A Comprehensive Approach to Balanced Mathematics

MATHEMATICS PLANNING FOR EIGHTH GRADE
2010 Edition

8

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Teaching with *Impact Mathematics*

As you move through this document and the Impact materials, you will note many recurring themes and underlying programmatic structures that will support your classroom teaching:

A. The Grades 6 through 8 program is a comprehensive curriculum that completes a full year of algebra by the end of Grade 8.

B. Impact Mathematics is a standards-based, integrated curriculum that includes strands on number and operations, proportional reasoning, geometry, probability and data, with a focus on the development of algebraic thinking.

C. There is a balance of basic skills and conceptual understanding; students build new mathematical ideas and at the same time practice needed procedures.

D. The curriculum is centered around problem sets that students work on individually or in groups. Many of the problems are open-ended, allowing students to choose or develop solution strategies.

E. Students are asked to make conjectures based on patterns they observe and to develop convincing mathematical arguments.

F. Impact Mathematics provides opportunities for students to reflect upon, critique and communicate their ideas.

G. The concepts in each chapter connect to and build on concepts developed in earlier chapters and courses.

H. There is an emphasis on a variety of mathematical representations, as well as modeling.

I. Informal to formal development of concepts makes mathematics accessible and appropriate for middle grades students.

J. There is strong content progress from grade to grade with minimal reteaching of topics. Important topics are revisited in greater depth and formality.

K. The contexts used for developing concepts and practicing skills include real-world applications, as well as mathematical settings.

L. To maintain students' ongoing interest in all areas of mathematics, Impact Mathematics uses narrative and realistic contexts, personalization in the form of cartoons in which middle grades students explain how they approach problems, and opportunities for students to choose or create their own problems.

M. Manipulatives and calculators are used to support the content learning only when appropriate. Students need and gain experiences with pencil and paper along with graphing technology.

N. The teaching process is designed around a three-step instructional cycle: Introduce, Develop, and Assign & Assess.

O. The curriculum balances structured learning, direct instruction, and creative problem-solving. Student discovery plays as significant a role in the learning process as teacher-directed instruction.

P. Assessment tools are broad, encompassing the processes of problem solving, reasoning, communication, connections, concepts, applications, representational strategies and procedures.

PACING	IMPACT TEXTBOOK		NEW YORK STATE MATHEMATICS STANDARDS	NOTES
	D&U: Develop & Understand E: Explore Ex: Example IYOW: In Your Own Words PS: Problem Set QQ: Quick Quiz S&S: Share and Summarize	QR: Quick Review Math Handbook CRM: Chapter Resource Masters INRJ: Investigation Notebook and Reflection Journal		N: Notes LP: Links to the Past LC: Literature Connections CC: Computer Connections

CHAPTER 1: LINEAR RELATIONSHIPS

Algebraic Representations: Coordinate Graphs—Apply; Tables and Graphs—Develop
Algebraic Reasoning: Patterns And Numeric Forms—Develop; Properties and Rules—Apply
Functions And Relations: Linear Expressions/Equations—Develop
Coordinate Geometry: Coordinate Representations—Develop
Numbers and Number Sense: Signed Numbers—Develop
Ratios and Rates: Meaning and Representations—Develop; Proportions—Develop

WEEK 1	Administer Pre-Chapter One Assessment. **1.1 Direct Variation** • Represent and interpret linear relationships in multiple ways. • Understanding the connection between a linear equation in the form $y = mx + b$ and its graph. 1. E, p. 4; Investigation 1: D&U: A, pp. 6-7. 2. D&U:B:, p. 8; D&U:C, p. 9; S&S, p. 9. 3. Investigation 2: D&U:A, pp. 10-11; D&U:B, p. 11; S&S, p. 12. **Note**: While executing mini-lesson, include as Do Now operations with signed numbers and plotting points. *(continued)*	*For additional practice or homework:* **QR:** 6.4: Solving Linear Equations, pp. 271-278 6.7: Graphing on the Coordinate Plane, pp288-294 6.9: Direct Variation, pp. 306-308 **Skills Intervention for Algebra** Skill 27: Ordered Pairs, pp. 53-54 **CRM:** pp. 16-20 *Standardized test review:* **QR:** 7.8: Circles, p. 359-364	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.3 Describe a situation involving relationships that match a given graph. 8.A.4 Create a graph given a description or an expression for a situation involving a linear or nonlinear relationship. ***Students will recognize, use, and represent algebraically patterns, relations, and functions.*** 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically. 8.A.16 Find a set of ordered pairs to satisfy a given linear numerical pattern (expressed algebraically); then plot the ordered pairs and draw the line. 8.A.19 Interpret multiple representations using equation, table of values, and graph. (MAY–JUNE IN GRADE 8) *(continued)*	**LP:** **Course 2** 10.2: Proportional Relationships, pp. 505-507 10.2: Similarity, pp. 517-522 **LC:** *Pythagoras Gets The Right Angle: A Math Adventure* by Julie Ellis *The Kingdom of Infinite Numbers* by Bryan Bunch

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WEEK 1 (continued)	4. Investigation 3: T&D, p. 12; D&U:A, p. 13; D&U:B, p. 14 (odd numbers); D&U:C, p. 14 (odd numbers); D&U: D, p.15, #19,20; S&S, p. 15. 5. IYOW, p. 22, #14; QQ, p. 23TE **Note:** The recommended pacing is based on the mandated 375 minutes, or seven to eight 45–60 minute periods per week.		**GEOMETRY STRANDS** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.15 Graph a line using a table of values.	

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WEEK 2	**1.2 Slope** • Understand slope as the constant rate of change in a line. • Calculate slope as the ratio of rise/run • Understanding and applying the idea of slope. *Suggested per period pacing:* 6. T&D, p. 24; Investigation 1: D&U:A, pp.25-26; D&U:B, p. 26 7. D&U:C, pp. 27-28; S&S, p. 28; Investigation 2: E, p. 29; D&U:A, pp. 29-30 8. D&U:B, p. 30; S&S, p. 30; IYOW, p. 33, # 24; QQ, p. 34 TE *Graphing calculator is suggested for use in checking answers.	*For additional practice or homework:* **QR:** 6.8: Slope and Intercept, p. 295-298. **Skills Intervention for Algebra** Skill 32: Slope of a Line, pp. 63-64. *Standardized test review:* **QR:** 7.1: Naming angles, p. 318	**ALGEBRA STRAND** ***Students will recognize, use, and represent algebraically patterns, relations, and functions.*** 8.A.16 Find a set of ordered pairs to satisfy a given linear numerical pattern (expressed algebraically); then plot the ordered pairs and draw the line. **GEOMETRY STRANDS** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.13 Determine the slope of a line from a graph and explain the meaning of slope as a constant rate of change 8.G.14 Determine the y-intercept of a line from a graph and be able to explain the y-Intercept 8.G.16 Determine the equation of a line given the slope and the y-intercept 8.G.17 Graph a line from an equation in slope-intercept form (y = mx + b)	**LP:** **Course 2** 8.2: Speed and the Slope Connection: E, p. 389 Investigation 1: Walking and Jogging, pp. 390-393 (slope); Investigation 4: Changing the Starting Point, pp. 398-401.

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WEEK 2-3	**1.3 Write Equations** To recognize and write equations for linear relationships using the method of constant differences. *Suggested Per Period Pacing:* 9. T&D, p. 35; Investigation 1: T&D, p. 35; D&U:A, p. 36, D&U:B, pp. 36-37 10. D&U:C, p. 37; Ex, p. 38; S&S, p. 38; Investigation 2: D&U:A, pp. 38-40 11. D&U:B, p. 40; S&S, p. 41; Investigation 3:T&D, p. 42; D&U:A, pp. 42; S&S. 12. Investigation 4:E, p. 44; Ex, p. 45; D&U:A, p. 45; D&U:B, pp. 45-46; D&U:C, p. 46; D&U:D, pp. 46-47; S&S, p. 47. 13. Investigation 5:T&D, p. 48; D&U:A, pp. 48-49; T&D, p. 49; D&U:B, p. 49. 14. D&U:C, p. 50; D&U:D, p. 50; S&S, Investigation 6: Inquiry, pp. 51-52 15. IYOW, p. 59 # 42; QQ, 59 TE	*For additional practice or homework:* **Skills Intervention for Pre-Algebra** Skill 39: Solve Equations in Two Variables, pp. 77-78. **QR:** 6.1: Writing Expressions and Equations, pp. 252-257. 6.2: Simplifying Expressions, p. 259 6.4: Solving Linear Equations, pp. 271-277 6.8: Slope and Intercept, pp. 295-298 **CRM:** pp. 27-31.	**ALGEBRA STRAND** ***Students will recognize, use, and represent algebraically patterns, relations, and functions.*** 7.A.10 Write an equation to represent a function from a table of values (MAY–JUNE IN GRADE 7). **GEOMETRY STRAND** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.14 Determine the y-intercept of a line from a graph and be able to explain the y-intercept. 8.G.15 Graph a line using a table of values	**LP:** **Course 1** 3.2: Find the Rule, pp. 133-135. 3.2: Patterns and Variables, pp. 120-135. 3.3: Variables and Rules pp. 143-165 9.1: Understanding Equations, pp. 534. 9.2: Backtracking, pp. 546-554. 9.3: Guess, Check and Improve, pp. 560-567.

Review and Self-Assessment

Suggested Per Period Pacing:

16. Review and Self-Assessment, pp. 60-63.
17. Test, Chapter 1

CRM: MARS Assessment: Number Pairs, pp. 52-56.

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CHAPTER 2: LINES AND ANGLES

Algebraic Representations: Coordinate Graphs—Develop; Tables and Graphs—Develop
Algebraic Reasoning: Patterns and Numeric Forms—Develop
Functions and Relations: Linear Expressions/Equations—Develop
Geometric Relationships: Congruenc—Develop
Data Analysis: Modeling and Analysis

WEEK 4-5	**2.1 Lines** Administer Pre-Chapter Two Assessment. • Understanding the connection between a linear equation in the form y = mx + b and its graph. • Understanding and applying the idea of slope. • Using a linear graph to gather information. • Fitting a line to data. *Suggested per period pacing:* 18. *Explore, p. 66; Investigation 1: D&U:A, p. 67; * D&U:B, p. 68; S&S, p. 69 19. Investigation 2:T&D, p. 69; D&U:A, p. 69; D&U:B, p. 70; S&S, p. 70 20. Investigation 3:Inquiry, pp. 71-73 21. *Investigation 4:T&D, p. 74; D&U:A, pp. 75-76; D&U:B, pp. 77-78; D&U:C, p. 78; S&S, p. 78. 22. IYOW, p. 85, #29; QQ, p. 86 TE *Graphing calculator is suggested.	*For additional practice or homework:* **QR:** 6.7: Graphing on the Coordinate Plane, pp. 288-290 6.8: Slope and Intercept, p. 299. 6.4: Solving Linear Equations, 271-277 7.1: Classifying Angles and Triangles, pp. 318-324. **CRM:** pp.4-8 *Standardized test review:* **QR:** 4.4: Statistics, pp. 201-205 **Skills Intervention for Algebra** Skill 29: Graphing Functions, pp. 57-58.	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.4 Create a graph given a description or an expression for a situation involving a linear or nonlinear relationship. **GEOMETRY STRANDS** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.17 Graph a line from an equation in slope-intercept form ($y = mx + b$)	**LP:** **Course 2** 8.3: Linear Relationships, pp. 410-422 9.3: Solve Equations, pp. 460-465 **LC:** *The Adventures of Penrose the Mathematical Cat* by Theoni Pappas *Mathographics* by Robert Dixon

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WEEK 5-6	**2.2 Angle Relationships** • Identify and determine the measure of supplementary angles, complementary angles, and vertical angles. • Explore angle relationships for parallel lines cut by a transversal *Suggested per period pacing:* 23. Investigation 1: T&D, pp. 87-88; D&U:A, p. 88; Ex, p. 89; D&U:B, p. 89, #4-7 24. D&U:B, p. 90, #8-10; D&U:C, p. 90; S&S, p. 90 25. Investigation 2:E, p. 91; D&U:A, pp. 91-92; D&U:B, pp. 92-93; S&S, p. 93 26. IYOW, p. 94, # 16; QQ, p. 95 TE	*For additional practice or homework:* **QR:** 7.1: Classifying Angles and Triangles, pp. 319-321 **CRM:** pp. 15-19	**GEOMETRY STRANDS** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.0 Construct using a straight edge and compass: segment congruent to a segment; angle congruent to an angle; perpendicular bisector; and angle bisector (MAY-JUNE IN GRADE 8). 8.G.1 Identify pairs of vertical angles as congruent 8.G.2 Identify pairs of supplementary and complementary angles 8.G.3 Calculate the missing angle in a supplementary or complementary pair 8.G.4 Determine angle pair relationship when given two parallel lines cut by a transversal 8.G.5 Calculate the missing angle measurements when given two parallel lines cut by a transversal 8.G.6 Calculate the missing angle measurements when given two intersecting lines and an angle.	**LP:** **Course 1** 1.1: Investigation 2, pp. 8-11. 1.2: Angles, pp. 24-34

Review and Self-Assessment

Suggested Per Period Pacing:

26. Review and Self Assessment, pp. 107-109.
27. Continue Review and Test

CRM: MARS Assessment: Pentagons, pp. 40-44

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CHAPTER 3: PERCENTS AND PROPORTIONS

Rationals and Irrationals: Fraction and Decimal Concepts-Apply: Meaning and Representation—Develop
Ratio and Rates: Meaning and Representation—Develop; Proportion—Develop
Algorithms and Operations: Fractions and Decimals—Apply

WEEK 6	Administer Pre-Chapter Three Assessment. **3.1 Understand Percents** • Recognize percents as ratios with a common scale of 100 • Recognize percents as a convenient way to compare ratios • Solve percent problems using proportions *Suggested per period pacing:* 28. Investigation 1: T&D, p. 112; D&U:A, p. 113; D&U:B, pp. 114-115; S & S, p. 115 29. Investigation 2: D&A, p 116; D&U:A, p. 116; T&D: p.117; D&U:B, pp. 117-118; S&S: p. 118; QQ, p. 122 TE; IYOW, p. 122	*For additional practice or homework:* **QR:** 2.6: Meaning of Percents, pp. 123-129. 2.7: Using and Finding Percents, p. 130-134. **CRM:** pp. 3-7	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.3 Read, write, and identify percents less than 1% and greater than 100% 8.N.4 Apply percents to: Tax, percent increase/decrease, simple interest, sale price, commission, interest rates, and gratuities	**LP:** **Course 1** 6.1: Use Percents, pp. 348-361. 6.2: A Percent of a Quantity, pp. 368-375. 6.3: Percents as Whole, pp. 380-389 **LC** *Erin McEwen, Your Days Are Numbered* by Alan Ritchie

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WEEK 7	**3.2 Work with Percents** • To calculate percent increase and percent decrease • To interpret comparisons that use ratios and percentages 30. Investigation 1: T&D, p. 123; D&U:A, pp. 124-125, D&U:B, p. 125, D&U:C, p. 126; S&S, p. 126. 31. Investigation 2: T&D, p. 127; D&U:A, pp. 127-128, D&U:B, p.129; S&S, p. 129. 32. Investigation 3: D&U:A, p. 130, D&U:B, p. 131; S&S, p. 131 33. Inquiry Investigation 4: pp. 132-133; IYOW, p. 139; QQ, p.139 (TE)	*For additional practice or homework:* **QR:** 2.7: Using & Finding Percents, pp. 135-141.	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.4 Apply percents to: Tax, percent increase/decrease, simple interest, sale price, commission, interest rates, and gratuities	**LP:** **Course 1** 6.1: Use Percents, pp. 348-361. 6.2: A Percent of a Quantity, pp. 368-375. 6.3: Percents as Whole, pp. 380-389

Review and Self-Assessment

Suggested Per Period Pacing:

34. Review and Self Assessment, pp. 140-141; Test-Taking practice, p. 143.
35. Continue Review and Test

CRM: MARS Assessment: Number Pairs

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CHAPTER 4: EXPONENTS AND EXPONENTIAL VARIATION

Algebraic Reasoning: Patterns and Numeric Forms—Develop; Properties and Rules—Develop
Functions and Relations: Quadratic Expressions/Equations—Develop
Coordinate Geometry: Coordinate Representations—Develop
Numbers and Number Sense: Exponents and Roots—Develop
Rationals and Irrationals: Fraction and Decimal Concepts—Apply

WEEK 8-9	Administer Pre-Chapter Four Assessment. **4.1 Exponents** • Calculate values of expressions with positive and negative integer exponents • To raise positive and negative (including fractional) bases to powers • To understand and use laws of exponents • To use scientific notation *Suggested per period pacing:* 36. Ex, p. 146, Investigation 1: D&U:A, p. 147; D&U:B, p.147 (1-11) 37. Investigation 1: D&U:B, p. 148 (12-16); D&U:C, p. 148; S&S, p. 149 38. Investigation 2: T&D, p.149, Ex, p. 149; D&U:A, p. 150; T&D, p. 151; D&U:B, p. 151; D&U:C, p. 152; S&S, p. 152 39. Investigation 3, Example, p. 153, D&U:A, p. 154; D&U:B, pp. 154-155; D&U,C, p. 155; S&S, p. 155 40. Investigation 4, D&U:A, pp. 156-158; D&U:B, p. 158; S&S, p. 158. 41. Inquiry Investigation 5, pp. 159-161; IYOW, p. 167, # 58; QQ, p. 168 TE	*For additional practice or homework:* **QR:** 3.1: Powers & Exponents, pp. 146-155 3.3: Scientific Notation pp. 161-166 3.4: Laws of Exponents, pp. 167-171 **CRM:** pp. 4-11	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.1 Develop and apply the laws of exponents for multiplication and division 8.N.2 Evaluate expressions with integral exponents	**Web resources:** www.ex.ac.uk/Mirrors/nineplanets www.nineplanets.org www.ex.ac.uk/Mirrors/nineplanets www.nineplanets.org **LP:** **Course 2** 3.1: Stretching and Shrinking Machines, pp. 146-159. 2.3: More Exponent Machines, pp. 107-116. **LC:** *King's Chessboard* by David Birch *Anno's Mysterious Multiplying Jar*

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WEEK 9	**4.2 Exponential Relationships** • To develop a sense of exponential growth and exponential decay • To describe examples of exponential growth with other kinds of growth • To represent exponential growth and exponential decay relationships with algebraic expressions 42. Ex, p. 169, Investigation 1, D&U:A, p. 170; D&U:B, p. 171; SS, p. 171 43. Investigation 2, T&D, p. 172; D&U:A, p. 173; D&U:B, p. 174; S&S, p. 175 44. Investigation 3, T&D, p. 175; D&U:A, pp. 176-177; D&U:B, p. 177-178 45. S&S, p. 178; IYOW, p. 184, #29; QQ, p. 184 TE	*For additional practice or homework:* **QR:** 3.1: Powers & Exponents, pp. 146-155 3.4: Laws of Exponents, pp. 167-171 **CRM:** pp. 12-16	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.1 Develop and apply the laws of exponents for multiplication and division 8.N.2 Evaluate expressions with integral exponents	**LP:** **Course 2** 4.1: Scientific Notation, pp. 174-184.

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WEEK 10-11	**4.3 Radicals** • To simplify radical expressions • To understand that irrational numbers cannot be expressed as the ratio of two integers • To determine whether simple radicals are rational or irrational numbers *Suggested Per Period Pacing* 46. Ex, p. 185, Investigation 1, pp. 185-186; D&U:A, p. 186; D&U:B, p. 187 47. Investigation 1, D&U:C, p. 187; S&S, p. 188 48. Investigation 2, D&U:A, p. 188-190, 49. Investigation 2, D&U:B, p. 190-191; D&U:C, p. 191; S&S, p. 192 50. Investigation 3, T&D, p.192; D&U:A, p. 193; D&U:B, p. 194; S&S, p. 194 51. IYOW, p. 198; QQ, p. 199 TE; Quiz, Lesson 4.3	*For additional practice or homework:* **QR** 3.1: Powers & Exponents, pp. 146-155 3.2: Squares and Cube Roots, pp. 156-160	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.1 Develop and apply the laws of exponents for multiplication and division 8.N.2 Evaluate expressions with integral exponents	**LP:** **Course 2** 7.3: Pythagorean Theorem, pp. 343-350. 7.3: Inquiry Investigation 3: Distance Formula, pp. 351-354. 10.3: Percents and Proportions, pp. 530-536 10.4: Rates, pp. 540-546 **LC:** *What's Your Angle Pythagoras?* by Julie Ellis *Mathematicians are People, Too* by Lyetta Reimer and Wilbert Reimer

Review and Self-Assessment

Suggested Per Period Pacing:

52. Review and Self Assessment, pp. 200-202; Test-Taking practice, p. 203.
53. Continue Review and Test

MARS Assessment: Sequences and Graphs, pp. 38-42

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CHAPTER 5: ALGEBRAIC EXPRESSIONS

Algebraic Reasoning: Patterns and Numeric Forms—Develop; Properties and Rules—Apply
Numbers and Number Sense: Whole Numbers—Apply

WEEK 11-12	Administer Pre-Chapter Five Assessment. **5.1 Rearrange Algebraic Expressions** • Use geometric models in illustrating the distributive property to expand expressions of the form a(b+c) • Represent algebraic expressions using rectangle models • Simplify expressions by combining like terms • Write and solve simple linear equations related to angle measures *Suggested Per Period Pacing* 54. T&D, p. 206, Investigation 1, D&U:A, pp. 207-208; D&U:B, p. 208-209, # 5, 6, 7 55. D&U:B, p. 209, # 8, 9; S&S, p. 209; T&D, pp. 210-211; Investigation 2: D&U:A, pp. 211-212 56. D&U:B, pp. 212-213; S&S, p. 213 57. Inquiry Investigation 3, pp. 214-215 58. Investigation 4, T&D, p. 216, D&U:A, pp. 216-217; T&D, p. 217, D&U:B, pp. 217-218; S&S, p. 218; IYOW p. 220, #8; QQ, p. 222 TE	*For additional practice or homework:* **QR:** 6.2: Simplifying Expressions, pp. 259-261. **CRM:** pp. 3-7	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.5 Use physical models to perform operations with polynomials 8.A.7 Add and subtract polynomials (integer coefficients) 8.A.12 Apply algebra to determine the measure of angles formed by or contained in parallel lines cut by a transversal and by intersecting lines	**LP:** **Course 1** 2.1: Patterns in Fractions, pp. 58-67. **Course 2** 1.3: The Distributive Property, pp. 52-68. 3.1: Adding and Subtracting with Negative Numbers, pp. 126-147 8.2: Speed and the Slope Connection, pp. 389-401. 8.3: Recognize Linear Relationships, pp. 410-422 9.1: Find a Solution Method Revisited, pp. 436-443. 9.2: A Model for Solving Equations, pp. 446-454 9.3: Solve Equations, pp. 460-468. 10.1: Ratios and Rates, pp. 494-499 **LC:** *Jayden's Rescue* by Vladmir Tumanov

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WEEK 12-13	**5.2 Monomials, Binomials and Trinomials** • To multiply and divide an expression by a monomial • To use geometric models to multiply binomials • To multiply binomials using the distributive property *Suggested Per Period Pacing* 59. T&D, p. 224; Investigation 1: D&U:A, p. 225-226; D&U:B, p. 226; D&U:C, p. 227; S&S, p. 227 60. Investigation 2, D&U:A, p. 227-228; S&S p. 228 61. Investigation 3, D&U:A, p. 230-231; S&S, p.231 62. Investigation 4: Ex. p. 231; T&D, p. 232; D&U:A, p. 232; D&U:B, p. 232; S&S, p. 233 63. Investigation 5: D&U:A, p. 234; T&D, pp. 234-235; D&U:B, p. 235; T&D, p. 235; 64. D&U:C, p. 236; S&S, p. 236; IYOW, p. 241, #50; QQ, p. 243 TE	*For additional practice or homework:* **QR:** 6.1: Writing Expressions, pp. 252-258 6.2: Simplifying Expressions, pp. 259-266 6.3: Evaluating Expressions & Formulas, pp. 267-270 6.4: Solving Linear Equations, pp. 271-278 **CRM:** pp. 10-14	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.5 Use physical models to perform operations with polynomials 8.A.6 Multiply and divide monomials 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients) 8.A.9 Divide a polynomial by a monomial (integer coefficients)	**Course 1** 3.3: Variables and Rules, pp. 143-156 **Course 2** 1.1: Variables and Expressions, pp. 4-17 1.3: The Distributive Property, pp. 49-62

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WEEK 14	**5.3 Special Products** • To understand the pattern and apply a shortcut to square binomials of the forms $(a+b)^2$ and $(a-b)^2$ • To understand the pattern and apply a shortcut to expand binomials of the form $(x+a)$ $(x-a)$ *Suggested Per Period Pacing* 65. Ex, p. 244, Investigation 1, D&U:A, pp. 244-245; D&U:B, pp. 245-246; S&S, p. 246 66. Investigation 2, D&U:A, p. 247; Ex, p. 248; D&U:B, pp. 248-249, S&S, p. 249 67. IYOW, p. 253, #43; QQ, p. 253 TE	*For additional practice or homework:* **QR** 3.2: Square and Cube Roots, pp. 156-160 3.4: Laws of Exponents, pp. 167-171 **CRM:** pp. 15-19	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients)	**LP:** **Course 1** 3.4: Apply Properties, pp. 174-186. **Course 2** 1.3: The Distributive Property, pp. 49-62

Review and Self-Assessment

Suggested Per Period Pacing:

68. Review and Self Assessment, pp. 254-256; Test-Taking practice, p. 257.
69. Continue Review and Test

CRM: MARS Assessment: One Less Than A Square, pp. 35-39

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CHAPTER 6: TRANSFORMATIONAL GEOMETRY

Algebraic Representations: Coordinate Graphs—Develop
Two Dimensional Shapes: Polygons—Apply
Geometric Relationships: Congruence—Apply; Similiarity—Apply
Coordinate Geometry: Transformations—Develop
Ratio and Rate: Meaning and Representations—Apply; Proportions—Apply

WEEK 15				
	Administer Pre-Chapter Six Assessment. **6.1 Symmetry and Reflection** • To determine whether a figure has reflection symmetry and to find the lines of symmetry for figures that do • To construct the reflected images of points and geometric figures over a line • To describe the relationship between the line of reflection and the segment joining a point to its reflective image *Suggested Per Period Pacing* 70. Ex, p. 260; Investigation 1, p. 261; D&U:A, p.262; S&S, p. 262 71. Investigation 2, p. 263, D&U:A, p. 264; D&U:B, p. 265; S&S, p.265 72. Investigation 3, p. 265-266; T&D, p. 267; D&U:A, p. 267; S&S, p. 267; IYOW, p. 272, #18; QQ, p. 272 TE.	*For additional practice or homework:* **QR:** 7.3: Symmetry and Transformations, pp. 334-335 **CRM:** pp. 3-7.	**GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients) 8.G.7 Describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations) 8.G.9 Draw the image of a figure under a reflection over a given line	**N:** All transformational geometry should include work done on the coordinate plane (**8.G.7**). **LP:** **Course 1** 1.1: Patterns in Geometry, pp. 4-17 2.1: Patterns in Fractions, pp. 58-67 5.1: Comparing with Ratios and Rates, pp. 290-301 5.2: Proportions, pp. 308-315 5.3: Similarity and Congruence, pp. 450-463. **LC** *Sir Cumference and The Great Knight of Angleland: A Math Adventure* by Cindy Neuschwander

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WEEK 16	**6.2 Rotation** • To recognize rotation symmetry • To determine the center of rotation, the angle of rotation • To construct the image of a figure under rotation and create a new figure with rotation symmetry *Suggested Per Period Pacing* 73. T&D, p. 273; Investigation 1: D&U:A, pp. 274-275; 74. Investigation 1, D&U:B, pp. 275-276; S&S, p. 276. 75. Investigation 2, D&U:A, pp. 277-278; D&U:B, p. 278; S&S, p. 278. 76. Investigation 3, D&U:A, p. 279; D&U:B, #6, p. 280; D&U:C, p. 281: S&S, p. 281 77. IYOW p. 283, #9; QQ, p. 284 TE;	*For additional practice or homework:* **QR:** 7.3: Symmetry and Transformations, p. 336 **CRM:** pp. 15-23	**GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients) 8.G.7 Describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations) 8.G.8 Draw an image of a figure under rotations of 90 and 180 degrees 8.G.12 Identify the properties preserved and not preserved under reflection, rotation, translation, and dilation	**N:** All transformational geometry should include work done on the coordinate plane (**8.G.7**).

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WEEK 16-17	**6.3 Translations, Dilations, and Combined Transformations** • To translate points and figures given a vector of translation • To determine the vector of translation given a pair of translated figures • To understand how to compose transformations and to analyze the results • To enlarge or shrink diagrams on a coordinate grid by multiplying or dividing coordinates *Suggested Per Period Pacing* 78. T&D, p, 285, Investigation 1, Ex, p. 286; D&U:A, p. 286; D&U:B, p. 287 79. D&U:C, p. 287-288; S&S, p. 288 80. Investigation 2, D&U:A, p. 288-289, #2-4; D&U:B, p. 289; S&S, p. 289 81. Investigation 4, D&U:A, p. 294-295; D&U:B, p. 296-297 82. D&U:C, p. 298; IYOW, #15; p. 303; QQ p. 305 TE	*For additional practice or homework:* **QR:** 7.3: Symmetry and Transformations, p. 337 **CRM:** pp. 24-36	**GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients) 8.G.7 Describe and identify transformations in the plane, using proper function notation (rotations, reflections, translations, and dilations) 8.G.10 Draw the image of a figure under a translation 8.G.11 Draw the image of a figure under a dilation 8.G.12 Identify the properties preserved and not preserved under reflection, rotation, translation, and dilation	**N:** All transformational geometry should include work done on the coordinate plane (**8.G.7**).

Review and Self-Assessment

Suggested Per Period Pacing:

83. Review and Self Assessment, pp. 306-309
84. Continue Review and Test

CRM: MARS Assessment: Patterns, pp. 52-56.

PACING	IMPACT TEXTBOOK		NEW YORK STATE MATHEMATICS STANDARDS	NOTES
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CHAPTER 7: INEQUALITIES & LINEAR SYSTEMS

Algebraic Representation: Coordinate Graphs—Develop; Tables and Graphs—Develop
Algebraic Reasoning: Patterns and Numeric Forms—Develop
Functions and Relations: Linear Expressions/Equations-Develop; Quadratic Expressions/Equations—Develop
Coordinate Geometry: Coordinate Representations—Develop

WEEK 18	Administer Pre-Chapter Seven Assessment **7.1 Equations** • To use algebraic methods to solve equations • To interpret situations mathematically and create equations to represent them • To choose the most appropriate equation-solving method for a particular situation *Suggested Per Period Pacing* 85. T&D, p. 312;, Investigation 1, Ex, p. 313, D&U:A, p. 314; T&D, p. 314; Ex, p. 314; D&U:B, p. 315 86. Investigation 1, D&U:C, p. 315; D&U:D, p. 316; S&S, p. 316 87. Investigation 2: D&U:A, p. 317; D&U:B, p. 318; D&U:C, p. 319. 88. D&U:D, pp. 319-320; D&U:E, pp. 320-321; S&S, p. 321; IYOW, #20, p. 324.	*For additional practice or homework:* **QR:** 6.1: Writing Expressions and Equations, p. 252-258 6.2: Simplifying Expressions, pp. 259-266 **CRM:** pp. 4-9	**NUMBER SENSE AND OPERATIONS** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 8.N.4 Apply percents to: Tax, percent increase/decrease, simple interest, sale price, commission, interest rates, and gratuities 8.N.5 Estimate a percent of a quantity, given an application **MEASUREMENT STRAND** ***Students will determine what can be measured and how, using appropriate methods and formulas.*** 8.M.1 Solve equations/ proportions to convert to equivalent measurements within metric and customary measurement systems. **Note:** Also allow Fahrenheit to Celsius and vice versa	**LP:** **Course 2** 1.1: Variables and Expressions, Investigation 4, pp. 17-20. 6.1: Find A Solution Method, pp. 434-443 6.2: A Model for Solving Equations, pp. 446-454

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WEEK 18-19	**7.2 Inequalities** • To understand and solve inequalities • To graphically represent inequalities *Suggested Per Period Pacing* 89. T&D, p. 325; Investigations 1, D&U:A, p. 326; D&U:B, p. 327-328. 90. Investigation 1, D&U:B, pp. 327-328; S&S, p. 328 91. Investigation 2, D&U:A, pp. 328-329; T&D, pp. 329-330; D&U:B, p. 329; S&S, p. 329 92. Investigation 3, Ex. p. 331, D&U:A, pp. 331-332; D&U:B, p. 332; S&S, p. 333 93. Investigation 4, D&U:A, p. 334; D&U:B, pp. 335-336; S&S, p. 336 94. IYOW, #38, p. 340; QQ, p. 341 TE	*For additional practice or homework:* **QR:** 6.6: Inequalities, pp. 283-287 **CRM:** pp. 10-14	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.1 Translate verbal sentences into algebraic inequalities. 8.A.2 Write verbal expressions that match given mathematical expressions. 8.A.13 Solve multi-step inequalities and graph the solution set on a number line 8.A.14 Solve linear inequalities by combining like terms, using the distributive property, or moving variables to one side of the inequality (include multiplication or division of inequalities by a negative number) **GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.G.19 Graph the solution set of an inequality on a number line	**LP:** **Course 2** 3.1: Adding and Subtracting with Negative Numbers, pp. 126-147 3.2: Multiply and Divide with Negative Numbers 8.3: Recognize Linear Relationships, pp. 417-419 9.3: Solve Equations, pp. 460-468

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WEEK 20-21	**7.3 Solve Systems of Equations** To solve systems of equations by graphically and algebraically *Suggested Per Period Pacing* 95. Ex, p. 342, Investigation 1, D&U:A, pp. 343-344 96. Investigation 1, D&U:B, pp. 344-345; S&S, p. 345 97. Investigation 2, Ex, p. 346, D&U:A, pp. 346-347; D&U:B, pp. 347-348; S&S, p. 348 98. Investigation 3, p. 349; T&D, p. 350; D&U:A, p. 350; D&U:B, p. 351; S&S, p. 351 99. Investigation 4, T&D, p.352; Ex, p. 353; T&D, p. 353; D&U:A, p. 354; 100. Investigation 4: D&U:B, p. 355; S&S, p. 355 101. Inquiry: Investigation 5: pp. 356-360; IYOW, #25, p. 366; QQ, p. 366 TE	*For additional practice or homework:* **QR:** 6.1: Writing Expressions and Equations, pp. 252-258 6.2: Simplifying Expressions, pp. 259-265 6.10: Systems of Equations **CRM:** pp. 15-19	**GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.G.18 Solve systems of equations graphically (only linear, integral solutions, y = mx + b format, no vertical/horizontal lines)	**LP:** **Course 2** 8.3: Recognize Linear Relationships, pp. 417-419 9.3: Solve Equations, pp. 460-468 9.4: Solve Equations with Parentheses, pp. 474-483

Review and Self-Assessment

Suggested Per Period Pacing:

102. Review and Self Assessment, pp. 367-370; Test-Taking practice, p. 371.

103. Continue Review and Test

CRM: MARS Assessment: Making Toys, pp. 33-35

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CHAPTER 8: QUADRATIC & INVERSE RELATIONSHIPS

Algebraic Representation: Coordinate Graphs—Develop; Tables and Graphs—Develop
Algebraic Reasoning: Patterns and Numeric Forms-Develop
Functions and Relations: Quadratic Expressions/Equations-Develop
Coordinate Geometry: Coordinate Representations—Develop

WEEK 21-22	Administer Pre-Chapter Eight Assessment **8.1 Use Graphs & tables to Solve Equations** To use graphs to estimate solutions of equations *Suggested Per Period Pacing* 104. T&D, p. 374; Investigation 1, p. 375; T&D, p. 376; D&U:A, pp. 376-377 105. Investigation 1, D&U:B, p. 377-378; S&S, p. 378 106. Investigation 2: T&D, p. 379; * Ex. p. 380; D&U:A, p. 381-382; D&U:B, p. 382; S&S, p. 382. 107. IYOW, #17, p. 388; QQ, p. 389 TE *Optional use of graphing calculator	*For additional practice or homework:* **QR** 6.7: Graphing on the Coordinate Plane, pp. 288-294 **CRM:** pp. 5-9	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically	**LP:** **Course 1** 8.3: Graph in four Quadrants, pp. 509-524 **Course 2** 8.2: Speed and Slope, pp. 389-401

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WEEK 22-23	**8.2 Quadratic Relationships** • To link quadratic equations to their graphs (parabolas) • To graph quadratic equations in the form $y=ax^2$ and identify the lines of symmetry and vertices • To identify quadratic relationships from graphs, tables, and equations *Suggested Per Period Pacing* 108. E, p.390-391; Investigation 1, p. 391, D&U:A, p. 392. 109 Investigation 1: D&U:A, p. 393; S&S, p. 393; Investigation 2, D&U:A, pp. 394-395. 110. D&U:B, pp. 396-397; S&S, p. 397; IYOW, p. 402, #10; QQ, p. 402 TE	*For additional practice or homework:* **QR:** 6.1: Writing Expressions and Equations, pp. 252-258 6.2: Simplifying Expressions, 259-265 6.3: Evaluating Expressions and Formulas, 267-270 6.7: Graphing on the Coordinate Plane, 288-294 **CRM:** pp. 13-17	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.3 Describe a situation involving relationships that matches a given graph 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically **GEOMETRY Strand** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.G.20 Distinguish between linear and nonlinear equations $ax^2 + bx + c$; a = 1 (only graphically)	**LP:** **Course 1** 8.2: Draw and Label Graphs, pp. 489-502 **Course 2** 8.2: Speed and the Slope Connection, pp. 389-396.

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WEEK 23	**8.3 Families of Quadratics** • To understand the effects of a, b, and c on the graphs of parabolas of the form $y = ax^2 + bx + c$ • To understand the connections between a quadratic equation and its graph. • To solve real world problems involving quadratic and inverse relationships. *Suggested Per Period Pacing* 111. T&D, pp. 403-404, Investigation 1, D&U:A, pp. 404-405 112. Investigation 1, D&U:B, p. 406; S&S, pp. 406-407 113. Investigation 2, p. 407, D&U:A, p. 408; [Suggested: D&U:B, p. 409; S&S, p. 409] 114. Investigation 3, D&U:A, pp. 410-411; [Suggested:D&U:B, pp. 411-412*; S&S, p.412] 115. [Suggested: Investigation 4; Inquiry Investigation 5*, pp. 416-417] *Graphing calculator suggested	*For additional practice or homework:* **QR:** 6.1: Writing Expressions and Equations, 252-258 6.2: Simplifying Expressions, pp. 259-265 6.3: Evaluating Expressions and Formulas, pp. 267-270 6.7: Graphing on the Coordinate Plane, pp. 288-294	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.3 Describe a situation involving relationships that matches a given graph 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically **GEOMETRY Strand** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.G.21 Recognize the characteristics of quadratics in tables, graphs, equations, and situations	**LP:** **Course 3** 1.2: Slope, pp. 24-30 1.3: Write Equations, pp. 35-52

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WEEK 24	**8.4 Inverse Variation** • To understand the relationship between x and y in equations of the form $xy = a$, where a is a constant • To graph equations of the form $xy = a$ or $y = a/x$, where a is a constant, and to describe the behavior of y when x gets close to 0 or far from 0 • To understand the connection between inverse proportions and reciprocals *Suggested Per Period Pacing* 116. Ex, pp. 428-429; Investigation 1, D&U:A, p. 430; D&U:B, p. 431. 117. D&U:C, pp. 431-432; S&S, p. 432 118. Investigation 2, T&D, p.433; D&U:A, pp. 433-434; D&U:B, pp. 434-435; D&U:C, p. 435; S&S, p. 436 119. [Suggested: Investigation 3: T&D, pp. 437-438, D&U:A, pp. 438-439; S&S, p. 439}	*For additional practice or homework:* **QR:** 6.1: Writing Expressions and Equations, pp. 252-258 6.2: Simplifying Expressions, pp. 259-265 6.3: Evaluating Expressions and Formulas, pp. 267-270 6.5: Ratio & Proportion, pp. 279-282 **CRM:** pp. 23-28	**ALGEBRA STRAND** ***Students will recognize, use, and represent algebraically patterns, relations, and functions.*** 7.A.10 Write an equation to represent a function from a table of values (MAY–JUNE IN GRADE 7) 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically	**LP:** **Course 1** 9.1: Understand Equations, pp. 534-540 **Course 3** 1.3: Write Equations, pp. 35-52

Review and Self-Assessment

Suggested Per Period Pacing:

120. Review and Self Assessment, pp. 459-463; Test-Taking practice, p. 463.
121. Test

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CHAPTER 9: SOLVE QUADRATIC EQUATIONS

Algebraic Representation: Tables and Graphs—Apply
Algebraic Reasoning: Patterns and Numeric Forms—Apply; Properties and Rules—Apply
Functions and Relations: Linear Expressions/Equations—Apply

WEEK 25				
	Administer Pre-Chapter Nine Assessment **9.1 Backtracking** • To backtrack to undo taking the square root of a number, to undo taking the reciprocal of a number, and to undo changing the sign of a number • To use backtracking to find solutions to equations with powers and square roots • To understand that some equations have more than one solution *Suggested Per Period Pacing* 122. Investigation 1, T&D, p. 466; D&U:A, pp. 467-469; D&U:B, p. 469; S&S, p. 469 123. Investigation 2, T&D, p. 470; D&U:A, pp. 470-471; 124. D&U:B, p. 472; S&S, p. 472; IYOW, #23, p. 475; QQ, p. 475 TE	*For additional practice or homework:* **QR** 3.1: Powers & Exponents, pp. 146-155 6.4: Solving Linear Equations, pp. 271-278 **CRM:** pp. 4-8	**ALGEBRA STRAND** ***Students will recognize, use, and represent algebraically patterns, relations, and functions*** 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically	**LP:** **Course 1** 9.2: Backtracking, pp. 546-554 **Course 2** 9.1: Find a Solution Method, pp. 436-443 9.2: A Model for Solving Equations, pp. 446-454. 9.3: Solve Equations, pp. 460-468 9.4: Solve Equations With Parenthesis, pp. 474-483. **Course 3** 5.2: Monomials, binomials, and Trinomials, pp. 224-256 5.3: Special Products, pp. 244-249 8.2: Quadratic Relationships, pp. 390-397 8.3: Families of Quadratics, pp. 403-417 7.1: Equations, 312-321

PACING	IMPACT TEXTBOOK D&U: Develop & Understand E: Explore Ex: Example IYOW: In Your Own Words PS: Problem Set QQ: Quick Quiz S&S: Share and Summarize	QR: Quick Review Math Handbook CRM: Chapter Resource Masters INRJ: Investigation Notebook and Reflection Journal	NEW YORK STATE MATHEMATICS STANDARDS	NOTES N: Notes LP: Links to the Past LC: Literature Connections CC: Computer Connections
WEEK 26	**9.2 Factoring** • To use geometric models to represent the factoring of polynomials • To solve quadratic equations in factored form • To solve quadratic equations by factoring the difference of two squares and perfect square trinomials • To solve quadratic equations by factoring quadratic trinomials *Suggested Per Period Pacing* 125. T&D, p, 476, Investigation 1, pp. 476-477; D&U:A, p. 477; S&S, p. 477. 126. Investigation 2, T&D, p. 478; D&U:A, p. 478; T&D, p. 479 127. D&U:B, p. 480; S&S, p. 480; Investigation 3, Ex, p. 481; D&U:A, p. 482. 128. T&D, p. 483; D&U:B, p. 483; S&S, p. 484; Investigation 4, T&D, p. 484; D&U:A, p. 485 129. D&U:A, p. 486; S&S, p. 486; IYOW, #18, p. 487; QQ, p. 491 TE	*For additional practice or homework:* **QR:** 3.4: Laws of Exponents, pp. 167-171 6.2: Simplifying Expressions, pp. 259-266 **CRM:** pp. 9-13	**ALGEBRA STRAND** ***Students will represent and analyze algebraically a wide variety of problem solving situations.*** 8.A.5 Estimate a percent of a quantity, given an application 8.A.10 Factor algebraic expressions using the GCF 8.A.11 Factor a trinomial in the form $ax^2 + bx + c$; a = 1 and c having no more than 3 sets of factors	**LP:** **Course 3** 5.2: Monomials, binomials, and Trinomials, pp. 224-256 5.3: Special Products, pp. 244-249

Review and Self-Assessment

Suggested Per Period Pacing:

130. Test Review

131. Test 9.1 and 9.2

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CHAPTER 10: FUNCTIONS AND THEIR GRAPHS

Algebraic Representation: Coordinate Graphs—Apply; Tables and Graphs—Apply

Algebraic Reasoning: Patterns and Numeric Forms-Apply; Properties and Rules—Apply

Functions and Relations: Linear Expressions/Equations—Apply ; Quadratic Expressions/Equations—Apply; Exponential Expressions/Equations-Apply; Rational Expressions/Equations—Apply

Coordinate Geometry: Coordinate Representation—Apply

WEEK 27-28

Administer Pre-Chapter Ten Assessment

10.1 Functions & Their Graphs

- To understand the definition of a function
- To understand different ways of representing functions
- To identify functions in a variety of contexts and representations
- To describe the domain of a given function
- To find the maximum or minimum value of a function from its graph

Suggested Per Period Pacing

132. pp.524-525; T&D, p. 525; Investigation 1, D&U:A, p. 526; D&U:B, p. 527; D&U:C, p. 527; S&S, p. 528

133. Investigation 2, D&U:A, p. 529; D&U:B, p. 529-530.

134. Ex, p. 530; D&U:C, p. 531; T&D, p. 532; D&U:D, p. 532; S&S, p. 532

(continued)

For additional practice or homework:

QR

6.3: Evaluating Expressions and Formulas, pp. 267-270

6.4: Solving Linear Equations, pp. 271-278

6.7: Graphing on the coordinate Plane, pp. 288-294

CRM:

pp. 3-9

ALGEBRA STRAND

Students will represent and analyze algebraically a wide variety of problem solving situations.

8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically and graphically

8.A.17 Define and use correct terminology when referring to function (domain and range)

8.A.18 Determine if a relation is a function

8.A.19 Interpret multiple representations using equation, table of values and graph

LP:

Course 1

3.3: Variables and Rules, pp. 143-165

Course 2

7.3: The Pythagorean Theorem, pp. 343-354

1.2: Expressions and Formulas, pp. 30-42.

8.1: Rates, pp. 368-381.

Course 3

8.2: Quadratic Relationships, pp. 390-397

8.2: Families of Quadratics, pp. 403-417

7.3: Solving Systems of Equations, pp. 342-360.

6.3: Translations Dilations, and Combined Transformations, pp. 285-298

9.1: Backtracking, pp. 466-472.

9.2: Factoring, pp. 476-486

(continued)

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WEEK 27-28 (continued)	135. Investigation 3, D&U:A, p. 533; D&U:B, p. 534; S&S, p. 535 136. Investigation 4, D&U:A, p. 536; D&U:B, p. 537; S&S; p. 537 137. Inquiry Investigation 5, pp. 538-539; IYOW, #24, p. 545; QQ, p. 549 TE			**LC:** *The Parrot's Theorem: A Novel* by Denis Guedj

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WEEK 28-29	**10.2 Graphs of Functions** • To understand how horizontal and vertical translations of a graph are related to the equation of a function • To specify the range of a function and understand the relationship between the range of a function and its maximum or minimum point • To use *x*-intercepts and completing the square to find the line of symmetry and vertex of a parabola • To use graphs to find approximate solutions to equations *Suggested Per Period Pacing* 138. T&D, p. 551; Investigation 1, D&U:A, p. 551; D&U:B. p. 552. 139. D&U:C, p. 552; S&S, p. 553 140. T&D, p. 554; D&U:A, p. 555; Ex, p. 555; D&U:B, pp. 556-557; D&U:C, p. 558 141. Investigation 3, T&D, p. 558; D&U:A, p. 559; Ex, p. 559; D&U:B, p. 560; S&S, p.560 142. Investigation 4, Ex, p.561; D&U:A, p. 562; D&U:B, pp. 562-563; 143. D&U:C, p. 563; S&S, p. 563; IYOW, #47, p. 571	*For additional practice or homework:* **QR:** 6.7: Graphing on the coordinate Plane, pp. 288-294 **CRM:** pp. 10-15	**GEOMETRY Strand** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 8.G.20 Distinguish between linear and nonlinear equations $ax^2 + bx + c$; a =1 (only graphically) 8.G.21 Recognize the characteristics of quadratics in tables, graphs, equations, and situations	

Review and Self-Assessment

Suggested Per Period Pacing:

144. Review and Self Assessment, pp. 572-575; Test-Taking practice, p. 575.

145 Continue Review and Test

CRM: MARS Assessment: Functions, pp. 31-35

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CHAPTER 11: DATA & PROBABILITY

Probability: Basic Concepts and Rules—Develop; Counting Methods—Develop; Experiments and Simulations—Develop

WEEK 30

Administer Pre-Chapter Eleven Assessment

11.1 Counting Strategies

- To understand the concept of a sample space and it's application to probability
- To list the outcomes of sample spaces using strategies that guarantee no outcome will be left out
- To use a pattern or shortcut to find the size of a sample space without listing every outcome
- To create sample spaces with equally likely outcomes for games of chance involving dice

Suggested Per Period Pacing

146. T&D, p.578; Inquiry Investigation 1, pp. 579-580
147. Investigation 2, D&U:A, p. 581; D&U:B, p. 582; D&U:C, p. 583;
148. Ex, p. 583; D&U:D, p. 584; S&S, p. 584
149. Investigation 3, T&D, p. 585; D&U:A, p. 586; Ex, p. 587; D&U:B, pp. 587-588; S&S, p. 588

(continued)

For additional practice or homework:

QR:
4.5: Combinations and Permutations, pp. 213-220
4.6: Probability, pp. 221-231

CRM:
pp. 3-8

NUMBER SENSE AND OPERATION STRAND

A.N.7 Determine the number of possible events, using counting techniques or the Fundamental Principle of Counting

A.N.8 Determine the number of possible arrangements (permutations) of a list of items.

STATISTICS AND PROBABILITY STRAND

Students will understand and apply concepts of probability.

A.S.19 Determine the number of elements in a sample space and the number of favorable events.

A.S.22 Determine, based on calculated probability of a set of events, if:

- some or all are equally likely to occur.
- one is more likely to occur than another.
- whether or not an event is certain to happen or not to happen.

Note: These concepts are introduced in Grade 8 to prepare students for later mastery.

LP:
Course 1
10.3: The Language of Chance, pp.
10.4: Making Matches, pp.

Course 2
6.1: Dependence, pp .
6.2: Making Predictions, pp.

LC:
Conned Again Watson! Cautionary Tales of Logic, Math and Probability
by Colin Bruce

Visual Patterns in Pascal's Triangle
by Dale Seymour

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WEEK 30 (continued)	150. Investigation 4, T&D, p. 589, D&U:A, p. 589; D&U:B, p. 590; D&U:C, p. 560; S&S, p. 591 151. Investigation 5, D&U:A, p. 592-593; D&U:B, p. 594, IYOW, #15, p. 600; QQ, p. 601 TE			

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WEEK 31-32	**11.2 Modeling with Data** • To sort and organize data appropriately • To construct and interpret box-and-whisker plots *Suggested Per Period Pacing* 152. T&D, p. 602; Investigation 1, D&U:A, pp. 603-604 153. Investigation 1, D&U:B, p. 604; S&S, p. 604 154. Investigation 2, T&D, p. 605; D&U:A, pp. 605-606. 155. D&U:B, p. 606; D&U:C, p. 607 156. Investigation 3, D&U:A, p. 609; D&U:B, p. 610; D&U:C, p. 611; 157. D&U:D, pp. 611-612; S&S, p. 612; IYOW, #15, p. 621; QQ, p. 621 TE	*For additional practice or homework:* **QR:** 4.1: Collecting Data, pp. 176-181 4.2: Displaying Data, pp. 182-192 4.3: Analyzing Data, pp. 193-200 **CRM:** pp. 9-17	**ALGEBRA STRAND** ***Students will recognize, use, and represent algebraically patterns, relations, and functions.*** 8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically. **GEOMETRY STRAND** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.15 Graph a line using a table of values **STATISTICS AND PROBABILITY STRAND** ***Students will collect, organize, display, and analyze data.*** A.S.4 Compare and contrast the appropriateness of different measures of central tendency for a given data set. A.S.7 Create a scatter plot of bivariate data. A.S.8 Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line. A.S.10 Evaluate published reports and graphs that are based on data by considering: experimental design, appropriateness of the data analysis, and the soundness of the conclusions. *(continued)*	**LP:** **Course 1** 10.1: Data displays, pp. 10.2: Collect and Analyze Data, pp. **Course 2** 6.3: Data Graphs, pp.

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WEEK 31-32 (continued)			***Students will make predictions that are based upon data analysis.*** A.S.16 Recognize how linear transformations of one-variable data affect the data's mean, median, mode and range. **Note:** These concepts are introduced in Grade 8 to prepare students for later mastery.	

Review and Self-Assessment

Suggested Per Period Pacing:

158. Review and Self Assessment, pp. 622-625; Test-Taking practice, p. 625.

159. Continue Review and Test CRM: MARS Assessment: Temperatures, pp. 35-39

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CHAPTER 12: ALGEBRAIC FRACTIONS

Algebraic Reasoning: Patterns and Numeric Forms—Apply; Properties and Rules—Apply
Functions and Relations: Rational Expressions/Equations—Apply
Number and Number Sense:Whole Numbers—Apply
Rationals and Irrationals-Fraction and Decimal Concepts—Apply
Algorithms and Operations-Fractions—Apply

WEEK 33				
	Administer Pre-Chapter Twelve Assessment **12.1 Work with Algebraic Fractions** • To understand when the denominator of an algebraic fraction is undefined • To understand how the graph and the table of an equation with an algebraic fraction show values for which the equation is undefined • To simplify algebraic fractions • To multiply and divide algebraic fractions *Suggested Per Period Pacing* 160. T&D, p. 628; Investigation 1, D&U:A, p. 629; D&U:B, pp. 630-631; S&S, p. 631 161. Investigation 2, T&D, p.631-632; Ex, p. 632; D&U:A, p. 622; D&U:B, p. 633. 162. S&S, p. 634; IYOW, #27, p. 638	*For additional practice or homework:* **QR** 2.1: Fractions, pp. 94-99 6.1: Writing Expressions, pp. 252-258 6.2: Simplifying Expressions, pp. 259-266 **CRM:** pp. 3-7	**ALGEBRA STRAND** ***Students will perform algebraic procedures accurately.*** 8.A.8 Multiply a binomial by a monomial or a binomial (integer coefficients). 8.A.9 Divide a polynomial by a monomial (integer coefficients). **Note:** The degree of the denominator is less than or equal to the degree of the numerator for all variables. A.A.16 Simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms. A.A.17 Add or subtract fractional expressions with monomial or like binomial denominators. A.A.18 Multiply and divide algebraic fractions and express the product or quotient in simplest form. **Note:** The New York State Standards places these concepts in integrated algebra. (These concepts are introduced in Grade 8 to prepare students for later mastery *(continued)*	**LP:** **Course 2** **10.** **Course 3** **8.** **LC:** *Great Math Stories and The Problems They Present* by Kozoil Haver

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WEEK 33 (continued)			**GEOMETRY STRAND** ***Students will apply coordinate geometry to analyze problem solving situations.*** 8.G.15 Graph a line using a table of values	

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WEEK 33-34	**12.2 Work with Algebraic Fractions** • To add and subtract algebraic fractions using common denominators • To use the graphs of equations containing algebraic fractions to estimate solutions • To solve equations containing algebraic fractions *Suggested Per Period Pacing* 163. T&D, p. 639; Investigation 1, D&U:A, pp. 639-640; Ex, p. 640; 164. D&U:B, p. 641; S&S, p. 641 165. Investigation 2, D&U:A, p. 642; Ex, p. 643; D&U:B, p. 643; Ex, p. 644; 166. D&U:C, pp. 644-645; S&S, p. 645 167. Inquiry Investigation 3, pp. 646-647 168. Investigation 4, T&D, p. 648; D&U:A, p. 648; Ex, p. 649. 169. D&U:B, p. 650; S&S, p. 650; IYOW, #45, p. 654; QQ, p. 654 TE	*For additional practice or homework:* **QR** 2.2: Operations with Fractions, pp. 100-109 6.2: Simplifying Expressions, pp. 259-266	**ALGEBRA STRAND** ***Students will perform algebraic procedures accurately.*** A.A.16 Simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms. A.A.17 Add or subtract fractional expressions with monomial or like binomial denominators. A.A.18 Multiply and divide algebraic fractions and express the product or quotient in simplest form. **Note:** The New York State Standards places these concepts in integrated algebra. (These concepts are introduced in Grade 8 to prepare students for later mastery	**LP:** **Course 2** 9.1: Find a Solution Method, pp. 436-439 9.3: Solve Equations, pp. 460-465. 9.4: Solve Equations with Parentheses, pp. 474-483

Review and Self-Assessment

Suggested Per Period Pacing:

170. Review and Self Assessment, pp. 655-656; Test-Taking practice, p. 657.

171. Continue Review and Test

CRM: MARS Assessment: Equations With Fractions, pp. 28-30

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	9.3 Completing the Square *(optional)* • To solve equations of the form $a(x + b)^2 + c = d$ • To identify perfect square trinomials • To complete quadratic expressions to make them perfect squares • To solve quadratic equations by completing the square *Suggested Per Period Pacing* • {Optional T&D, p.492; Investigation 1, Ex, p. 493; D&U:A, p. 493; D&U:B, p. 494; D&U:C, p. 495; S&S, p. 495} • {Optional Investigation 2, Ex, p. 495; D&U:A, p. 496; D&U:B, p. 496; D&U:C, p. 497; S&S, p. 497; IYOW, #34, p. 501; QQ, p. 501 TE}	*For additional practice or homework:* **QR** 3.2: Square & Cube Roots, pp. 156-160		**LP:** **Course 2** 1.3: The Distributive Property, pp. 53-62

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	9.4 The Quadratic Formula (*optional*) • To understand when the quadratic formula is appropriate to solve equations and when factoring is appropriate • To understand how to apply the quadratic formula to specific situations • To understand the significance of $b^2 - 4ac$ in the quadratic formula *Suggested Per Period Pacing* • {Optional: T&D, p. 503; Investigation 1, D&U:A, p. 503-504; D&U:B, p. 504; S&S, p. 504} • {Optional: Investigation 2, D&U:A, pp. 505-506; D&U:B, pp. 506-507; S&S, p. 507} • {Optional: Investigation 3, T&D, p. 508; D&U:A, pp. 508-509; D&U:B, p. 509; S&S, p. 510} • {Optional: Investigation 4, pp. 511-514; IYOW, #20, p. 517} • Quiz – Lessons 9.3 and 9.4	*For additional practice or homework:* **QR** 3.2: Square & Cube Roots, pp. 156-160		