A Comprehensive Approach to Balanced Mathematics

MATHEMATICS PLANNING FOR SIXTH GRADE
2010 Edition

6

NYC

Department of Education

Joel I. Klein
Chancellor

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.

grade 6

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*
MARS: *Mathematics Assessment Resource Service*

NEW YORK STATE MATHEMATICS STANDARDS

NOTES
N: *Notes*
LP: *Links to the Past*
LC: *Literature Connections*
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CHAPTER 1: POLYGONS, ANGLES AND CIRCLES

Algebraic Representation: Tables and Graphs-Develop
Algebraic Reasoning: Patterns and Numeric Forms—Develop; Properties and Rules—Develop
Two Dimensional Shapes: Polygons, Quadrilaterals, Triangles—Develop
Measurement: Perimeter and Area-Develop;

WEEK 1

Administer Pre-Chapter One Assessment.
1.1 Patterns in Geometry
Identifying, naming, and classifying polygons.

Suggested Per Period Pacing:
1. E, p. 4; Investigation 1: T&D, p. 4-5; Ex, p. 6; D&U:A, p.7; S&S, p. 8.
2. Investigation 2: T&D, p. 10; D&U:A, p. 10; D&U: B, p. 11; S&S, p. 11
3. Investigation 3: T&D, p. 13; D&U:A pp.14-15; S&S, p. 15.
4. Investigation 4: Inquiry, pp. 16-17
5. IYOW, p. 23, #25; QQ, p. 23 TE

Note: The recommended pacing is based on the mandated 375 minutes or seven to eight 45-60 minute periods per week.

CRM
Course Pretest, p. 41
Chapter 1 Pretest, p. 44-47

For additional practice or homework:

QR
6.1: Naming and Classifying Angles and Triangles, pp. 257-8; 261
6.2: Naming and Classifying Polygons and Polyhedrons, pp. 264-268

CRM:
pp. 16-20

ALGEBRA STRAND
STATISTICS AND PROBABILITY

Collection of Data
Students will collect, organize, display, and analyze data.
6.S.3   Construct Venn diagrams to sort data (MAY-JUNE IN GRADE 6).

Geometric Relationships
Students will identify and justify geometric relationships, formally and informally.
5.G.6   Classify triangles by properties of their angles and sides.
5.G.7   Know that the sum of the interior angles of a triangle is 180 degrees.
5.G.8   Find a missing angle when given two angles of a triangle.

Transformational Geometry
Students will apply transformations and symmetry to analyze problem solving situations.
5.G.11 Identify and draw lines of symmetry of basic geometric shapes.

LP:
Everyday Math, Grade 5
3.7: Properties of Polygons.
3.9: Angles of Polygons.

CC:
www.learner.org/channel/courses/learningmath/geometry/session2/index.html

LC:
Measurement Mania
by Lynette Long

Measuring Penny
by Loreen Leedy

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grade 6

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WEEK 2	**1.2 Angles** Measuring angles and drawing angles with given measures. *Suggested Per Period Pacing:* 6. T&D, p. 24; Investigation 1:T&D, pp. 26-27; D&U:A, p.28. 7. Ex, p. 28; D&U: B,p. 29; S&S, p. 29 8. Investigation 2: D&U:A, p. 30; T&D, p. 31; D&U:B, p. 31; T&D, p. 32; D&U:C, p. 33-34; S&S, p. 34 9. IYOW, p. 39, #24; QQ, pp. 39 TE	*For additional practice or homework:* **QR** 6.1: Naming and Classifying Angles and Triangles, pp. 256-262. **Skills Intervention for Middle School** Skill 42: Classifying Angles, **CRM:** p. 28-32	**Problem Solving Strand** *Students will apply and adapt a variety of appropriate strategies to solve problems.* 6.PS.11 Translate from a picture/diagram to a number or symbolic expression. 6.PS.13 Model problems with pictures/diagrams physical objects. **ALGEBRA STRAND** *Students will recognize, use, and represent algebraically patterns, relations, and functions.* 7.A.9 Build a pattern to develop a rule for determining the sum of the interior angles of polygons. **GEOMETRY STRAND** *Students will identify and justify geometric relationships, formally and informally.* 7.G.7 Find a missing angle when given angles of a quadrilateral. **Note:** These concepts are introduced in Grade 6 to prepare students for later mastery. 8.G.1 Identify pairs of vertical angles as congruent. 8.G.6 Calculate the missing angle measurements when given two intersecting lines and an angle. **Note:** These concepts are introduced in Grade 6 to prepare students for later mastery.	**LP:** **Everyday Math, Grade 5** 3.3: Exploring Angle Measures. 3.4: Using a Protractor. 3.7: Properties of Polygons. 3.9: Angles of Polygons. **CC:** Sum of Interior angles of a triangle and polygon: video 3; www.learner.org/resouces/series 176.html#

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WEEK 3	**1.3 Measure Around** • Finding and estimating perimeters. • Understanding pi and the formula for the circumference of a circle. *Suggested Per Period Pacing:* 10. T&D, p. 40; Investigation 1: D&U:A, pp. 40-41 11. Investigation 1: D&U: B, p. 42; Ex, p. 43; D&U:C, p. 43; S&S, p.44. 12. Investigation 2:T&D, p. 386; D&U:A, p. 45; * D&U:B, p. 47; S&S, p. 47. 13. IYOW, p.51, # 15; QQ, p. 51 TE **Note:** When determining the value of formulas that involve π, use the π key on the calculator, or write the answer in terms of π. *Scientific calculator is suggested.	*For additional practice or homework:* **QR** 6.4: Perimeter, p. 278 6.8: Circles, p. 295-298 *Standardized test review:* **QR** 7.1: Systems of Measurement, p. 304 7.6: Size and Scale, pp. 319-321 **Skills Intervention for Middle School** Skill 46: Circumference of Circles Skill 48: Area of Circles **CRM:** pp. 35-39.	**PROBLEM SOLVING STRAND** *Students will solve problems that arise in mathematics and in other contexts.* 6.PS.6 Translate from a picture/diagram to a numeric expression. *Students will apply and adapt a variety of appropriate strategies to solve problems.* 6.PS.11 Translate from a picture/diagram to a number or symbolic expression. 6.PS.13 Model problems with pictures/diagrams physical objects. 6.PS.15 Make organized lists or charts to solve numerical problems. **ALGEBRA STRAND** *Students will perform algebraic procedures accurately.* 6.A.2 Use substitution to evaluate algebraic expressions (may include exponents of one, two and three 6.A.6 Evaluate simple proportions within context. *(continued)*	**Note:** Additional work needs to be included to practice determining the perimeter of a figure when the figure is located on the coordinate graph.

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WEEK 3 (continued)			**GEOMETRY STRAND** *Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes* 6.G.5 Identify radius, diameter, chords and central angles of a circle. 6.G.6 Understand the relationship between the diameter and radius of a circle. 6.G.7 Determine the area and circumference of a circle, using the appropriate formula. 6.G.9 Understand the relationship between the circumference and the diameter of a circle.	

Review and Self-Assessment

Suggested Per Period Pacing:

14. Review and Self-Assessment, pp. 52-55

15. Chapter 1 Test. (CRM, pp. 48-55)   **CRM:** MARS Performance-Based Assessment, Merritt Bakery, pp. 61-63

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CHAPTER 2: FRACTIONS AND DECIMALS

Numbers and Number Sense: Whole Numbers, Signed Numbers—Develop
Rationals and Irrationals: Fractions and Decimal Concepts—Develop
Algorithms and Operations: Fractions, Decimals—Review & Extend
Algebraic Reasoning: Patterns and Numeric Forms—Develop

| WEEK 4 | Administer Pre-Chapter Two Assessment.
2.1 Patterns in Fractions
Finding equivalent fractions and comparing fractions.

Suggested Per Period Pacing:
16. Ex, p. 58; Investigation 1: D&U:A, p. 59; Ex, p. 59; D&U:B, p. 60; S&S, p. 60.
17. Investigation 2: D&U; A, p. 61; T&D, p. 62; D&U: B, p. 63; S&S, p. 63.
18. Investigation 3: D&U: A, p. 64; T&D, p. 65; D&U:B, p. 65; S&S, p. 65
19. Investigation 4: T&D, p. 66, D&U:A, pp. 66-67; T&D, p. 67; D&U:B, p. 67, S&S, p. 67.
20. IYOW, p. 73, #47; QQ, p.73 TE. | **CRM:**
Chapter 2 pretest, p. 30-33

For additional practice or homework:

Skills Intervention Workbook
Skill 21: Simplifying Fractions
Skill 22: Mixed Numbers and Improper Fractions

QR
2.1: Fractions and Equivalent Fractions, p. 96-100
2.2: Comparing and Ordering Fractions, p. 108
2.3: Addition and Subtraction of Fractions, p. 110-115

CRM:
pp. 4-8 | **REPRESENTATION STRAND**
Students will use representations to model and interpret physical, social, and mathematical phenomena.
6.R.7   Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board).

NUMBER SENSE AND OPERATIONS STRAND
Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.
6.N.7   Express equivalent ratios as a proportion.
6.N.14 Locate rational numbers on a number line (including positive and negative).
6.N.15 Order rational numbers (including positive and negative). | **LP:**
Everyday Math, Grade 5
5.4: Two Rules for Finding Equivalent Fractions.
8.1: Comparing Fractions.

LC:
The Grapes of Math: Mind Stretching Math Riddles
by Greg Tang

Sideways Arithmetic from Wayside School
by Louis Sachar |

grade 6

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WEEK 4 (continued)			***Students will understand meanings of operations and procedures, and how they relate to one another.*** 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100) ***Students will compute accurately and make reasonable estimates.*** 6.N.27 Justify the reasonableness of answers using estimation (including rounding).	

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WEEK 5	**2.2 Patterns in Decimals** Understanding and comparing decimals. *Suggested Per Period Pacing:* 21. E, p. 74; Investigation 1: Ex, p. 75; D&U:A, p. 76; 22. Investigation 1: D&U:B, p. 77; D&U:C, pp. 78-79; S&S, p. 79. 23. Investigation 2:T&D, p. 79; D&U:A, pp. 80-81; S&S, p. 81. 24. Investigation 3: Inquiry, pp. 82-83; IYOW, p. 85, #27. 25. QQ, p. 87 TE.	*For additional practice or homework:* **Skills Intervention Workbook** Skill 1: Large Numbers Skill 15: Multiplying by Powers of Ten Skill 16: Dividing by Powers of Ten **QR:** 2.5: Naming and Ordering Decimals, pp. 123-128 7.2: Length and distance, p. 309. *Standardized test review:* **Skills Intervention Workbook** Skill 58: Metric Units of Measure. Skill 59: Customary Units of Measure. **CRM:** pp. 12-16	**PROBLEM SOLVING STRAND** *Students will apply and adapt a variety of appropriate strategies to solve problems.* 6.PS.12 Use trial and error and the process of elimination to solve problems. **NUMBER SENSE AND OPERATION STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.1 Read and write whole numbers to trillions. 6.N.14 Locate rational numbers on a number line (including positive and negative). 6.N.15 Order rational numbers (including positive and negative). *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents, 0 to 100).	**LP:** **Everyday Math, Grade 5** 5.5: Fractions and Decimals, Part 1 5.6: Fractions and Decimals, Part 2 5.7: Fractions and Decimals, Part 3.

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WEEK 6-7	**2.3 Fraction and Decimal Equivalents** Converting decimals to fractions and fractions to decimals. *Suggested Per Period Pacing:* 26. T&D, p.88; Investigation 1: D&U:A, pp. 88-90: D&U:B, pp. 90-91; S&S, p. 91. 27. Investigation 2: D&U:A, pp. 91-92; D&U:B, pp. 92-93; S&S, p. 93. 28. Investigation 3: T&D, p. 94; Ex, p. 93 D&U:A, pp. 94-95; T&D, p. 95; D&U:B, p. 96; S&S, p. 97 29. Investigation 4: D&U:A, pp. 97-98; D&U:B, p. 99; S&S, p. 99. 30. IYOW, p. 102, # 34; QQ, p. 104 TE.	*For additional practice or homework:* **Skills Intervention Workbook** Skill 24: Changing Fractions to Decimals **QR** 2.1: Fractions and Equivalent Fractions, p. 97 2.9: Fraction, Decimal, and Percent Relationships, p. 147, 149, 151. **CRM:** pp. 20-24.	**NUMBER SENSE AND OPERATIONS STRAND** ***Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.*** 6.N.14 Locate rational numbers on a number line (including positive and negative). 6.N.15 Order rational numbers (including positive and negative). ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 6.N.20 Represent fractions as terminating or repeating decimals. 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents, 0 to 100). ***Students will compute accurately and make reasonable estimates.*** 6.N.22 Evaluate numerical expressions using order of operations (may Include exponents of two and three)	**LP:** **Everyday Math, Grade 5** 5.5: Fractions and Decimals: Part 1. 5.6: Fractions and Decimals: Part 2. 5.7: Fractions and Decimals: Part 3.

Review and Self-Assessment
Suggested Per Period Pacing:
31. Review & Self-Assessment, pp. 105-107.
32. Chapter 2 Test.   CRM: MARS Assessment: Teaching with Purpose: Sports Results pp. 49-52

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CHAPTER 3: PATTERNS, NUMBERS, AND RULES

Algebraic Reasoning: Patterns and Numeric Forms—Develop; Properties and Rules-Develop
Algebraic Representation: Tables and Graphs—Develop
Functions and Relations: Linear Expressions & Equations-Develop;
Two-Dimensional Shapes: Polygons—Develop
Measurement: Perimeter and Area—Develop
Numbers and Number Sense: Whole Numbers, Signed Numbers—Develop; Exponents and Roots-Develop
Algorithms and Operations: Fractions—Review & Extend
Data Analysis: Modeling and Analysis—Develop

WEEK 7		CRM:	NUMBER SENSE AND OPERATION STRAND	LP:
	<u>Administer Pre-Chapter Three Assessment.</u> **3.1 Number Sense** *Suggested Per Period Pacing:* 33. T&D, p. 110, *Investigation 1: T&D, p. 111; D&U A, pp. 111-112; T&D, p. 112; D&U, pp. 112-113; S&S, p. 113. 34. Investigation 2: D&U:A, p. 114; D&U:B, p. 115; D&U: C, pp. 115-116; S&S, p. 116. 35. IYOW, p. 119; QQ, p. 119 *Scientific calculator is suggested.	**CRM:** Chapter 3 pretest, p. 30-33 *For additional practice or homework:* **QR** 1.1: Place Value of Whole Numbers, p. 68 3.1: Powers and Exponents, p. 158. **Skills Intervention for Pre-Algebra** Skill 54: Metric Units of Measure, pp. 107-108. **CRM:** p. 6-10.	**NUMBER SENSE AND OPERATION STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.1 Read and write whole numbers to trillions. *Students will understand meanings of operations and procedures, and how they relate to one another* 6.N.23 Represent repeated multiplication in exponential form 6.N.24 Represent exponential form as repeated multiplication	**LP:** **Everyday Math, Grade 5** 1.7: Square Numbers 1.8: Unsquaring Numbers 1.9: Factor Strings **LP:** **Course 1** 2.2: Patterns in Decimals, pp. 74-87 **LC:** *How Much is a Million* by David Schwartz. *If You Made a Million* by David Schwartz.

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WEEK 8				
	3.2 Patterns Recognizing, describing, and extending numeric and visual patterns. *Suggested Per Period Pacing:* 36. Explore, p.120; Investigation 1: D&U:A, pp. 121-122; T&D, p. 126; 37. D&U:B, pp. 123-125; S&S, p. 125. 38. *Investigation 2: D&U:A, p. 127; D&U:B, p. 128; D&U:C, p. 129; S&S, p. 129 39. *Investigation 3: T&D, p. 130; D&U:A, pp. 130-131; D&U:B, pp. 131-132; S&S, p. 132. 40. Investigation 4: Ex, p. 133; D&U:A, p. 134; T&D, p. 134; D&U:B, p. 135; S&S, p. 135 41. IYOW, p. 139, #41; QQ, p. 142 TE *Scientific calculator is suggested.	*For additional practice or homework:* **QR** 1.3: Order of operations, p. 76 1.4: Factors and Multiples, pp. 78-80 **Skills Intervention Workbook** pp. 175-176. **CRM:** pp. 11-15	**NUMBER SENSE AND OPERATION STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.4 Define and identify the identity and inverse properties of addition and multiplication. *Students will understand meanings of operations and procedures, and how they relate to one another* 6.N.22 Evaluate numerical expressions using order of operations (may include exponents of two and three) 6.N.23 Represent repeated multiplication in exponential form 6.N.25 Evaluate expressions having exponents where the power is an exponent of one, two, or three. **GEOMETRY STRAND** *Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes* 6.G.2 Determine the area of triangles and quadrilaterals (squares, rectangles, rhombi, and trapezoids) and develop formulas.	**LP:** **Course 1** 2.2: Patterns in Decimals, pp. 74-87 **LC:** *How Much is a Million* by David Schwartz. *If You Made a Million* by David Schwartz.

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WEEK 9-10

3.3 Variables and Rules
- Writing and interpreting rules for sequences and input/output tables.
- Showing that two rules for a sequence are equivalent.

Suggested Per Period Pacing:

42. T&D, p. 143;Investigation 1:D&U:A, pp. 144-146; D&U:B, p. 146, # 11-14

43. D&U:B, pp.147-148, # 15-18 ; S&S, p. 148

44. Investigation 2:D&U:A, pp. 149-150; D&U:B, p. 151; S&S, p. 152.

45. Investigation 3: T&D, p. 152; Ex, p. 153; D&U:A, pp. 154-156; S&S, p. 156.

46. Investigation 4: Inquiry, pp.157-159

47. Investigation 5:T&D, p. 160; D&U:A, p. 161; D&U:B, p. 161

48. D&U:C, p. 162; S&S, p. 162; Investigation 6: T&D, p. 163; D&U:A, p. 164

49. D&U:B, p. 165; S&S, p. 165; IYOW, p. 173, #34; QQ, p. 173TE

For additional practice or homework:

QR
Patterns, pp. 61-63
1.3: Order of operations, pp. 76-77.
6.1: Writing Expressions and Equations, pp. 210, 227.
6.2: Simplifying Expressions, pp. 216-221.

CRM:
pp. 19-23

Skills Intervention for Middle School Mathematics
Skill 88: Look for a Pattern, pp. 175-176.

Standardized Test Review:

Math Skills Maintenance Workbook
Using Order of Operations, pp. 52-57

Skills Intervention for Middle School Mathematics
Skill 8: Order of Operations, pp. 15-16

NUMBER SENSE AND OPERATION STRAND

Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.

6.N.5   Define and identify the zero property of multiplication

Students will understand meanings of operations and procedures, and how they relate to one another

6.N.22   Evaluate numerical expressions using order of operations (may include exponents of two and three)

6.N.25   Evaluate expressions having exponents where the power is an exponent of one, two,or three.

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

6.A.1   Translate two-step verbal expressions into algebraic expressions

Students will perform algebraic procedures accurately.

6.A.2   Use substitution to evaluate algebraic expressions (may include exponents of one, two, and three

6.A.3   Translate two-step verbal sentences into algebraic equations

6.A.6   Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.)

LP:
Everyday Math Grade 5
10.3: Algebraic Expressions.
10.4: Rules, Tables and Graphs: Part 1.
10.5: American Tour: Old Faithful's Next Eruption
10.6: Rules, Tables and Graphs: Part 2.

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WEEK 11	**3.4 Apply Properties** 50. E, p. 174; Investigation 1:T&D, p. 175; D&U:A, p. 175; D&U:B, p. 176 51. E, p. 176; T&D, p. 177; D&U:C, p. 178; D&U:D, p. 178. 52. Investigation 2: D&U:A, pp. 179-180; T&D, p. 181; Ex, p. 181; D&U:B, p. 182 53. D&U:C, p. 183; S&S, p. 183 53. Investigation 3: D&U:A, p. 184; D&B:B, p. 185; D&B:C, p. 186; S&S, p. 186; IYOW, p. 190, #37, QQ, p. 190 TE.	*For additional practice or homework:* **QR** 1.2: Properties, pp. 72-75 5.2: Simplifying Expressions, p. 223. *Standardized test review:* **QR** 1.4: Factors and Multiples, pp. 81-85. **CRM:** pp. 24-28	**NUMBER SENSE AND OPERATION STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.2 Define and identify the commutative and associative properties of addition and multiplication 6.N.3 Define and identify the distributive property of multiplication over addition 6.N.4 Define and identify the identity and inverse properties of addition and multiplication.	

Review and Self-Assessment

Suggested Per Period Pacing:

54. Review & Self-Assessment, pp. 191-195

55. Chapter 3 Test   **CRM:** MARS Assessment: Design A Logo, pp. 49-52

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CHAPTER 4: FRACTION AND DECIMAL OPERATIONS

Rationals and Irrationals: Fractions and Decimal Concepts—Develop
Algorithms and Operations: Fractions, Decimals—Review & Extend
Data Analysis:Graphs and Displays- Develop; Statistical Measures-Review and Extend

WEEK 12				
	Administer Pre-Chapter Four Assessment **4.1 Add and Subtract Fractions** Adding and subtracting fractions and mixed numbers. *Suggested Per Period Pacing:* 56. T&D, p. 198; Investigation 1: Ex, p. 199; D&U:A, p.199; D&U:B, pp. 200-201; S&S, p. 201. 57. Investigation 2: E, p. 201; D&U:A, p. 202; D&U:B, p. 202 58. Ex. p. 203; D&U:C, pp. 203-204; D&U:D, p. 204; S&S, p. 204. 59. Investigation 3 (All). 60. Investigation 4:* Inquiry, pp. 208-209; IYOW, p. 214. # 53; QQ, p. 215 TE; **Note:** Inquiry Investigation provides practice in using a scientific calculator. *Scientific calculator suggested	*For additional practice or homework:* **Skills Intervention Workbook** Skill 21: Simplifying Fractions, p. 41. Skill 26: Adding Fractions, pp. 51-52. Skill 27: Subtracting Fractions, pp. 53-54. **QR:** 2.3: Addition and Subtraction of Fractions, pp. 110-115. **Skills Maintenance Workbook** p. 71. **CRM:** pp. 4-16	**NUMBER SENSE AND OPERATIONS STRAND** ***Students will understand meanings of operations and procedures, and how they relate to one another.*** 6.N.16 Add and subtract fractions with unlike denominators. 6.N.18 Add, subtract, multiply and divide mixed numbers with unlike denominators	**LP:** **Everyday Math, Grade 5** 5.2: Mixed Numbers. 6.8: Using a Slide Rule to Add and Subtract Fractions. 8.2: Adding Mixed Numbers. 8.3: Subtracting Mixed Numbers. **LC:** *The Number Devil* by Hans Magnus Enzenberger *More Sideway Arithmetic from Wayside School* by Louis Sachar

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WEEK 13-14	**4.2 Multiplying and Dividing with Fractions** • Multiplying fractions and mixed numbers. • Dividing fractions and mixed numbers. *Suggested Per Period Pacing:* 61 Explore, p. 216; Investigation 1: D&U:A, p. 217; T&D, p. 217; D&U:B, p.218, #4, 5a, d, 6a, b,c; D&U:C, p. 218, # 8, 9; S&S, p. 219. 62. Investigation 2:T&D, p. 219; D&U:A, p. 220 63. Investigation 2: D&U:B, p.221; S&S, p. 221 64. Investigation 3:Ex, p. 222; D&U:A, p. 222; T&D, p. 223; D&U:B, p. 223: Ex, p. 224; D&U:C, p. 225; S&S, p. 225 65 Investigation 4: E, p. 226; D&U:C. pp. 228-229; S&S, p. 229 66. Investigation 5: E, p. 229; Ex, p. 230; D&U:A, p. 231; T&D, p. 231; Ex, p. 232; D&*:B, p. 232; S&S, p. 232. 67 IYOW, p. 241, #72; QQ, p. 241 TE, **Note:** Assign S&S, p. 219, as part of homework if not enough time in class.	*For additional practice or homework:* **Skills Intervention Workbook** Skill 28: Multiplying Fractions, pp. 55-56. Skill 29: Multiplying Whole Numbers by Fractions, pp 57-58. Skill 30: Dividing Fractions, pp. 59-60. **QR** 2.4: Multiplication and Division of Fractions, pp. 117-122. **CRM:** pp. 17-21	**NUMBER SENSE AND OPERATIONS STRAND** *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.17 Multiply and divide fractions with unlike denominators. 6.N.18 Multiply and divide mixed numbers with unlike denominators. 6.N.19 Identify the multiplicative inverse (reciprocal) of a number. *Students will compute accurately and make reasonable estimates.* 6.N.27 Justify the reasonableness of answers using estimation (including rounding).	**LP:** **Everyday Math, Grade 5** 8.5: Fractions of Fractions. 8.6: An Area Model for Fraction Multiplication. 8.7: Multiplication of Fractions and Whole Numbers. 8.8: Multiplication of Mixed Numbers.

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| WEEK 14-15 | **4.3 Multiplying and Dividing with Decimals**
Multiplying and dividing decimals.

Suggested Per Period Pacing:
68. T&D, p. 242; Investigation 1: D&U:A, p. 243 ; D&U:B, p. 244*; S&S, p. 245.

69. Investigation 2: T&D, p. 245; D&U:A, pp. 245-246; T&D, p. 246; D&U:B, p. 247; S&S,p.247

70. Investigation 3: T&D, p. 248; D&U:A, p. 248; D&U:B, p. 249

71. D&U:C, p. 250; S&S, p. 250; Investigation 4:D&U:A, p. 251

72. Ex, p. 252; D&U:B, p. 252; Ex, p. 253; D&U:C, p. 253; S&S, p. 253

73. Investigation 5:T&D, p. 254; D&U:A, p. 255; D&U:B, pp. 255-256; S&S, p. 256

74. IYOW, p. 264, #41; QQ, p. 264 TE.

*Calculator is suggested | *For additional practice or homework:*

Skills Intervention Workbook
Skill 12: Multiplying Whole Numbers and Decimals, pp. 23-24.
Skill 13: Dividing Decimals, pp. 25-26.

QR:
2.6: Multiplication and Division of Decimals, pp. 131-135.

CRM:
pp. 22-28.

Standardized test review:

Skills Intervention Workbook
Skill 14: Estimating Products and Quotients, pp. 27-28. | **PROBLEM SOLVING STRAND**
Students will solve problems that arise in mathematics and in other contexts.
6.PS.8   Select an appropriate representation of a problem.

REPRESENTATION STRAND
Students will use representations to model and interpret physical, social, and mathematical phenomena.
6.R.7   Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board).

NUMBER SENSE AND OPERATIONS STRAND
Students will understand meanings of operations and procedures, and how they relate to one another.
6.N.17   Multiply and divide fractions with unlike denominators
6.N.21   Find multiple representations of rational numbers (fractions, decimals, and percents, 0 to 100).

Students will compute accurately and make reasonable estimates.
6.N.27   Justify the reasonableness of answers using estimation (including rounding). | **LP:**
Everyday Math, Grade 5
2.8: Multiplication of Whole Numbers and Decimals.
4.5: Division of Decimal Numbers.

Course 1: Impact Math
2.2: Multiplication and division by powers of 10, pp. 77-78. |

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WEEK 16	**4.4 What is Typical?** • Interpreting and creating line plots. • Finding and interpreting the mode, median, and mean. • Choosing the best average for a given situation. *Suggested Per Period Pacing:* 75. T&D, p. 265; Investigation 1: D&U: A,pp. 266-267; D&U:B, p. 267. 76. D&U:C, pp.267-268; S&S, p. 268 77. Investigation 2:D&U:A, p. 269; D&U:B, p. 270; D&U:C, p. 271; S&S, p. 271 78. Investigation 3:D&U:A, p. 272; D&U:B, pp. 273; D&U:C, p. 274; D&U:D, p. 275; S&S, p. 275 79. IYOW, p. 281, #14; QQ, p. 282 TE.	*For additional practice or homework:* **QR** 4.2: Displaying Data, pp. 179-186. 4.3: Statistics, pp. 187-194. **Skills Intervention Workbook** Skill 66: Line Plots, pp. 131-132. **CRM:** pp.29-34 *Standardized Test Review:* **Skills Intervention Workbook** Skill 65: Mean, Median, Mode, pp. 129-130.	**STATISTICS AND PROBABILITY STRAND** ***Students will collect, organize, display, and analyze data.*** 6.S.5 Determine the mean, mode and median for a given set of data. 6.S.6 Determine the range for a given set of data. 6.S.7 Read and interpret graphs.	**LP:** **Everyday Math, Grade 5** 6.4: Mystery Plots.

Review and Self-Assessment
Suggested Per Period Pacing:
80. Review & Self-Assessment, pp. 283-287
81. Chapter 4 Test   **CRM** :MARS Assessment: Costumes for the Play, pp. 53-58.

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CHAPTER 5: RATIO, RATE AND PROPORTION

Algebraic Representation: Coordinate Graphs- Develop; Tables and Graphs—Develop
Two-Dimensional Shapes: Quadrilaterals—Review and Apply
Geometric Relationships: Congruence—Develop;Similarity-Develop
Ratios and Rates: Meaning and Representation—Develop

WEEK 17				
	<u>Administer Chapter 5 pre test</u> **5.1 Ratios and Rates** • To compare and scale ratios and rates. • To write and interpret comparisons. *Suggested Per Period Pacing:* 82. Ex, p. 291;Investigation 1: D&U:A, pp. 291-293; D&U:B, pp. 293-294; S&S, p. 294. 83. Investigation 2: D&U:A, p. 295; T&D, p. 295; D&U:B, p. 296; S&S, p. 296 84. Investigation 3:T&D, p. 297; D&U:A, pp. 298-299; S&S, p. 299 85. Investigation 4: D&U:A, p.299; T&D, p. 300; S&U:B, p. 201; S&S, p. 301; IYOW, p. 307, #29; QQ, p. 307 TE	*For additional practice or homework:* **QR** 2.1: Fractions and Equivalent Fractions, pp. 96-105. 5.5: Ratio and Proportion, p. 236. **CRM:** p. 3-7	**NUMBER SENSE AND OPERATIONS STRAND** 6.N.6 Understand the concept of rate 6.N.8 Distinguish the difference between rate and ratio	**LP:** **Everyday Math, Grade 5** 10.4: Rules, Tables and Graphs: Part 1 **LP: Course 1** 2.1: Patterns in Fractions, pp. 56-68 6.1: Using Percents, D&U:B p. 356. 6.3: Percents and Wholes, pp. 380-381. **LC:** *The Search for the Sigma Code* by Cecil Balmond

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WEEK 18	**5.2 Proportions** To write and solve proportions. *Suggested Per Period Pacing:* 86. T&D, p. 308; Investigation 1: D&U:A, pp. 310-311; S&S, p. 311, PS A. 87. Investigation 2: D&U:A, p. 321; D&U:B, p. 313; S&S, p. 313 88. Investigation 3: Inquiry, pp314-315; IYOW, p. 320, # 17; QQ, p. 320 (TE)	*For additional practice or homework:* **QR** 5.5: Ratio and Proportion, pp. 238-239. **CRM:** p. 8-12 *Standardized test review:* **Skills Intervention for Pre-Algebra** Skill 30: Ratio and Proportion, pp. 59-60. Skill 31: Proportional Reasoning, pp. 61-62.	**NUMBER SENSE AND OPERATIONS STRAND** 6.N.7 Express equivalent ratios as a proportion 6.N.9 Solve proportions using equivalent fractions 6.N.10 Verify the proportionality using the product of the means equals the product of the extremes **ALGEBRA STRAND** 6.A.5 Solve simple proportions within context	**LP:** **Everyday Math, Grade 5** 10.4: Rules, Tables and Graphs: Part 1

grade 6

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WEEK 18-19	**5.3 Similarity and congruence** • To identify congruent figures, angles, and segments. • To identify corresponding sides and angles of similar or congruent polygons. • To identify equivalent ratios. *Suggested Per Period Pacing:* 89. E, pp.321-322; Investigation 1: D&U:A, pp. 322-323; T&D, p. 323; D&U:B, p. 323; D*U:C, p. 324; S&S, p. 324. 90. Investigation 2: D&U:A, p. 325; D&U:B, p. 325; D&U:C, p. 326; S&S, p. 326. 91. Investigation 3: Ex, p. 327; D&U:A, p. 328; D&U:B, p. 329; D&U:C, pp. 330-331; S&S, p. 331. 92. Investigation 4: D&U:A, pp. 332-333; D&U:B, p. 334; S&S, p. 334; IYOW, p. 338, #21; QQ, p. 340 TE.	*For additional practice or homework:* **QR** 6.2: Naming and Classifying Polygons and Polyhedrons, pp. 264-271. 7.6: Size and Scale, pp. 319-321. **CRM** pp. 13-27 **Skills Intervention for Pre-Algebra** Skill 47: Similar Figures, pp. 93-94. Skill 48: Congruent Figures, pp. 95-96.	**GEOMETRY STRAND** 6.G.1 Calculate the length of corresponding sides of similar triangles, using proportional reasoning	**LP: Course 1:** 1.1: Angles, pp. 8-10, (D&U:A). Triangles, pp. 16-17. 1.2: Investigating Angle Relationships, p31, (D&U:B).

Review and Self-Assessment
Suggested Per Period Pacing:
93. Review & Self-Assessment, pp. 341-345
94. Chapter 5 Test   **CRM**: MARS Assessment: Lawn Mowing, pp. 45-47

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CHAPTER 6: MAKING SENSE OF PERCENTS

Rationals and Irrationals: Percents—Develop

Algorithms and Operations: Fractions, Decimals—Review & Extend

| **WEEK 20** | Administer Pre-chapter Six Assessment.

6.1 Use Percents
• Converting among fractions, decimals, and percents.
• Using a percent to represent part of a whole.
• Using percents to compare groups of different sizes.

Suggested Per Period Pacing:
95. T&D, p. 348; Investigation 1: T&D, p. 349; D&U:A, pp. 349-350; T&D, p. 350.
96. Investigation 1: D&U:B, p. 351; D&U:C, p. 351; S&S, p. 351.
97. Investigation 2 (All).
98. Investigation 3 (All).
99. Investigation 4: E, p. 358; D&U:A, p. 358; D&U:B, pp. 358-359; E, p. 360.
100. Investigation 4: D&U:C, pp. 360-361; S&S, p. 361; IYOW, p. 366, #41; QQ, p. 367 TE

Note: Periods 96 and 98, assign S&S as homework if not enough time in class. | *For students who have difficulty with* Pre-chapter Six Assessment:

Skills Intervention Workbook
Skill 24: pp. 47-48.

For additional practice or homework:

QR
2.7: Meaning of Percent, pp. 136-139
2.9: Fraction, Decimal, and Percent Relationships, pp. 147-153.

CRM
pp. 4-9.

Standardized test review:

Math Skills Maintenance Workbook
Skill 24: Equivalent Fractions, pp. 68-69. | **REPRESENTATION STRAND**
Students will use representations to model and interpret physical, social, and mathematical phenomena.
6.R.8   Use mathematics to show and understand social phenomena (i.e., construct tables to organize data showing book sales).

NUMBER SENSE AND OPERATIONS STRAND
Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.
6.N.11   Read, write, and identify percents of a whole (0 to 100%).
6.N.14   Locate rational numbers on a number line (including positive and negative).
6.N.15   Order rational numbers (including positive and negative)

Students will understand meanings of operations and procedures, and how they relate to one another.
6.N.21   Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100).| **LP:**
Everyday Math, Grade 5
8.9:   Finding a Percent of a Number.
12.3:   American Tour: Ratio Exploration.
12.4:   Ratios of Parts to Wholes.

Course 1: Impact Math
2.2:   Patterns in decimals
2.3:   Fraction and Decimal Equivalents |

grade 6

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WEEK 20 (continued)			*Students will compute accurately and make reasonable estimates.* 6.N.26 Estimate a percent of quantity (0 to 100%). 6.N.27 Justify the reasonableness of answers using estimation (including rounding). **STATISTICS AND PROBABILITY STRAND** *Students will collect, organize, display, and analyze data.* 6.S.1 Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question (MAY-JUNE IN GRADE 6). 6.S.7 Read and interpret graphs.	

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WEEK 21	**6.2 Percent of a Quantity** • Calculating a percent of a quantity • Estimate a percent of a quantity *Suggested Per Period Pacing:* 101 Investigation 1 (All) pp. 368-371. 102 Investigation 2: Ex, p. 372; D&U:A, pp. 272-273; D&U:B, p. 373; D&U:C, p. 374; 103 Investigation 2: D&U:D, pp. 374-375; S&S, p. 375; IYOW, p.378, # 23; QQ, p. 279 TE **Note:** Period 103, assign S&S as part of homework if not enough time in class.	*For additional practice or homework:* **QR** 2.8: Using and Finding Percents, pp. 140-146. **CRM:** pp. 10-14	**REPRESENTATION STRAND** *Students will use representations to model and interpret physical, social, and mathematical phenomena.* 6.R.7 Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board). **NUMBER SENSE AND OPERATIONS STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.11 Read, write, and identify percents of a whole (0 to 100%). *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100). *Students will compute accurately and make reasonable estimates.* 6.N.26 Estimate a percent of quantity (0 to 100%). 6.N.27 Justify the reasonableness of answers using estimation (including rounding).	**LP:** **Everyday Math, Grade 5** 8.9: Finding a Percent of a Number.

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WEEKS 22	**6.3 Percents and Wholes** Calculating a percent of a whole. Finding the whole from the part and the percent. *Suggested Per Period Pacing:* 104. Ex, p. 380; Investigation 1: Ex, p. 261; D&U:A, p. 382; D&U:B, p. 383 PS C, p. 384; S & S, p. 284. 105. Investigation 2: T & D, p. 285. D&U:A, p. 385; Ex, p. 386; D&U:B, p. 386; D&U:C, p. 387; S&S, p. 387 106. Inquiry Investigation 3, pp. 388-389; IYOW, p. 391, #20; QQ, p. 392 TE	*For additional practice or homework:* **QR** 2.8: Using and Finding Percents, pp. 140-146 2.9: Fraction, Decimal, and Percent Relationships, pp. 147-153. **CRM** pp. 15-22	**NUMBER SENSE AND OPERATIONS STRAND** ***Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.*** 6.N.4 Define and identify the identity and inverse properties of addition and multiplication 6.N.11 Read, write, and identify percents of a whole (0% to 100%) 6.N.12 Solve percent problems involving percent, rate, and base ***Students will compute accurately and make reasonable estimates.*** 6.N.27 Justify the reasonableness of answers using estimation (including rounding)	**LP:** **Course 1 Impact Math** 4.3: Multiply and Divide Decimals

Review and Self-Assessment
Suggested Per Period Pacing:
107. Review and Self-Assessment, p. 273-275.
108. Chapter 4 Test   **CRM**: MARS Assessment: Basketball, pp. 41-43.

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CHAPTER 7: AREA, VOLUME AND CAPACITY

Algebraic Reasoning: Patterns and Numeric Forms—Develop, Properties and Rules—Develop
Two-Dimensional Shapes: Polygons, Angles—Develop
Three-Dimensional figures: Spatial Visualization-Develop; 3-D Solids—Develop

WEEK 22-23			
Administer Pre-Chapter Seven Test **7.1 Squares** Finding and estimating areas. *Suggested Per Period Pacing:* 109. Explore, p. 398; Investigation 1: D&U:A, p. 399; D&U:B, p. 400; T&D, p. 401;[Suggested: D&U:C, p. 401] S&S, p. 402. 110. Investigation 2*: T&D, p. 402; D&U:A, p. 403; D&U:B, p. 404;{Suggested, D&U:C, p. 404]; S&S, p. 404. 111. IYOW, p. 408, # 28; QQ, p. 408 TE; Note: Period 111, assign S&S as part of homework if not enough time. *Scientific calculator is suggested.	*For additional practice or homework:* **QR** 3.1: Powers and Exponents, pp. 158-163. **CRM** pp. 9-14 *Standardized test review:* **Skills Intervention for Middle School** Skill 49: Area of Rectangles, Squares and Parallelograms, pp. 97-98.	**NUMBER SENSE AND OPERATIONS STRAND** *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.17 Multiply and divide fractions with unlike denominators. 6.N.18 Multiply and divide mixed numbers with unlike denominators. 6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100). 6.N.22 Evaluate numerical expressions using order of operations (may include exponents of two or three). 6.N.23 Represent repeated multiplication in exponential form. 6.N.24 Represent exponential form as repeated multiplication. 6.N.25 Evaluate expressions having exponents where the power is an exponent of one, two or three. *Students will compute accurately and make reasonable estimates.* 6.N.27 Justify the reasonableness of answers using estimation (including rounding). *(continued)*	**LP:** **Everyday Math Grade 5** 1.7: Square Numbers. 1.8: Unsquaring Numbers. 9.4: Areas of Rectangles. 9.5: Rectangle Method for Finding Area.

grade 6

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WEEK 22-23 (continued)	**Note:** Interchange the use of the terms *base*, *altitude*, and *length*, *width* where appropriate (when working with rectangles). **Note:** Additional work needs to be included to practice determining the perimeter of a figure when the figure is located on the coordinate graph.	**Math Skills Maintenance, Course 1** Skill 16: Using Order of Operations, pp. 52-53. Skill 17: Using order of operations with Parentheses, pp. 54-55. Skill 18: Using Order of Operations with Powers, pp. 56-57	**ALGEBRA STRAND** ***Students will perform algebraic procedures accurately.*** 6.A.2 Use substitution to evaluate algebraic expressions (may include exponents of one, two and three 6.A.6 Evaluate formulas for given input values (area) **GEOMETRY STRAND** ***Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.*** 6.G.2 Determine the area of triangles and quadrilaterals (squares, rectangles, rhombi, and trapezoids) and develop formulas.	**LC:** *Grandfather Tang's Story* by Ann Tompert *Sir Cumference and the First Round Table: A Math Adventure* by Cindy Neuschwander

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WEEK 24	**7.2 Calculating Areas** Finding and estimating areas. *Suggested Per Period Pacing:* 112. E p. 409, Investigation 1, D&U:A, p. 410; D&U:B, p. 411 113. Investigation 1: D&U:C, p. 412; S&S, p. 412; 114. Investigation 2: D&U:A, pp. 413-414; D&U:B, p. 415; D&U:C, pp. 415-416; S&S, p. 416. (Use of Geometer's Sketchpad is suggested.) 115. Investigation 3: T&D, p. 416; D&U:A, p. 417; D&U:B, p. 418 D&U:B, p. 418; D&U:C, pp. 418-419; S&S, p. 419. 116. Investigation 4: D&U:A, pp. 419-420; D&U:A, 421; S&S, p. 421. 117. Investigation 5: D&U:A, p. 422; D&U:B, p. 423; [Suggested D&U:C, pp. 423-424] S&S, p. 424 118. IYOW, p. 431 #34; QQ, p. 433 TE **Note:** Interchange the use of the terms altitude and height when working with area of triangles. *Scientific Calculator is suggested.	*For additional practice or homework:* **QR** 6.5: Area, pp. 281-286 6.8: Circles, pp. 295-299 **CRM** pp. 15-22 *Standardized test review:* **Skills Intervention for Middle School** Skill 50: Area of Triangles, pp. 99-100. Skill 51: Area of Trapezoids, pp. 101-102.	**NUMBER SENSE AND OPERATIONS STRAND** *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.17 Multiply and divide fractions with unlike denominators. 6.N.18 Multiply and divide mixed numbers with unlike denominators. **ALGEBRA STRAND** *Students will perform algebraic procedures accurately.* 6.A.6 Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.) **GEOMETRY STRAND** *Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.* 6.G.2 Determine the area of triangles and quadrilaterals (squares, rectangles, rhombi, and trapezoids) and develop formulas. 6.G.3 Use a variety of strategies to find the area of regular and irregular polygons. 6.G.5 Identify radius, diameter, chords and central angles of a circle *(continued)*	**LP:** **Everyday Mathematics Grade 5** 9.4: Area of Rectangles. 9.5: The Rectangle Method for Finding Area. 9.6: Formulas for the Area of Triangles and Parallelograms. 10.8: Circumference of a Circle. 10.9: Area of Circles.

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WEEK 24	**7.2 Calculating Areas** **Note:** When determining the value of formulas that involve π, write the answer in terms of π, or use the π key on the calculator.		**GEOMETRY STRAND** 6.G.6 Understand the relationship between the diameter and radius of a circle 6.G.7 Determine the area and circumference of a circle, using the appropriate formula. 6.G.8 Calculate the area of a sector of a circle, given the measure of a central angle and the radius of the circle 6.G.9 Understand the relationship between the circumference and the diameter of a circle.	

grade 6

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WEEK 24-25	**7.3 Surface Area and Volume** • Finding and estimating surface areas. • Finding and estimating the volume of a rectangular prism *Suggested Per Period Pacing:* 119. T&D, p. 434; Investigation 1, D&U:A, p. 435; D&U:B, pp. 435-436. *D&U:C, pp. 436-437 120. Investigation 1: *D&U:C, pp. 436-437; S&S, p. 437 121. Investigation 2: T&D, pp. 437-438; D&U:A, p. 438; [Suggested: D&U:B, p. 439] D&U:C, p. 440; S&S, p. 440 (use of Geometer's Sketchpad is suggested). 122. [Suggested: Inquiry Investigation 3] IYOW, p. 445, # 14; QQ, p. 448 TE. *Using manipulatives is suggested	*For additional practice or homework:* **QR** 6.6: Surface Area, pp. 288-291 6.7: Volume, pp. 292-294 **CRM** **pp. 23-31** *Standardized Test Review:* **Math Skills Maintenance, Course 1** Skill 33: Measurement: Capacity (cups, pints, quarts, gallons) in the Customary System, p.85. Skill 36: Measurement: Capacity (liter, milliliter) in the Metric System, p. 88.	**NUMBER SENSE AND OPERATIONS STRAND** *Students will understand meanings of operations and procedures, and how they relate to one another.* 6.N.17 Multiply and divide fractions with unlike denominators. 6.N.18 Multiply and divide mixed numbers with unlike denominators. **ALGEBRA STRAND** *Students will perform algebraic procedures accurately.* 6.A.6 Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.) **GEOMETRY STRAND** *Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.* 6.G.4 Determine the volume of rectangular prisms by counting cubes and develop the formula. *(continued)*	**LP:** **Everyday Mathematics Grade 5** 9.4: Area of Rectangles. 9.5: The Rectangle Method for Finding Area. 9.6: Formulas for the Area of Triangles and Parallelograms. 9.7: Earth's Water Surface. 9.8: Volume of Rectangular Prisms 9.9: Volume of Right Prisms 11.7 Surface Area

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	S&S: Share and Summarize
		QR: Quick Review Math
		        Handbook
		CRM: Chapter Resource Masters
		INRJ Investigation Notebook and
		        Reflection Journal
		MARS: Mathematics Assessment
		        Resource Service
			NEW YORK STATE MATHEMATICS
			STANDARDS
				NOTES
				N: Notes
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WEEK 24-25			**MEASUREMENT STRAND** *Students will determine what can be measured and how, using appropriate methods and formulas* 6.M.1 Measure capacity and calculate volume of a rectangular prism. *Students will develop strategies for estimating measurements.* 6.M.7 Estimate volume, area, and circumference (square, rectangle, rhombi, trapezoid, rectangular prism, circle). 6.M.8 Justify the reasonableness of estimates.	

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| WEEK 25-26 | **7.4 Capacity**
Determine capacity in metric units or in customary units

Suggested Per Period Pacing:
123. Ex, pp. 449-450; Investigation 1: C&U:A, p. 450; D&U:B, pp. 450-451
124. D&U:C, pp. 451-453; S&S, p. 453
125. Investigation 3: D&U:A, p. 454; D&U:B, p. 455; D&U:C, p. 456; S&S, p. 456.
126. IYOW, p. 461, # 20; QQ, p. 461 TE | *Standardized Test Review:*

QR
7.3: Area, Volume, and Capacity, pp. 311-314

CRM
pp. 32-36. | **MEASUREMENT STRAND**
Students will determine what can be measured and how, using appropriate methods and formulas
6.M.2 Identify customary units of capacity (cups, pints, quarts, and gallons)
6.M.3 Identify equivalent customary units of capacity (cups, to pints, pints to quarts, and quarts to gallons)
6.M.4 Identify metric units of capacity (liter and milliliter)
6.M.5 Identify equivalent metric units of capacity (milliliter to liter and liter to milliliter).
6.M.6 Determine the tool and technique to measure with an appropriate level of precision: capacity.

Students will develop strategies for estimating measurements.
6.M.9 Determine personal references for capacity. | **LP:**
Everyday Math Grade 5
9.10: Capacity: Liter, Milliliter, and Cubic Centimeter
11.3: Volume of cylinders
11.4: Volume of Pyramids and Cones
11.6: Capacity and Weight |

Review and Self-Assessment
Suggested Per Period Pacing:
127. Review & Self-Assessment, pp. 462-465
128. Chapter 7 Test.   **CRM**: MARS Assessment: Leaky Faucet, pp. 49-51.

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CHAPTER 8: COORDINATE PLANE

Algebraic Representations: Coordinate Graphs—Develop; Tables and Graphs—Develop
Algebraic Reasoning: Patterns and Numeric Forms-Develop
Coordinate Geometry: Coordinate Representations—Develop
Number and Number Sense: Signed Numbers—Develop

WEEK 27				
	<u>Administer Pre-Chapter Eight Pre-Test</u> **8.1 Interpret Graphs** • Interpreting graphs. • Using graphs to find relationships and make predictions. *Suggested Per Period Pacing:* 129. E, p. 468; Investigation 1: T&D, p. 469; D&U:A, p. 470; D&U:B, pp. 470-471; S&S, p. 472 130. Investigation 2: Ex, p. 472; D&U:A, p. 473; D&U:B, p. 474; D&U:C, p. 475; S&S, p. 476 131. Investigation 3:T&D, p. 477; D&U:A, pp. 477-478; D&U:B, pp. 478-480; D&U:C, p. 480; S&S, p. 481 132. IYOW, pp. 486-487,# 11; QQ, p. 488	*For additional practice or homework:* **QR** 4.2: Displaying Data, pp. 179-184. **CRM:** pp. 5-11	**REPRESENTATION STRAND** *Students will use representations to model and interpret physical, social, and mathematical phenomena.* 6.R.7 Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board). **STATISTICS AND PROBABILITY** *Students will collect, display, and analyze data.* 6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph. (MAY-JUNE of Grade 6) 6.S.7 Read and interpret graphs. *Students will make predictions that are based upon data analysis* 6.S.8 Justify predictions made from data	**LP:** **Everyday Math Grade 5** 9.1: Hidden Treasure: A Coordinate Game. 9.2: Coordinate Graphs: Part 1. 9.3: Coordinate Graphs: Part 2. **LC:** *The fly on the Ceiling:* *A Math Myth* by Julie Glass

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WEEK 28	**8.2 Draw and Label Graphs** • Interpreting graphs. • Creating graphs. • Using graphs to find relationships and make predictions. *Suggested Per Period Pacing:* 133. Explore, p. 489; Suggested: Investigation 1: ALL, p. 301; Investigation 2: D&U:A, p. 492 134. Investigation 2: D&U:B, pp. 493-494; S&S, p. 494. 135. Investigation 3: T&D, p. 495;D&U:A, p.497; D&U:B, pp. 498-499 S&S, p. 499 136. Investigation 4: D&U:A, p. 500; T&D, P. 500; D&U:B, pp. 501-502; S&S, p. 502 137. IYOW, p. 507, QQ, p. 508 TE	*For additional practice or homework:* **Skills Intervention for Middle School Mathematics Workbook** Skill 41: The Coordinate System, pp. 81-82. **QR** 4.2: Display Data, pp. 179-184. 5.7: Graphing on the Coordinate Plane, pp. 244-249.	**GEOMETRY STRAND** *Students will apply coordinate geometry to analyze problem solving situations.* 5.G.12 Identify and plot points in the first quadrant (MAY-JUNE IN GRADE 5). 6.G.10 Identify and plot points in all four quadrants **STATISTICS AND PROBABILITY** *Students will collect, organize, display, and analyze data.* 6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph) (MAY-JUNE in Grade 6) 6.S.7 Read and interpret graphs.	**LP:** **Everyday Math Grade 5** 9.2: Coordinate Graphs: Part 1. 9.3: Coordinate Graphs: Part 2.

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WEEK 29

8.3 Graph in Four Quadrants
- Understanding negative numbers and opposites.
- Create and interpret 4-quadrant graphs.
- To use the distinguishing characteristics of points in the four quadrants and on the two axes to analyze graphs.

Suggested Per Period Pacing:

138. T&D, p. 509; Investigation 1: D&U: A, p. 511; T&D, p. 511; D&U:B, pp. 511-512; S&S, p. 512.

139. Investigation 2: ALL

140. Investigation 3: ALL

141. Investigation 4: ALL

142. [Suggested Inquiry Investigation 5: ALL]; IYOW, p. 527, # 31; QQ, p. 527 TE

For additional practice or homework:

QR
1.5: Positive and negative integers, p. 88; Opposites of Integers and Absolute Value, pp. 88-89.

5.7: Graphing on the Coordinate Plane, pp. 244-249.

CRM
pp. 23-30

NUMBER SENSE AND OPERATIONS STRAND
Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.

6.N.4   Define and identify the identity and inverse properties of addition and multiplication.

6.N.13   Define absolute value and determine the absolute value of rational numbers (including positive and negative).

6.N.14   Locate rational numbers on a number line (including positive and negative).

6.N.15   Order rational numbers (including positive and negative).

GEOMETRY STRAND
Students will apply coordinate geometry to analyze problem solving situations.

6.G.10   Graph the solution set of an inequality (positive coefficients only) on a number line.

6.G.11   Calculate the area of basic polygons drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with Integer lengths).

LP:
Everyday Math, Grade 5
7.7:   Using Negative Numbers.

7.8:   Addition of Positive and Negative Numbers.

7.9:   Subtraction of Positive and Negative Numbers.

7.10:   Using a Slide Rule to Add and Subtract.

7.11:   Calculator Practice: Working with Negative Numbers.

Impact Math Course 1
2.5:   Negative Numbers, pp. 142-145; p. 146 # 4.

5.2:   Drawing and Labeling Graphs, pp. 302-310.

Review and Self-Assessment
Suggested Per Period Pacing:

143. Review & Self-Assessment, pp. 528-531
144. Chapter 8 Test.   **CRM** MARS Assessment: Congruent Triangles, pp. 50-52.

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CHAPTER 9: EQUATIONS

Algebraic Representations: Coordinate Graphs—Develop, Tables and Graphs—Develop

Algebraic Reasoning: Patterns and Numeric Forms—Develop, Properties and Rules- Develop

Functions and Relations: Linear Expressions/Equations—Develop, Quadratic Expressions/Equations-Develop

WEEK 30	Administer Chapter Nine Pre-Test **9.1 Understand Equations** Understanding equations and inequalities. *Suggested Per Period Pacing:* 145. E, p. 534; Investigation 1: T&D, p. 535; D&U:A, p. 535; S&S, p. 536. 146. Investigation 2: T&D, p. 536; D&U:A, p. 537; T&D, p. 537; D&U:B, p. 538; S&S, p. 538. 147. [Suggested, Inquiry Investigation 3 pp. 563-564.]; IYOW, p. 542; QQ, p. 545 TE **Note:** This Lab Investigation reinforces the notion of undoing in a practical context that may be useful.	*For additional practice or homework:* **QR** 5.2: Simplifying Expressions, pp. 216-222 5.3: Evaluating Expressions and Formulas, pp. 223-226 5.4: Equations, pp. 227-235 5.6: Inequalities, pp. 241-243 **CRM** pp.3-8 **Math Skill Maintenance Workbook** Skill 30: Identifying Properties, pp. 80-81. Skill 31: Using Properties, pp.82-83. **Skills Intervention for Middle School Mathematics** Skill 8: Order of Operations, pp. 15-16.	**ALGEBRA STRAND** *Students will represent and analyze algebraically a wide variety of problem solving situations.* 6.A.1 Translate two-step verbal expressions into algebraic expressions. 6.A.3 Translate two-step verbal sentences into algebraic equations. 6.A.4 Solve and explain two-step equations.	**LP:** **Everyday Math Grade 5** 10.3: Algebraic Expressions. 10.4: Rules, Tables and Graphs: Part 1. 10.6: Rules, Tables and Graphs: Part 2. **Course 1: Impact Math** 3.1: Order of Operations, pp. 126-132 **LC** *The I Hate Mathematics Book* by Marilyn Burns *Whodunit Math Puzzles* by Bill Wise

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WEEK 30-31	**9.2 Backtracking** Solving equations by backtracking. *Suggested Per Period Pacing:* 148. T&D, p. 546; Investigation 1: ALL 149. Investigation 2: ALL 150. Investigation 3: ALL 151. IYOW, p. 559, # 24; QQ, p. 559 TE 671;	*For additional practice or homework:* **Skill Intervention for Middle School Mathematics** Skill 37: Solve Equations Involving Addition, pp. 73-74. Skill 38: Solve Equations Involving Subtraction, pp. 75-76. Skill 39: Solve Equations Involving Multiplication, pp. 77-78. Skill 40: Solve Equations Involving Division, pp. 79-80. **QR** 5.2 Simplifying Expressions, pp. 216-222 5.4 Equations, pp. 227-235.	**REPRESENTATION STRAND** *Students will use representations to model and interpret physical, social, and mathematical phenomena.* 6.R.9 Use mathematics to show and understand mathematical phenomena (i.e., Find the missing value: $(3 + 4) + 5 = 3 + (4 + \underline{\quad})$). **NUMBER SENSE AND OPERATIONS STRAND** *Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.* 6.N.4 Define and identify the identity and inverse properties of addition and multiplication. **ALGEBRA STRAND** *Students will perform algebraic procedures accurately.* 6.A.3 Translate two-step verbal equations into algebraic equations 6.A.4 Solve and explain two-step equations involving whole numbers using inverse operations	

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WEEK 31	**9.3 Guess-Check-and-Improve** Choosing a solution method for an equation. *Suggested Per Period Pacing:* 152. T&D, p. 586; Investigation 1: ALL 153. Investigation 2: ALL 154. Investigation 3: ALL 155. IYOW, p. 570, #20; QQ, p. 572 TE.	*For additional practice or homework:* **Skills Intervention** Skill 84: Guess and Check: pp. 167-168 **CRM** pp. 14-18 **QR** 5.4: Equations, pp. 227-235.	**PROBLEM SOLVING STRAND** *Students will solve problems that arise in mathematics and in other contexts.* 6.PS.8 Select an appropriate representation of a problem. *Students will apply and adapt a variety of appropriate strategies to solve problems.* 6.PS.12 Use trial and error and the process of elimination to solve problems. **REPRESENTATION STRAND** *Students will use representations to model and interpret physical, social, and mathematical phenomena.* 6.R.9 Use mathematics to show and understand mathematical phenomena (i.e., Find the missing value: $(3 + 4) + 5 = 3 + (4 + \underline{\quad})$. **ALGEBRA STRAND** *Students will perform algebraic procedures accurately.* 6.A.3 Translate two-step verbal equations into algebraic equations 6.A.4 Solve and explain two-step equations involving whole numbers using inverse operations	

Review and Self-Assessment
Suggested Per Period Pacing:
156. Review & Self-Assessment, pp. 573-575
157. Chapter 9 Test.   **CRM**: MARS Assessment: Emma's Models

grade 6

MATHEMATICS PLANNING GUIDE

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CHAPTER 10: DATA AND PROBABILITY

Algebraic Representations: Coordinate Graphs—Develop; Tables and Graphs—Develop
Data Analysis: Graphs and Displays—Develop; Modeling and Analysis—Develop; Surveys and Sampling—Develop
Probability: **Basic Concepts and Rules—Develop; Counting Members-Develop; Experiments and Simulations—Develop**

| **WEEK 32-33** | **10.3 The Language of Chance**
• Understanding probability.
• Identifying outcomes.
• Finding probabilities of events.

Suggested Per Period Pacing:
158. Investigation 1: (All)
159. Investigation 2:Ex, p. 621; D&U:A, pp. 621-622; D&U:B, pp. 623-624
160. Investigation 2: D&U:C, p. 624; S&S, p. 625
161. Inquiry Investigation 3: ALL
162. Investigation 4: ALL
163. IYOW, p. 636, # 16; QQ, p. 637 TE

Note: Period 158, assign S&S as part of homework. | *For additional practice or homework:*

Skills Intervention Workbook
Skill 75: Tree Diagrams, pp. 149-150.
Skill 76: Counting Outcomes, pp. 151-152.

QR
4.4: Probability, pp. 195-205

CRM
pp. 29-35 | **PROBLEM SOLVING STRAND**
Students will solve problems that arise in mathematics and in other contexts.
6.PS.4   Act out or model with manipulatives activities involving mathematical content from literature.

Students will apply and adapt a variety of appropriate strategies to solve problems.
6.PS.12 Use trial and error and the process of elimination to solve problems.

REPRESENTATION STRAND
Students will use representations to model and interpret physical, social, and mathematical phenomena.
6.R.8   Use mathematics to show and understand social phenomena (i.e., construct tables to organize data showing book sales).

STATISTICS AND PROBABILITY STRAND
Students will collect, organize, display, and analyze data.
6.S.1   Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question (MAY-JUNE IN GRADE 6).
6.S.10   Determine the probability of dependent events. | **LP:**
Everyday Math Grade 5
12.1: Factor Trees
12.2: Choices, Tree Diagrams and Probability |

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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 MARS: Mathematics Assessment Resource Service	NEW YORK STATE MATHEMATICS STANDARDS	NOTES N: Notes LP: Links to the Past LC: Literature Connections CC: Computer Connections
WEEK 33-34	**10.4 Making Matches** Working with situations in which the probabilities depend on previous results. *Suggested Per Period Pacing:* 164. Investigation 1: ALL 165. Investigation 2: ALL 166. Investigation 3: T&D, p. 644; D&U:A, p. 645-646. 167. T&D, p. 646; U&D:B, pp. 646-647; S&S, p. 647; QQ, p. 653 TE **Note:** Period 164, assign S&S as part of homework	*For additional practice or homework:* **Skills Intervention Workbook** Skill 75: Tree Diagrams, pp. 149-150. Skill 76: Counting Outcomes, pp. 151-152. **QR** 4.3: Statistics, pp. 187-194. 4.4: Probability, pp. 195-205 **CRM** pp. 36-40	**PROBLEM SOLVING STRAND** *Students will solve problems that arise in mathematics and in other contexts.* 6.PS.9 Understand the basic language of logic in mathematical situations (and, or, and not). **REPRESENTATION STRAND** *Students will use representations to model and interpret physical, social, and mathematical phenomena.* 6.R.8 Use mathematics to show and understand social phenomena (i.e., construct tables to organize data showing book sales). **STATISTICS AND PROBABILITY STRAND** *Students will understand and apply concepts of probability.* 6.S.9 List possible outcomes for compound events. 6.S.10 Determine the probability of dependent events. 6.S.11 Determine the number of possible outcomes for a compound event by using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability.	**LP:** **Everyday Math Grade 5** 12.1: Factor Trees. 12.2: Choices, Tree Diagrams, and Probability.

grade 6

MATHEMATICS PLANNING GUIDE

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 **MARS:** Mathematics Assessment Resource Service		**N:** Notes **LP:** Links to the Past **LC:** Literature Connections **CC:** Computer Connections

| WEEK 33-34 | Administer the Pre-Chapter Ten Test
10.1 Data Displays
Interpreting and creating line graphs, bar graphs and histograms.

Suggested Per Period Pacing:
168. Explore, p. 342; Investigation 1: ALL
169. Investigation 2: ALL
170. Investigation 3:ALL
171. Investigation 4: ALL
172. IYOW, p. 599; QQ, p. 600 | *For additional practice or homework:*

Skills Intervention Workbook
Skill 68: Make a Table, pp. 135-136.
Skill 69: Statistical Graphs, pp. 137-138.

CRM
pp. 6-19

QR
4.2**:** Displaying Data, p. 179-185

Standardized Test Review:

Skills Intervention Workbook
Skill 74: Misleading Graphs, pp. 147-148. | **STATISTICS AND PROBABILITY STRAND**
Students will collect, organize, display, and analyze data.
6.S.2 Record data in a frequency table (MAY-JUNE IN GRADE 6).
6.S.3 Construct Venn diagrams to sort data (MAY-JUNE in GRADE 6)
6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph) (MAY-JUNE IN GRADE 6).

Students will make predictions that are based upon data analysis.
6.S.8 Justify predictions made from data.

GEOMETRY STRAND
Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes
6.G.4 Determine the volume of rectangular prisms by counting cubes and develop the formula
6.G.7 Determine the area and circumference of a circle, using the appropriate formula. | **LP:**
Everyday Math Grade 5
6.1: Organizing Data.
6.2: Natural Measures of Length.
6.3: Stem and Leaf Plots for Hand and Finger Measures.
6.4: Mystery Plots.
6.5: Sample Size and Sound Conclusions.
6.6: Analysis of Sample Data.

CC:
Statistical database for U.S.: www.statemaster.com

Statistical database for countries around the world: www.nationmaster.com

LC:
Probability Game
by Ivan Moscovish and David Brion |

grade 6

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 **MARS:** Mathematics Assessment Resource Service	NEW YORK STATE MATHEMATICS STANDARDS	NOTES **N:** Notes **LP:** Links to the Past **LC:** Literature Connections **CC:** Computer Connections
WEEK 33-34	**10.2 Collect and Analyze Data** • Interpreting and creating bar graphs and histograms. • Interpreting and creating line plots and stem plots. • Finding and interpreting the mode, median, and mean. • Choosing the best average for a given situation. *Suggested Per Period Pacing:* 173. Investigation 1: ALL 174. Investigation 2: ALL 175. Investigation 3: ALL 176. Investigation 4: ALL 177. IYOW, p. 613, # 10; QQ, p. 616 TE	*For additional practice or homework:* **QR** 4.1: Collecting Data, pp. 172-177	**STATISTICS AND PROBABILITY STRAND** ***Students will collect, organize, display, and analyze data.*** 6.S.1 Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question (MAY-JUNE IN GRADE 6). 6.S.2 Record data in a frequency table (MAY-JUNE IN GRADE 6). 6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph) (MAY-JUNE IN GRADE 6). ***Students will make predictions that are based upon data analysis*** 6.S.8 Justify predictions made from data	**LP:** **Everyday Math, Grade 5** 6.1: Organizing Data. 6.6: Analysis of Sample Data.

Review and Self-Assessment
Suggested Per Period Pacing:
178. Begin Review & Self-Assessment, pp. 654-657
179. Chapter 10 Test   **CRM:** MARS Assessment: Travel to School, pp. 60-62