

**8th Grade Math Curriculum Map
2014-2015**

**Focus Topic 1 (& Foundation Topic 1) – Solving Linear Equations in 1 Variable (& Algebraic Expressions and Equations)
(3 Weeks)**

Enduring Understanding:

- Algebraic expressions and equations are used to model real-life problems and represent quantitative relationships, so that the numbers and symbols can be mindfully manipulated to reach a solution or make sense of the quantitative relationships.

Essential Question:

- How can algebraic expressions and equations be used to model, analyze, and solve mathematical situations?

8.EE.C.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).

Learning Target(s):

- I can give an example of a linear equation which has one solution by transforming into an equivalent equation of the form $x = a$.
- I can give an example of a linear equation which has no solution by transforming into an equivalent equation of the form $a = b$.
- I can give an example of a linear equation which has infinitely many solutions by transforming into an equivalent equation of the form $a = a$.

- b.** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Learning Target(s):

- I can solve linear equations with rational number coefficients.
- I can solve linear equations whose solutions require expanding expressions using the distributive property.
- I can solve linear equations whose solutions require collecting like terms, including variables on both sides.

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Foundation Topic: Algebraic Expressions & Equations

7.EE.B.3 – Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), 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. *For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*

Learning Target(s):

- I can solve multi-step, real-world and mathematical problems with any form of positive and negative rational numbers using tools strategically.
- I can apply the properties of operations, converting between forms as appropriate, to solve real-world and mathematical problems.
- I can justify if an answer is reasonable by 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 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. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*

Learning Target(s):

- I can solve equations in the form $px + q = r$ with speed and accuracy.
- I can identify the sequence of operations used to solve an equation of the form $px + q = r$ and $p(x + q) = r$.

Vocabulary: equivalent forms, properties of operations, solution, coefficient, equation, variable, no solution, infinite solutions, linear, rational number, like terms

Instructional Notes:

- When working on Foundation Topic 7.EE.B.4, teachers need to focus only on the underlined portion of the standard.
- When referring to collecting like terms, this includes variables on both sides of the equation (8.EE.C.7b).

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Instructional Resources:

- Formative Assessment Lessons for Mathematics: <http://map.mathshell.org/materials/lessons.php>
 - ❖ [Solving Linear Equations in One Variable](#) (Emphasis on 8.EE.C.7)
 - ❖ [Building and Solving Equations 1](#) (Emphasis on 8.EE.C.7)
- Formative Assessment Tasks for Mathematics: <http://map.mathshell.org/materials/tasks.php>
 - ❖ [Hot Under The Collar](#) (Emphasis on 8.EE.C.7)
- Illustrative Mathematics: [8th Grade Expressions and Equations](#)
- NCTM Illuminations: <http://illuminations.nctm.org/>
- PARCC: [Model Content Frameworks Browser](#)
- Inside Mathematics: [8th Grade](#)
- Engage New York: [8th Grade](#)
- Khan Academy Videos:
 - ❖ [Variables on both sides Video](#) (Emphasis on 8.EE.C.7)
 - ❖ [Equations with variables on both sides Activity](#) (Emphasis on 8.EE.C.7)
 - ❖ [Solving Equations with the Distributive Property Video](#) (Emphasis on 8.EE.C.7)
 - ❖ [Number of Solutions to Linear Equations Video](#) (Emphasis on 8.EE.C.7)

Assessment Notes for Proficiency #1:

- This Focus Topic will have 3 multiple choice items on Proficiency Assessment #1.
- This Focus Topic will have 1 short answer item in the **no-calculator part** of Proficiency Assessment #1.
- This Foundation Topic will have 3 multiple choice items in the **no-calculator part** of Proficiency Assessment #1.
- Foundational standards should be formatively assessed early in the cycle to identify foundational gaps of students.