TN Standards Major Work of the Grade:

* Operations with fractions
* Proportional Relationships
* Equivalent Expressions from properties
* Contextual problems involving equations and inequalities

Supporting:

* Geometrical figures
* Angle measure, area, surface area, volume
* Random sampling
* Compare two populations
* Probability
* Data Sets

[**The Standards for Mathematical Practice**](http://www.corestandards.org/Math/Practice)

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| **MP1. Make sense of problems and persevere in solving them.** | **MP2. Reason abstractly and quantitatively.** | **MP3. Construct viable arguments and critique the reasoning of others.** | **MP4. Model with mathematics.** |
| **MP5. Use appropriate tools strategically.** | **MP6. Attend to precision.** | **MP7. Look for and make use of structure.** | **MP8. Look for and express regularity in repeated reasoning.** |

**2nd Nine Weeks**

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| **TN Standards** | **Learning Outcomes** | **Instructional Focus** | **Content** |
| **Equations and Inequalities**  **(Allow 5 - 6 weeks for instruction, review, and assessment)** | | | |
| 7.EE.B.3 Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) a. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate  b. Assess the reasonableness of answers using mental computation and estimation strategies.  7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.  a. Solve 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.  b. 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. | I can...  Solve multi-step real world problems using whole numbers, fractions, and decimals.  Convert between fractions, decimals, and percents in order to solve a problem. For example: If a woman  making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50.  Apply reason to a solution to determine if my answer is  Logical. Ex: : If a woman making $25 an hour gets a 10% raise, what is her new salary? 25 X .10 = 2.50. Is that a logical new salary? No, you must add 2.50 to 25 to get the new salary.  I can ………  Solve a two-step equation using inverse operations and explain each step.  Solve a multi-step equation and explain each step (distributive property or combine like terms before using inverse operations).  Solve a two-step inequality and graph the solution on a number line.  Solve a multi-step inequality and graph the solution on a number line.  Write an equation to model a situation, define the variable, and explain the solution within the context of the problem. EX: *the perimeter of a rectangle is 54cm. Its length is 6 cm. What is its width?* | **Instructional Focus:**  Students should extend their understanding of solving multi-step real- world and mathematical problems by assessing solutions for reasonableness when working with rational numbers presented in any form. Additionally, they should be able to provide an explanation of their solution path, reasoning for their estimation strategy, and how their solution connects to the contextual problem. Justifications and explanations should be in both verbal and written form using precise mathematical vocabulary.  Instructional Focus:  Students should extend their understanding of solving contextual problems to recognize whether the problem should be represented with an equation or an inequality and provide justification for their reasoning. Also, students should be able to interpret the solution or solution set and determine its reasonableness to the contextual situation. As students solve equations and inequalities, they should be able to justify their solution or solution set by substituting values in the equation or inequality to determine if the equation or inequality is true. Justification for this should be in written and verbal form using precise mathematical vocabulary. | **GO Math Lessons:**  Lesson 6.1 Algebraic Expressions (p. 173)  Lesson 6.2 One-Step Equations with Rational Coefficients (p. 179)  Lesson 6.3. Writing Two-Step Equations (p. 185)  Lesson 6.4 Solving Two-Step Equations (p. 191)  Lesson 7.1 Writing and Solving One-Step Inequalities (p. 203)  Lesson 7.2 Writing Two-Step Inequalities (p. 211)  Lesson 7.3 Solving Two-Step Inequalities (p. 217)  **Engage NY Task:**  [Module 3, Topic A, Topic B](https://www.engageny.org/resource/grade-7-mathematics-module-3)  [Use Properties of Operations to Generate Equivalent Expressions](https://www.engageny.org/resource/grade-7-mathematics-module-3)  [Solve Problems Using Expressions, Equations, and Inequalities](https://www.engageny.org/resource/grade-7-mathematics-module-3) |
| **Proportional Relationships**  **(Allow 5 weeks for instruction, review, and assessment)** | | | |
| 7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. | I can………..  Write a ratio in three ways (ie, 2/3, 2:3, 2 to 3) and simplify, if appropriate, using the GCF.  Compute unit rates with ratios of fractions  Ex.: *if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction*  *1/2/1/4 miles per hour, equivalently 2 miles per hour*  Compute unit rates with ratios of lengths, areas, and other quantities  Compute unit rates with ratios measured in like units  Compute unit rates with ratios measured in unlike units |  | **GO Math Lesson:**  Lesson 4.1 Unit Rates (p. 117)  Lesson 4.2 Constant Rates of Change (p.123)  Lesson 4.3 Proportional Relationships and Graphs (p. 129)  **Engage NY Task:**  [Module 4, Topic A, Topic B, Topic C, Topic D](https://www.engageny.org/resource/grade-7-mathematics-module-4)  [Finding the Whole](https://www.engageny.org/resource/grade-7-mathematics-module-4)  [Percent Problems Including More than One Whole](https://www.engageny.org/resource/grade-7-mathematics-module-4)  [Scale Drawings](https://www.engageny.org/resource/grade-7-mathematics-module-4)  [Population, Mixture, and Counting Problems Involving Percents](https://www.engageny.org/resource/grade-7-mathematics-module-4) |
| 7.RP.A.2 Recognize and represent proportional relationships between quantities.  a. Decide whether two quantities are in a proportional relationship, e.g, by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.  b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.  c. Represent proportional relationships by equations.  d. 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. | Identify and write a proportion using a correct relationship and units.  Determine whether two ratios are proportional – cross-multiply, reduce fractions, create decimals, etc.  Solve proportions by using cross multiplication.  Graph points on a table to determine if the result is a straight line through the origin.  Identify the unit rate (constant of proportionality) from a table.  Identify the unit rate (constant of proportionality) from a graph.  Identify the unit rate (constant of proportionality) from an equation.  Represent a proportional relationship with an equation. Ex.: *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*  Identify equations in direct proportion (direct variation) y = kx where k is the unit rate  Explain in words what a specific point means on a graph demonstrating a proportional relationship in a context. Determine especially the meaning of the points (0,0) and (1,r) where r is the unit rate | **Instructional Focus:**  Students should extend their understanding of identifying unit rates in multiple representations to explain the connections between the unit rate and the verbal context interchangeably. Additionally, students should make connections to both unit rates of (1,y) and (x,1) to the context as well as the connection to one another using precise mathematical vocabulary. As students solidify their understanding, they should be able to identify and explain unit rates in multiple representations when the unit rate is represented in a form other than one to a quantity by employing their knowledge of proportional relationships and prior knowledge of equivalent fractions and explain their reasoning. | **Engage NY Task:**  [Module 1, Topic A, Topic B, Topic C](https://www.engageny.org/resource/grade-7-mathematics-module-1)  [Proportional Relationships](https://www.engageny.org/resource/grade-7-mathematics-module-1)  [Unit Rate and the Constant of Proportionality](https://www.engageny.org/resource/grade-7-mathematics-module-1)  [Ratios and Rates Involving Fractions](https://www.engageny.org/resource/grade-7-mathematics-module-1) |
| 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems.  *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.* | I can……………….  Demonstrate that I can proficiently convert numbers from fraction to decimal to percent and back to fraction  I can find the percent of a number by multiplication or a proportion.  I can solve problems involving percents (ie., percent proportion)  I can solve for simple interest (I = PRT) if given the principal, rate, and time in months.  I can solve for tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. | **Instructional Focus:**  As students extend their understanding of multi-step ratio and percent problems, they should be able to extract essential information from more complex contextual problems. Students should also be able to determine efficient solutions paths to solve ratio and percent problems and explain why they have chosen the selected solution path. Additionally, students should be able to use precise mathematical vocabulary in their explanations and its connection to the contextual situation. | **GO Math Lesson:**  Lesson 5.1 Percent Increase and Decrease (p. 141)  Lesson 5.3 Applications of Percent (p. 153) |

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| **Resource Toolbox:**  <http://www.kutasoftware.com/free.html>  <http://illuminations.nctm.org/>  <http://cuacs8.mck.ncsu.edu/mathsampleitems/main.html>  <http://www.ilovemath.org/index.php?option=com_docman>  <http://www.math-aids.com>  <http://www.commoncoresheets.com>  <http://www.mathworksheetsland.com> |