

**Link Community Charter School**  
**8th Grade Mathematics Scope and Sequence**

Unit	Standards: CCSS Math	Essential Question:	Knowledge: What will Students Know?	Skill: What will students be able to do?	Resources:
Unit 1: Q1 Equations in One Variable	8.NS.1, 8.NS.2, 8.EE.2, 8.EE.7.a, 8.EE.7.b, 8.F.1, 8.F.2, 8.F.4	<p>Why do we use the order of operations to evaluate expressions?</p> <p>What are dependent and independent variables and what is their relationship to functions?</p> <p>What is an inequality, how can we apply inequalities to real world problems?</p> <p>What steps can be used to solve complicated word problems?</p> <p>What are real numbers?</p> <p>What is the form of a linear equation and how do we solve linear equations?</p> <p>How can we rewrite formulas, and when is it necessary to rewrite them?</p>	<p>Evaluate Expressions</p> <p>Apply Order of Operations</p> <p>Write expressions</p> <p>Write Equations and Inequalities</p> <p>Use a Problem Solving Plan</p> <p>Represent Functions as Rules and Tables</p> <p>Use Integers and Rational numbers</p> <p>Add Real Numbers</p> <p>Subtract Real Numbers</p> <p>Multiply Real Numbers</p> <p>Apply Distributive Property</p> <p>Divide Real Numbers</p> <p>Find Square Roots and Compare Real Numbers</p> <p>Solve One - Step Equations</p> <p>Solve Two- Step Equations</p> <p>Solve Multi- Step Equations</p> <p>Solve Equations with Variables on Both Sides</p> <p>Write Ratios and Proportions</p> <p>Solve Proportions using Cross Products</p> <p>Solve Percent Problems</p>	<p>1. Students evaluate expressions using exponents and the order of operations.</p> <p>2. Students solve equations and inequalities using mental math.</p> <p>3. Students use equations to solve real-world problems as part of a four step problem solving plan.</p> <p>4. Students will be able to visualize and determine functions.</p> <p>5. Students order and operate with real numbers.</p> <p>6. Students write conditional equations/statements.</p> <p>7. Students also learn the properties of real-number addition and multiplication, including the distributive property.</p> <p>8. Students will be able to solve linear equations in one variable.</p> <p>9. Students solve proportions using the multiplicative property of equality.</p> <p>10. Students solve percent problems by using proportions as well as the percent equation.</p> <p>11. Students will rewrite equations and formulas for unknown variables .</p>	EngageNY

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Unit 2: Q2 Equations in Two Variables	8.EE.5, 8.EE.6, 8.EE.8.a, 8.EE.8.b, 8.EE.8.c, 8.F.3, 8.F.4, 8.F.5, 8.G.1.c,	<p>How do we write and graph linear functions and inequalities?</p> <p>What is the slope intercept method for graphing?</p> <p>What does slope mean and how do we compute it?</p> <p>How do we solve system of linear systems using graphing calculators?</p> <p>How do we write equations of lines using its graph and points?</p> <p>How does the change in slope affect the graph of a line?</p> <p>How can we tell if the slope of a line is positive, negative, undefined or equal to zero?</p> <p>How do we write the equation of vertical and horizontal lines and what would the graph look like?</p> <p>What does it mean to solve a system of equations and how can we apply this to real world situations?</p>	<p>Plot Points in Coordinate Plane</p> <p>Graph Linear Equations</p> <p>Graph Using Intercepts</p> <p>Find Slope and Rate of Change</p> <p>Graph using Slope- Intercept Form                      Model</p> <p>Direct Variation                      Write</p> <p>Linear Equations in Slope- Intercept Form                      Use</p> <p>Linear Equations in Slope- Intercept Form                      Write</p> <p>Linear Equations in Standard Form                      Write</p> <p>Equations of Parallel and Perpendicular Lines                      Solve</p> <p>Inequalities using Addition and Subtraction                      Solve</p> <p>Inequalities using Multiplication and Division</p> <p>Solve Multi- Step Inequalities</p> <p>Solve Compound Inequalities</p> <p>Solve Absolute Value Equations</p> <p>Solve Absolute Value Inequalities</p>	<ol style="list-style-type: none"> <li>1. Plot points in a Coordinate Plane</li> <li>2. Graph Linear Equations and Functions</li> <li>3. Graph using Intercepts</li> <li>4. Find slope and rate of change</li> <li>5. Graph using Slope Intercept Form</li> <li>6. Write &amp; Use Linear Equations in Slope – Intercept Form</li> <li>7. Write &amp; Use Linear Equations in Point – Slope Form</li> <li>8. Write Linear Equations in Standard form</li> <li>9. Write Equations of Parallel and Perpendicular Lines</li> <li>10. Fit a line to Data</li> <li>11. Solve Inequalities using addition, subtraction, multiplication, and division</li> <li>12. Solve Multi Step and Compound Inequalities</li> <li>13. Solve Absolute Value Equations and Inequalities</li> <li>14. Graph Linear Inequalities in Two Variables</li> <li>15. Solve Linear Systems by graphing</li> <li>16. Solve Linear Systems by substitution</li> <li>17. Solve Systems of Linear Inequalities</li> </ol>	EngageNY

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Unit 3: Q3 Exponential and Quadratic Functions	8.EE.1, 8.EE.2, 8.EE.3, 8.EE.4, 8.EE.7.b, 8.F.1, 8.F.2,	<p>How do you use properties of exponents involving products?</p> <p>How do you use properties of exponents involving quotients?</p> <p>How do you use zero and negative exponents?</p> <p>How can you change a negative exponent to represent a positive exponent?</p> <p>When is it useful to write numbers in scientific notation?</p> <p>How is this method applied in your science class?</p> <p>What does a graph that shows exponential growth look like?</p> <p>What is a polynomial and how are they classified?</p> <p>What is the F.O.I.L method and how is it used to multiply polynomials?</p> <p>How do you solve polynomial equations in factored form?</p> <p>What is a trinomial and how is it factored?</p> <p>What is a quadratic function and what does its graph look like?</p> <p>What are the methods used to solve quadratic equations?</p>	<p>Apply Exponents and Properties Involving Products</p> <p>Apply Exponent Properties Involving Quotients</p> <p>Define and Use Zero and Negative Exponents</p> <p>Add and Subtract Polynomials</p> <p>Multiply Polynomials</p> <p>Find Special Product of Polynomials</p> <p>Solve Polynomial Equations in Factored Form Factor <math>x^2 + bx + c</math></p> <p>Factor <math>ax^2 + bx + c</math></p> <p>Graph <math>y = ax^2 + c</math></p> <p>Graph <math>y = ax^2 + bx + c</math></p> <p>Solve Quadratic Equations by Graphing Use Square Roots to Solve Quadratic Equations</p> <p>Solve Quadratic Equations by the Quadratic Formula</p>	<ol style="list-style-type: none"> <li>1. Use and apply the properties of exponents</li> <li>2. Use zero and negative exponents</li> <li>3. Read and write numbers in scientific notation</li> <li>4. Write and graph exponential growth and decay models/functions</li> <li>5. Add and Subtract polynomials</li> <li>6. Multiply polynomials</li> <li>7. Use special product patterns to multiply polynomials</li> <li>8. Solve polynomials equations</li> <li>9. Factor trinomials</li> <li>10. Graph simple quadratic functions</li> <li>11. Solve quadratic equations by graphing, completing the square/ using square roots, factoring, and using the quadratic formula</li> </ol>	EngageNY

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Unit 4: Q4 Radical and Rational Functions	8.NS.1, 8.NS.2, 8.EE.2, 8.F.5, 8.G.6, 8.G.7, 8.G.8, 8.SP.1, 8.SP.2, 8.SP.3	<p>How do you graph square root functions?</p> <p>How do you know when a radical expression is in simplest form?</p> <p>What does it mean to rationalize the denominator when working with radicals?</p> <p>How do you solve radical equations?</p> <p>How is it similar to solving normal equations?</p> <p>How is it different?</p> <p>What is the Pythagorean Theorem? How is it used in other subject areas?</p> <p>What is the distance formula and how is it used?</p> <p>What is a rational function and what does its graph look like?</p> <p>How can rational expressions be simplified?</p> <p>How do you add and subtract rational expressions?</p>	<p>Graph Square Root Functions</p> <p>Simplify Radical Expressions</p> <p>Solve Radical Equations</p> <p>Apply the Pythagorean Theorem and its Converse</p> <p>Apply the Distance and Midpoint Formulas</p> <p>Simplify Rational Expressions</p> <p>Multiply/ Divide Rational Expressions</p> <p>Add/ Subtract Rational Expressions</p> <p>Solve Rational Equations</p> <p>Solve Probabilities and Odds</p> <p>Analyze Surveys and Samples</p>	<ol style="list-style-type: none"> <li>1. Graph square root functions</li> <li>2. Simplify radical expressions</li> <li>3. Solve radical equations</li> <li>4. Use the Pythagorean Theorem</li> <li>5. Use the distance and Midpoint formulas in relation to locations on a coordinate graph</li> <li>6. Graph Rational Functions</li> <li>7. Simplify rational expressions</li> <li>8. Multiply and divide rational expression</li> <li>9. Add and subtract rational expressions</li> <li>10. Solve rational equations</li> <li>11. Find probability of events</li> <li>12. Interpret data in histograms, Stem –and-Leaf plots, and Box-and-Whisker Plots</li> <li>13. Analyze Surveys</li> </ol>	EngageNY