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

Standard	Clarifications
KY.8.EE.7 Solve linear equations in one variable a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	Building upon skills from grade 7, students combine like terms on the same side of the equality and use the distributive property to simplify the equation when solving. Emphasis in this standard is also on using rational number coefficients. Solutions of certain equations may elicit infinitely many or no solutions.
Alternate Assessment Target: Limit full standard to equations with one solution and limit the range of solutions to within negative 100 and 100.	*Alternate Assessment Clarification:* *Solve the following equations for the variable.* $x - ¾ x + 6 = 10$ $½(4x - 8) = -6$ $-4(20t - 5 - t) = 96$ $40 = 50a + 30a$

Revised May 2020, KY Special Education Cooperatives

Connections to Math Practices	Coherence/Foundational Understandings
MP.2 Reason abstractly and quantitatively. (Add or remove context to solve problems*) Students reason about how to combine terms and use properties to advance their solution. **MP. 3** Construct viable arguments and critique the reasoning of others. (Explain and defend your reasoning*) Students are able to explain why an equation has one solution, no solutions, or infinitely many solutions. **MP.7** Look for and make use of structure. (Simplify problems by using their structure) Some linear equations require students to expand expressions by using the distributive property and to collect like terms **MP.6** Attend to precision. (Communicate precisely.*) *Key Vocabulary:* solve, solution, equation, variable, inverse operation, isolate the variable, like terms, coefficient **Click here to see more about what teachers and students do to build the math practices: Engaging the Math Practices and Question Stems**	**Pre-requisite Skills** ● Properties of operations ● Order of operations ● Combining like terms ● Solving one-step and two-step equations ● Distributive property ● Identify the variable in the equation KY.6.EE.7 Coherence KY.7.EE.1→ KY.8.EE.7→ KY.HS.A.18 Kentucky Academic Standards for Mathematics

*Clarification to the math practices by Robert Kaplinsky.

Instructional Considerations

Possible Areas of Difficulties/Misconceptions
- Students have difficulty applying the distributive when negative numbers are involved, such as -2(-3b - 4) = 20 which should simplify to 6b + 8 = 20. The error occurs when they try to multiply -2 and the -4, they often forget the negative on the 2. Students need repeated exposure to equations of this type.
- 3(4a + 2) = 30 (students incorrectly apply the distributive property and simply to 12a + 2 = 30 *instead* of 12a + 6 = 30, which is correct)
- Students may have difficulty understanding what it means to "isolate" the variable.
- Understanding the concept of balance in an equation.
- Thinking the variable is a placeholder for a number (e.g., student sees 8x and if x = 5 thinks the answer is 85)

Suggested Tools/Visual Aids -
- KY Alternate Assessment Resource Guide(General terms pps 6-11 ; Math terms pps 22-26)
- Students should have concrete experiences that may include an equation mat, a balance or "Hands-On" equations, Algebra tiles, or similar set of manipulatives to demonstrate
- Use of virtual manipulatives
- Picture of a balance
- Provide and discuss examples that involve students analyzing errors helps students self-correct many misconceptions
- Plane Geoboards