WAKE COUNTY
PUBLIC SCHOOL SYSTEM

8th Grade UNIT 13 OVERVIEW: Systems of Equations

Unit Outcomes	Key Vocabulary
At the end of this unit, your student should be able to:	Terms to deepen the student's understanding
✓ Determine whether a system of equations has one solution, no solution, or infinite solutions by graphing. ✓ Solve systems of equations by graphing. ✓ Use the substitution method to solve systems of equations. ✓ Use addition and subtraction in solving systems of equations by elimination. ✓ Solve systems of equations using the best method for the given problem (graphing, substitution, or elimination). ✓ Solve systems of equations using a variety of methods. ✓ Solve real world problems involving systems of equations with graphing, substitution, and elimination.	✓ Infinitely Many Solutions ✓ Intersecting ✓ No Solution ✓ Parallel Lines ✓ Solution of a System of Linear Equations ✓ Standard Form ✓ Substitution ✓ System of Linear Equations

Key Standards Addressed	Where This Unit Fits
Connections to Common Core/NC Essential Standards	Connections to prior and future learning
8.EE.8 - Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.* c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	**Coming into this unit, students should have a strong foundation in:** ✓ Solving simple equations ✓ Solving equations that include variables on both sides, using the distributive property, and combining like terms. ✓ Showing fluency in solving equations with rational numbers that include variables on both sides, using the distributive property, and combining like terms. ✓ Showing fluency in solving equations with one solution, infinitely many solutions, or no solution. ✓ Solving literal equations with a focus on solving equations for the *y* variable. **This unit builds to the following future skills and concepts:** ✓ Apply understanding of solving systems of equations to application problems ✓ Graph and interpret linear inequalities ✓ Graph and solve systems of linear inequalities

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Additional Resources Materials to support understanding and enrichment	**"Learning Checks"** Questions Parents Can Use to Assess Understanding
✓ Teaching videos made by Wake County teachers ✓ WCPSS YouTube Channel – Math Playlist ✓ Systems of Equations Overview ✓ Solving by Graphing Overview ✓ Solving by Graphing Video ✓ Solving by Elimination Overview ✓ Solving by Elimination Video ✓ Solving by Elimination Practice ✓ Solving by Substitution Overview ✓ Solving by Substitution Video ✓ Solving by Substitution Practice ✓ Systems Word Problem Video	✓ How will you know whether a system has one solution, no solution, or infinitely many solutions? ✓ How do you find a solution to a system of equations with a graph? ✓ Suppose you are testing two fertilizers on bamboo plants A and B, which are growing under identical conditions. Plant A is 6 cm tall and growing at a rate of 4cm/day. Plant B is 10 cm tall and growing at a rate of 2 cm/day. After how many days will the bamboo plants be the same height? What will their height be? ✓ What kinds of systems would be difficult to solve by graphing? ✓ How do you solve a system of equations using substitution? ✓ When have you used the word substitute in math before? How did you solve problems that asked you to substitute? ✓ How can you check to see if your answer to a system of equations problem is correct? ✓ How do you find a solution to a system of equations using elimination? ✓ Why is it best to have the equations in standard form when solving by elimination? ✓ What are the different ways you can solve a system of equations? ✓ How do you decide which variable to eliminate? ✓ What are three methods for solving systems of equations? ✓ When is each method of solving systems of equations beneficial? ✓ How do you solve systems of equations by graphing, substitution, and elimination? How do you know which one to use? ✓ Outside of school, when might you need to solve systems of equations problems? ✓ Once you find a break-even point, how can it help you in a decision about whether to purchase something, how much to sell, or if you should go with a certain company?