Topic A

Writing and Solving Linear Equations

8.EE.C.7

Focus Standard:	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).
	b.	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
Instructional Days:	9	
	Lesson 1:	Writing Equations Using Symbols (P)[1]
	Lesson 2:	Linear and Nonlinear Expressions in x (P)
	Lesson 3:	Linear Equations in x (P)
	Lesson 4:	Solving a Linear Equation (P)
	Lesson 5:	Writing and Solving Linear Equations (P)
	Lesson 6:	Solutions of a Linear Equation (P)
	Lesson 7:	Classification of Solutions (S)
	Lesson 8:	Linear Equations in Disguise (P)
	Lesson 9:	An Application of Linear Equations (S)

In Lesson 1, students begin by transcribing written statements into symbolic language. Students learn that before they can write a symbolic statement, they must first define the symbols they intend to use. In Lesson 2, students learn the difference between linear expressions in x and nonlinear expressions in x, a distinction that is necessary to know whether or not an equation can be solved (at this point). Also, Lesson 2 contains a

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[1]Lesson Structure Key: **P**-Problem Set Lesson, **M**-Modeling Cycle Lesson, **E**-Exploration Lesson, **S**-Socratic Lesson

quick review of terms related to linear equations, such as *constant, term,* and *coefficient.* In Lesson 3, students learn that a linear equation in x is a statement of equality between two linear expressions in x. Students also learn that an equation that contains a variable really is a question: Is there a value of x that makes the linear equation true? In Lesson 4, students begin using properties of equality to rewrite linear expressions, specifically using the distributive property to "combine like terms." Further, students practice substituting numbers into equations to determine if a true number sentence is produced.

In Lesson 5, students practice the skills of the first few lessons in a geometric context. Students transcribe written statements about angles and triangles into symbolic language and use properties of equality to begin solving equations (**8.EE.C.7b**). More work on solving equations occurs in Lesson 6, where the equations are more complicated and require more steps to solve (**8.EE.C.7b**). In Lesson 6, students learn that not every linear equation has a solution (**8.EE.C.7a**). This leads to Lesson 7, where students learn that linear equations either have a unique solution, no solution, or infinitely many solutions (**8.EE.C.7a**). In Lesson 8, students rewrite equations that are not obviously linear equations and then solve them (**8.EE.C.7b**). Finally, in Lesson 9, students take another look at the Facebook problem from Module 1 in terms of linear equations (**8.EE.C.7a**).