesson planning. There are many instructional strategies that can be used in the classroom and you are not limited to these alone. If you have other ARI/Instructional strategies that work well for you and your students, use them to assist with academic growth and development. Have fun experimenting with different strategies to reach all students and address the different learning styles.

Suggested time period	ARI/Instructional Strategy	Explanation/How to use the strategy
Before:	Admit Slip	Purpose: 1) reflect on content of previous lesson or learned concept The admit-slip strategy requires students to write responses to questions you pose at the beginning of class. Admit slips help students reflect on what they have learned and express what or how they are thinking about the information. Admit slips easily incorporate writing into your content area classroom and require students to think critically.
	KWL	Purposes: 1) link prior knowledge to new information 2) generate questions to guide meaningful learning 3) create own meaning and learning from new text Procedure: 1. On the whiteboard, on a handout, or on students' individual clean sheets, three columns should be drawn. 2. Label Column 1 **K**, Column 2 **W**, Column 3 **L**. 3. Before reading, viewing or listening, students fill in the **Know** column with words, terms, or phrases from their background or prior knowledge. If the students are drawing on a topic previously learned, then the K column may be topic related. But if the topic is something brand-new, and they don't know anything much about it, you should use the K column to have them recalling a similar, analogous, or broader idea. 4. Then have students generate questions about what they might learn or want to learn about the topic, which might follow a quick glance at the topic headings, pictures, problems and charts that are found in the text or on a handout provided. This helps set their purpose for the lesson or concept and focuses their attention on key ideas. 5. After the math lesson and reading, students should fill in their new knowledge gained from the content. They can also clear up misperceptions about the topic which might have shown up in the Know column before they learned anything about the topic. This is the stage of metacognition: Does the student fully understand?
	Think Pair Share	Purposes: There are a variety of uses for this activity 1) Think. The teacher provokes students' thinking with a problem, question, prompt or observation. The students should take a few moments just to THINK about the question and jot down their thoughts. 2) Pair with someone…Using designated partners, nearby neighbors, or a desk mate, students PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. 3) Share. After students talk in pairs for a few moments, the teacher calls for pairs to SHARE their thinking with the rest of the class. Sharing can be accomplished in a variety of ways: going around in round-robin fashion, calling on each pair, taking answers as they are called out (or as hands are raised), pairing with another pair. Often, the teacher or a designated helper will record these responses on the board or on the overhead.

	Quick Write	Purposes: 1) introduce a concept and connect this concept with prior knowledge or experiences and 2) allow students to discuss and learn from each other Procedure: 1. Introduce a single word, phrase, problem, or question to the class. 2. Students copy the concept on index cards or sheet of paper. 3. Students are given two to five minutes to write whatever comes to their minds relative to the concept. They may write freely using single words, phrases, sentences, etc. 4. After time is called, students may volunteer to share their thoughts on the subject.
	Turn and Talk/ Table Talk	Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading Procedure: 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the whiteboard or project overhead. 2. Each student has two minutes to read the question or statement, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.
	Bell Ringer/Bell Work/Warm Up	Bell ringers are questions or tasks posted before students enter the classroom. They are to be completed before class starts, or, as the name suggests, as the bell rings. Bell ringers provide benefits to both the student and the teacher in all classroom settings ranging from elementary to high school. Bell ringers help to encourage promptness, organization, responsibility, spark prior knowledge, reinforce concepts, promote student engagement and so much more.
During:	Think Pair Share	Purposes: There are a variety of uses for this activity 1) Think. The teacher provokes students' thinking with a problem, question, prompt, or observation. The students should take a few moments just to THINK about the question and jot down their thoughts. 2) Pair with someone…Using designated partners, nearby neighbors, or a desk mate, students PAIR up to talk about the answer each came up with. They compare their mental or written notes and identify the answers they think are best, most convincing, or most unique. 3) Share. After students talk in pairs for a few moments, the teacher calls for pairs to SHARE their thinking with the rest of the class. Sharing can be accomplished in a variety of ways: going around in round-robin fashion, calling on each pair, taking answers as they are called out (or as hands are raised), pairing with another pair. Often, the teacher or a designated helper will record these responses on the board or on the overhead.

	Turn and Talk/ Table Talk	Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading Procedure: 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the chalkboard. 2. Each student has two minutes to read the topic, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.
	Jot Notes	Jot Notes are basically lesson notes the students jot down before, during and after the lesson (in some cases) …The notes can be given in a variety of formats or structures…Example: chart format, graphic organizer, table format, guided notes, foldables, etc.…
	Quadrant Cards / Frayer Model	Purposes: 1) motivate students to engage in vocabulary study and expand vocabulary 2) Reinforce concepts etc.…. Procedure: Divide a sheet of paper into four parts Adapt to meet your students' needs…. whether you want to emphasize on vocabulary, connecting concepts, or organizing steps or procedures for graphing or solving etc.…
	Venn Diagram	Purpose: compare concepts Procedure: 1. Draw two circles overlapping. Each circle represents a concept. 2. Unique characteristics of the two ideas being compared are recorded in the outer of the two overlapping circles. Common characteristics are recorded where the circles overlap. 3. Teacher should model the strategy first.

	Charts/Foldables	Purposes: 1) engage with concept/lesson/text 2) construct graphic organizer/chart/foldable 3) self-monitor comprehension
		Procedure:
		1. Create a Jot Chart, project on the whiteboard or produce a print copy for each student. The chart/matrix should be structured as follows. You can also use foldables to accomplish these tasks.
		     o Main ideas/items for description or analysis are listed across the top of the chart.
		     o Question/characteristics of the main concepts are listed down the left side of the chart.
		2. Discuss the purpose of the chart with students before the assignment. Give an example of a completed chart to help clarify its functions.
		3. Have students complete the chart or foldable as you go through the lesson or assign tasks to groups etc...As the teacher, you decide and adapt this to meet the needs of your students and what you want to accomplish from the task.
		4. Discuss the students' findings and compile the results into a group chart. Stress the relationships between the data in the chart.

	Partner Learning	Purpose: 1) To engage students in the content and spark meaningful discussions 2) To encourage collaboration and improve knowledge among students 3) Promote socialization and boost self-esteem 4) Reinforce concepts taught through open questioning and answer sessions Procedure: The students are paired up and given a task to complete together; open discussions, sharing of ideas, writing, final product presentation, etc....
	Concept Map	Purpose: activate and organize knowledge about a specific topic Procedure: 1. Select the main idea or topic of discussion; write it on a chart, overhead, or whiteboard; and put a circle around it. 2. Have students brainstorm subtopics; knowledge related to the topic. Use lines to connect to the main topic. 3. Have students brainstorm specific vocabulary, ideas, mathematical knowledge related to each subtopic. Record these ideas beneath each subtopic. Add new knowledge to the concept map as learning progresses.
	Graphic Organizer	Purposes: 1) provide a visual model of the structure of lesson and 2) provide a format for organizing information and concepts Procedure: 1. Introduce the graphic organizer to the students. Demonstrate how it works by noting key concepts and ideas on the organizer. 2. Have groups of students practice using the graphic organizer with ideas from independently read mathematical text and/or mathematical information presented during lessons. Students can share their ideas with the class. 3. Choose an organizer that matches what you want to accomplish with your students for the topic or lesson.

	Jigsaw	Purposes: 1) engage with mathematical concept or text 2) self-monitor comprehension 3) integrate new information with prior knowledge 4) respond to mathematical concept or text through discussion Procedure: 1. Divide class into 4-6 member groups; each member becomes an expert on a different topic/concept assigned by teacher. 2. Members of the teams with the same topic meet in an expert group with a variety of resource materials and texts available to explore their topic. 3. The students prepare how they will teach the information to others. 4. Everyone returns to their jigsaw (home) teams to teach what they learned to the other members. It may be helpful to supply each student with a graphic organizer for note taking purposes. 5. Team members listen and take notes as their classmate teaches them
After:	Cooperative Learning/ Partner Learning/Practice	Cooperative learning is the process of breaking a classroom of students into small groups so they can discover a new concept together and help each other learn. Each group is given a task or assignment to complete. Often a record keeper and team leader are assigned to keep everyone on task. Collaboration and discussion are expected with a final assignment or project completed and submitted. Open discussions between the teacher and/or students can occur during class as well.
	Stations/ Carousels etc.…	Purposes: This strategy can fit almost any purpose developed. Procedure: 1. Teacher determines what topics/lessons will be placed on chart paper. 2. Chart paper is placed on walls around the room. 3. Teacher places students into groups of three- four. 4. Students begin at a designated chart. 5. They read the question or phrase, discuss with group, and respond directly on the chart or assigned task sheet. 6. After an allotted amount of time, students rotate to next chart. 7. Students read next question and records new response or discussion points. 8. Continue until each group has responded to each prompt. 9. Teacher shares information from charts and conversations heard while responding. ** This strategy can be modified by having the chart "carousel" to groups, rather than groups moving to chart.

	Exit slip	Purpose: 1) reflect on content of lesson
		The exit-slip strategy requires students to write responses to questions you pose at the end of class. Exit slips help students reflect on what they have learned and express what or how they are thinking about the new information. Exit slips easily incorporate writing into your content area classroom and require students to think critically.
		There are three categories of exit slips (Fisher & Frey, 2004):
		• Prompts that document learning,
		  o Ex. Write one thing you learned today.
		  o Ex. Discuss how today's lesson could be used in the real world.
		• Prompts that emphasize the process of learning,
		  o Ex. I didn't understand…
		  o Ex. Write one question you have about today's lesson.
		• Prompts to evaluate the effectiveness of instruction
		  o Ex. Did you enjoy working in small groups today?

	Turn and Talk/Table Talk	Purposes: 1) activate prior knowledge, 2) build background knowledge, 3) encourage active listening, and 4) set a purpose for concept/lesson or reading Procedure: 1. Write a thought-provoking statement or question related to the subject of the upcoming lesson on the whiteboard or project overhead. 2. Each student has two minutes to read the question or statement, reflect, and write a response. 3. Each student has three minutes to share his/her response with a partner, reflect, and write a response to his/her partner's statement. 4. Pairs combine to form small groups of 4-6 students. Responses are shared within the group and one response is chosen to share with the whole class.

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	Hands on Activity/ Graphs, charts, diagrams, etc.	Hand on activities are simply activities which students physically in some way connect with their learning…writing, drawing, graphing, demonstration through movement, use of manipulatives etc.… Hands-on activities are especially important in the classroom because it allows students to engage in kinesthetic learning. Educational studies have shown that kinesthetic learning, where a student performs some type of physical activity rather than just listening to a lecture, is the most popular type of learning with students - doing or working on something before, during, and/or after the lesson, helps them to gain a better understanding of the material. It allows students to experiment with trial and error, learn from their mistakes, and understand the potential gaps between theory and practice. It also encourages students to collaborate with their peers and share information from different perspectives.

Formatting:

- Honors or advanced material is highlighted in blue. Example: Advanced: Page 145 #75-86
- Remediation is highlighted in yellow. Example: Remediation: Small group on fractions
- enVisionmath2.0 Grade 8 will be highlighted in purple. Example: enVisionmath2.0 Grade 8

The Textbook for this course is:

enVisionmath2.0 Accelerated Grade 7.
enVisionmath2.0 Grade 8 will also be referenced for standards not explored in the Accelerated Grade 7 book.

Huntsville City Schools
2020 - 2021 Pacing Guide
7th Grade Math Accelerated

First Semester
1st 9 – weeks (August 17 – October 23)
44 instructional days; 22 A-Days and 22 B-Days

Time Period	Unit Topic	Standards	Resources
Week 1	Introduction to Integers / Operations with Rational Numbers	8. Apply and extend knowledge of operations of whole numbers, fractions, and decimals to add, subtract, multiply, and divide rational numbers including integers, signed fractions, and decimals. a. Identify and explain situations where the sum of opposite quantities is 0 and opposite quantities are defined as additive inverses. b. Interpret the sum of two or more rational numbers, by using a number line and in real-world contexts. c. Explain subtraction of rational numbers as addition of additive inverses. d. Use a number line to demonstrate 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. e. Extend strategies of multiplication to rational numbers to develop rules for multiplying signed numbers, showing that the properties of the operations are preserved. f. Divide integers and explain that division by zero is undefined. Interpret the quotient of integers (with a non-zero divisor) as a rational number. g. Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats. [Grade 7, 4] 9. Solve real-world and mathematical problems involving the four operations of rational numbers, including complex fractions. Apply properties of operations as strategies where applicable. [Grade 7, 5]	**EnVision: Unit 1 – Rational Number Operations** • Relate Integers and their opposites (1.1) / Understand the Rational Numbers (1.2) • Adding Integers (1.3) / Subtract Integers (1.4) / Add and Subtract Rational Numbers (1.5) • Multiply Integers (1.6) / Multiply Rational Numbers (1.7) / Divide Integers (1.8) / Divide Rational Numbers (1.9) • Solve Problems with Rational Numbers (1.10) **Illustrative Mathematics:** • "Rational Number Arithmetic" -- grade 7, unit 5 **MARS:** • "Using Positive and Negative Numbers in Context" • "Adding and Subtracting Directed Numbers" **GeoGebra Links:** • "Adding Integers" • "Division of a Whole Number by a Fraction" Pearson Success Net Khan academy

Week 2	Integer Exponents / Scientific Notation	14. Develop and apply properties of integer exponents to generate equivalent numerical and algebraic expressions. [Grade 8, 3] 16. Express and compare very large or very small numbers in scientific notation. [Grade 8, 5] • a. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used, expressing answers in scientific notation. [Grade 8, 6] • b. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. [Grade 8, 6a] c. Interpret scientific notation that has been generated by technology. [Grade 8, 6b]	**enVision: Unit 2 – Real Numbers** • Use Properties of Integer Exponents (2.6) • More Properties of Integer Exponents (2.7) • Use powers of 10 to estimate quantities (2.8) / Understand Scientific Notation (2.9) • Operations with Numbers in Scientific Notation (2.10) **Illustrative Mathematics:** • "Exponents and Scientific Notation" -- grade 8, unit 7 **MARS:** • "Applying Properties of Exponents" • "Estimating Length Using Scientific Notation"
Week 3	Approximations of Real Numbers / Unit Review and Testing	10. Define the real number system as composed of rational and irrational numbers. a. Explain that every number has a decimal expansion; for rational numbers, the decimal expansion repeats in a pattern or terminates. b. Convert a decimal expansion that repeats in a pattern into a rational number. [Grade 8, 1] 11. Locate rational approximations of irrational numbers on a number line, compare their sizes, and estimate the values of irrational numbers. [Grade 8, 2] 15. Use square root and cube root symbols to represent solutions to equations. a. Evaluate square roots of perfect squares (less than or equal to 225) and cube roots of perfect cubes (less than or equal to 1000). b. Explain that the square root of a non-perfect square is irrational. [Grade 8, 4]	**enVision: Unit 2 – Real Numbers** • Understand Irrational Numbers (2.2) / Compare and Order Real Numbers (2.3) • Evaluate square and cube roots (2.4) / Solve equations using square and cube roots (2.5) **Illustrative Mathematics:** • "Pythagorean Theorem and Irrational Numbers" -- grade 8, unit 8 **MARS:** • "Translating Between Repeating Decimals and Fractions" **Note:** Days are given in this week for review and testing of the unit.

| Week 4 | Ratio, Rate, and Proportion | 1. Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions. [Grade 7, 1]

2. Represent a relationship between two quantities and determine whether the two quantities are related proportionally.
a. Use equivalent ratios displayed in a table or in a graph of the relationship in the coordinate plane to determine whether a relationship between two quantities is proportional.
b. Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
c. Explain in context the meaning of a point (x,y) on the graph of a proportional relationship, with special attention to the points (0,0) and (1, r) where r is the unit rate. [Grade 7, 2]

4. Determine whether a relationship between two variables is proportional or non-proportional. [Grade 8, 7]

5. Graph proportional relationships.
a. Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation y = mx where m is the slope. [Grade 8, 8]

33. Solve problems involving scale drawings of geometric figures including computation of actual lengths and areas from a scale drawing and reproduction of a scale drawing at a different scale. [Grade 7, 17] | **enVision: Unit 3 – Analyze and Use Proportional Relationships**
• Connect ratios, rates, and unit rates (3.1) / Determine the unit rates of fractions (3.2)
• Understand proportional relationships (3.3) / Describe proportional relationships (3.4)
• Graph proportional relationships (3.5) / Apply proportional reasoning to solve problems (3.6)
• Solve problems involving scale drawings (10.1)

Illustrative Mathematics:
• "Scale Drawings" -- grade 7, unit 1
• "Introducing Proportional Relationships" -- grade 7, unit 2
• "Proportional Relationships and Percentages" -- grade 7, unit 4

MARS:
• "Using Proportional Reasoning"
• "Representing: Road Race"
• "Comparing Strategies for Proportions Problems"
• "Classifying Proportion and Non-Proportion Situations"
• "Short Tasks" -- Ratio and Proportion
• "Drawing to Scale: A Garden"

"Sharing Costs Equitably: Traveling to School" |

Week 5	Percentage Problems	3. Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease. [Grade 7, 3]	**enVision: Unit 4 – Analyze and Solve Percent Problems** • Analyze percents of numbers (4.1) / Connect percent and proportion (4.2) • Represent and Use the Percent Equation (4.3) • Solve Percent Change problems (4.4) • Solve Markup and Markdown problems (4.5) **Illustrative Mathematics:** • "Proportional Relationships and Percentages" -- grade 7, unit 4
Week 6	Percentages / Review and Test	3. Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease. [Grade 7, 3]	**enVision: Unit 4 – Analyze and Solve Percent Problems** • Solve simple interest problems (4.6) **Illustrative Mathematics:** • "Proportional Relationships and Percentages" -- grade 7, unit 4 **MARS:** • Increasing and Decreasing Quantities by a percent • 25% Sale **Note:** Days are given in this week for review and testing of the unit.
Week 7	Equivalent Expressions	12. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. [Grade 7, 6] 13. Generate expressions in equivalent forms based on context and explain how the quantities are related. [Grade 7, 7]	**enVision: Unit 5 – Generate Equivalent Expressions** • Write and evaluate algebraic expressions (5.1) / Generate Equivalent Expressions (5.2) • Simplify Expressions (5.3) • Expand Expressions (5.4) • Factor Expressions (5.5) **Illustrative Mathematics:** "Expressions, Equations, and Inequalities" -- grade 7, unit 6
Week 8 & Week 9	Catch-up	Use this time to catch up due to remediation, testing, weather, sickness, ect.	**Note:** This week provides time to review and test

2nd 9 – weeks (October 26 – December 22)
38 instructional days; 19 A-Days and 19 B-Days

Time Period	Unit Topic	Standards	Resources
Week 1	Operations with Expressions Writing and Solving Basic Equations and Inequalities	12. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. [Grade 7, 6] 13. Generate expressions in equivalent forms based on context and explain how the quantities are related. [Grade 7, 7] 18. Use variables to represent quantities in a real-world or mathematical problem and construct algebraic expressions, 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. 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. [Grade 7, 9, and linear portion of Algebra I with Probability, 11]	EnVision: Unit 5 – Generate Equivalent Expressions • Add Expressions (5.6) / Subtract Expressions (5.7) • Analyze Equivalent Expressions (5.8) EnVision: Unit 6 – Solve Problems Using Equations and Inequalities • Write 2-step equations (6.1) / Solve 2-step equations (6.2) • Solve Inequalities using addition/subtraction (6.4) / Solve inequalities using multiplication/division (6.5) Illustrative Mathematics: "Expressions, Equations, and Inequalities" -- grade 7, unit 6

Week 2	Solving Equations and Inequalities Using the Distributive Property Solving Advanced Linear Equations	17. Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions, and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies. [Grade 7, 8] 18. Use variables to represent quantities in a real-world or mathematical problem and construct algebraic expressions, 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. 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. [Grade 7, 9, and linear portion of Algebra I with Probability, 11] 21. Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms. b. Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem. [Grade 8, 11]	**EnVision: Unit 6 – Solve Problems Using Equations and Inequalities** • Solving 2-step inequalities (6.6) • Solve Equations Using the Distributive Property (6.3) / Solve inequalities using the distributive property (6.6) **EnVision: Unit 7 – Analyze and Solve Linear Equations** • Combine like terms to solve equations (7.1) / Solve equations with variables on both sides (7.2) • Solve multi-step equations (7.3) **Illustrative Mathematics:** • "Expressions, Equations, and Inequalities" -- grade 7, unit 6 • "Linear Relationships" - grade 8, unit 3 • "Linear Equations and Linear Systems" - grade 8, unit 4

Week 3	Solving Equations with Special Solutions Review / Test	17. Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions, and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies. [Grade 7, 8] 21. Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms. a. Determine whether linear equations in one variable have one solution, no solution, or infinitely many solutions of the form x = a, a = a, or a = b (where a and b are different numbers). b. Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem. [Grade 8, 11]	**EnVision: Unit 7 – Analyze and Solve Linear Equations** • Solve equations with no solutions / infinitely many solutions (7.4) **Illustrative Mathematics:** • "Linear Relationships" - grade 8, unit 3 • "Linear Equations and Linear Systems" - grade 8, unit 4 **Note:** Days are given in this week for review and testing of the unit.

Week 4	Building from proportional to slope-intercept structures	5. Graph proportional relationships. a. Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation y = mx where m is the slope. [Grade 8, 8] 6. Interpret y = mx + b as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept. a. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in a coordinate plane. b. Given two distinct points in a coordinate plane, find the slope of the line containing the two points and explain why it will be the same for any two distinct points on the line. c. Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value. d. Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts. [Grade 8, 9] 7. Compare proportional and non-proportional linear relationships represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions) to solve real-world problems. [Grade 8, 10] 22. Identify the effect on the graph of replacing f (x) by f (x) + k, k · f(x), f (kx), and f (x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph using technology, where appropriate. Limit to linear functions. [Algebra I with Probability, 23] 23. Construct a function to model the linear relationship between two variables. a. Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship from two points in a table or graph. [Grade 8, 16]	**EnVision: Unit 7 – Analyze and Solve Linear Equations** • Compare proportional Relationships (7.5) • Connect Proportional Relationships and Slope (7.6) / Analyze y = mx (7.7) • Understand the y-intercept of a line (7.8) / Analyze y = mx + b (7.9) **Illustrative Mathematics** • "Linear Relationships" - grade 8, unit 3 • "Linear Equations and Linear Systems" - grade 8, unit 4

Week 5	Comparing Representations of Functions	7. Compare proportional and non-proportional linear relationships represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions) to solve real-world problems. [Grade 8, 10] 19. Create equations in two variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. Limit to contexts arising from linear functions. [Algebra I with Probability, 12 partial] 20. Represent constraints by equations and/or inequalities and interpret solutions as viable or nonviable options in a modeling context. Limit to contexts arising from linear. [Algebra I with Probability, 13 partial] 23. Construct a function to model the linear relationship between two variables. a. Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship from two points in a table or graph. [Grade 8, 16]	Grade 8 enVision: Unit 3 – Use Functions to Model Relationships • Connect Representations of Functions (3.2) • Compare linear and nonlinear functions (3.3) • Construct Functions to Model Linear Relationships (3.4) Note: 3.1 is not included, as defining "function" is reserved for a later course Illustrative Mathematics: • "Functions and Volume" - grade 8, unit 5 Mars: • Model: Hot and Cold "Matching Situations, Graphs, and Linear Equations"
Week 6	Brief Introduction to Systems of Linear Equations	24. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x). Limit to linear equations. [Algebra I with Probability, 19] 25. Find approximate solutions by graphing the functions, making tables of values, or finding successive approximations, using technology where appropriate. Note: Include cases where f(x) is linear and g(x) is constant or linear. [Algebra I with Probability, 19 edited]	Grade 8 Envision: Unit 5 – Analyze and Solve Systems of Linear Equations • Estimate Solutions by Inspection (5.1) • Solve Systems by Graphing (5.2) Illustrative Mathematics: "Linear Equations and Linear Systems" - grade 8, unit 4
Week 7	Review / Test for the Unit	24. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x). Limit to linear equations. [Algebra I with Probability, 19] 25. Find approximate solutions by graphing the functions, making tables of values, or finding successive approximations, using technology where appropriate. Note: Include cases where f(x) is linear and g(x) is constant or linear. [Algebra I with Probability, 19 edited]	Grade 8 Envision: Unit 5 – Analyze and Solve Systems of Linear Equations • Estimate Solutions by Inspection (5.1) • Solve Systems by Graphing (5.2) Illustrative Mathematics: "Linear Equations and Linear Systems" - grade 8, unit 4
Week 8	Catch-up	Use this time to catch up due to remediation, testing, weather, sickness, ect.	Note: This week provides time to review and test

Second Semester
3rd 9 – weeks (January 4 – March 12)
48 instructional days; 24 A-Days and 24 B-Days

Time Period	Unit Topic	Standards	Resources
Week 1	Sampling and Interpreting Statistics	26. Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences. c. Determine whether conclusions and generalizations can be made about a population based on a sample. d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and make predictions or conclusions about the population. e. Informally explain situations in which statistical bias may exist. [Grade 7, 10] 27. 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. [Grade 7, 11] 28. Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context. [Grade 7, 12]	**EnVision: Unit 8 – Using Sampling to Draw Inferences About Populations** • Populations and Samples (8.1) • Draw Inferences from Data (8.2) • Make Comparative Inferences about Populations (8.3) • Make More Comparative Inferences about Populations (8.4) **Illustrative Mathematics:** • "Probability and Sampling" - grade 7, unit 8 **MARS:** • "Sampling and Estimating: Counting Trees" • "Comparing Data Using Statistical Measures" • "Representing Variability with Mean, Median, Mode, and Range" "Representing Data with Grouped Frequency Graphs and Box Plots"

Week 2	Review / Test of the unit	26. Examine a sample of a population to generalize information about the population. a. Differentiate between a sample and a population. b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences. c. Determine whether conclusions and generalizations can be made about a population based on a sample. d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and make predictions or conclusions about the population. e. Informally explain situations in which statistical bias may exist. [Grade 7, 10] 27. 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. [Grade 7, 11] 28. Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context. [Grade 7, 12]	**EnVision: Unit 8 – Using Sampling to Draw Inferences About Populations** • Populations and Samples (8.1) • Draw Inferences from Data (8.2) • Make Comparative Inferences about Populations (8.3) • Make More Comparative Inferences about Populations (8.4) **Illustrative Mathematics:** • **"**Probability and Sampling" - grade 7, unit 8 **MARS:** • "Sampling and Estimating: Counting Trees" • "Comparing Data Using Statistical Measures" • "Representing Variability with Mean, Median, Mode, and Range" "Representing Data with Grouped Frequency Graphs and Box Plots"

Week 3	Likelihood Theoretical v. Experimental Probabilities Probability Models	29. Use a number between 0 and 1 to represent the probability of a chance event occurring, explaining that larger numbers indicate greater likelihood of the event occurring, while a number near zero indicates an unlikely event. [Grade 7, 13] 30. Define and develop a probability model, including models that may or may not be uniform, where uniform models assign equal probability to all outcomes and non-uniform models involve events that are not equally likely. a. Collect and use data to predict probabilities of events. b. Compare probabilities from a model to observe frequencies, explaining possible sources of discrepancy. [Grade 7, 14] 31. Approximate the probability of an event by using data generated by a simulation (experimental probability) and compare it to theoretical probability. a. Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency. [Grade 7, 15]	**EnVision: Unit 9 – Probability** • Understand Likelihood and Probability (9.1) / Understand Theoretical Probability (9.2) • Understand Experimental Probability (9.3) • Use Probability Models (9.4) **Illustrative Mathematics:** • "Probability and Sampling" - grade 7, unit 8 **MARS:** • "Designing: A Game of Chance" • "Analyzing Games of Chance" • "Evaluating Statements About Probability"
Week 4	Modeling Compound Events Simulations	32. Find probabilities of simple and compound events through experimentation or simulation and by analyzing the sample space, representing the probabilities as percents, decimals, or fractions. a. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams, and determine the probability of an event by finding the fraction of outcomes in the sample space for which the compound event occurred. b. Design and use a simulation to generate frequencies for compound events. c. Represent events described in everyday language in terms of outcomes in the sample space which composed the event. [Grade 7, 16]	**EnVision: Unit 9 – Probability** • Determine Outcomes of Compound Events (9.5) • Find Probabilities of Compound Events (9.6) • Simulate Compound Events (9.7) **Illustrative Mathematics:** • "Probability and Sampling" - grade 7, unit 8

Week			
Week 5	Review / Test	32. Find probabilities of simple and compound events through experimentation or simulation and by analyzing the sample space, representing the probabilities as percents, decimals, or fractions. a. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams, and determine the probability of an event by finding the fraction of outcomes in the sample space for which the compound event occurred. b. Design and use a simulation to generate frequencies for compound events. c. Represent events described in everyday language in terms of outcomes in the sample space which composed the event. [Grade 7, 16]	**EnVision: Unit 9 – Probability** • Determine Outcomes of Compound Events (9.5) • Find Probabilities of Compound Events (9.6) • Simulate Compound Events (9.7) **Illustrative Mathematics:** • "Probability and Sampling" - grade 7, unit 8
Week 6	Constructing Geometry Shapes Basic Angle Relationships	34. Construct geometric shapes (freehand, using a ruler and a protractor, and using technology) given measurement constraints with an emphasis 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. [Grade 7, 18] 37. Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure. [Grade 7, 21]	**EnVision: Unit 10 – Solve Problems Involving Geometry** • Draw Geometric Figures (10.2) • Draw Triangles with Given Conditions (10.3) • Solve Problems Using Angle Relationships (10.4) **Illustrative Mathematics:** • "Angles, Triangles, and Prisms" -- grade 7, unit 7 **MARS:** • "Applying Angle Theorems" "Describing and Defining Triangles"
Week 7	Parallel Lines and Transversals	38. Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures. a. Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees. [Grade 8, 25]	**enVision: Unit 11 – Congruence and Similarity** • Angles, Lines, and Transversals (11.8) • Interior and Exterior Angles of Triangles (11.9) **Illustrative Mathematics:** • "Angles, Triangles, and Prisms" -- grade 7, unit 7 • "Rigid Transformations and Congruence" -- grade 8, unit 1

		38. Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures. a. Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees. [Grade 8, 25]	enVision: Unit 11 – Congruence and Similarity • Angles, Lines, and Transversals (11.8) • Interior and Exterior Angles of Triangles (11.9) Illustrative Mathematics: • "Angles, Triangles, and Prisms" -- grade 7, unit 7 • "Rigid Transformations and Congruence" -- grade 8, unit 1
Week 8	Review / Test		
Week 9 & Week 10	Catch-up	Use this time to catch up due to remediation, testing, weather, sickness, ect.	**Note:** This week provides time to review and test

4th 9 – weeks (March 15 – May 28)
46 instructional days; 23 A-Days and 23 B-Days
+4 Exam Days

Time Period	Unit Topic	Standards	Resources
Week 1	Circles	36. Explain the relationships among circumference, diameter, area, and radius of a circle to demonstrate understanding of formulas for the area and circumference of a circle. a. Informally derive the formula for area of a circle. b. Solve area and circumference problems in real-world and mathematical situations involving circles. [Grade 7, 20] 39. 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 rectangular prisms. [Grade 7, 22]	**EnVision: Unit 10 – Solve Problems Involving Geometry** • Solve Problems Involving Circumference (10.5) • Solve Problems Involving Area of a Circle (10.6) **Note**: there are no specific topics in enVision for general area problems **Illustrative Mathematics:** • "Measuring Circles" -- grade 7, unit 3
Week 2	Cross Sections ("Slices") Surface Area and Volume of Prisms	35. Describe the two-dimensional figures created by slicing three-dimensional figures into plane sections. [Grade 7, 19] 39. 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 rectangular prisms. [Grade 7, 22] 41. Use formulas to calculate the volumes of three-dimensional figures to solve real-world problems. [Grade 8, 30]	**EnVision: Unit 10 – Solve Problems Involving Geometry** • Describe Cross Sections (10.7) • Solve Problems Involving Surface Area (10.8) • Solve Problems Involving Volume (10.9) **Illustrative Mathematics:** • "Angles, Triangles, and Prisms" -- grade 7, unit 7

Week 3	Volumes of "Circular" Solids	39. 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 rectangular prisms. [Grade 7, 22] 40. Informally derive the formulas for the volume of cones and spheres by experimentally comparing the volumes of cones and spheres with the same radius and height to a cylinder with the same dimensions. [Grade 8, 29] 41. Use formulas to calculate the volumes of three-dimensional figures to solve real-world problems. [Grade 8, 30]	**EnVision: Unit 12 -- Solve Problems Involving Surface Area and Volume** • Find Surface Area of 3-D figures (12.1) • Find Volumes of Cylinders (12.2) / Find Volumes of Cones (12.3) • Find Volumes of Spheres **Illustrative Mathematics:** "Functions and Volume" -- grade 8, unit 5
Week 4	Review / Test	39. 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 rectangular prisms. [Grade 7, 22] 40. Informally derive the formulas for the volume of cones and spheres by experimentally comparing the volumes of cones and spheres with the same radius and height to a cylinder with the same dimensions. [Grade 8, 29] 41. Use formulas to calculate the volumes of three-dimensional figures to solve real-world problems. [Grade 8, 30]	**EnVision: Unit 12 -- Solve Problems Involving Surface Area and Volume** • Find Surface Area of 3-D figures (12.1) • Find Volumes of Cylinders (12.2) / Find Volumes of Cones (12.3) • Find Volumes of Spheres **Illustrative Mathematics:** "Functions and Volume" -- grade 8, unit 5
Week 5	Transformations – Rigid Motion Congruence	42. Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. a. Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship. [Grade 8, 22] 43. Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two- dimensional figures. [Grade 8, 23] 44. Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them. [Grade 8, 24]	**EnVision: Unit 11 – Congruence and Similarity** • Analyze Translations (11.1) / Analyze Reflections (11.2) • Analyze Rotations (11.3) • Compose Transformations (11.4) • Understand Congruent Figures (11.5) **Illustrative Mathematics:** "Rigid Transformations and Congruence" -- grade 8, unit 1

Week 6	Transformations – Dilation Similarity	42. Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. a. Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship. [Grade 8, 22] 43. Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two- dimensional figures. [Grade 8, 23] 44. Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them. [Grade 8, 24]	**EnVision: Unit 11 – Congruence and Similarity** • Describe Dilations (11.6) • Understand Similar Figures (11.7) **Illustrative Mathematics:** • "Dilations, Similarity, and Introducing Slope" -- grade 8, unit 2 **MARS:** • "Identifying Similar Triangles" "Representing and Combining Transformations"
Week 7	Review / Test	42. Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines. a. Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship. [Grade 8, 22] 43. Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two- dimensional figures. [Grade 8, 23] 44. Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them. [Grade 8, 24]	**EnVision: Unit 11 – Congruence and Similarity** • Describe Dilations (11.6) • Understand Similar Figures (11.7) **Illustrative Mathematics:** • "Dilations, Similarity, and Introducing Slope" -- grade 8, unit 2 **MARS:** • "Identifying Similar Triangles" "Representing and Combining Transformations"
Week 8 & Week 9	Catch-up	Use this time to catch up due to remediation, testing, weather, sickness, ect.	**Note:** This week provides time to review and test