# Grade: 7 FCPS 2025-2026 Math Grade 7 Topic 5

| 7th Grade Topic 5 : Solve Problems Using Equations and Inequalities | Estimate Time Frame: 22 days |
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| Essential Standards: 7.EE.4<br>Supporting Standards: 7.EE.3<br><br>Assessment Resource: enVision Topic 5 and Formative Assessment Lesson (FAL): Solving Linear Equations in One Variable | |

| FCPS Supporting Links | Additional Supporting Links |
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| Pacing Guide<br>7th Grade Topic 5 Standards Resource with Sample<br>Formative Assessments<br>enVision 7th Grade Topic 5 Standards Crosswalk Resource<br>FCPS P-12 Mathematics Guidance Document<br>FCPS Achievement & Trauma-Informed Strategies in the Classroom | Kentucky Academic Standards<br>KSA Blueprint<br>Target of the Standards - conceptual, procedural & application<br>Three-Reads Routine<br>Notice and Wonder Routine<br>**MILC Resources Topic 5: Solve Problems Using Equations and Inequalities**<br>***enVision Teacher Guide: page 256A to 256D for specific Topic 5 Focus-Coherence-Rigor*** |

| Big Ideas |
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| **Solve real-life and mathematical problems using numerical and algebraic expressions and equations.** |

| Essential Questions | Common Preconceptions/Misconceptions |
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| How can you solve real-world and mathematical problems with numerical and algebraic equations and inequalities? How are expressions, equations, inequalities, and graphs applied to real-world situations? | Students may still have difficulty solving multi-step problems. Some common ways to assist include:<br>● Scaffold the problem by adding a question mid-way<br>● Display the first step of the problem<br>○ Allow students to find the answer<br>○ Present the next part that relies on the first part<br>○ Gradually remove the middle question as students get used to |

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| | finding a middle question and identifying it for themselves<br><br>Use number lines and visuals (i.e., bars and hands-on materials) instead of memorizing rules. All students benefit from solving equations using a hands-on approach. (Algeblocks™, Hands-On Equations™, and Algebra Tiles™ can be helpful). All are available from the District Math Lab at the Teacher Resource Center.<br><br>Students reason for a solution to a real-life situation but may struggle with modeling the problems with an equation or inequality involving a variable. For example, "I buy 6 pencils and a $3 pen for a total of $12. How much did each pencil cost?" Students with an understanding of numbers but not the idea of a variable may create an equation of $p$ = 12–3 6 = 1.50. Students who successfully model with mathematics understand the variable represents the cost of one pencil and use it appropriately, $6p + 3 = 12$, which more accurately represents the problem presented. |
| **Standards for Mathematical Practices** | **Kentucky Interdisciplinary Literacy Practices (KILP)** |
| **MP.1. Make sense of problems and persevere in solving them.**<br>**MP.2. Reason abstractly and quantitatively.**<br>MP.3. Construct viable arguments and critique the reasoning of others.<br>**MP.4. Model with mathematics.**<br>MP.5. Use appropriate tools strategically.<br>**MP.6. Attend to precision.**<br>MP.7. Look for and make use of structure.<br>MP.8. Look for and express regularity in repeated reasoning.<br><br>***enVision Teacher Guide: page 256E for specific Topic 5 Math Practice suggestions*** | 1. Recognize that text is anything that communicates a message.<br>2. Employ, develop, and refine schema to understand and create text.<br>3. View literacy experiences as transactional, interdisciplinary and transformational.<br>4. Utilize receptive and expressive language arts to better understand self, others, and the world.<br>**5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks.**<br>**6. Collaborate with others to create new meaning.**<br>**7. Utilize digital resources to learn and share with others.**<br>**8. Engage in specialized, discipline-specific literacy practices.**<br>**9. Apply high level cognitive processes to think deeply and critically about text.**<br>10. Develop a literacy identity that promotes lifelong learning.<br><br>*Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.* |

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| Essential Standards | Sample Learning Intentions & Success Criteria | HQIR/Resource Considerations |
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| **Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.** | | |
| KY.7.EE.4 Use variables to represent quantities in a real-world or mathematical problem and construct equations and inequalities to solve problems by reasoning about the quantities.<br><br>☐**Conceptual** ☐**Procedural** ☐**Application**<br><br>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 this form. Graph the solution set of the equality and interpret it in the context of the problem.<br><br>☐**Conceptual** ☐**Procedural** ☐**Application**<br><br>**Clarifications:** Interpret word problems in the form of the initial value as a one-time occurrence within the problem and the coefficient as the recurring event within the problem.<br><br>Coherence KY.6.EE.7 → KY.7.EE.4 → KY.8.EE.7<br><br>**MP.2, MP.4, KILP.1, KILP.3, KILP.9**<br><br>*Supporting Standard KY.7.EE.3* | We are learning how to write and solve equations that represent real-life situations and interpret solutions.<br>• I can identify quantities in a real-life situation.<br>• I can identify a variable in a real-life situation.<br>• I can write an equation using variables that represent quantities in real-life situations.<br>• I can use inverse operations to solve equations.<br>• I can interpret what the solution means in context of the situation.<br><br>We are learning to represent real-life situations using an equation with the distributive property to solve problems.<br>• I can write an equation including the distributive property to represent real-life situations.<br>• I can show the distributive property to create an equivalent equation.<br>• I can use inverse operations to solve equations.<br>• I can explain how to solve an equation.<br>• I can interpret the solution in terms of the context of the problem. | • Topic 5 Lesson 5-1<br>• Brainingcamp Task (Lesson 5-1) “Triangular Numbers”<br>• Topic 5 Lesson 5-2<br>• Topic 5: Let’s Investigate! The Real Deal (do in place of Lessons 5-1 and 5-2)<br>• Brainingcamp Task (Lesson 5-2) “Planting a Flower Bed”<br>• Topic 5 Lesson 5-3<br>• enVision Language Support Handbook<br><br>• Formative Assessment Lesson (FAL): Solving Linear Equations in One Variable |
| KY.7.EE.4 Use variables to represent quantities in a real-world or mathematical problem and construct equations and inequalities to solve problems by reasoning about the quantities. | We are learning to solve inequalities with rational numbers in word problems.<br>• I can identify quantities and variables within an inequality in a real-life situation.<br>• I can write inequalities using the symbols>, | • Topic 5 Lesson 5-4 combined with Lesson 5-5<br>• Brainingcamp Task (Lesson 5-4) “”Weighting” |

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| ☐ **Conceptual** ☐ **Procedural** ☐ **Application**<br><br>b. Solve word problems leading to inequalities of the form $px + q > r$, $px + q < r$, $px + q \geq r$, $px + q \leq r$; 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.<br><br>☐ **Conceptual** ☐ **Procedural** ☐ **Application**<br><br>**Clarifications:** Interpret word problems having one or more solutions that satisfy the conditions of the problem.<br><br>Coherence KY.6.EE.8 → KY.7.EE.4<br><br>**MP.2, MP.4, KILP.1, KILP.3, KILP.9**<br><br>*Supporting Standard KY.7.EE.3* | <, ≥, ≤.<br>• I can use inverse operations to solve inequalities.<br>• I can use inequality notation to graph a solution on a number line.<br>• I can tell what the solution means in the context of the problem.<br>• I can explain why we should reverse the sign of inequality when multiplying or dividing by a negative number. | for a Package"<br>• Brainingcamp Task (Lesson 5-5) "Buying More, Spending Less"<br>• 3-Act Math Topic 5: Digital Downloads<br>• Topic 5 Lesson 5-6<br>• Brainingcamp Task (Lesson 5-6) "Dog Days!"<br>• Topic 5 Lesson 5-7<br>• enVision Language Support Handbook |

## Attending to the Standards for Mathematical Practice

It is common for students to have difficulty in scaffolding from simple problems to more complex, multi-step problems; assistance in this regard is given by the use of estimation strategies to benchmark their work and lend confidence to more accurate solutions (MP.1, MP.6). Students apply the properties of rational numbers in order to solve equations and inequalities. Students must be precise when defining a variable (MP.6). Students reason a solution to a real-life situation but may struggle with modeling the problems with an equation or inequality involving a variable. For example, "I buy 6 pencils and a $3 pen for a total of $12. How much did each pencil cost?" Students with an understanding of numbers, but not the idea of a variable, may create an equation of $pp$ = 12–3 6 = 1.50. Students who successfully model with mathematics understand the variable represents the cost of one pencil and use it appropriately, 6$pp$ + 3 = 12, which more accurately represents the problem presented (MP.4).

## Supporting Standards

**KY.7.EE.3** Solve real-life and mathematical problems posed with positive and negative rational numbers in any form, using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate, and assess the reasonableness of answers using mental computation and estimation strategies. **MP.1, MP.4, MP.6**

**Considerations:** Students solve multi-step real-world and mathematical problems containing integers, fractions, and decimals, using previously acquired skills around converting fractions, decimals, and percentages and using properties of operations to find equivalent forms of expressions when needed.

Students solidify understanding by checking their solutions for reasonableness using estimation strategies such as rounding, compatible numbers, and benchmark numbers.

☐ **Conceptual** ☐ **Procedural** ☐ **Application**

## Vocabulary

**Isolate the variable** - get the variable by itself on one side of the equation

*****Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.
** Mathematical Practices (A.MP. 1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.
******* Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.