Curriculum Map

2017-2018

Grade level curriculum maps are thoughtfully designed so concepts connect to prior learning and build throughout the year while assuring all standards are taught prior to the state testing window. Resources are listed to support instruction of the standards, and include core curriculum materials and additional resources. A suggested sequence is provided to ensure a logical progression of concepts. Teacher may need to use professional judgment to adjust the amount of time spent on concepts based on the needs of their students. If timeframes are adjusted, careful consideration must be made to assure that all standards are addressed.

Topic Overview	Rationale for Sequence	Prior Knowledge
Integers • Ordering, locating, and comparing rational numbers on a number line. • Using additive inverse to support understanding of all operations. • Fluently adding, subtracting, multiplying, and dividing integers.	"In Grade 6, students learned to locate rational numbers on the number line; in Grade 7 they extend their understanding of operations with fractions to operations with rational numbers." -*Progressions for Standards in Mathematics: Number Systems 6-8*	In Grade 6, students began working with integers and will now apply it to basic operations numerically and in context. Students developed an understanding of positive and negative numbers, absolute value, and ordering numbers. They were also introduced to multiplying and dividing decimals, which will connect to an understanding of working with rational numbers operations.
Long Division and Conversion • Using long division to convert a fraction to a decimal. • Identifying when a decimal repeats or terminates. • Converting between fraction, decimal, and percent.	Reviewing and extending students work from 6th grade on percent conversion and long division will help them make the transition from integers to all rational numbers. Students will recognize the difference between repeating and terminating decimals. This will help the transition to 8th grade where they will need to distinguish between rational and irrational numbers.	In grade 6, students work with percent identifying the part, whole and percent. In 5th and 6th grade, students work with long division of numbers with a remainder and interpreting the quotient. Students will need to become fluent in these skills in order to be able to use them in context in 7th grade.
Operations with Rational Numbers • Apply and extend understanding of integers with decimals. • Apply and extend understanding of integers with fractions. • Apply operations of integers using models to connect with operations of rational numbers.	Extending the work students have done with number operations with integers to cover all rational numbers.	In Grade 6, students mastered multiplying and dividing fractions, adding and subtracting fractions with unlike denominators and mixed numbers. Students in Grade 7 will be introduced to all operations with integers. Mastery of operations with positive rational numbers in Grade 6 will be extended to gaining mastery of operations with all rational numbers.

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Website Directions: 1) Log in   2) Select Grade 7

Teacher Notes

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Weeks 1 - 4: Integers	Rationale for Sequence	Prior Knowledge
Integers • Ordering, locating, and comparing rational numbers on a number line. • Using additive inverse to support understanding of all operations. • Fluently adding, subtracting, multiplying, and dividing integers.	"In Grade 6, students learned to locate rational numbers on the number line; in Grade 7 they extend their understanding of operations with fractions to operations with rational numbers." *-Progressions for Standards in Mathematics: Number Systems 6-8*	In Grade 6, students began working with integers and will now apply it to basic operations numerically and in context. Students developed an understanding of positive and negative numbers, absolute value, and ordering numbers. They also were introduced to multiplying and dividing decimals, which will connect to an understanding of working with rational numbers operations.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 1-4 (17 days)	Day 1 and 2: Teachers work on creating classroom norms while reviewing long division and integer understanding with embedded practices of the Habits of Mind and Habits of Interactions. **7.NS.A.1 (Major)** 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. **(Integers only applies to all standards in weeks 1-4.)** **7.NS.A.1a (Major)** Describe situations in which opposite quantities combine to make 0. **7.NS.A.1b (Major)** 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. **7.NS.A.1c (Major)** 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. **7.NS.A.1d (Major)** Apply properties of operations as strategies to add and subtract rational numbers. **7.NS.A.2 (Major)** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **7.NS.A.2a** (**Major**) Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1) (–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. **7.NS.A.2b (Major)** Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts. **7.NS.A.2c (Major)** Apply properties of operations as strategies to multiply and divide rational numbers.	*[Task Arc: Adding and Subtracting Positive and Negative Rational Numbers: Football Task 1](#) **MI**: Lesson 1: Introduction and Guided Instruction *[Task Arc: Adding and Subtracting Positive and Negative Rational Numbers: Football Task 2](#) **MI:** Lesson 2 **MI**: Lesson 3 **TRB**: Hands On Activity p. 18 , *(use manipulatives: two-color counters)* **MI:** Lesson 4 [Multiplying Signed Numbers](#)	**PPS:** Lesson 1: p. 3-4 **TRB**: Hands On Activity p. 3 [Integer Addition Game](#) (activities can be used for weeks 1-4 and 6-9) **PPS:** Lesson 2: p. 11-14 **PPS**: Lesson 3: p. 25-26 [Multiplication Integer Game](#) PPS: Lesson 4: p. 35-36

Week 5: Long Division and Conversion	Rationale for Sequence	Prior Knowledge
Long Division and Conversion • Using long division to convert a fraction to a decimal. • Identifying when a decimal repeats or terminates. • Converting between percent, fraction, & decimal.	Reviewing and extending students work from 6th grade on percent conversion and long division will help them make the transition from integers to all rational numbers. Students will recognize the difference between repeating and terminating decimals. This will help the transition to 8th grade where they will need to distinguish between rational and irrational numbers.	In grade 6, students work with percent identifying the part, whole and percent. In 5th and 6th grade, students work with long division of numbers with a remainder and interpreting the quotient. Students will need to become fluent in these skills in order to be able to use them in context in 7th grade.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Week 5 (4 days)	**7.NS.A.2d (Major)** 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.	**MI:** Lesson 5 Fraction, Decimal, Percent Conversions	**PPS**: Lesson 5: p. 45-46

Weeks 6 - 9: Operations with Rational Numbers	Rationale for Sequence	Prior Knowledge
Operations with Rational Numbers • Apply and extend understanding of integers with decimals. • Apply and extend understanding of integers with fractions. • Apply operations of integers using models to connect with operations of rational numbers.	Extending the work students have done with number operations with integers to cover all rational numbers.	In Grade 6, students mastered multiplying and dividing fractions, adding and subtracting fractions with unlike denominators and mixed numbers. Students in Grade 7 will be introduced to all operations with integers. Mastery of operations with positive rational numbers in Grade 6 will be extended to gaining mastery of operations with all rational numbers.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 6-9 (19 days)	**7.NS.A.1 (Major)** 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. (**Rational numbers applies to all standards in weeks 6-9.**) **7.NS.A.1a (Major)** Describe situations in which opposite quantities combine to make 0. **7.NS.A.1b (Major)** 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. **7.NS.A.1c (Major)** 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. **7.NS.A.1d (Major)** Apply properties of operations as strategies to add and subtract rational numbers **7.NS.A.2 (Major)** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **7.NS.A.2a (Major)** Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1) (–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. **7.NS.A.2b (Major)** Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts. **7.NS.A.2c (Major)** Apply properties of operations as strategies to multiply and divide rational numbers. **7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	**MI**: Lesson 6 **MI**: Lesson 7 Differences & Distances *Task Arc: Adding and Subtracting Positive and Negative Rational Numbers: Cold Weather 7 & 8 Subtraction of Integers Difference of Integers **MI:** Lesson 8 Comparing Freezing Points Distances between Houses (Create a table for students to fill in answers to part b. See solution for an idea.)	Multiplication Integer Game **PPS**: Lesson 6: p. 55-56 **PPS**: Lesson 7: p. 65-66 Teacher Toolbox: Lesson 7 Game: Bella's Cella **PPS**: Lesson 8: p. 75-76 Weight of Candy Bags

Topic Overview	Rationale for Sequence	Prior Knowledge
Expressions • Find and write equivalent expressions from a variety of models. • Analyze different expressions to see if they are equivalent. • Rewrite expressions in different equivalent forms. • Use algebraic expressions to describe area. • Create algebraic expressions to represent percentage problems.	Students gain a better understanding of what algebraic expressions are and specifically that they can represent concrete situations. Students find a variety of ways to test whether different expressions are equivalent. They see that by using properties of operations to combine like terms, they can rewrite one expression to an equivalent expression. For example, if an item costs x dollars, the sale price after a 30% discount could be given by either x - 0.3x or 0.7x. Both are equivalent.	In Grade 6, students develop a basic understanding of equivalent expressions, how to rewrite expressions, and how to represent problems in expressions. In Grade 7, students develop mastery of using expressions in a real world context.
Equations and Inequalities • Use contextual to write and solve one-step equations leading to discovering inverse operations. • Read two-step word problems and solve using arithmetic. • Create a two-step equation based on word problems. • Write an equation to represent real-world percentage problems. (Focusing on the idea that a percent can be written in 2 forms. Example: 30% off or 70% paid) • Use multi-step problems to create equations that include rational numbers. • Read a word problem that leads to solving an inequality. • Write an inequality that can model a real-world problem. • Graph the solution set of an inequality on a number line.	In Grade 7, students solve multi-step problems leading to equations of the form px+q=r and p(x+q) = r without the restrictions they had in Grade 6. Within Grade 7, students will connect their understanding of equations with proportional relationships in the real-world. In Grade 8, they will need to solve problems with two linear equations in two variables. In Grade 6, students studied inequalities with infinitely many solutions and represented the solutions on a number line. In Grade 7, students expand upon what they learned in Grade 6 to solve real-world problems using inequalities and graph the solution on a number line.	In Grade 6, students fluently computed with rational numbers in one-step equations. They also converted among forms of rational numbers and estimated/discussed the reasonableness of their answer. Using their knowledge of one-step equations in Grade 6, students will extend their understanding to solve multi-step equations in Grade 7. Students will use their newly developed understanding of solving multi-step equations with rational numbers to solve, write, and graph inequalities.

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Proportional Relationships (Percent Problems)	Problems in which proportional relationships are expressed as percentages are common in everyday life as well as in science and the social studies.	In Grade 6, students understand percent as a ratio. They used proportions to find percent of a whole. In Grade 7, students solve single and multi-step percent problems preparing for data analysis.
• Set up and solve multi-step simple interest problems, tax, markup, markdowns, gratuities, commissions, and fees.		

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Weeks 10 - 12: Expressions	Rationale for Sequence	Prior Knowledge
Expressions • Find and write equivalent expressions from a variety of models. • Analyze different expressions to see if they are equivalent. • Rewrite expressions in different equivalent forms. • Use algebraic expressions to describe area. • Create algebraic expressions to represent percentage problems.	Students gain a better understanding of what algebraic expressions are and specifically that they can represent concrete situations. Students find a variety of ways to test whether different expressions are equivalent. They see that by using properties of operations to combine like terms, they can rewrite one expression to an equivalent expression. For example, if an item costs x dollars, the sale price after a 30% discount could be given by either x - 0.3x or 0.7x. Both are equivalent.	In Grade 6, students develop a basic understanding of equivalent expressions, how to rewrite expressions, and how to represent problems in expressions. In Grade 7, students develop mastery of using expressions in a real world context.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 10-12 (15 days)	**7.EE.A.1 (Major)** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients **7.EE.A.2 (Major)** Understand that rewriting an expression in different forms in a contextual problem can provide multiple ways of interpreting the problem and how the quantities in it are related. For example, shoes are on sale at a 25% discount. How is the discounted price P related to the original cost C of the shoes? C - .25C = P. In other words, P is 75% of the original cost for C - .25C can be written as .75C.	**MI**: Lesson 14 **MI**: Lesson 15 Ticket to Ride **PPS**: Lesson 15: p.157-158	**TRB**: Hands on Activity p. 135 **PPS**: Lesson 15: p. 153-154 **PPS**: Lesson 15: p. 155- 156 Miles to Kilometers

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Weeks 13 - 16: Equations and Inequalities	Rationale for Sequence	Prior Knowledge
Equations and Inequalities • Use contextual to write and solve one-step equations leading to discovering inverse operations. • Read two-step word problems and solve using arithmetic. • Create a two-step equation based on word problems. • Write an equation to represent real-world percentage problems. (Focusing on the idea that a percent can be written in 2 forms. Example: 30% off or 70% payed) • Use multi-step problems to create equations that include rational numbers. • Read a word problem that leads to solving an inequality. • Write an inequality that can model a real-world problem. • Graph the solution set of an inequality on a number line.	In Grade 7, students solve multi-step problems leading to equations of the form px+q=r and p(x+q) = r without the restrictions they had in Grade 6. Within Grade 7, students will connect their understanding of equations with proportional relationships in the real-world. In Grade 8, they will need to solve problems with two linear equations in two variables. In Grade 6, students studied inequalities with infinitely many solutions and represented the solutions on a number line. In Grade 7, students expand upon what they learned in Grade 6 to solve real-world problems using inequalities and graph the solution on a number line.	In Grade 6, students fluently computed with rational numbers in one-step equations. They also converted among forms of rational numbers and estimated/discussed the reasonableness of their answer. Using their knowledge of one-step equations in Grade 6, students will extend their understanding to solve multi-step equations in Grade 7. Students will use their newly developed understanding of solving multi-step equations with rational numbers to solve, write, and graph inequalities.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 13-16 (17 days)	**7.EE.B.3 (Major)** Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals). **7.EE.B.3a (Major)** Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. **7.EE.B.3b (Major)** Assess the reasonableness of answers using mental computation and estimation strategies. **7.EE.B.4 (Major)** 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. **7.EE.B.4a (Major)** Solve contextual problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (Inequalities on back of page)	**Review one-step equations with:** Which Goes with Which? **TRB**: Hands-on Activity p. 147 **MI**: Lesson 16 Bookstore Task	**TRB:** Quick Check and Remediation p. 154 Gotham City Taxis **TRB**: Hands-On Activity p. 156

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	7.EE.B.4b (Major) Solve contextual 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 on a number line and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions. (Note that inequalities using >, <, ≤, ≥ are included in this standard).	**MI**: Lesson 17 Sports Equipment Set	Task Arcs: Investigating Inequalities

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Weeks 17 - 19: Proportional Relationships (Percent Problems)	Rationale for Sequence	Prior Knowledge
Proportional Relationships (Percent Problems) • Set up and solve multi-step simple interest problems, tax, markup, markdowns, gratuities, commissions, and fees.	Problems in which proportional relationships are expressed as percentages are common in everyday life as well as in science and the social studies.	In Grade 6, students understand percent as a ratio. They used proportions to find percent of a whole. In Grade 7, students solve single and multi-step percent problems preparing for data analysis.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 17-19 (12 days)	**7.RP.A.3 (Major**) Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	**MI**: Lesson 12 Selling Computers Tax and Tip **MI**: Lesson 13 25% Sale	**TRB:** Quick Check and Remediation p. 110 Challenge and Hands-on Activity, p. 111 Comparing Years

Topic Overview	Rationale for Sequence	Prior Knowledge

Proportional Relationships (Unit Rates & Ratios)
• Compute unit rates involving ratios with complex fractions.
• Analyze a problem and learn how to model it using a ratio written as a complex fraction; rewrite to the equivalent unit rate.
• Determine if two quantities are in a proportional relationship
   • Testing for equivalent ratios from a table
   • Graphing on a coordinate plane and determining if a proportional relationship
   • Using an equation to represent a proportional relationship
• Identify the constant of proportionality (unit rate) in a table, equations, and graph
	Students begin to combine skills they have previously acquired such as writing ratios, rational number operations, solving and writing equations, graphing, and creating tables to connect them all together through the proportional relationship thread. Students also begin to work using given information to draw connections and make projections using ratios and unit rate.	Students previously computed unit rates involving ratios with whole numbers. They also found equivalent fractions, divided fractions, and wrote whole numbers as fractions.
		In Grade 7, students extend the concepts of unit rate to solving problems with complex fractions. They transition from solving problems primarily with visual models to applying familiar algorithms. In Grade 6 and Grade 7, students mastered unit rate, ratios, and proportions. They developed ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tape diagrams, tables of equivalent ratios, graphs, or equations.

Scale Drawings • Understand that scale is a ratio. • Compute actual lengths and areas from a scale drawing involving geometric figures. • Reproduce a scale drawing using a different scale. • Determine the scale of a drawing and find the actual dimensions.	Students will continue to use the skills that they have developed with proportional reasoning to work with scale drawings, moving them into their upcoming work with geometric figures. Scaling involves precision and careful attention to structure in setting up proportions. It will lead to work in Grade 8 with similar figures in geometry.	In grade 6, students worked with ratios and unit rates, one step equations and fractions. In 7th grade, students have extended the work from 6th grade to proportional relationships, which is the foundation of scale drawings. In this section, students will stretch this understanding to cover some more of their geometry skills. These skills will help prepare students for 8th grade work of dilating and transforming figures.
Sides, Angles, and Triangles • Write and solve problems with angles and be able to identify the angle type. • Draw triangles to meet given conditions. • Discover and understand what conditions will lead to unique triangles, more than one triangle, or no triangle.	Students apply and extend their geometric measurement and use of appropriate tools to work with triangles and angles. Incorporating their work with equations and geometry to write and solve equations based on the context and the visual model.	In Grade 6, students worked with triangles and angles working to identify the key types of each. In Grade 7, students draw, construct, and describe geometrical figures and describe the relationships between them. Students gain the foundation of geometry in Grade 7. Use of geometric measurement continues in high school geometry.

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Area, Surface Area, Volume, Circumference, and Circles	Students extend their work with geometric measurement to real-world problems, making use of properties to calculate area, surface areas, and volumes. Students further extend their understanding of volume to include composite figures. They also begin to work with circles and their corresponding formulas for circumference and area.	In Grade 6, students solve real-world and mathematical problems involving perimeter, area, and surface area with simple composite figures. They also found the volume of rectangular prisms. The use of geometric measurement continues in high school geometry.
• Find the area of composite figures and circles. • Find volume and surface area of composite three-dimensional figures. • Discover and use the formula for circumference and area of a circle.		

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Weeks 20 - 24: Proportional Relationship (Unit Rates & Ratios)	Rationale for Sequence	Prior Knowledge

Proportional Relationships (Unit Rates & Ratios)
• Compute unit rates involving ratios with complex fractions.
• Analyze a problem and learn how to model it using a ratio written as a complex fraction; simplifying to the unit rate.
• Determine if two quantities are in a proportional relationship
    • Testing for equivalent ratios from a table
    • Graphing on a coordinate plane and determining if a proportional relationship
    • Using an equation to represent a proportional relationship
• Identify the constant of proportionality (unit rate) in a table, equations, and graph
	Students begin to combine skills they have previously acquired such as writing ratios, rational number operations, solving and writing equations, graphing, and creating tables to connect them all together through the proportional relationship thread. Students also begin to work using given information to draw connections and make projections using ratios and unit rate.	Students previously computed unit rates involving ratios with whole numbers. They also found equivalent fractions, divided fractions, and wrote whole numbers as fractions.
		In Grade 7, students extend the concepts of unit rate to solving problems with complex fractions. They transition from solving problems primarily with visual models to applying familiar algorithms. In Grade 6 and Grade 7, students mastered unit rate, ratios, and proportions. They developed ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tape diagrams, tables of equivalent ratios, graphs, or equations.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 20-24 (24 days)	**7.RP.A.1 (Major)** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. For example, if a person walks 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. **7.RP.A.2 (Major)** Recognize and represent proportional relationships between quantities. **7.RP.A.2a (Major)** 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). **7.RP.A.2b (Major)** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **7.RP.A.2c (Major)** Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn. **7.RP.A.2d (Major)** 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.	**MI:** Lesson 9 Cooking with the Whole Cup **MI:** Lesson 10 **TRB**: On level activity p. 93B Coupon Book Sales Task Arcs: Reasoning with Ratios and Rates **MI**: Lesson 11 Robot Races	**PPS:** Lesson 9 p. 93-94 Cider versus Juice **TRB:** Challenge Activity p. 93B **TRB:** Quick Check and Remediation p. 100, Challenge Activity p. 101 **PPS:** Lesson 10 p. 101-102

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Week 25: Scale Drawings	Rationale for Sequence	Prior Knowledge
Scale Drawings • Understand that scale is a ratio. • Compute actual lengths and areas from a scale drawing involving geometric figures. • Reproduce a scale drawing using a different scale. • Determine the scale of a drawing and find the actual dimensions.	Students will continue to use the skills that they have developed with proportional reasoning to work with scale drawings, moving them into their upcoming work with geometric figures. Scaling involves precision and careful attention to structure in setting up proportions. It will lead to work in Grade 8 with similar figures in geometry.	In grade 6, students worked with ratios and unit rates, one step equations and fractions. In 7th grade, students have extended the work from 6th grade to proportional relationships, which is the foundation of scale drawings. In this section, students will stretch this understanding to cover some more of their geometry skills. These skills will help prepare students for 8th grade work of dilating and transforming figures.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Week 25 (5 days)	**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.	**MI**: Lesson 22 Rescaling Washington Park	**TRB:** Lesson 22 Challenge Activity p. 217

Weeks 26 - 27: Sides, Angles, and Triangles	Rationale for Sequence	Prior Knowledge
Sides, Angles, and Triangles • Write and solve problems with angles and be able to identify the angle type. • Draw triangles to meet given conditions. • Discover and understand what conditions will lead to unique triangles, more than one triangle, or no triangle.	Students apply and extend their geometric measurement and use of appropriate tools to work with triangles and angles. Incorporating their work with equations and geometry to write and solve equations based on the context and the visual model.	In Grade 6, students worked with triangles and angles working to identify the key types of each. In Grade 7, students draw, construct, and describe geometrical figures and describe the relationships between them. Students gain the foundation of geometry in Grade 7. Use of geometric measurement continues in high school geometry.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 26-27 (9 days)	**7.G.B.4** Know and 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. **7.G.A.2** Draw 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.	**MI**: Lesson 18 **TBR**: Intervention *or* On Level p. 185B **MI:** Lesson 19 Ladybug	**PPS:** Lesson 18: p. 197-198 **PPS:** Lesson 18: p. 191-194 **TBR:** Challenge Activity p. 185B **PPS:** Lesson 19: p. 203-204

Weeks 28 - 29: Area, Surface Area, Volume, Area and Circumference w/Circle	Rationale for Sequence	Prior Knowledge
Area, Surface Area, Volume, Area and Circumference w/Circle • Find the area of composite figures and circles. • Find volume and surface area of composite three-dimensional figures. • Discover and use the formula for circumference and area of a circle.	Students extend their work with geometric measurement to real-world problems, making use of properties to calculate area, surface areas, and volumes. Students further extend their understanding of volume to include composite figures. They also begin to work with circles and their corresponding formulas for circumference and area.	In Grade 6, students solve real-world and mathematical problems involving perimeter, area, and surface area with simple composite figures. They also found the volume of rectangular prisms. The use of geometric measurement continues in high school geometry.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 28-29 (9 days)	**7.G.B.3** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. **7.G.B.5** Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	**MI:** Lesson 20 **MI:** Lesson 21 **TRB**: Hands on Activity p. 207 **MI:** Lesson 23 Painting-Surface Area **MI:** Lesson 24	Real World Area Problems Pizza Crust **PPS:** Lesson 21: p. 221-22 Sand Under the Swing Set **TRB**: Hands On Activity p. 218

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Topic Overview	Rationale for Sequence	Prior Knowledge
Random Sampling • Identify and examine random samples. • Make statistical inferences from random samples. • Compare data distributions.	In elementary school, students develop a basic understanding of data and how to display it. In Grade 7, students develop a deeper understanding of variability and data distributions, using numerical measures of center and spread.	In Grade 6, students recognize a statistical question as one that assumes variability, and write and solve proportions. In Grade 7, they have been introduced to recognizing samples that represent a population and those that are biased. Using this, they will be able to obtain a sample of a population.
Probability • Compare theoretical and experimental probabilities. • Find probabilities of simple events.	Grade 7 is the introduction to the formal study of probability. Students begin to understand the probability of chance (likelihood and simple), develop and use sample spaces, compare experimental and theoretical probabilities.	In Grade 6, students convert among fractions, decimals, and percentages and use that knowledge to determine likelihood with probability.
Measure of Center, Variability and Summarizing Data Sets • Draw informal comparative inferences about two populations. • Mean, median, and mode and analyze the effect of an outlier. • Analyze a set of data using the interquartile range (IQR). • Compare data and the effects of striking deviation. • Students use graphs and measures of center and variability.	Grade 7 will analyze data regarding the measure of center and variability. Students develop the concept that the measure of center gives vital information to predict or compare two sets of data. Students develop the understanding that striking deviation (outliers) may cause the data to be skewed.	In grade 6, students found the mean, median, mode, and range of a data set. Students have previously created box plots and found the interquartile range. As well as working on displaying data in numerous formats, including box plots, histograms, and line plots. Students have previously compared two sets of data visually and compare the difference in the means and medians.
Integer Rules with Order of Operations • Evaluate Operations with Integers • Evaluate Order of Operations	Teachers will ensure student mastery of integer rules with rational numbers while working multi-step expressions. The focus is complex order of operations to ensure success on multi-step problems.	In grade 6 and earlier in the year, students worked to master the operations with integers, operations with rational numbers, and operations with fractions and decimals.
Multi-step Equations with Focus on Inverse Operations • Identify inverse operations and properties of equality. • Solve two-step equations. • Solve multi-step equations with distributive property. • Justify when solving multi-step equations.	Students will master two-step equations with the use of inverse operations to ensure success for multi-step equations in 8th grade math. Students will justify each step when solving the equation.	In 6th and 7th grade, students worked with one-step equations and two-step equations. They have also previously explored operations with rational numbers.

Basic Exponents with Perfect Squares	There is not a huge focus on exponents in 7th grade; nevertheless, students are expected to master the Law of Exponents in 8th grade. Students will review the basics of exponents and start the understanding of perfect squares.	Students have previously worked with multiplying rational numbers and expanding exponents.
- Identify the base and exponent. - Simplify exponents. - Expand and write in exponential form. - Perfect Squares		

Curriculum Associates Ready Website: Materials referenced and updates may be found at www.teacher-toolbox.com
Website Directions:
1) Log in
2) Select Grade 7

Teacher Notes
For tasks or resources in this pacing guide which show an * beside them, a user account is necessary. To create a free user account:
1. Go to EduTOOLBOX.org, 2. Click on Login in the right hand corner, 3. Select the Tab: Create a New Account, 4. Complete the information, which includes a username that you create and a password of your choice., 5. Once you log in with your username and password, resources with the * will be unlocked and available to the user.

Week 30: Random Sampling	Rationale for Sequence	Prior Knowledge
Random Sampling • Identify and examine random samples. • Make statistical inferences from random samples. • Compare data distributions.	In elementary school, students develop a basic understanding of data and how to display it. In Grade 7, students develop a deeper understanding of variability and data distributions, using numerical measures of center and spread.	In Grade 6, students recognize a statistical question as one that assumes variability, and write and solve proportions. In Grade 7, they have been introduced to recognizing samples that represent a population and those that are biased. Using this, they will be able to obtain a sample of a population.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Week 30 (5 days)	**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. **7.SP.A.2** Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	**MI**: Lesson 26 **TRB**: Concept Extension p. 251 **MI**: Lesson 27 **TRB**: Hands-on Activity p. 256	**PPS:** Lesson 26: p. 283-284

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Weeks 31 - 32: Probability	Rationale for Sequence	Prior Knowledge
Probability • Compare theoretical and experimental probabilities. • Find probabilities of simple events.	Grade 7 is the introduction to the formal study of probability. Students begin to understand the probability of chance (likelihood and simple), develop and use sample spaces, compare experimental and theoretical probabilities.	In Grade 6, students convert among fractions, decimals, and percentages and use that knowledge to determine likelihood with probability.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 31-32 (9 days)	**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, and a probability near 1 indicates a likely event. **7.SP.C.6** Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. **7.SP.C.7** Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. **7.SP.C.7a** Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. **7.SP.C.7b** Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	**MI**: Lesson 30 **TRB**: Hands-On Activity & Real-World Connection p. 281 **MI**: Lesson 31 **TRB**: Hands-on Activity p. 290 **MI**: Lesson 32 **PPS**: Lesson 32 p. 337-338	**TRB**: On-Level Activity p. 285B **PPS**: Lesson 31 p. 325-326 How Many Buttons?

Weeks 33 - 34: Measure of Center and Variability and Summarizing Data Sets	Rationale for Sequence	Prior Knowledge
Measure of Center, Variability and Summarizing Data Sets • Draw informal comparative inferences about two populations. • Mean, median, and mode and analyze the effect of an outlier. • Analyze a set of data using the interquartile range (IQR). • Compare data and the effects of striking deviation. • Students use graphs and measures of center and variability.	Grade 7 will analyze data regarding the measure of center and variability. Students develop the concept that the measure of center gives vital information to predict or compare two sets of data. Students develop the understanding that striking deviation (outliers) may cause the data to be skewed.	In grade 6, students found the mean, median, mode, and range of a data set. Students have previously created box plots and found the interquartile range. As well as working on displaying data in numerous formats, including box plots, histograms, and line plots. Students have previously compared two sets of data visually and compare the difference in the means and medians.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 33-34 (10 days)	**7.SP.B.3** Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team; on a dot plot or box plot, the separation between the two distributions of heights is noticeable. **7.SP.B.4** Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a 7th grade science book are generally longer than the words in a chapter of a 4th grade science book. **7.SP.D.8** Summarize numerical data sets in relation to their context. **7.SP.D.8a** Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. **7.SP.D.8b** Know and relate the choice of measures of center (median and/or mean) and variability (range and/or interquartile range) to the shape of the data distribution and the context in which the data were gathered.	**MI:** Lesson 28 **TRB:** Hands-On Activity p. 264 **MI**: Lesson 29 **MI**: Lesson 33B **TRB:** Lesson 33B Striking Deviation	**PPS:** Lesson 28 p. 303-304 Temperatures

Weeks 35: Integer Rules with Order of Operations	Rationale for Sequence	Prior Knowledge
Integer Rules with Order of Operations • Evaluate Operations with Integers • Evaluate Order of Operations	Teachers will ensure student mastery of integer rules with rational numbers while working multi-step expressions. The focus is complex order of operations to ensure success on multi-step problems.	In grade 6 and earlier in the year, students worked to master the operations with integers, operations with rational numbers, and operations with fractions and decimals.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 35 (5 days)	**7.NS.A.1 (Major)** 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. **7.NS.A.1a (Major)** Describe situations in which opposite quantities combine to make 0. **7.NS.A.1b (Major)** 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. **7.NS.A.1c (Major)** 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. **7.NS.A.1d (Major)** Apply properties of operations as strategies to add and subtract rational numbers. **7.NS.A.2 (Major)** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **7.NS.A.2a (Major)**. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1) (–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. **7.NS.A.2b (Major)** Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts. **7.NS.A.2c (Major)** Apply properties of operations as strategies to multiply and divide rational numbers. **7.NS.A.3 (Major)** Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	Task Arcs: Adding and Subtracting Positive and Negative Numbers: Tasks 3: Fundraiser, Task 4: If A, Then B, Task 5: Choose Your Chips Wisely, Task 6: Traveling on the Number Line Integer problems **PPS**: Unit 1 Game p. 77-78	**MI**: Unit 1 Interim Assessment p. 74-75

Weeks 36 - 37: Multi-step Equations with Focus on Inverse Operations	Rationale for Sequence	Prior Knowledge
Multi-step Equations with Focus on Inverse Operations • Identify inverse operations and properties of equality. • Solve two-step equations. • Solve multi-step equations with distributive property. • Justify when solving multi-step equations.	Students will master two-step equations with the use of inverse operations to ensure success for multi-step equations in 8th grade math. Students will justify each step when solving the equation.	In 6th and 7th grade, students worked with one-step equations and two-step equations. They have also previously explored operations with rational numbers.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Weeks 36-37 (10 days)	**7.EE.B.3 (Major)** Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals). **7.EE.B.3a (Major)** Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. **7.EE.B.4 (Major)** 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. **7.EE.B.4a (Major)** Solve contextual problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?	Scuba Dive Task **PPS:** Unit 3 Practice p. 183-184 Solving Linear Equations	**PPS**: Lesson 16 p. 167-168 **MI**: Unit 3 Interim Assessment p. 166-167

Week 38: Basic Exponents with Perfect Squares	Rationale for Sequence	Prior Knowledge
Basic Exponents with Perfect Squares • Identify the base and exponent. • Simplify exponents. • Expand and write in exponential form. • Perfect Squares	There is not a huge focus on exponents in 7th grade; nevertheless, students are expected to master the Law of Exponents in 8th grade. Students will review the basics of exponents and start the understanding of perfect squares.	Students have previously worked with multiplying rational numbers and expanding exponents.

Weeks	Tennessee State Standards	Core Material	Additional Resources
Week 38 (4 days)	6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.	Exponents: Lesson 5 Exponents Video	Perfect Squares Video

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