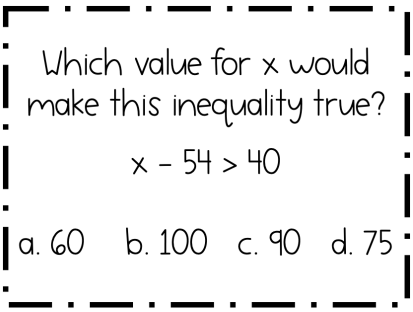
Solving Equations:

Where are these topics taught in our current Math Standards/Curriculum?

Grade	Standard	What it looks like	Resource
1	Find the missing number in an addition or subtraction equation relating three whole numbers.	Students fill in the missing number in an equation: 8 + ? = 11 5 = ? – 3 6 + 6 = __	Scoot!
3	Find the missing number in a multiplication or division equation relating three whole numbers.	Students fill in the missing number in an equation: 8 x ? = 48 5 = □ ÷ 3 6 x 6 = ?	Multiplication Salute
4	• Solve multi-step word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. • Represent these problems using equations with a letter standing for the unknown quantity. • Assess the reasonableness of answers using mental computations and estimation strategies including rounding.	Mr. May's grade four class is collecting canned goods for a food drive. Their goal is to bring in 50 cans of food by Friday. So far, the students have brought in 10 on Monday and Tuesday, 14 cans on Wednesday and 13 on Thursday. How many more cans will the class need to bring in to reach their goal? 50 = 2 x 10 + 14 + 13 + c 50 = 20 + 14 + 13 + c 50 = 47 + c 3 = c	Problem of the Day
6	Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.		
	Solve problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all positive rational numbers.	$x + 5 = 9$ $x - 6 = 3$ $4x = 34$ $\frac{x}{7} = 2$	Open Middle

	• Write an inequality of the form $x > c$, $x < c$, $x \geq c$, or $x \leq c$ to represent a constraint or condition in a real-world or mathematical problem. • Recognize that inequalities of these forms have infinitely many solutions. • Represent solutions of such inequalities on vertical and horizontal number lines.	Emphasis is on students understanding the phrases "more than", "less than", "at least" and "at most" represent constraints and conditions and are therefore associated with the operators listed in real-world problems. Students also understand an inequality does not yield a specific value, but rather an infinite range of values.	Inequality Card Sort Inequality match up
7	Solve two-step equations and inequalities.	2x + 1 = 9 3(x - 4) = 14 2x - 7 < 8 -2x + 6 > 9	Splat! Bump: Solving Equations
8	Solve square root and cube root equations mentally.	Students use guess and check and other informal methods to find and verify solutions: $X^2 = 36$ $X^3 = 8$	Bump Perfect Squares Bump Perfect Cubes
	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. MP.2, MP.3, MP.7	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.	**Eighth Grade Fluency Standard:** **Solve linear equations in one variable**
Alg 1	Solve linear equations and inequalities in one variable,	Solve for x: Ax + By = C	Mystery: Solving literal equations

	including literal equations with coefficients represented by letters.		
	Solve quadratic equations in one variable: Solve quadratic equations by taking square roots, the quadratic formula and factoring, as appropriate to the initial form of the equation.	$x^2 - 4x - 5 = 0$ $(x+3)^2 - 2 = 8$ $x^2 + 8x - 5 = 0$	Solving quadratic equations (factoring) Solving quadratic equations (square root)
Alg 2	Solve quadratic equations with real coefficients that have complex solutions.	$x^2 + 4x + 7 = 0$	Solving quadratic equations (quadratic formula)
	a. Solve rational equations written as proportions in one variable. b. Solve radical equations in one variable. (Justify the solutions and give examples showing how extraneous solutions may arise.)	$\frac{x}{x+2} = \frac{x+1}{x+4}$ $\sqrt{x+1} = x - 5$	
	Solve quadratic equations in one variable. a. Solve quadratic equations by taking square roots, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. b. (+) Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. c. (+) Solve quadratic equations by completing the square.		**Algebra Fluency Standard:** **Solve Quadratic Equations** Quadratic equation task cards

Reminder:
When a course is skipped for acceleration (i.e. a student moves from 7th Grade Math "PreAlgebra" - to 8th Grade Algebra), the math teacher must include "skipped content" in the course *currently* being taught to those students.

Although no specific standards relating to solving equations are required in Geometry, students are expected to continue to solve equations (both linear and quadratic) and use equations with Geometry content (ex. Finding angle measures, side lengths, area, volume, etc.)