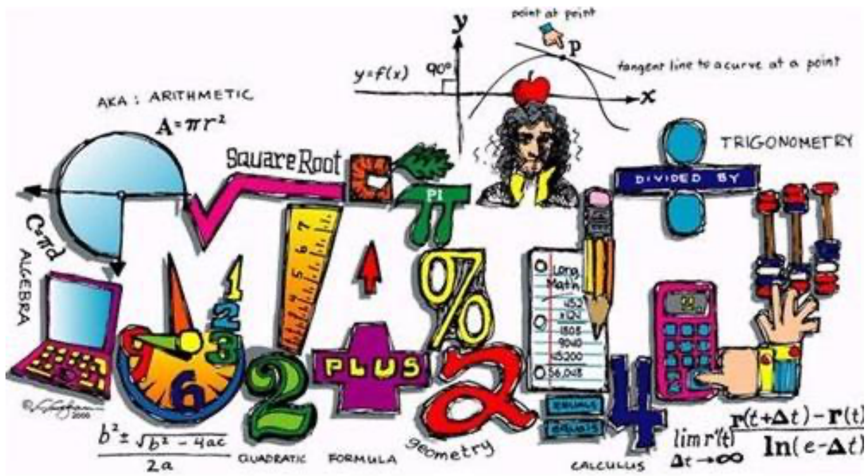
West Iron County Middle School
Curriculum Map

Mathematics
Grade 8 Algebra 1

Updated 2023-2024



Based on the
Common Core State Standards

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PREFACE

This curriculum map is aligned to the Common Core State Standards, as defined in 2022. The timeline presented for each unit is meant to aid in estimating and defining the relative pacing and sequencing of the course. It is not imperative that it be followed with fidelity. For instance, many of the lessons from Unit 11 - Data Analysis & Displays, are covered in middle school math, with further development in Algebra 2/Statistics. The following is the breakdown, by term, of the units in Algebra 1:

Semester	Unit Number/Chapters from *Big Ideas Math*	Unit (Chapter) Title
1	Unit 1	Solving Linear Equations
	Unit 2	Solving Linear Inequalities
	Unit 3	Graphing Linear Functions
	Unit 4	Writing Linear Functions
2	Unit 5	Systems of Linear Functions
	Unit 6	Exponential Functions & Sequences
	Unit 7	Polynomial Equations & Factoring
	Unit 8	Graphing Quadratic Functions

For students in 8th grade, topics from Math 8 not previously taught, such as volumes of solids, may need to be integrated into the topics presented in Algebra 1, as determined by material assessed on the PSAT.

Daily instructional tools, materials, and methods:

- Big Ideas Math Textbook & Supplementary Materials (Paper & Online)
- Notebook
- Interactive whiteboard (as available)
- Computers (as available)
- Class discussion and practice
- Small-group discussion and practice
- Scientific calculators
- Classroom website containing additional online resources, tools, and apps
- Supplementary material provided via digital curriculums (in Google Drive)

Periodic assessment and progress monitoring:

- Independent practice
- Lesson quizzes
- Unit tests
- Cumulative semester exams
- NWEA MAP Growth standardized achievement test (given three times per school year)

STANDARDS FOR MATHEMATICAL PRACTICE

These mathematical practices should be integrated into daily lessons as applicable:

CCSS.Math.Practice.MP1 – Make sense of problems and persevere in solving them. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

CCSS.Math.Practice.MP2 – Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

CCSS.Math.Practice.MP3 – Construct viable arguments and critique the reasoning of others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

CCSS.Math.Practice.MP4 – Model with mathematics. Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

CCSS.Math.Practice.MP5 – Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

CCSS.Math.Practice.MP6 – Attend to precision. Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

CCSS.Math.Practice.MP7 – Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well-remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

CCSS.Math.Practice.MP8 – Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

UNIT 1 – SOLVING LINEAR EQUATIONS (BIM Algebra 1, Chapter 1)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 1.1: Solving Simple Equations	CED.A.1, REI.A.1, REI.B.1	How can you use simple equations to solve real-life problems?	- I can solve linear equations using addition and subtraction. - I can solve linear equation using multiplication and division. - I can use linear equations to solve real-life problems.	conjecture, rule, theorem, equation, linear equation (in one variable), solution, inverse operations, equivalent expressions
BIM 1.2: Solving Multi-Step Equations	Q.A.1, CED.A.1, REI.B.3	How can you use multi-step equations to solve real-life problems?	- I can solve multi-step linear equations using inverse operations. - I can use multi-step linear equations to solve real-life problems. - I can use unit analysis to model real-life problems.	inverse operations, mean
BIM 1.3: Solving Equations with Variables on Both Sides	CED.A.1, REI.B.3	How can you solve an equation that has variables on both sides?	- I can solve linear equations that have variables on both sides. - I can identify special solutions of linear equations. - I can use linear equations to solve real-life problems.	identity, inverse operations
BIM 1.4: Solving Absolute Value Equations	CED.A.1, REI.B.3	How can you solve an absolute value equation?	- I can solve absolute value equations. - I can solve equations involving two absolute values. - I can identify special solutions of absolute value equations.	absolute value equation, extraneous solution, absolute value, opposite
BIM 1.5: Rewriting Equations and Formulas	CED.A.4	How can you use a formula for one measurement to write a formula for a different measurement?	- I can rewrite literal equations. - I can rewrite and use formulas for area. - I can rewrite and use other common formulas.	literal equation, formula, surface area

UNIT 2 – SOLVING LINEAR INEQUALITIES (BIM Algebra 1, Chapter 2)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 2.1: Writing and Graphing Inequalities	CED.A.1	How can you use an inequality to describe a real-life statement?	- I can write linear inequalities. - I can sketch the graph of linear inequalities. - I can write linear inequalities from graphs.	- inequality - solution of an inequality - solution set - graph of an inequality - expression
BIM 2.2: Solving Inequalities Using Addition or Subtraction	CED.A.1, REI.B.3	How can you use addition or subtraction to solve an inequality?	- I can solve inequalities using addition. - I can solve inequalities using subtraction. - I can use inequalities to solve real-life problems.	- equivalent inequalities - inequality
BIM 2.3: Solving Inequalities Using Multiplication or Division	CED.A.1, REI.B.3	How can you use division to solve an inequality?	- I can solve inequalities by multiplying or dividing by *positive* numbers. - I can solve inequalities by multiplying or dividing by *negative* numbers.	- equivalent inequalities - inequality
BIM 2.4: Solving Multi-Step Inequalities	CED.A.1, REI.B.3	How can you solve a multi-step inequality?	- I can solve multi-step inequalities. - I can use multi-step inequalities to solve real-life problems.	- equivalent inequalities - inequality
BIM 2.5: Solving Compound Inequalities	CED.A.1, REI.B.3	How can you use inequalities to describe intervals on the real number line?	- I can write and graph compound inequalities. - I can solve compound inequalities. - I can use compound inequalities to solve real-life problems.	- compound inequality
BIM 2.6: Solving Absolute Value Inequalities	CED.A.1, REI.B.3	How can you solve an absolute value inequality?	- I can solve absolute value inequalities. - I can use absolute value inequalities to solve real-life problems.	- absolute value inequality - absolute deviation - compound inequality - mean

UNIT 3 – GRAPHING LINEAR FUNCTIONS (BIM Algebra 1, Chapter 3)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 3.1: Functions	IF.A.1	What is a function?	- I can determine whether relations are functions. - I can find the domain and range of a function. - I can identify the independent and dependent variables of functions.	- relation - function - domain - range - independent variable - dependent variable - ordered pair - mapping diagram
BIM 3.2: Linear Functions	CED.A.2, REI.D.10, IF.B.5, IF.C.7a, LE.A.1b	How can you determine whether a function is linear or nonlinear?	- I can identify linear functions using graphs, tables, and equations. - I can graph linear functions using discrete and continuous data. - I can write real-life problems to fit data.	- linear equation in two variables - linear function - nonlinear function - solution of a linear equation in two variables - discrete/continuous domain
BIM 3.3: Function Notation	CED.A.2, IF.A.1, IF.A.2, IF.C.7a, IF.C.9	How can you use function notation to represent a function?	- I can use function notation to evaluate and interpret functions. - I can use function notation to solve and graph functions. - I can solve real-life problems using function notation.	- function notation - linear function - quadrant
BIM 3.4: Graphing Linear Equations in Standard Form	CED.A.2, IF.C.7a,	How can you describe the graph of the equation $Ax + By = C$?	- I can graph equations of horizontal and vertical lines. - I can graph linear equations in standard form using intercepts. - I can use linear equations in standard form to solve real-life problems.	- standard form - *x*-intercept - *y*-intercept - ordered pair - quadrant
BIM 3.5: Graphing Linear Equations in Slope-Intercept Form	CED.A.2, IF.B.4, IF.C.7a, LE.B.5	How can you describe the graph of the equation $y = mx + b$?	- I can find the slope of a line. - I can use the slope-intercept form of a linear equation. - I can use slopes and *y*-intercepts to solve real-life problems.	- slope - rise - run - slope-intercept form - constant function - dependent variable - independent variable
BIM 3.6: Transformations of Graphs of Linear Functions	IF.C.7a, BF.B.3	How does the graph of the linear function $f(x) = x$ compare to the graph of $g(x) = f(x) + c$ and $h(x) = f(cx)$?	- I can translate and reflect graphs of linear functions. - I can stretch and shrink graphs of linear functions. - I can combine transformations of graphs of linear functions.	- family of functions - parent function - transformation - translation - reflection - horizontal shrink/stretch - vertical stretch/shrink
BIM 3.7: Graphing Absolute Value Functions	CED.A.2, REI.D.10, IF.C.7b, BF.B.3	How do the values of *a*, *h*, and *k* affect the graph of the absolute value function $g(x) = a\|x - h\| + k$?	- I can translate graphs of absolute value functions. - I can stretch, shrink, and reflect graphs of absolute value functions. - I can combine transformations of graphs of absolute value functions.	- standard form - *x*-intercept/*y*-intercept - ordered pair - quadrant

UNIT 4 – WRITING LINEAR FUNCTIONS (BIM Algebra 1, Chapter 4)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 4.1: Writing Equations in Slope-Intercept Form	CED.A.2, BF.A.1a LE.A.1b, LE.A.2	Given the graph of a linear function, how can you write an equation of the line?	- I can write equations in slope-intercept form. - I can use linear equations to solve real-life problems.	- linear model - slope-intercept form - function - rate
BIM 4.2: Writing Equations in Point-Slope Form	CED.A.2, BF.A.1a LE.A.1b, LE.A.2	How can you write an equation of a line when you are given the slope and a point on the line?	- I can write an equation of a line given its slope and a point on the line. - I can write an equation of a line given two points on the line. - I can use linear equations to solve real-life problems.	- point-slope form - slope-intercept form - function - linear model - rate
BIM 4.3: Writing Equations of Parallel and Perpendicular Lines	CED.A.2, LE.A.2	How can you recognize lines that are parallel or perpendicular?	- I can identify and write equations of parallel lines. - I can identify and write equations of perpendicular lines. - I can use parallel and perpendicular lines in real-life problems.	- parallel lines - perpendicular lines - reciprocal
BIM 4.4: Scatter Plots and Lines of Fit	LE.B.5, ID.B.6a, ID.B.6c, ID.C.7	How can you use a scatter plot and a line of fit to make conclusions about the data?	- I can interpret scatter plots. - I can identify correlations between data sets. - I can use lines of fit to model data.	- scatter plot - correlation - line of fit
BIM 4.5: Analyzing Lines of Fit	LE.B.5, ID.B.6a, ID.B.6b, ID.B.6c, ID.C.7, ID.C.8, ID.C.9	How can you *analytically* find a line of best fit for a scatter plot?	- I can use residuals to determine how well lines of fit model data. - I can use technology to find lines of best fit. - I can distinguish between correlation and causation.	- residual - linear regression - line of best fit - correlation coefficient - interpolation - extrapolation - causation
BIM 4.6: Arithmetic Sequences	IF.A.3, BF.A.1a, BF.A.2, LE.A.2	How can you use an arithmetic sequence to describe a pattern?	- I can write the terms of an arithmetic sequence. - I can graph arithmetic sequences. - I can write arithmetic sequences as functions.	- sequence - term - arithmetic sequence - common difference
BIM 4.7: Piecewise Functions	CED.A.2, REI.D.10, IF.C.7b	How can you describe a function that is represented by more than one equation?	- I can evaluate piecewise functions. - I can graph and write piecewise functions. - I can graph and write step functions. - I can write absolute value functions.	- piecewise function - step function - absolute value function - vertex form - vertex

UNIT 5 – SOLVING SYSTEMS OF LINEAR EQUATIONS (BIM Algebra 1, Chapter 5)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 5.1: Solving Systems of Linear Equations by Graphing	CED.A.3, REI.C.6	How can you solve a system of linear equations?	- I can check solutions of systems of linear equations. - I can solve systems of linear equations by graphing. - I can use systems of linear equations to solve real-life problems.	- system of linear equations - solution of a system of linear equations
BIM 5.2: Solving Systems of Linear Equations by Substitution	CED.A.3, REI.C.6	How can you use substitution to solve a system of linear equations?	- I can solve systems of linear equations by substitution. - I can use systems of linear equations to solve real-life problems.	- system of linear equations - solution to a system of linear equations
BIM 5.3: Solving Systems of Linear Equations by Elimination	CED.A.3, REI.C.5, REI.C.6	How can you use elimination to solve a system of linear equations?	- I can solve systems of linear equations by elimination. - I can use systems of linear equations to solve real-life problems.	- coefficient
BIM 5.4: Solving Special Systems of Linear Equations	CED.A.3, REI.C.6	Can a system of linear equations have no solution or infinitely many solutions?	- I can determine the numbers of solutions of linear systems. - I can use linear systems to solve real-life problems.	- parallel
BIM 5.5: Solving Equations by Graphing	CED.A.3, REI.D.11	How can you use a system of linear equations to solve an equation with variables on both sides?	- I can solve linear equations by graphing. - I can solve absolute value equations by graphing. - I can use linear equations to solve real-life problems.	- absolute value equation
BIM 5.6: Graphing Linear Inequalities in Two Variables	CED.A.3, REI.D.12	How can you graph a linear inequality in two variables?	- I can check solutions of linear inequalities. - I can graph linear inequalities in two variables. - I can use linear inequalities to solve real-life problems.	- ordered pair
BIM 5.7: Systems of Linear Inequalities	CED.A.3, REI.D.12	How can you graph a system of linear inequalities?	- I can check solutions of systems of linear inequalities. - I can graph systems of linear inequalities. - I can write systems of linear inequalities. - I can use systems of linear inequalities to solve real-life problems.	- systems of linear inequalities - solution of a system of linear inequalities - graph of a system of linear inequalities - linear inequality in two variables

UNIT 6 – EXPONENTIAL FUNCTIONS AND SEQUENCES (BIM Algebra 1, Chapter 6)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 6.1: Properties of Exponents	RN.A.2	How can you write general rules involving properties of exponents?	- I can use zero and negative exponents. - I can use the properties of exponents. - I can solve real-life problems involving exponents.	- power - exponent - base - scientific notation
BIM 6.2: Radicals and Rational Exponents	RN.A.1, RN.A.2	How can you write and evaluate an *n*th root of a number?	- I can find *n*th roots. - I can evaluate expressions with rational exponents. - I can solve real-life problems involving rational exponents.	- square root
BIM 6.3: Exponential Functions	CED.A.2, IF.B.4, IF.C.7e, IF.C.9, BF.A.1a, BF.B.3, LE.A.1, LE.A.2	What are some of the characteristics of the graph of an exponential function?	- I can identify and evaluate exponential functions. - I can graph exponential functions. - I can solve real-life problems involving exponential functions.	- independent variable - dependent variable - parent function
BIM 6.4: Exponential Growth and Decay	SSE.B.3c, CED.A.2, IF.C.7e, IF.C.8b, BF.A.1a, LE.A.1c, LE.A.2	What are some of the characteristics of exponential growth and exponential decay functions?	- I can use and identify exponential growth and decay functions. - I can interpret and rewrite exponential growth and decay functions. - I can solve real-life problems involving exponential growth and decay.	- exponential growth - exponential growth function - exponential decay - exponential decay function - compound interest
BIM 6.5: Solving Exponential Equations	CED.A.1, REI.A.1, REI.D.11	How can you solve an exponential equation graphically?	- I can solve exponential equations with the same base. - I can solve exponential equations with unlike bases. - I can solve exponential equations by graphing.	- exponential equation
BIM 6.6: Geometric Sequences	IF.A.3 BF.A.2, LE.A.2	How can you use a geometric sequence to describe a pattern?	- I can identify geometric sequences. - I can extend and graph geometric sequences. - I can write geometric sequences as functions.	- geometric sequence - common ratio - arithmetic sequence - common difference
BIM 6.7: Recursively Defined Sequences	IF.A.3, BF.A.1a, BF.A.2, LE.A.2	How can you define a sequence recursively?	- I can write terms of recursively defined sequences. - I can write recursive rules for sequences. - I can translate between recursive rules and explicit rules. - I can write recursive rules for special sequences.	- explicit rule - recursive rule - arithmetic sequence - geometric sequence

UNIT 7 – POLYNOMIAL EQUATIONS & FACTORING (BIM Algebra 1, Chapter 7)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 7.1: Adding and Subtracting Polynomials	APR.A.1	How can you add and subtract polynomials?	- I can find the degree of monomials. - I can classify polynomials. - I can add and subtract polynomials. - I can solve real-life problems.	- monomials - degree of a monomial - polynomial - binomial - trinomial - degree of a polynomial - standard form - leading coefficient - closed
BIM 7.2: Multiplying Polynomials	APR.A.1	How can you multiply two polynomials?	- I can multiply polynomials. - I can use the FOIL Method. - I can multiply binomials and trinomials.	- square root
BIM 7.3: Special Products of Polynomials	APR.A.1	What are the patterns in the special products $(a+b)(a-b)$, $(a+b)^2$, and $(a-b)^2$?	- I can use the square of a binomial pattern. - I can use the sum and difference pattern. - I can use special product patterns to solve real-life problems.	- binomial
BIM 7.4: Solving Polynomial Equations in Factored Form	APR.B.3, REI.B.4b	How can you solve a polynomial equation?	- I can use the Zero-Product Property. - I can factor polynomials using the GCF. - I can use the Zero-Product Property to solve real-life problems.	- polynomial - standard form - greatest common factor (GCF) - monomial
BIM 7.5: Factoring $x^2 + bx + c$	SSE.A.2, SSE.B.3a	How can you use algebra tiles to factor the trinomial $x^2 + bx + c$ into the product of two binomials?	- I can factor $x^2 + bx + c$. - I can use factoring to solve real-life problems.	- polynomial - FOIL Method - Zero-Product Property
BIM 7.6: Factoring $ax^2 + bx + c$	SSE.A.2, SSE.B.3a	How can you use algebra tiles to factor the trinomial $ax^2 + bx + c$ into the product of two binomials?	- I can factor a$x^2 + bx + c$. - I can use factoring to solve real-life problems.	- polynomial - greatest common factor (GCF) - Zero-Product Property
BIM 7.7: Factoring Special Products	SSE.A.2, SSE.B.3a	How can you recognize and factor special products?	- I can factor the difference of two squares. - I can factor perfect square trinomials. - I can use factoring to solve real-life problems.	- polynomial - trinomial
BIM 7.8: Factoring Polynomials Completely	SSE.A.2, SSE.B.3a	How can you factor a polynomial completely?	- I can factor polynomials by grouping. - I can factor polynomials completely. - I can use factoring to solve real-life problems.	- polynomial - binomial

UNIT 8 – GRAPHING QUADRATIC FUNCTIONS (BIM Algebra 1, Chapter 8)

Lesson	Common Core State Standard(s)	Essential Question	Objectives ("I Can" Statements)	Core Vocabulary
BIM 8.1: Graphing $f(x) = ax^2$	CED.A.2, IF.C.7a, BF.B.3	What are some of the characteristics of the graph of a quadratic function of the form $f(x) = ax^2$?	- I can identify characteristics of quadratic functions. - I can graph and use quadratic functions of the form $f(x) = ax^2$.	- domain - range - vertical shrink - vertical stretch - reflection
BIM 8.2: Graphing $f(x) = ax^2 + c$	CED.A.2, IF.C.7a, BF.B.3	How does the value of c affect the graph of $f(x) = ax^2 + c$?	- I can graph functions of the form $f(x) = ax^2 + c$. - I can solve real-life problems involving functions of the form $f(x) = ax^2 + c$.	- translation - vertex of a parabola - axis of symmetry - vertical stretch - vertical shrink
BIM 8.3: Graphing $f(x) = ax^2 + bx + c$	CED.A.2, IF.C.7a, IF.C.9	How can you find the vertex of the graph of $f(x) = ax^2 + bx + c$?	- I can graph quadratic functions of the form $f(x) = ax^2 + bx + c$. - I can find maximum and minimum values of quadratic functions.	- independent variable - dependent variable
BIM 8.4: Graphing $f(x) = a(x-h)^2 + k$	CED.A.2, IF.B.4, BF.A.1a, BF.B.3	How can you describe the graph of $f(x) = a(x-h)^2 + k$?	- I can identify even and odd functions. - I can graph quadratic functions of the form $f(x) = a(x-h)^2$. - I can graph quadratic functions of the form $f(x) = a(x-h)^2 + k$. - I can model real-life problems using $f(x) = a(x-h)^2 + k$.	- reflection
BIM 8.5: Using Intercept Form	SSE.B.3a, APR.B.3, CED.A.2, IF.B.4, IF.C.8a, BF.A.1a	What are some of the characteristics of the graph of $f(x) = a(x-p)(x-q)$?	- I can graph quadratic functions of the form $f(x) = a(x-p)(x-q)$. - I can use intercept form to find zeros of functions. - I can use characteristics to graph and write quadratic functions. - I can use characteristics to graph and write cubic functions.	- intercept form
BIM 8.6: Comparing Linear, Exponential, and Quadratic Functions	IF.B.6, BF.A.1a, LE.A.3	How can you compare the growth rates of linear, exponential, and quadratic functions?	- I can choose functions to model data. - I can write functions to model data. - I can compare functions using average rates of change. - I can solve real-life problems involving different function types.	- slope