

A Correlation of

Scott Foresman • Addison Wesley

en**Vision**MATH™

to the

Tri-State
Grade Level Expectations
Grades K–6



O/M-184A

Introduction

This correlation shows the close alignment between **Scott Foresman – Addison Wesley enVisionMATH**, copyright 2009, to the Tri-State Grade Level Expectations-Mathematics. Correlation page references are to the Teacher’s Edition. Lessons in the Teacher’s Edition include facsimile pages of the Student Edition.

The en**VisionMATH**TM program is based around scientific research on how children learn mathematics as well as on classroom-based evidence that validates proven reliability.

Personalized Curriculum

en**VisionMATH**TM provides 20 (16 in Kindergarten) focused topics that are coherent, digestible groups of lessons focusing on one or a few related content areas. A flexible sequence of topics is small enough for a district to rearrange into a personalized curriculum that matches the sequence preferred by the district. The curriculum is designed so that all standards can be taught before the major mathematics testing.

Instructional Design

en**VisionMATH**TM teaches for deep conceptual understanding using research-based best practices. Essential understandings connected by Big Ideas are explicitly stated in the Teacher’s Edition. Daily Spiral Review and the Problem of the Day focus foundational skills and allow for ongoing practice with a variety of problem types. Daily interactive concept development encourages students to interact with teachers and other students to develop conceptual understanding.

Visual Learning allows students to benefit from seeing math ideas portrayed pictorially as well as being able to see connections between ideas. en**VisionMATH**TM created a Visual Learning Bridge which is a step-by-step bridge between the interactive learning activity and the lesson exercises to help students focus on one idea at a time and see the connections within the sequence of ideas. The strong sequential visual/verbal connections deepen conceptual understanding for students of all learning modalities and are particularly effective with English language learners and struggling readers. Guiding questions in blue type help the teacher guide students through the examples, ask probing questions to stimulate higher order thinking, and allow for checking of understanding.

Differentiated Instruction

en**VisionMATH**TM engages and interests all students with leveled activities for ongoing differentiated instruction. A Teacher-Directed Intervention activity at the end of every lesson provides immediate opportunities to get students on track. In addition, ready made leveled learning centers for each lesson allow different students to do the same activity at different levels at the same time giving the teacher uninterrupted time to focus on reteaching students who require intervention. All centers can be used repeatedly due to the inclusion of a “Try Again” at the end. They can also be used for ongoing review and they can be used year after year. Topic-specific considerations for EL, Special Education, At-Risk, and Advanced students enable the teacher to accommodate the diverse learners in the classroom.

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**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations
Kindergarten**

Number and Operations

M(N&O)–K–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 12 through investigations that apply the concepts of equivalency in composing or decomposing numbers using models, explanations, or other representations; and positive fractional numbers ($\frac{1}{2}$) as “fair share” (i.e., equal sized parts or sets) using models, explanations, or other representations.

51, 52–52B, 52C, 53, 54–54B, 54C, 55, 56–56B, 56C, 57, 58–58B, 58C, 59, 60–60B, 60C, 61, 62–62B, 62C, 75, 76–76B, 76C, 77, 78–78B, 78C, 79, 80–80B, 80C, 81, 82–82B, 82C, 83, 84–84B, 84C, 85, 86–86B, 86C, 87, 88–88B, 88C, 89, 90–90B, 90C, 91, 92–92B, 92C, 137, 138–138B, 138C, 139, 140–140B, 140C, 213, 214–214B, 214C

M(N&O)–K–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 20 through investigations that demonstrate one-to-one correspondence; that compare whole numbers to each other or to benchmark whole numbers (5, 10); that demonstrate an understanding of the relation of inequality when comparing whole numbers by using “1 more” or “1 less”; that connect numbers orally and written as numerals to the quantities that they represent using models, representations, or number lines.

51, 52–52B, 52C, 55, 56–56B, 56C, 61, 62–62B, 62C, 63, 64–64B, 64C, 65, 66–66B, 66C, 67, 68–68B, 68C, 75, 76–76B, 76C, 77, 78–78B, 78C, 81, 82–82B, 82C, 83, 84–84B, 84C, 101, 102–102B, 102C, 103, 104–104B, 104C, 105, 106–106B, 106C, 107, 108–108B, 108C, 289, 290–290B, 290C

M(N&O)–K–3 Demonstrates conceptual understanding of mathematical operations through investigations involving addition and subtraction of whole numbers (from 0 to 10) by solving problems involving joining actions, separating actions, part-part whole relationships, and comparison situations; and addition of multiple one-digit whole numbers.

177, 178–178B, 178C, 179, 180–180B, 180C, 181, 182–182B, 182C, 183, 184–184B, 184C, 185, 186–186B, 186C, 187, 188–188B, 188C, 189, 190–190B, 190C, 177–190, 195, 196–196B, 196C, 197, 198–198B, 198C, 199, 200–200B, 200C, 201, 202–202B, 202C, 203, 204–204B, 204C, 205, 206–206B, 206C, 207, 208–208B, 208C

M(N&O)–K–4 No standard at this grade

M(N&O)–K–5 Demonstrates understanding of monetary value through investigation involving knowing the names and values for coins (penny, nickel and dime).

237, 238–238B, 238C, 239, 240–240B, 240C, 241, 242–242B, 242C

M(N&O)–K–6 Mentally adds and subtracts whole numbers by naming the number that is one more or one less than the original number. (IMPORTANT: *The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.*)

65, 66–66B, 66C, 67, 68–68B, 68C, 107, 108–108B, 108C

M(N&O)–K–7 Makes estimates of the number of objects in a set (up to 20) by making and revising estimates as objects are counted (e.g., A student estimates the number of pennies in a jar as 20. Then the student counts the first 10 and makes another estimate based on those that have been counted and those that remain in the jar.). (IMPORTANT: *Estimation should be imbedded instructionally throughout all strands.*)

These pages provide opportunities for students to apply this Grade Level Expectation.

51, 52–52B, 52C, 55, 56–56B, 56C, 75, 76–76B, 76C, 81, 82–82B, 82C, 87, 88–88B, 88C, 213, 214–214B, 214C, 215, 216–216B, 216C, 217, 218–218B, 218C, 219, 220–220B, 220C

Geometry and Measurement

M(G&M)–K–1 Uses properties, attributes, composition, or decomposition to sort or classify polygons (triangles, squares, rectangles, rhombi, trapezoids, and hexagons) or objects by using one non-measurable or measurable attribute; and recognizes, names, and builds polygons and circles in the environment.

5, 6–6B, 6C, 7, 8–8B, 8C, 9, 10–10B, 10C, 115, 116–116B, 116C, 117, 118–118B, 118C, 119, 120–120B, 120C, 121, 122–122B, 122C, 125, 126–126B, 126C, 131, 132–132B, 132C

M(G&M)–K–2 No standard at this grade

M(G&M)–K–3 No standard at this grade

M(G&M)–K–4 No standard at this grade

M(G&M)–K–5 No standard at this grade

M(G&M)–K–6 No standard at this grade

M(G&M)–K–7 Demonstrates conceptual understanding of measurable attributes using comparative language to describe and compare attributes of objects (length [longer, shorter], height [taller, shorter], weight [heavier, lighter], temperature [warmer, cooler], and capacity [more, less]); and compares objects visually and with direct comparison.

153, 154–154B, 154C, 155, 156–156B, 156C, 157, 158–158B, 158C, 163, 164–164B, 164C, 167, 168–168B, 168C, 281, 282–282B, 282C

M(G&M)–K–8 Determines elapsed and accrued time as it relates to calendar patterns (days of the week, yesterday, today, and tomorrow), the sequence of events in a day; and identifies a clock and calendar as measurement tools (days of week, months of the year).

255, 256–256B, 256C, 257, 258–258B, 258C, 259, 260–260B, 260C, 271, 272–272B, 272C, 273, 274–274B, 274, 275, 276–276B, 276C, 277, 278–278B, 278C, 279, 280–280B, 280C

M(G&M)–K–9 Demonstrates understanding of spatial relationships using location and position by using positional words to locate and describe where an object is found in the environment.

17, 18–18B, 18C, 19, 20–20B, 20C, 21, 22–22B, 22C, 23, 24–24B, 24C, 25, 26–26B, 26C

Functions and Algebra

M(F&A)–K–1 Identifies and extends to specific cases a variety of patterns (sequences of shapes, sounds, movement, colors, and letters) by extending the pattern to the next one, two or three elements, or by translating AB patterns across formats (e.g., an abb pattern can be represented as snap, clap, clap or red, yellow, yellow) or by identifying number patterns in the environment.

33, 34–34B, 34C, 35, 36–36B, 36C, 37, 38–38B, 38C, 39, 40–40B, 40C, 41, 42–42B, 42C, 43, 44–44B, 44C, 230–230B, 230C

M(F&A)–K–2 No standard at this grade
M(F&A)–K–3 No standard at this grade
M(F&A)–K–4 No standard at this grade

Data, Statistics, and Probability

M(DSP)–K–1 Interprets a given representation created by the class (models and tally charts) to answer questions related to the data, or to analyze the data to formulate conclusions using words, diagrams, or verbal/scribed responses to express answers. (IMPORTANT: *Analyzes data consistent with concepts and skills in M(DSP)–K–2.*)

69, 70–70B, 289, 290–290B, 290C, 291, 292–292B, 292C, 293, 294–29B, 294C, 295, 296–296B, 296C, 297, 298–298B, 298C

M(DSP)–K–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using more, less, or equal (e.g., Have there been more, less, or the same number of cloudy days compared to sunny days this week?).

289, 290–290B, 290C, 291, 292–292B, 292C, 293, 294–29B, 294C, 295, 296–296B, 296C, 297, 298–298B, 298C

M(DSP)–K–3 No standard at this grade
M(DSP)–K–4 No standard at this grade
M(DSP)–K–5 No standard at this grade
M(DSP)–K–6 No standard at this grade

Problem Solving, Reasoning, and Proof

M(PRP)–2–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- Formulate and solve multi-step problems from everyday and mathematical situations.

69, 70–70B, 70C

- Solve problems using a variety of strategies (e.g., working backwards, looking for patterns and relationships; guess and check; making tables, charts, or organized lists; solving a simpler version of a problem, drawing a diagram; or creating a model)

27, 28–28B, 28C, 41, 42–42B, 42C, 69, 70–70B, 70C, 95, 96–96B, 96C, 109, 110–110B, 110C, 131, 132–132B, 132C, 141, 142–142B, 142C, 147, 148–148B, 148C, 161, 162–162B, 162C, 171, 172–172B, 172C, 189, 190–190B, 190C, 231, 232–232B, 232C, 283, 284–284B, 284C, 301, 302–302B, 302C

- **Verify and interpret results with respect to the original problem.**

These pages provide opportunities for students to apply this Grade Level Expectation.

27, 28–28B, 28C, 41, 42–42B, 42C, 69, 70–70B, 70C, 95, 96–96B, 96C, 109, 110–110B, 110C, 131, 132–132B, 132C, 141, 142–142B, 142C, 147, 148–148B, 148C, 161, 162–162B, 162C, 171, 172–172B, 172C, 189, 190–190B, 190C, 231, 232–232B, 232C, 283, 284–284B, 284C, 301, 302–302B, 302C

- **Determine if the solution of a problem is reasonable.**

11, 12–12B, 12C, 265, 266–266B, 266C

- **Solve problems using manipulatives, graphs, charts, diagrams, and calculators.**

These are some of the many examples.

69, 70–70B, 70C, 125, 126–126B, 126C, 177, 178–178B, 178C, 207, 208–208B, 208C, 283, 284–284B, 284C, 293, 294–294B, 294C

- **Demonstrate that a problem may be solved in more than one way.**

7, 8–8B, 8C, 45, 46–46B, 46C, 61, 62–62B, 62C, 69, 70–70B, 70C, 77, 78–78B, 78C, 83, 84–84B, 84C, 89, 90–90B, 90C, 141, 142–142B

- **Exhibit confidence in their ability to solve problems independently and in groups.**

These are some of the many examples.

11, 12C, 23, 24C, 41, 42C, 69, 70C, 107, 108C, 121, 122C, 131, 132C, 179, 180C, 220, 221C, 223, 224C, 299, 301C

- **Display increasing perseverance, and persistence in problem solving.**

These are some of the many examples.

27, 28–28B, 69, 70–70B, 95, 96–96B, 131, 132–132B, 161, 162–162B, 171, 172–172B, 231, 232–232B, 283, 284–284B, 301, 302–302B

M(PRP)–2–2 Students will use mathematical reasoning and proof and be able to:

- **Use models, known facts, properties, and relationships to explain their thinking.**

These are some of the many examples.

7, 8–8B, 8C, 41, 42–42B, 42C, 93, 94–94B, 94C, 105, 106–106B, 106C, 141, 142–142B, 142C, 199, 200–200B, 200C, 227, 228–228B, 228C

- **Justify solution processes and answers (e.g., "I chose this method to solve the problem because...").**

11, 12–12B, 12C, 265, 266–266B, 266C

- **Draw conclusions using inductive reasoning.**

5, 6–6B, 6C, 7, 8–8B, 8C, 9, 10–10B, 10C, 11, 12–12B, 12C, 43, 44–44B, 44C, 45, 46–46B, 46C, 161, 162–162B, 162C, 171, 172–172B, 172C

- **Identify the missing information needed to find a solution to a given story problem.**

These pages provide opportunities for students to apply this Grade Level Expectation.

301, 302–302B, 302C

- **Use patterns and relationships to analyze mathematical situations (e.g., count by fives).**

33, 34–34B, 34C, 35, 36–36B, 36C, 37, 38–38B, 38C, 39, 40–40B, 40C, 41, 42–42B, 42C, 43, 44–44B, 44C, 225, 226–226B, 226C, 227, 228–228B, 228C, 229, 230–230B, 230C, 231, 232–232B, 232C

Communication, Connections, and Representations

M(CCR)–2–1 Students will communicate their understanding of mathematics and be able to:

- **Demonstrate mathematical communication through discussion, reading, writing, listening, and responding, individually and in groups.**

These are some of the many examples.

8C, 18A, 38A, 78A, 104C, 120A, 138A, 156A, 186A, 202A, 224C, 237, 246A, 253, 262A, 279, 292A, 302A

- **Discuss relationships between everyday language and mathematical language and symbols (e.g., words that mean something different in mathematics and in everyday life).**

1E, 3–4, 15E, 17–18, 19–20, 21–22, 23–24, 25–26, 31E, 49E, 73E, 99E, 113E, 135E, 151E, 175E, 179–180, 181–182, 183–184, 193E, 195–196, 197–198, 211E, 235E, 251E, 269E, 287E

- **Explain conclusions, thought processes, and strategies in problem-solving situations.**

11, 12–12B, 12C, 27, 28–28B, 28C, 41, 42–42B, 42C, 69, 70–70B, 70C, 95, 96–96B, 96C, 109, 110–110B, 110C, 131, 132–132B, 132C, 141, 142–142B, 142C, 147, 148–148B, 148C, 161, 162–162B, 162C, 171, 172–172B, 172C, 189, 190–190B, 190C, 231, 232–232B, 232C, 283, 284–284B, 284C, 301, 302–302B, 302C

- **Discuss, illustrate, and write about mathematical concepts and relationships.**

These are some of the many examples.

39, 95, 96–96B, 96C, 105, 147, 148–148B, 148C, 153, 189, 190–190B, 190C, 221, 283, 284–284B, 284C, 301, 302–302B, 302C

- **Draw pictures and use objects to illustrate mathematical concepts.**

27, 28B–28, 28C, 109, 110–110B, 110C, 131, 132–132B, 132C, 141, 142–142B, 142C, 147, 148–148B, 148C, 189, 190–190B, 190C, 207, 208–208B, 208C, 247, 248–248B, 248C, 283, 284–284B, 284C

M(CCR)–2–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Create and use age level appropriate representations to organize, record, and communicate mathematical ideas (e.g., students should recognize the relationship among seven counters, seven tally marks, and the symbol 7).**

These are some of the many examples.

61, 62–62B, 62C, 69, 70–70B, 70C, 89, 90–90B, 90C, 177, 178–178B, 178C, 195, 196–196B, 196C, 291, 292–292B, 292C, 301, 302–302B, 303C

- **Select, apply, and translate among mathematical representations to solve problems (e.g., representing fractions with circles, with geoboards, and with pattern blocks).**

116–116A, 118–118A, 119, 120–120A, 120C, 121, 122–122B, 122C, 124A, 124C, 128A, 130–130A, 131, 132–132B, 132C, 137, 138–138A, 138C, 139, 140–140B, 140C, 141, 142–142B, 142C

- **Link different representations.**

42A, 42B, 53, 54–54B, 54C, 57, 58–58B, 58C, 61, 62–62B, 62C, 77, 78–78B, 78C, 79, 80–80B, 80C, 83, 84–84B, 84C, 85, 86–86B, 86C, 89, 90–90B, 90C, 91, 92–92B, 92C, 137, 138–138A, 138C, 139, 140–140B, 140C, 141, 142–142B, 142C, 213, 214–214B, 214C, 215, 216–216B, 216C, 217, 218–218B, 218C, 219, 220–220B, 220C

- **Use representations to model and interpret physical, social, and mathematical phenomena.**

These are some of the many examples.

33, 34–34B, 34C, 61, 62–62B, 62C, 69, 70–70B, 70C, 125, 126–126B, 126C, 177, 178–178B, 178C, 195, 196–196B, 196C, 291, 292–292B, 292C, 301, 302–302B, 303C

- **Use conventional and self-generated (invented) representations and connect them.**

53, 54A, 57, 58A, 61, 62A, 77, 78A, 79, 82A, 82C, 83, 84A, 84C, 85, 86A, 89, 90A, 90C, 91, 137, 139, 141, 147, 148–148A, 148C, 189, 190–190A, 190C, 213, 214A, 215, 216A, 217, 218A, 219

- **Realize that any representation is subject to multiple interpretations (e.g., drawings and graphs can be read in a different way).**

42A, 42B, 61, 62–62B, 62C, 77, 78–78B, 78C, 83, 84–84B, 84C, 89, 90–90B, 90C, 92A, 138A, 138C, 140B, 190A, 190C, 194, 284A, 292–292A, 299

M(CCR)–2–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **Link conceptual and procedural knowledge (e.g., they will know that when they “regroup,” they are simply changing the representation of the minuend, but not its value).**

175E, 177, 178–178B, 178C, 179, 180–180B, 180C, 181, 182–182B, 182C, 183, 184–184B, 184C, 185, 186–186B, 186C, 187, 188–188B, 188C, 193E, 195, 196–196B, 196C, 197, 198–198B, 198C, 199, 200–200B, 200C, 201, 202–202B, 202C, 203, 204–204B, 204C, 205, 206–206B, 206C

- **Recognize and use mathematics in other curriculum areas (e.g., science, social studies).**

1G–1H, 15G–15H, 31G–31H, 49G–49H, 73G–73H, 99G–99H, 113G–113H, 135G–135H, 151G–151H, 175G–175H, 193G–193H, 211G–211H, 235G–235H, 251G–251H, 269G–269, 287G–287H

- **Recognize and use mathematics in their daily lives (e.g., graphs, tables, or maps).**

These are some of the many examples.

5, 6–6B, 6C, 10C, 49G–49H, 73G–73H, 99G–99H, 118A, 125, 126–126B, 126C, 155, 156–156A, 156C, 247, 248–248B, 248C, 255, 256–256B, 256C, 279, 280–280B, 280C, 293, 294–294B, 294C

- **Identify mathematical situations occurring in literature for children.**

1, 15, 31, 49, 73, 99, 113, 135, 151, 175, 193, 211, 235, 251, 269, 287

- **Identify examples of geometry in nature, art, and architecture.**

113H, 114, 124, 124C, 135G

**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations**

Grade One

Number and Operations

M(N&O)–1–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 100 using place value, by applying the concepts of equivalency in composing or decomposing numbers; and in expanded notation using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, or $\frac{a}{4}$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area models where the denominator is equal to the number of parts in the whole using models, explanations, or other representations.

3, 4–6A, 6B, 7, 8–10A, 10B, 11, 12–14A, 14B, 15, 16–18A, 18B, 19, 20–22A, 22B, 119, 120–122A, 122B, 123, 124–126A, 126B, 127, 128–130A, 130B, 131, 132–134A, 134B, 263, 264–266A, 266B, 267, 268–270A, 270B, 271, 272–274A, 274B, 303, 304–306A, 306B, 307, 308–310A, 310B, 311, 312–314a, 314B, 315, 316–318A, 318B, 319, 320–322A, 322B, 323, 324–326A, 326B

M(N&O)–1–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 100 by ordering whole numbers; by comparing whole numbers to each other or to benchmark whole numbers (5, 10, 25, 50, 75, 100); by demonstrating an understanding of the relation of inequality when comparing whole numbers by using “1 more”, “1 less”, “5 more”, “5 less”, “10 more”, “10 less”; and by connecting number words (from 0 to 20) and numerals (from 0 to 100) to the quantities and positions that they represent using investigations, models, representations, or number lines.

4–6, 8–10, 12–14, 31, 32–34A, 34B, 35, 36–38A, 38B, 39, 40–42A, 42B, 43, 44–46A, 46B, 143, 144–146A, 146B, 171, 172–174A, 174B, 264–266, 268–270, 331, 332–334A, 334B, 339, 340–342A, 342B, 343, 344–346A, 346B, 347, 348–350A, 350B, 351, 352–354A, 354B, 355, 356–358A, 358B

M(N&O)–1–3 Demonstrates conceptual understanding of mathematical operations involving addition and subtraction of whole numbers (from 0 to 30) by solving problems involving joining actions, separating actions, part-part whole relationships, and comparison situations; and addition of multiple one-digit whole numbers.

63, 64–66A, 66B, 67, 68–70A, 70B, 95, 96–98A, 98B, 99, 100–102A, 102B, 103, 104–106A, 106B, 143, 144–146A, 146B, 147, 148–150A, 150B, 151, 152–154A, 154B, 155, 156–158A, 158B, 159, 160–162A, 162B, 171, 172–174A, 174B, 175, 176–178A, 178B,

179, 180–182A, 182B, 183, 184–186A, 186B, 481, 482–484A, 484B, 485, 486–488A, 488B, 489, 490–492A, 492B, 505, 506–508A, 508B, 517, 518–520A, 520B, 521, 522–524A, 524B, 525, 526–528A, 528B, 529, 530–532A, 532B

M(N&O)–1–4 No standard at this grade

M(N&O)–1–5 Demonstrates understanding of monetary value by knowing the names and values for coins (penny, nickel, dime, and quarter); and by adding collections of like coins together to a sum no greater than \$1.00.

367, 368–370A, 370B, 371, 372–374A, 374B, 375, 376–378A, 378B, 383, 384–386A, 386B

M(N&O)–1–6 Mentally adds and subtracts whole numbers by naming the number that is one or two more or less than the original number; and adds and subtracts whole number facts to ten (e.g., $5 + 3 = 8$; $8 - 5 = 3$). (IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

143, 144–146A, 146B, 147, 148–150A, 150B, 151, 152–154A, 154B, 155, 156–158A, 158B, 159, 160–162A, 162B, 171, 172–174A, 174B, 175, 176–178A, 178B, 179, 180–182A, 182B, 331, 332–334A, 334B

M(N&O)–1–7 Makes estimates of the number of objects in a set (up to 30) and revises estimates as objects are counted (e.g., A student estimates the number of pennies in a jar as 28. Then the student counts the first 10 and makes another estimate based on those that have been counted and those that remain in the jar.). (IMPORTANT: Estimation should be imbedded instructionally throughout all strands.)

These pages provide opportunities for students to apply this Grade Level Expectation.
16–18, 20–22, 123, 263, 266B, 267, 268–270, 558–560

M(N&O)–1–8 Applies properties of numbers (odd, even, composition, and decomposition [e.g., 5 is the same as $2 + 3$]) and field properties (commutative and identity for addition) to solve problems and to simplify computations involving whole numbers.

51, 52–54A, 54B, 55, 56–58A, 5B, 59, 60–62A, 62B, 71, 72–74A, 74B, 83, 84–86A, 86B, 87, 88–90A, 90B, 91, 92–94A, 94B, 123, 124–126A, 126B, 127, 128–130A, 130B, 131, 132–134A, 134B, 283, 284–286A, 286B, 319, 320–322A, 322B, 497, 498–500A, 500B, 501, 502–504A, 504B, 505, 506–508A, 508B

Geometry and Measurement

M(G&M)–1–1 Uses properties, attributes, composition, or decomposition to sort or classify polygons (triangles, squares, rectangles, rhombi, trapezoids, and hexagons) or objects by a combination of two non-measurable or measurable attributes; and recognizes, names, builds, and draws polygons and circles in the environment.

195, 196–198A, 198B, 199, 200–202A, 202B, 203, 204–206A, 206B, 207, 208–210A, 210B, 223, 224–226A, 226B

M(G&M)–1–2 No standard at this grade

M(G&M)–1–3 Given an example of a three-dimensional geometric shape (rectangular prisms, cylinders, or spheres) finds examples of objects in the environment that are of the same geometric shape (e.g., show a wooden cylinder and students identify common objects of the same shape).

227, 228–230A, 230B

M(G&M)–1–4 Demonstrates conceptual understanding of congruency by making mirror images and creating shapes that have line symmetry.

215, 216–218A, 218, 219, 220–222A, 222B

M(G&M)–1–5 No standard at this grade

M(G&M)–1–6 Demonstrates conceptual understanding of the length/height of a two-dimensional object using nonstandard units (e.g. comparing objects to trains of small cubes, using iterations of a small unit to measure an object).

399, 400–402A, 402B, 403, 404–406A, 406B

M(G&M)–1–7 Demonstrates conceptual understanding of measurable attributes using comparative language to describe and compare attributes of objects (length [longer, shorter], height [taller, shorter], weight [heavier, lighter], temperature [warmer, cooler], and capacity [more, less]); compares objects visually, with direct comparison, and using non-standard units.

395, 396–398A, 398B, 419, 420–422A, 422B, 431, 432–434A, 434B, 443, 444–446A, 446B

M(G&M)–1–8 Determines elapsed and accrued time as it relates to calendar patterns (days of the week, months of the year), the sequence of events in a day; and recognizes an hour and “on the $\frac{1}{2}$ hour”.

453, 454–456A, 456B, 457, 458–460A, 460B, 469, 470–472A, 472B, 473, 474–476A, 476B

M(G&M)–1–9 Demonstrates understanding of spatial relationships using location and position by using positional words (e.g., close by, on the right, underneath, above, beyond) to describe one location in reference to another on a map, in a diagram, and in the environment.

553, 554–556A, 556B

Functions and Algebra

M(F&A)–1–1 Identifies and extends to specific cases a variety of patterns (repeating and growing [numeric and nonnumeric]) represented in models, tables, or sequences by extending the pattern to the next one, two, or three elements, by finding a missing element (e.g., 2, 4, 6, ____, 10), or by translating repeating patterns across formats (e.g., an abb pattern can be represented as snap, clap, clap; or red, yellow, yellow; or 1,2,2).

135, 136–138A, 138B, 243, 244–246A, 246B, 247, 248–250A, 250B, 251, 252–254A, 254B, 255, 256–258A, 258B, 271, 272–274A, 274B, 275, 276–278A, 278B, 279, 280–282A, 282B, 291, 292–294A, 294B, 295, 296–298A, 298B

M(F&A)–1–2 No standard at this grade

M(F&A)–1–3 No standard at this grade

M(F&A)–1–4 Demonstrates conceptual understanding of equality by finding the value that will make an open sentence true (e.g., $2 + W = 7$) using models, verbal explanations, or written equations. (limited to one operation and limited to use addition or subtraction)

65, 85, 89, 93, 97, 101, 105, 109, 149, 153, 157, 161, 177, 180–181, 184–185, 186A, 505, 523, 526–527, 528A, 530

Data, Statistics, and Probability

M(DSP)–1–1 Interprets a given representation created by the class (models, tally charts, pictographs with one-to-one correspondence, and tables) to answer questions related to the data, or to analyze the data to formulate conclusions using words, diagrams, or verbal/scribed responses to express answers.

(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–1–2.)

135, 136–138A, 473, 474–476A, 476B, 509, 510–512A, 541, 542–544A, 544B, 545, 546–548A, 548B, 549, 550–552A, 552B, 557, 558–560A, 560B, 565, 566–568A, 568B, 569, 570–572A, 572B

M(DSP)–1–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using more, less, or equal.

541, 542–544A, 544B, 545, 546–548A, 548B, 549, 550–552A, 552B, 558–560A, 560B, 565, 566–568A, 568B, 569, 570–572A, 572B

M(DSP)–1–3 No standard at this grade

M(DSP)–1–4 No standard at this grade

M(DSP)–1–5 For a probability event in which the sample space may or may not contain equally likely outcomes, groups use experiments to describes the likelihood or chance of an event (using “more likely,” “less likely”, or “equally likely”).

577, 578–580A, 580B

M(DSP)–1–6 No standard at this grade

Problem Solving, Reasoning, and Proof

M(PRP)–2–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Formulate and solve multi-step problems from everyday and mathematical situations.**

75, 76–78, 78B, 493, 494–496A, 496B

- **Solve problems using a variety of strategies (e.g., working backwards, looking for patterns and relationships; guess and check; making tables, charts, or organized lists; solving a simpler version of a problem, drawing a diagram; or creating a model)**

23, 24–25A, 25B, 43, 44–46A, 46B, 75, 76–78A, 78B, 111, 112–114A, 114B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 223, 224–226A, 226B, 255, 256–258A, 258B, 295, 296–298A, 298B, 323, 324–326A, 326B, 359, 360–362A, 362B, 387, 388–390A, 390B, 509, 510–512A, 512B, 533, 534–536A, 536B, 569, 570–572A, 572B, 601, 602–604A, 604B

- **Verify and interpret results with respect to the original problem.**

These pages provide opportunities for students to apply this Grade Level Expectation.

23, 24–25A, 25B, 43, 44–46A, 46B, 75, 76–78A, 78B, 111, 112–114A, 114B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 223, 224–226A, 226B, 255, 256–258A, 258B, 295, 296–298A, 298B, 323, 324–326A, 326B, 359, 360–362A, 362B, 387, 388–390A, 390B, 509, 510–512A, 512B, 533, 534–536A, 536B, 569, 570–572A, 572B, 601, 602–604A, 604B

- **Determine if the solution of a problem is reasonable.**

403, 404–406A, 406B, 413, 414, 438, 441, 442, 487, 531, 623, 628B, 631

- **Solve problems using manipulatives, graphs, charts, diagrams, and calculators.**

These are some of the many examples.

23, 24–26A, 26B, 75, 76–78A, 78B, 11, 112–114A, 114B, 190, 223, 224–226A, 226B, 246B, 258B, 306B, 323, 324–326A, 326B, 525–526, 561, 562–564A, 564B

- **Demonstrate that a problem may be solved in more than one way.**

51, 52–54A, 54B, 55, 56–58A, 58B, 59, 60–62A, 62B, 71, 72–74A, 74B, 78, 77–78, 78B, 83, 84–86A, 86B, 87, 88–90A, 90B, 91, 92–94A, 94B, 127, 128–130A, 130B, 131, 132–134A, 134B, 223, 224–226A, 226B, 319, 320–322A, 322B, 359, 360–362A, 362B, 505, 506–508A, 508B

- **Exhibit confidence in their ability to solve problems independently and in groups.**

These are some of the many examples.

31, 34B, 67, 70B, 101, 102B, 127, 137, 181, 186B, 215, 229, 246B, 309, 318B, 347, 381, 437, 468B, 517, 547, 624B

- **Display increasing perseverance, and persistence in problem solving.**

These are some of the many examples.

23, 24–25A, 43, 44–46A, 111, 112–114A, 163, 164–166A, 223, 224–226A, 295, 296–298A, 323, 324–326A, 387, 388–390A, 493, 494–496A, 533, 534–536A, 536B, 569, 570–572A, 637, 638–640A

M(PRP)–2–2 Students will use mathematical reasoning and proof and be able to:

- **Use models, known facts, properties, and relationships to explain their thinking.**

These are some of the many examples.

31, 32–34A, 34B, 159, 160–162A, 162B, 183, 184–186A, 186B, 199, 200–202A, 202B, 235, 236–238A, 238B, 419, 420–422A, 422B, 505, 506–508A, 508B

- **Justify solution processes and answers (e.g., "I chose this method to solve the problem because...").**

403, 404–406A, 406B, 413, 414, 438, 441, 442, 487, 531, 623, 628B, 631

- **Draw conclusions using inductive reasoning.**

67, 68–70A, 70B, 123, 124–126A, 126B, 199, 200–202A, 202B, 235, 236–238A, 238B, 243, 244–246A, 246B, 251, 252–254A, 254B, 271, 272–274A, 274B, 283, 284–286A, 286B

- **Identify the missing information needed to find a solution to a given story problem.**

These pages provide opportunities for students to apply this Grade Level Expectation.

637, 638–640A, 640B

- **Use patterns and relationships to analyze mathematical situations (e.g., count by fives).**

135, 136–138A, 138B, 243, 244–246A, 246B, 247, 248–250A, 250B, 251, 252–254A, 254B, 255, 256–258A, 258B, 271, 272–274A, 274B, 275, 276–278A, 278B, 279, 280–282A, 282B, 291, 292–294A, 294B, 295, 296–298A, 298B, 497, 498–500A, 500B, 501, 502–504A, 504B

Communication, Connections, and Representations

M(CCR)–2–1 Students will communicate their understanding of mathematics and be able to:

- **Demonstrate mathematical communication through discussion, reading, writing, listening, and responding, individually and in groups.**

These are some of the many examples.

31, 34B, 51, 67, 70B, 101, 102B, 114, 119, 120, 127, 137, 181, 186B, 215, 229, 246B, 309, 318B, 347, 381, 437, 468B, 517, 547, 624B

- **Discuss relationships between everyday language and mathematical language and symbols (e.g., words that mean something different in mathematics and in everyday life).**

1E, 29E, 31, 32–34, 35, 36–38, 39, 40–42, 49E, 51, 52–54, 55, 56–58, 63, 64–66, 67, 70B, 71, 81E, 83, 84–86, 95, 96–98, 117E, 141E, 169E, 193E, 241E, 261E, 301E, 329E, 365E, 393E, 451E, 479E, 515E, 539E, 583E, 607E

- **Explain conclusions, thought processes, and strategies in problem-solving situations.**

23, 24–25A, 25B, 43, 44–46A, 46B, 75, 76–78A, 78B, 111, 112–114A, 114B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 223, 224–226A, 226B, 255, 256–258A, 258B, 295, 296–298A, 298B, 323, 324–326A, 326B, 359, 360–362A, 362B, 387, 388–390A, 390B, 509, 510–512A, 512B, 533, 534–536A, 536B, 569, 570–572A, 572B, 601, 602–604A, 604B

- **Discuss, illustrate, and write about mathematical concepts and relationships.**

These are some of the many examples.

63, 99, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 223, 224–226A, 224B, 307, 347, 395, 465, 497, 525, 549, 585, 621

- **Draw pictures and use objects to illustrate mathematical concepts.**

23, 24–26A, 26B, 43, 44–46A, 46B, 75, 76–78A, 78B, 111, 112–114A, 114B, 163, 164–166A, 166B, 187, 188–190A, 190B

M(CCR)–2–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Create and use age level appropriate representations to organize, record, and communicate mathematical ideas (e.g., students should recognize the relationship among seven counters, seven tally marks, and the symbol 7).**

These are some of the many examples.

15, 16–18A, 18B, 39, 40–42A, 42B, 59, 60–62A, 62B, 135, 136–138A, 138B, 187, 188–190A, 190B, 263, 264–266A, 266B, 303, 304–306A, 307, 308–310A, 310B, 312–314, 314B, 316–318, 318B, 318B, 347, 348–350A, 350B, 557, 558–560A, 560B

- **Select, apply, and translate among mathematical representations to solve problems (e.g., representing fractions with circles, with geoboards, and with pattern blocks).**

195, 199, 203, 204–206A, 206B, 207, 208–210A, 211, 212–214A, 214B, 215, 216–218A, 218B, 223, 224–226A, 226B, 232–234, 586–588, 588B, 589, 590–592A, 592B, 598–600A

- **Link different representations.**

3, 4–6A, 7, 8–10A, 11, 12–14A, 15, 16–18A, 19, 20–22A, 51, 52–54A, 55, 56–58A, 59, 60–62A, 119, 120–122A, 122B, 123, 124–126A, 126B, 127, 128–130A, 131, 132–134A, 134B, 303, 304–306A, 307, 308–310A, 310B, 312–314, 314B, 316–318, 318B, 318B, 319, 320–322A, 586–588, 589, 590, 592B

- **Use representations to model and interpret physical, social, and mathematical phenomena.**

These are some of the many examples.

15, 16–18A, 18B, 39, 40–42A, 42B, 59, 60–62A, 62B, 135, 136–138A, 138B, 187, 188–190A, 190B, 211, 212–214A, 214B, 263, 264–266A, 266B, 303, 304–306A, 307, 308–310A, 310B, 312–314, 314B, 347, 348–350A, 350B, 557, 558–560A, 560B

- **Use conventional and self-generated (invented) representations and connect them.**

3, 7, 11, 15, 19, 22B, 23, 24–26, 26B, 59, 63, 127, 138B, 187, 188–190A, 533, 534–536B, 585, 589, 601, 602–603

- **Realize that any representation is subject to multiple interpretations (e.g., drawings and graphs can be read in a different way).**

75, 187, 243, 244–246, 246B, 544, 556, 560, 568, 585, 589

M(CCR)–2–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **Link conceptual and procedural knowledge (e.g., they will know that when they “regroup,” they are simply changing the representation of the minuend, but not its value).**

51, 52–54A, 54B, 55, 56–58A, 58B, 59, 60–62A, 62B, 63, –64–66A, 66B, 67, 68–70A, 70B, 83, 84–86A, 86B, 87, 88–90A, 90B, 91, 92–94A, 94B, 95, 96–98A, 98B, 99, 100–102A, 102B, 103, 104–106A, 106B, 319, 320–322, 621, 633

- **Recognize and use mathematics in other curriculum areas (e.g., science, social studies).**

395, 396–398A, 398B, 431, 432–434A, 434B, 443, 444–446A, 446B

- **Recognize and use mathematics in their daily lives (e.g., graphs, tables, or maps).**

These are some of the many examples.

163, 164–166A, 166B, 227, 228–230, 383, 384–386A, 386B, 407, 408–410A, 410B, 431, 432–434A, 434B, 465, 466–468A, 468B, 557, 558–560A, 560B, 565, 566–568A, 568B

- **Identify mathematical situations occurring in literature for children.**

1, 29, 81, 117F, 117, 141, 169, 193, 241, 261F, 261, 301F, 301, 329F, 365, 393F, 393, 451, 479, 515, 539, 583, 607

- **Identify examples of geometry in nature, art, and architecture.**

193D, 203, 204–206, 208–210

**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations**

Grade Two

Number and Operations

M(N&O)–2–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 199 using place value, by applying the concepts of equivalency in composing or decomposing numbers (e.g., $34 = 17 + 17$; $34 = 29 + 5$); and in expanded notation (e.g., $141 = 1$ hundred + 4 tens + 1 one or $141 = 100 + 40 + 1$) using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, or $\frac{a}{4}$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the denominator is equal to the number of parts in the whole using models, explanations, or other representations.

99, 100–102A, 102B, 103, 104–106A, 106B, 355, 356–358A, 358B, 363–364–366A, 366B, 369

M(N&O)–2–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 199 by ordering whole numbers; by comparing whole numbers to each other or to benchmark whole numbers (10, 25, 50, 75, 100, 125, 150, or 175); by demonstrating an understanding of the relation of inequality when comparing whole numbers by using “1 more”, “1 less”, “10 more”, “10 less”, “100 more”, or “100 less”; or by connecting number words and numerals to the quantities they represent using models, number lines, or explanations.

107, 108–110A, 110B, 11, 112–114A, 114B, 115, 116–118A, 118B, 119, 120–122A, 122B, 123, 124–126A, 126B, 128–130A, 130B

M(N&O)–2–3 Demonstrates conceptual understanding of mathematical operations involving addition and subtraction of whole numbers by solving problems involving joining actions, separating actions, part-part whole relationships, and comparison situations; and addition of multiple one-digit whole numbers.

3, 4–6A, 6B, 7, 8–10A, 10B, 11, 12–14A, 14B, 15, 16–18A, 18B, 19, 20–22A, 22B, 51, 52–54A, 54B, 55, 56–58A, 58B, 59, 60–62A, 62B, 87, 88–90A, 90B, 199, 200–202A, 202B

M(N&O)–2–4 No standard at this grade

M(N&O)–2–5 Demonstrates understanding of monetary value by adding coins together to a value no greater than \$1.99 and representing the result in dollar notation; making change from \$1.00 or less, or recognizing equivalent coin representations of the same value (values up to \$1.99).

143, 144–146A, 146B, 147, 148–150A, 150B, 151, 152–154A, 154B, 155, 156–158A, 158B, 163, 164–166A, 166B

M(N&O)–2–6 Mentally adds and subtracts whole number facts to a sum of 20; names the number that is 10 more or less than the original number, and mentally adds and subtracts two digit multiples of ten (e.g., $60 + 80$, $90 - 30$).

(IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

35, 36–38A, 38B, 39, 40–42A, 42B, 43, 44–46A, 46B, 55, 56–58A, 58B, 59, 60–62A, 62B, 71, 72–74A, 74B, 75, 76–78A, 78B, 79, 80–82A, 82B, 83, 84–86A, 86B, 128–130A, 130B, 171, 172–174A, 174B, 195, 196–198A, 198B

M(N&O)–2–7 Makes estimates of the number of objects in a set (up to 50) by selecting an appropriate method of estimation. (IMPORTANT: The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.)

These pages provide opportunities for students to apply this Grade Level Expectation.
99, 102, 104, 366B

M(N&O)–2–8 Applies properties of numbers (odd and even) and field properties (commutative for addition, identity for addition, and associative for addition) to solve problems and to simplify computations involving whole numbers.

35, 36–38A, 38B, 47, 48–50A, 50B, 51, 52–54A, 54B, 131, 132–134A, 134B

Geometry and Measurement

M(G&M)–2–1 Uses properties, attributes, composition, or decomposition to sort or classify polygons or objects by a combination of two or more non-measurable or measurable attributes.

316, 319, 320–322A, 322B, 323, 324–326A, 326B, 327, 328–330A, 330B

M(G&M)–2–2 No standard at this grade

M(G&M)–2–3 No standard at this grade

M(G&M)–2–4 Demonstrates conceptual understanding of congruency by composing and decomposing two-dimensional objects using models or explanations (e.g., using triangular pattern blocks to construct a figure congruent to the hexagonal pattern block); and uses line symmetry to demonstrate congruent parts within a shape.

331, 332–334A, 334B, 339, 340–342A, 342B

M(G&M)–2–5 No standard at this grade**M(G&M)–2–6 Demonstrates conceptual understanding of perimeter and area by using models or manipulatives to surround and cover polygons.**

399, 400–402A, 402B, 403, 404–406A, 406B, 407, 408–410A, 410B

M(G&M)–2–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

391, 392–394A, 394B, 395, 396–398A, 398B, 423, 424–426A, 426B, 427, 428–430A, 430B, 435, 436–438A, 438B, 439, 440–442A, 442B, 467, 468–470A, 470B

M(G&M)–2–8 No standard at this grade**M(G&M)–2–9 Demonstrates understanding of spatial relationships using location and position by using positional language in two- and three- dimensional situations to describe and interpret relative positions (e.g., above the surface of the desk, below the triangle on the paper); and creates and interprets simple maps and names locations on simple coordinate grids.**

491, 492–494A, 494B

Functions and Algebra**M(F&A)–2–1 Identifies and extends to specific cases a variety of patterns (linear and non-numeric) represented in models, tables, or sequences by extending the pattern to the next element, or finding a missing element (e.g., 2, 4, 6, ____, 10).**

127, 128–130A, 130B, 163, 164–166A, 166B, 187, 188–190A, 190B, 323, 324–326A, 326B, 523, 524–526A, 526B, 527, 528–530A, 530B, 535, 536–538A, 538B, 543, 544–546A, 546B, 590, 635, 636–638A, 638B

M(F&A)–2–2 No standard at this grade**M(F&A)–2–3 No standard at this grade****M(F&A)–2–4 Demonstrates conceptual understanding of equality by finding the value that will make an open sentence true (e.g., $2 + W = 7$). (limited to one operation and limited to use addition or subtraction)**

36–38, 40–42, 45, 53, 57, 61, 73, 78A, 80–82, 82B, 84–86A, 88–90A, 90B, 93, 55–62, 75–90, 201, 202A, 205, 208–210A

Data, Statistics, and Probability**M(DSP)–2–1 Interprets a given representation (pictographs with one-to-one correspondence, line plots, tally charts, or tables) to answer questions related to the data, or to analyze the data to formulate conclusions. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–2–2.)**

479, 480–482A, 482B, 484–486A, 486B, 487, 488–490A, 490B, 503, 504–506A, 506B

M(DSP)–2–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using more, less, or equal.

479, 480–482A, 482B, 484–486A, 486B, 487, 488–490A, 490B, 503, 504–506A, 506B

M(DSP)–2–3 No standard at this grade

M(DSP)–2–4 Uses counting techniques to solve problems involving combinations using a variety of strategies (e.g., student diagrams, organized lists, tables, tree diagrams, or others); (e.g., How many ways can you make 50 cents using nickels, dimes, and quarters?)

155, 156, 163, 164–166A, 166B

M(DSP)–2–5 For a probability event in which the sample space may or may not contain equally likely outcomes, uses experiments to describe the likelihood or chance of an event using “more likely,” “less likely,” “equally likely,” certain or impossible.

495, 496–498A–498B, 499, 500–502A, 502B

M(DSP)–2–6 In response to a teacher or student generated question or hypothesis, groups decide the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–2–2.)

477F, 478, 479, 487, 490B, 495, 499

Problem Solving, Reasoning, and Proof

M(PRP)–2–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Formulate and solve multi-step problems from everyday and mathematical situations.**

91, 92–94A, 94B, 275, 276–278A, 278B, 471, 472–474A, 474B

- **Solve problems using a variety of strategies (e.g., working backwards, looking for patterns and relationships; guess and check; making tables, charts, or organized lists; solving a simpler version of a problem, drawing a diagram; or creating a model)**

27, 28–30A, 30B, 63, 64–66A, 66B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 243, 244A–246A, 246B, 307, 308–310A, 310B, 343, 344–346A, 346B, 371, 372–374A, 374B, 407, 408–410A, 410B, 443, 444–446A, 446B, 503, 504–506A, 506B, 543, 544–546A, 546B, 583, 584–586A, 586B, 611, 612–614A, 614B, 635, 636–638A, 638B

- **Verify and interpret results with respect to the original problem.**

These pages provide opportunities for students to apply this Grade Level Expectation.

27, 28–30A, 30B, 63, 64–66A, 66B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 243, 244A–246A, 246B, 307, 308–310A, 310B, 343, 344–346A, 346B, 371, 372–374A, 374B, 407, 408–410A, 410B, 443, 444–446A, 446B, 503, 504–506A, 506B, 543, 544–546A, 546B, 583, 584–586A, 586B, 611, 612–614A, 614B, 635, 636–638A, 638B

- **Determine if the solution of a problem is reasonable.**

285, 287, 288–290A, 290B, 297, 299, 300–302A, 302B, 307, 308–310, 310A, 310B, 343, 344–346A, 346B, 387, 389, 401, 405, 417, 421, 561

- **Solve problems using manipulatives, graphs, charts, diagrams, and calculators.**

These are some of the many examples.

27, 28–30, 30B, 135, 136–138A, 138B, 163, 164–166A, 166B, 183, 184–186A, 186B, 255, 256–258A, 258B, 351, 352–354A, 354B, 503, 504–506A, 506B, 635, 636–638A, 638B

- **Demonstrate that a problem may be solved in more than one way.**

47, 48–50A, 50B, 51, 52–54A, 54B, 87, 88–90A, 90B, 155, 156–158A, 158B, 163, 164–165, 166B, 239, 240–242A, 242B, 291, 292–294A, 294B, 303, 304–306A, 306B, 563, 564–566A, 566B, 567, 568–570A, 570B, 603, 604–606A, 606B

- **Exhibit confidence in their ability to solve problems independently and in groups.**

These are some of the many examples.

23, 25, 91, 93, 151, 153, 179, 181, 235, 237, 271, 273, 331, 333, 399, 401, 487, 489, 563, 565

- **Display increasing perseverance, and persistence in problem solving.**

These are some of the many examples.

27, 28–30A, 63, 64–66A, 163, 164–166A, 166B, 187, 188–190A, 190B, 243, 244A–246A, 246, 343, 344–346A, 407, 408–410A, 443, 503, 504–506A, 543, 544–546A, 583, 611, 612–614A, 635, 636–638A

M(PRP)–2–2 Students will use mathematical reasoning and proof and be able to:

- **Use models, known facts, properties, and relationships to explain their thinking.**

These are some of the many examples.

27, 51, 52–54A, 54B, 75, 76–78A, 78B, 187, 188–190, 263, 264–266A, 371, 372–374A, 374B, 403, 404–406, 543, 544–546A, 546B, 607, 608–610A, 610B

- **Justify solution processes and answers (e.g., "I chose this method to solve the problem because...").**
91, 92–94A, 94B, 275, 276–278A, 278B, 307, 308–310A, 310B, 471, 472–474A, 474B–474
- **Draw conclusions using inductive reasoning.**
187, 188–190A, 190B, 211, 212–214A, 214B, 343, 344–346A, 346B, 371–374, 543, 544–546A, 546B, 635, 636–638A, 638B
- **Identify the missing information needed to find a solution to a given story problem.**
211, 212–214A, 214B
- **Use patterns and relationships to analyze mathematical situations (e.g., count by fives).**
127, 128–130A, 130B, 163, 164–166A, 166B, 187, 188–190A, 190B, 323, 324–326A, 326B, 523, 524–526A, 526B, 527, 528–530A, 530B, 535, 536–538A, 538B, 543, 544–546A, 546B, 590, 635, 636–638A, 638B

Communication, Connections, and Representations

M(CCR)–2–1 Students will communicate their understanding of mathematics and be able to:

- **Demonstrate mathematical communication through discussion, reading, writing, listening, and responding, individually and in groups.**
These are some of the many examples.
19, 44, 78, 135, 155, 190, 214, 292, 327, 394, 399, 424, 483, 522, 559, 608, 630, 635
- **Discuss relationships between everyday language and mathematical language and symbols (e.g., words that mean something different in mathematics and in everyday life).**
1E, 33E, 69E, 97E, 141E, 169E, 193E, 217E, 249E, 281E, 313E, 349E, 377E, 413E, 449E, 477E, 509E, 549E, 589E, 617E
- **Explain conclusions, thought processes, and strategies in problem-solving situations.**
27, 28–30A, 30B, 63, 64–66A, 66B, 135, 136–138A, 138B, 163, 164–166A, 166B, 187, 188–190A, 190B, 243, 244A–246A, 246B, 275, 276–278A, 278B, 307, 308–310A, 310B, 343, 344–346A, 346B, 371, 372–374A, 374B, 407, 408–410A, 410B, 443, 444–446A, 446B, 503, 504–506A, 506B, 543, 544–546A, 546B, 583, 584–586A, 586B, 611, 612–614A, 614B, 635, 636–638A, 638B

- **Discuss, illustrate, and write about mathematical concepts and relationships.**

These are some of the many examples.

63, 64–66A, 66B, 83, 134, 179, 206, 243, 244–245, 246B, 303, 322, 363, 382, 422, 479, 491, 542, 583, 584–586A, 586B, 591, 622

- **Draw pictures and use objects to illustrate mathematical concepts.**

27, 28–30A, 30B, 63, 64–66A, 66B, 99, 100–102A, 102B, 103, 104–106A, 111, 112–114A, 114B, 223, 224–226A, 226B, 231, 232–234A, 234B, 243, 244–246A, 246B, 255, 256–258A, 258B, 263, 264–266A, 266B, 315, 318B, 319, 322B, 323, 324–326A, 326B, 327, 331, 334B, 335, 338B, 339, 342B, 371, 372–374A, 374B, 407, 408–410A, 410B, 443, 444–446A, 446B, 559, 560–562A, 562B, 575, 576–578A, 578B, 611, 612–614A, 614B

M(CCR)–2–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Create and use age level appropriate representations to organize, record, and communicate mathematical ideas (e.g., students should recognize the relationship among seven counters, seven tally marks, and the symbol 7).**

These are some of the many examples.

99, 100–102A, 102B, 103, 104–106A, 106B, 163, 164–166A, 166B, 223, 224–226A, 226B, 403, 404–406A, 406B, 483, 484–486A, 486B, 519, 520–522A, 522B, 583, 584–586A, 586B

- **Select, apply, and translate among mathematical representations to solve problems (e.g., representing fractions with circles, with geoboards, and with pattern blocks).**

319, 322, 323, 324–326A, 326B, 327, 331, 333–334B, 335, 336, 338A, 341–342B, 351, 352–353, 354B, 355, 358B, 362B

- **Link different representations.**

63, 64–66A, 66B, 99, 100–102A, 102B, 103, 104–106A, 106B, 112, 113, 114B, 223, 224–226A, 226B, 231, 232–234A, 234B, 255, 256–256A, 256B, 263, 264–266A, 266B, 355, 356–358A, 358B, 359, 360–362A, 362B, 367, 368–370A, 370B, 512–514A, 514B, 516–518A, 518B, 519, 520–522A, 522B, 559, 560–562A, 562B, 575, 576–578A, 578B, 591, 592–594A, 594B, 596–598A, 598B, 607, 608–610A, 631, 632–634, 634B

- **Use representations to model and interpret physical, social, and mathematical phenomena.**

These are some of the many examples.

99, 100–102A, 102B, 103, 104–106A, 106B, 163, 164–166A, 166B, 223, 224–226A, 226B, 319, 322B, 333–334A, 336–338A, 341–342A, 404–406A, 406B, 483, 484–486A, 486B, 519, 520–522A, 522B, 583, 584–586A, 586B

- **Use conventional and self-generated (invented) representations and connect them.**

63, 64–66A, 66B, 243, 244–246A, 246B, 351, 353–354, 367, 595, 598B

- **Realize that any representation is subject to multiple interpretations (e.g., drawings and graphs can be read in a different way).**

63, 64–66, 66B, 135, 187, 190, 351

M(CCR)–2–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **Link conceptual and procedural knowledge (e.g. they will know that when they “regroup,” they are simply changing the representation of the minuend, but not its value).**

3, 4–6, 7, 8–10, 11, 12–14, 15, 16–18, 19, 20–21, 227, 228–230, 235, 236–238, 259, 260–262, 267, 268–270, 563, 564–566, 579, 580–582, 595, 596–598, 603, 604–606, 607, 608–610, 631, 632–634

- **Recognize and use mathematics in other curriculum areas (e.g., science, social studies).**

471, 472–474A, 474B

- **Recognize and use mathematics in their daily lives (e.g., graphs, tables, or maps).**

These are some of the many examples.

151, 152–154A, 154B, 275, 276–278A, 278B, 316, 391, 392–394, 423, 423–425, 439, 440–442, 443, 444–446, 463, 464–466, 495, 495–498, 599, 600–602

- **Identify mathematical situations occurring in literature for children.**

1, 33, 69, 69F, 97, 141, 169, 193, 193F, 217, 249, 249F, 281, 313, 313F, 349, 377, 413, 449, 477, 509, 509F, 549, 589, 617

- **Identify examples of geometry in nature, art, and architecture.**

323, 324–326A, 326B, 327, 328–330A, 331, 333–334A, 339, 341–342A

**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations**

Grade Three

Number and Operations

M(N&O)–3–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 999 through equivalency, composition, decomposition, or place value using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$, $\frac{a}{6}$, or $\frac{a}{8}$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the number of parts in the whole is equal to the denominator; and decimals (within a context of money) as a part of 100 using models, explanations, or other representations.

4B, 4–5A, 5B, 6B, 6–7A, 7B, 8B, 9–9A, 9B, 10B, 10–11A, 11B, 12B, 12–14, 15A, 15B, 18B, 18–21, 21A, 21B, 23, 23B, 24B, 24–25, 25A, 276B, 276–277A, 277B, 278B, 278–279A, 279B, 280B, 280–281A, 281B, 282B, 282–283A, 283B, 308B, 308–311, 311A

M(N&O)–3–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers ($\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$ where a is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

12B, 12–14, 15A, 15B, 16B, 16–17A, 17B, 18B, 18–21, 21A, 21B, 284B 284–287A, 287B, 288B, 288–289A, 289B

M(N&O)–3–3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the inverse relationship between addition and subtraction of whole numbers; and the relationship between repeated addition and multiplication using models, number lines, or explanations.

66B, 67–67A, 67B, 108B, 108–109A, 109B

M(N&O)–3–4 Accurately solves problems involving addition and subtraction with regrouping; the concept of multiplication; and addition or subtraction of decimals (in the context of money).

48B, 48–49A, 49B, 50B, 50–53, 53A, 54B, 54–55A, 55B, 86B, 86–87A, 87B, 88B, 88–89A, 89B, 108B, 108–109A, 109B, 110B, 110–111A, 114B, 114–115A, 312B, 312–315A, 315B

M(N&O)–3–5 No standard at this grade

M(N&O)–3–6 Mentally adds and subtracts whole number facts through 20; adds two-digit and one-digit whole numbers; adds combinations of two-digit and three-digit whole numbers that are multiples of ten (e.g., $60 + 50$, $300 + 400$, $320 + 90$); subtracts a one-digit whole number from a two-digit whole number (e.g., $37 - 5$); and subtracts two-digit whole numbers that are multiples of ten and three-digit whole numbers that are multiples one hundred (e.g., $50 - 20$, $500 - 200$).

(IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

34B, 34–35A, 35B, 36B, 36–38, 39A, 39B, 55A, 72B, 72–73A, 73B, 152B, 152–152A, 152B, 412B, 412–413A, 413B, 436B, 436–437A, 437B

M(N&O)–3–7 Makes estimates in a given situation by identifying when estimation is appropriate, selecting the appropriate method of estimation, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands. (IMPORTANT: The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

44B, 44–47A, 47B, 54B, 54–55, 92B, 92–94, 146, 214–215, 221, 223, 283, 307, 354, 378B, 378–379A, 379B, 394, 438B, 438–439A, 439B, 445

M(N&O)–3–8 Applies properties of numbers (odd, even, and multiplicative property of zero for single-digit whole numbers [$6 \times 0 = 0$]) and field properties (commutative for addition, associative for addition, identity for multiplication, and commutative for multiplication for single-digit whole numbers [e.g., $3 \times 4 = 4 \times 3$]) to solve problems and to simplify computations involving whole numbers.

32B, 32–33A, 33B, 110–112, 113A, 113B, 122B, 122, 130B, 130–131A, 131B, 152B

Geometry and Measurement

M(G&M)–3–1 Uses properties or attributes of angles (number of angles) or sides (number of sides or length of sides) or composition or decomposition of shapes to identify, describe, or distinguish among triangles, squares, rectangles, rhombi, trapezoids, hexagons, or circles.

244B, 244–245A, 245B, 246B, 246–247A, 247B, 248B, 248–249A, 249B, 250B, 250–251A, 251B, 252B, 252–253A, 253B

M(G&M)–3–2 No standard at this grade

M(G&M)–3–3 No standard at this grade

M(G&M)–3–4 Demonstrates conceptual understanding of congruency by matching congruent figures using reflections, translations, and rotations (flips, slides, and turns) (e.g., recognizing when pentominoes are reflections, translations and rotations of each other); composing and decomposing two- and three-dimensional objects using models or explanations (e.g., Given a cube, students use blocks to construct a congruent cube.); and by using line symmetry to demonstrate congruent parts within a shape.

260B, 260–263A, 263B, 264B, 264–265A, 265B, 266B, 266–267A, 267B, 268B, 268–269A, 269B

M(G&M)–3–5 Demonstrates conceptual understanding of similarity by identifying similar shapes.

These pages prepare students this Grade Level Expectation.

260B, 260–263A, 263B, 264B, 264–265A, 265B, 266B, 266–267A, 267B, 268B, 268–269A, 269B

M(G&M)–3–6 Demonstrates conceptual understanding of perimeter of polygons, and the area of rectangles on grids using a variety of models or manipulatives. Expresses all measures using appropriate units.

368B, 368–369A, 369B, 370B, 370–371A, 371B, 372B, 372–373A, 373B, 376B, 376–376A, 376B, 378B, 378–379A, 379B, 384B, 384–386A, 386B

M(G&M)–3–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

328B, 328–329A, 329B, 332B, 332–333A, 333B, 334B, 334–336, 337A, 337B, 338B, 338–339A, 339B, 340B, 340–341A, 341B, 350B, 350–351A, 351B, 352B, 352–355A, 355B, 356B, 356–357A, 357B, 358B, 358–359A, 359B, 392B, 392–395, 395A, 395B, 396B, 396–397A, 397B, 398B, 398–399A, 399B, 400B, 400–401A, 401B, 402B, 402–403A, 403B

M(G&M)–3–8 No standard at this grade

M(G&M)–3–9 Demonstrates understanding of spatial relationships using location and position by interpreting and giving directions from one location to another (e.g., classroom to the gym, from school to home) using positional words; and between locations on a map or coordinate grid (first quadrant) using positional words or compass directions.

468B, 468–471A, 471B

M(G&M)–3–10 Demonstrates conceptual understanding of spatial reasoning and visualization by copying, comparing, and drawing models of triangles, squares, rectangles, rhombi, trapezoids, hexagons, and circles; and builds models of rectangular prisms from three-dimensional representations.

238B, 239–241A, 241B 246B, 246–247A, 247B, 248B, 248–249A, 249B, 250B, 250–251A, 251B, 260B, 260–263A, 263B, 266B, 266–267A, 267B, 268B, 268–269A, 269B

Functions and Algebra

M(F&A)–3–1 Identifies and extends to specific cases a variety of patterns (linear and non-numeric) represented in models, tables, or sequences by extending the pattern to the next one, two, or three elements, or finding missing elements.

206B, 206–207A, 207B, 208B, 208–209A, 209B, 210B, 210–211A, 211B, 212–214, 215A, 215B, 218B, 218–221A, 221B, 298B, 298–299A, 299B, 360B, 360–361A, 361B

M(F&A)–3–2 No standard at this grade

M(F&A)–3–3 No standard at this grade

M(F&A)–3–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions; or by finding the value that will make an open sentence true (e.g., $2 + W = 7$). (limited to one operation and limited to use addition, subtraction, or multiplication)

32–33, 43, 66–67A, 71, 147, 216B, 216–217A, 217B, 222B, 222–223A, 223B, 426B, 426–429A, 429B

Data, Statistics, and Probability

M(DSP)–3–1 Interprets a given representation (line plots, tally charts, tables, or bar graphs) to answer questions related to the data, to analyze the data to formulate conclusions, or to make predictions. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–3–2.)

458B, 458–459A, 459B, 460B, 460–463A, 463B, 468B, 468–471A, 471B, 472B, 472–473, 475, 481B

M(DSP)–3–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using most frequent (mode), least frequent, largest, or smallest.

458B, 458–459A, 459B, 460B, 460–463A, 463B, 468B, 468–471A, 471B, 472B, 472–473, 475, 481B

M(DSP)–3–3 Organizes and displays data using tables, tally charts, and bar graphs, to answer questions related to the data, to analyze the data to formulate conclusions, to make predictions, or to solve problems.

458B, 458–459A, 459B, 464B, 464–465A, 465B, 466B, 466–467A, 467B, 472B, 486B, 476–477, 477B, 478B, 478–481, 481B, 482B, 482–483A, 483B

M(DSP)–3–3 Identifies or describes representations or elements of representations that best display a given set of data or situation, consistent with the representations required in M(DSP)–3–1. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–3–2.)

460B, 460, 464B, 464–465A, 465B, 466B, 466–467A, 467B

M(DSP)–3–4 Uses counting techniques to solve problems involving combinations and simple permutations using a variety of strategies (e.g., student diagrams, organized lists, tables, tree diagrams, or others).

24B, 24–25A, 26B, 227B

M(DSP)–3–5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the likelihood of an event using “more likely,” “less likely,” “equally likely,” certain, or impossible and tests the prediction through experiments; and determines if a game is fair.

472B, 472–475A, 475B

M(DSP)–3–5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the likelihood of the occurrence of an event (using “more likely”, “less likely”, or “equally likely”).

472B, 472–475A, 475B

M(DSP)–3–6 In response to a teacher or student generated question or hypothesis, groups decide the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–3–2.)

472B, 476B, 478B, 481B, 482B

Problem Solving, Reasoning, and Proof

M(PRP)–5–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Determine the reasonableness of solutions to real world problems.**

12–14, 17, 23, 44–46, 48–49, 54–55, 56–57, 70, 74–76, 89, 153, 214, 248, 279, 285, 403, 415, 473, 477

- **Generalize solutions and apply strategies to new problem situations.**

These are some of the many examples.

24B, 24–25A, 25B, 58B, 58–59A, 59B, 98B, 98–101A, 101B, 174B, 174–176, 177A, 174B, 196B, 196–198, 199A, 199B, 224B, 224–226, 227A, 227B, 252B, 252–253A, 253B, 384B, 384–385A, 385B, 426B, 426–427A, 427B

- **Add to the repertoire of problem-solving strategies (e.g., looking for similar problems) and use those strategies in more sophisticated ways.**

24B, 24–25A, 25B, 58B, 58–59A, 59B, 98B, 98–101A, 101B, 174B, 174–176, 177A, 174B, 196B, 196–198, 199A, 199B, 224B, 224–226, 227A, 227B, 252B, 252–253A, 253B, 268B, 268–269A, 269B, 298B, 298–299A, 298B, 342B, 342–343A, 343B, 360B, 360–361A, 361B, 384B, 384–385A, 385B, 404B, 404–405A, 405B, 426B, 426–427A, 427B

- **Solve problems with multiple solutions, recognize when a problem has no solution, and recognize problems where more information is needed.**

320B, 320–321A, 320B

- **Translate results of a computation into solutions that fit the real-world problem (e.g., when a computation shows that one needs 3.2 gallons of paint to paint a room, how much paint do you buy?).**

These are some of the many examples.

20–21, 23, 49, 57, 89, 94, 127, 130, 143, 151, 191, 224–225, 295, 334–335, 413, 437, 445, 447

M(PRP)–5–2 Students will use mathematical reasoning and proof and be able to:

- **Draw conclusions and solve problems using elementary deductive reasoning and reasoning by analogy.**

208B, 208–209A, 209B, 210B, 210–211A, 211B, 212B, 212–214, 215A, 215B, 224B, 224–225A, 225B, 252B, 252–253A, 253B, 342B, 342–343A, 343B, 370B, 370–371A, 384B, 384–385A, 385B, 482B, 482–483A, 483B

- **Make and defend conjectures and generalizations.**

118B, 119–121A, 121B, 252B, 252–252A, 252B, 374B, 374–375A, 375B

- **Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.**

These are some of the many examples.

20–21, 33, 33A, 34, 46, 121A, 122, 127, 169A, 195A, 224–225, 237A, 279A, 311, 319A, 333, 333A, 357A, 413A, 421, 459A, 481A

- **Recognize the pervasive use and power of reasoning as a part of mathematics.**

These are some of the many examples.

5, 10, 16B, 33, 34B, 46, 66B, 86B, 112, 114B, 140B, 141A, 208B, 247, 278B, 299, 330, 338B, 341, 356, 397B, 416B, 421, 438B, 439A, 476B, 477A, 482B, 482–483A, 483B

Communication, Connections, and Representations

M(CCR)–5–1 Students will communicate their understanding of mathematics and be able to:

- **Discuss mathematical ideas and write convincing arguments.**

These are some of the many examples.

16B, 17A, 34B, 35A, 66B, 67A, 86B, 87A, 114B, 115A, 118–120, 140B, 141A, 208B, 209A, 278B, 279A, 338B, 339A, 396A, 397B, 416B, 417A, 438B, 439A, 476B, 477A

- **Understand, explain, analyze, and evaluate mathematical arguments and conclusions presented by others.**

These are some of the many examples.

16B, 34B, 66B, 86B, 98B, 114B, 140B, 150B, 208B, 218B, 266B, 278B, 312B, 316B, 338B, 356B, 397B, 416B, 438B, 448B, 476B

- **Ask clarifying and extending questions related to mathematics they have heard or read about.**

These are some of the many examples.

4B, 10B, 34B, 54B, 90B, 118B, 144B, 164B, 186B, 210B, 260B, 282B, 308B, 328B, 372B, 412B, 438B, 460B

- **Understand and appreciate the economy and power of mathematical symbolism and its role in the development of mathematics.**

These are some of the many examples.

12B, 12–14, 15A, 15B, 43, 109, 118–120, 129, 131, 147, 196B, 196–199B, 199A, 216B, 216–217A, 217B, 290–292, 315

- **Demonstrate an understanding of mathematical concepts and relationships through a variety of methods (e.g., writing, graphing, charts, diagrams, number sentences, or symbols).**

These are some of the many examples.

12B, 12–14, 15A, 15B, 43, 109, 118–120, 129, 131, 147, 216B, 216–217A, 217B, 290–292, 308B, 315, 328B, 460B, 460–462, 463A, 463B

- **Use a variety of technologies (e.g., computers, calculators, video, probes) to represent and communicate mathematical ideas.**

39, 43, 53, 101, 124–125, 157, 199, 227, 263, 355, 383, 429

M(CCR)–5–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Use physical models and diagrams to represent important mathematical ideas (e.g., multiplication).**

These are some of the many examples.

32B, 32–33A, 33B, 71A, 71B, 86B, 86–87, 98B, 98–101A, 110B, 110–112, 113A, 113B, 144B, 144–146, 147A, 170B, 170–171A, 171B, 196B, 196–197, 199A, 199B, 289B, 290–293A, 293B, 306B, 306–307A, 307B, 416B, 416–417A, 417B, 418B, 418–419A, 419B

- **Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.**

These are some of the many examples.

12B, 12–13, 40B, 40–41, 48B, 48–49, 90B, 90–91, 91B, 130B, 148B, 148–149A, 149B, 276B, 276–277A, 277B, 278B, 278–279A, 279B, 287, 306B, 306–307A, 307B, 418B, 418–419A, 419B, 464B, 464–464A, 464B, 466B, 466–467A, 467B

- **Recognize equivalent representations of concepts and procedures and translate among them as appropriate (for example, understand how the addition of whole numbers, fractions, and decimals are related).**

These are some of the many examples.

32B, 32–33A, 33B, 34B, 34–35A, 35B, 50B, 50–53A, 53B, 90B, 90–91, 91B, 110B, 110–112, 164B, 164–165A, 165B, 294B, 294–295A, 295B, 296B, 296–297A, 297B, 312B

M(CCR)–5–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **See mathematics as an integrated whole.**

These are some of the many examples.

5, 7, 9, 13, 14, 17, 19, 20, 21, 25, 33, 35, 37, 94–95, 220–221, 360, 361, 447, 477

- **Recognize relationships among different topics in mathematics.**

These are some of the many examples.

5, 7, 9, 13, 14, 17, 19, 20, 21, 25, 33, 35, 79, 94–95, 141, 220–221, 320B, 361, 447, 477

- **Recognize and use mathematics in other curriculum areas and in their daily lives.**

These are some of the many examples.

18B, 18–21A, 21B, 47, 77, 106F, 117, 215, 304F, 312B, 312–313, 328B, 328–329A, 329–330, 331A, 331B, 368B, 368–369A, 369B, 400B, 400–401A, 401B, 456F

- **Link concepts and procedures.**

These are some of the many examples.

32B, 32–33A, 33B, 34B, 34–35A, 35B, 50B, 50–53A, 53B, 90B, 90–91, 91B, 110B, 110–112, 164B, 164–165A, 165B, 294B, 294–295A, 295B, 296B, 296–297A, 297B, 312B

- **Use mathematical skills, concepts, and applications in other disciplines (e.g., graphs in social studies, patterns in art, or music and geometry in technology education).**

These are some of the many examples.

2F, 4–5, 6–7, 8–9, 12–14, 16–17, 18–21, 30F, 32–33, 47, 64F, 77, 84F, 106F, 113, 138F, 162F, 169, 182F, 204F, 215, 232F, 258F, 274F, 304F, 313, 326F, 348F, 366F, 390F, 410F, 434F, 456F, 463

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Grade Four

Number and Operations

M(N&O)–4–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 999,999 through equivalency, composition, decomposition, or place value using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$, $\frac{a}{5}$, $\frac{a}{6}$, $\frac{a}{8}$, or $\frac{a}{10}$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area, set, or linear models where the number of parts in the whole are equal to, and a multiple or factor of the denominator; and decimals as hundredths within the context of money, or tenths within the context of metric measurements (e.g., 2.3 cm) using models, explanations, or other representations.

4B, 4–6, 7B, 8B, 8–9, 9B, 10B, 10–13, 13B, 216B, 216–218, 219B, 220B, 220–221, 221B, 224B, 224–226, 227B, 230B, 230–231, 233B, 268B, 268–269, 269B, 274B, 274–275, 275B, 276B, 276–278, 279B

M(N&O)–4–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999,999 by ordering or comparing whole numbers; and ordering, comparing, or identifying equivalent proper positive fractional numbers; or decimals using models, number lines, or explanations.

10B, 10–13, 13B, 224B, 224–226, 227B, 274B, 274–275, 275B

M(N&O)–4–3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the relationship between repeated subtraction and division (no remainders); the inverse relationship between multiplication and division of whole numbers; or the addition or subtraction of positive fractional numbers with like denominators using models, number lines, or explanations.

76B, 76–77, 79B, 80B, 80–81, 81B, 250B, 250–253, 253B

M(N&O)–4–4 Accurately solves problems involving multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.) (IMPORTANT: Applies the conventions of order of operations where the left to right computations are modified only by the use of parentheses.)

62B, 62–63, 63B, 64B, 64–65, 65B, 66B, 66–67, 67B, 182B, 182–183, 183B, 184B, 184–185, 185B, 186B, 186–187, 187B, 250B, 250–253, 253B 296B, 296–298, 299B, 300B, 300–302, 303B

M(N&O)–4–5 No standard at this grade

M(N&O)–4–6 Mentally adds and subtracts whole number facts through 20; multiplies whole number facts to a product of 100, and calculates related division facts; adds two-digit whole numbers, combinations of two-digit and 3-digit whole numbers that are multiples of ten, and 4-digit whole numbers that are multiples of 100 (limited to two addends) (e.g., $67 + 24$; $320 + 430$; $320 + 90$; $1,300 + 1,400$); and subtracts a one-digit whole number from a two-digit whole number (e.g., $67 - 9$); and subtracts combinations of two-digit and three-digit whole numbers that are multiples of ten (e.g., $50 - 20$, $230 - 80$, $520 - 200$). (IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

22C–22D, 58B, 58–59, 59B, 62B, 62–63, 63B, 64B, 64–65, 65B, 66B, 66–67, 67B, 80B, 80–81, 81B, 96B, 96–97, 97B

M(N&O)–4–7 Makes estimates in a given situation by identifying when estimation is appropriate, selecting the appropriate method of estimation, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands. (IMPORTANT: The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

32B, 32–33, 33B, 100B, 100–101, 101B, 144B, 144–145, 145B, 166B, 166–167, 167B, 294B, 294–295, 295B, 300–301, 316B, 316–317, 317B

M(N&O)–4–8 Applies properties of numbers (odd, even, multiplicative property of zero, and remainders) and field properties (commutative, associative, and identity) to solve problems and to simplify computations.

60B, 60–61, 61B

Geometry and Measurement

M(G&M)–4–1 Uses properties or attributes of angles (number of angles) or sides (number of sides, length of sides, parallelism, or perpendicularity) to identify, describe, or distinguish among triangles, squares, rectangles, rhombi, trapezoids, hexagons, or octagons; or classify angles relative to 90° as more than, less than, or equal to.

198B, 198–199, 199B, 200B, 200–201, 201B, 202B, 202–203, 203B, 204B, 204–205, 205B, 206B, 206–207, 207B

M(G&M)–4–2 No standard at this grade

M(G&M)–4–3 Uses properties or attributes (shape of bases or number of lateral faces) to identify, compare, or describe three-dimensional shapes (rectangular prisms, triangular prisms, cylinders, or spheres).

346B, 346–349, 349B, 350B, 350–351, 351B

M(G&M)–4–4 Demonstrates conceptual understanding of congruency by matching congruent figures using reflections, translations, or rotations (flips, slides, or turns), or as the result of composing or decomposing shapes using models or explanations.

454B, 454–455, 455B

M(G&M)–4–5 Demonstrates conceptual understanding of similarity by applying scales on maps, or applying characteristics of similar figures (same shape but not necessarily the same size) to identify similar figures, or to solve problems involving similar figures. Describes relationships using models or^{sc} explanations.

These pages prepare students for this Grade Level Expectation.

454B, 454–455, 455B

M(G&M)–4–6 Demonstrates conceptual understanding of perimeter of polygons, and the area of rectangles, polygons or irregular shapes on grids using a variety of models, manipulatives, or formulas. Expresses all measures using appropriate units.

316B, 316–317, 317B, 318B, 318–319, 319B, 320B, 320–322, 322B, 323B, 324–325, 325B, 326B, 326–327, 327B, 328B, 328–331, 331B, 332B–332–333, 333B, 334B, 334–335, 335B

M(G&M)–4–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

364B, 364–365, 365B, 366B, 366–367, 367B, 368B, 368–369, 369B, 370B, 370–373, 373B, 374B, 374–375, 375B, 376B, 376–377, 377B, 378B, 378–379, 379B, 380B–380–383, 383B, 384B, 384–385, 385B, 386B, 386–388, 389B, 390B–390–391, 391B, 392B–392–393, 393B

M(G&M)–4–8 No standard at this grade

M(G&M)–4–9 Demonstrates understanding of spatial relationships using location and position by interpreting and giving directions between locations on a map or coordinate grid (first quadrant); plotting points in the first quadrant in context (e.g., games, mapping); and finding the horizontal and vertical distances between points on a coordinate grid in the first quadrant.

These pages prepare students for this Grade Level Expectation.

408B, 408–409, 409B

M(G&M)–4–10 Demonstrates conceptual understanding of spatial reasoning and visualization by copying, comparing, and drawing models of triangles, squares, rectangles, rhombi, trapezoids, hexagons, octagons, and circles; and builds models of rectangular prisms from two- or three-dimensional representations.

202B, 202–203, 203B, 204B, 204–205, 205B, 206B, 206–207, 207B, 208B, 208–209, 209B, 346B, 346–348, 349B 350B, 350–351, 351B

Functions and Algebra

M(F&A)–4–1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables or sequences; and writes a rule in words or symbols to find the next case.

130B, 130–131, 131B, 132B, 132–133, 133B

M(F&A)–4–2 Demonstrates conceptual understanding of linear relationships ($y = kx$) as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.

These pages prepare students for this Grade Level Expectation.

130B, 130–131, 131B, 132B, 132–133, 133B

M(F&A)–4–3 Demonstrates conceptual understanding of algebraic expressions by using letters or symbols to represent unknown quantities to write simple linear algebraic expressions involving any one of the four operations; or by evaluating simple linear algebraic expressions using whole numbers.

128B, 128–129, 129B, 130B, 130–131, 131B, 132B, 132–133, 133B

M(F&A)–4–3), and by solving one-step linear equations of the form $ax = c$, $x \pm b = c$, where a , b , and c are whole numbers with $a \neq 0$.

These pages prepare students for this Grade Level Expectation.

434B, 434–435, 435B, 436B, 436–437, 437B

M(F&A)–4–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions, by simplifying numerical expressions where left to right computations may be modified only by the use of parentheses [e.g., $14 - (2 \times 5)$] (expressions consistent with the parameters of

These pages prepare students for this Grade Level Expectation.

128B, 128–129, 129B, 130B, 130–131, 131B, 132B, 132–133, 133B

Data, Statistics, and Probability

M(DSP)–4–1 Interprets a given representation (line plots, tables, bar graphs, pictographs, or circle graphs) to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–4–2.)

404B, 404–405, 405B, 406B, 406–407, 407B, 410B, 410–411, 411B, 416B, 416–417, 417B, 418B, 418–419, 419B

M(DSP)–4–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using measures of central tendency (median or mode), or range.

414B, 414–415, 415B, 416B, 416–417, 417B

M(DSP)–4–3 Organizes and displays data using tables, line plots, bar graphs, and pictographs to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–4–2.)

420B, 420–423, 423B

M(DSP)–4–4 Uses counting techniques to solve problems in context involving combinations or simple permutations (e.g., Given a map – Determine the number of paths from point A to point B.) using a variety of strategies (e.g., organized lists, tables, tree diagrams, or others).

468B, 468–469, 469B, 470B, 470–471, 471B

M(DSP)–4–5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the theoretical probability of an event and expresses the result as part to whole (e.g., two out of five).

These pages prepare students for this Grade Level Expectation.

472B, 472–474, 475B

M(DSP)–4–5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the likelihood of an event as a part to whole relationship (e.g., two out of five, zero out of five, five out of five) and tests the prediction through experiments; and determines if a game is fair.

These pages prepare students for this Grade Level Expectation.

472B, 472–474, 475B

M(DSP)–4–6 In response to a teacher or student generated question or hypothesis, groups decide the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions; and asks new questions and makes connections to real world situations. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–4–2.)

420B, 420–423, 423B

Problem Solving, Reasoning, and Proof

M(PRP)–5–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Determine the reasonableness of solutions to real world problems.**

102B, 102–104, 105B, 323

- **Generalize solutions and apply strategies to new problem situations.**

These are some of the many examples.

20B, 20–21, 21B, 34B, 34–35, 35B, 86B, 86–88, 89B, 116B, 116–118, 119B, 156B, 156–157, 157B, 186B, 186–187, 187B, 238B, 238–240, 241B, 258B, 258–260, 261B, 282B, 282–283, 283B, 308B, 308–309, 309B

- **Add to the repertoire of problem-solving strategies (e.g., looking for similar problems) and use those strategies in more sophisticated ways.**

These are some of the many examples.

20B, 20–21, 21B, 34B, 34–35, 35B, 86B, 86–88, 89B, 116B, 116–118, 119B, 156B, 156–157, 157B, 186B, 186–187, 187B, 238B, 238–240, 241B, 258B, 258–260, 261B, 282B, 282–283, 283B, 308B, 308–309, 309B

- **Solve problems with multiple solutions, recognize when a problem has no solution, and recognize problems where more information is needed.**

34B, 34–35, 35B

- **Translate results of a computation into solutions that fit the real-world problem (e.g., when a computation shows that one needs 3.2 gallons of paint to paint a room, how much paint do you buy?).**

These are some of the many examples.

168B, 168–169, 169B, 255, 257, 258B, 258–260, 260B, 317, 319, 321, 333, 335, 367, 372, 375, 377, 385

M(PRP)–5–2 Students will use mathematical reasoning and proof and be able to:

- **Draw conclusions and solve problems using elementary deductive reasoning and reasoning by analogy.**

134B, 134–135, 135B, 385, 403, 469, 476B, 476–477, 477B

- **Make and defend conjectures and generalizations.**

208B, 208–209, 298B

- **Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.**

These are some of the many examples.

7A, 9A, 13A, 119A, 205A, 253A, 323A, 325A, 331A, 339A, 379A, 415A, 419A, 433A, 439A, 475A, 477A

- **Recognize the pervasive use and power of reasoning as a part of mathematics.**

These are some of the many examples.

134B, 134–135, 134B, 219, 221, 225, 229, 235, 237, 385, 403, 469, 471, 476B, 476–477, 477B

Communication, Connections, and Representations

M(CCR)–5–1 Students will communicate their understanding of mathematics and be able to:

- **Discuss mathematical ideas and write convincing arguments.**

These are some of the many examples.

7A, 9A, 13A, 15A, 17A, 35A, 41A, 83A, 133A, 149A, 187A, 253A, 299A, 303A, 339A, 383A, 415A, 435A, 471A

- **Understand, explain, analyze, and evaluate mathematical arguments and conclusions presented by others.**

These are some of the many examples.

28B, 40B, 60B, 80B, 98B, 128B, 198B, 228B, 254B, 279B, 306B, 326B, 406B, 434B, 450B, 470B

- **Ask clarifying and extending questions related to mathematics they have heard or read about.**

These are some of the many examples.

28B, 40B, 60B, 80B, 98B, 128B, 198B, 228B, 254B, 279B, 306B, 326B, 406B, 434B, 450B, 470B

- **Understand and appreciate the economy and power of mathematical symbolism and its role in the development of mathematics.**

These are some of the many examples.

170B, 170–172, 173B, 197, 234B, 234–235, 235B, 324B, 324–325, 325B, 354B, 354–355, 355B, 390B, 390–391, 391B, 432B, 432–433, 433B, 438B, 438–439, 439B

- **Demonstrate an understanding of mathematical concepts and relationships through a variety of methods (e.g., writing, graphing, charts, diagrams, number sentences, or symbols).**

These are some of the many examples.

44B, 44–46, 47B, 134B, 134–135, 135B, 219, 317A, 335A, 420B, 420–422, 423B, 453A, 461A, 470B, 470–471, 471B

- **Use a variety of technologies (e.g., computers, calculators, video, probes) to represent and communicate mathematical ideas.**

47, 89, 105, 119, 219, 241, 299, 323, 339, 373, 389, 423

M(CCR)–5–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Use physical models and diagrams to represent important mathematical ideas (e.g., multiplication).**

These are some of the many examples.

20B, 20–21, 21B, 68B, 68–69, 69B, 86B, 86–88, 89B, 170–172, 296–299, 420B, 420–422, 423B, 470B, 470–471, 471B

- **Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.**

These are some of the many examples.

32B, 32–33, 33B, 40B, 40–41, 41B, 84B, 84–85, 85B, 128B, 128–129, 129B, 250B, 250–253, 253B, 254B, 254–255, 255B, 276B, 276–278, 279B, 280–281, 281B, 296–298, 299B

- **Recognize equivalent representations of concepts and procedures and translate among them as appropriate (for example, understand how the addition of whole numbers, fractions, and decimals are related).**

These are some of the many examples.

80B, 80–81, 81B, 84B, 84–85, 85B, 274B, 274–275, 275B, 276B, 276–278, 279B, 370B, 370–372, 373B

M(CCR)–5–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **See mathematics as an integrated whole.**

These are some of the many examples.

26E, 52E, 74E, 94E, 96B, 96–97, 98B, 116B, 116–118, 119B, 140E, 314E, 336B, 337–338, 339B, 344E, 400E, 400

- **Recognize relationships among different topics in mathematics.**

These are some of the many examples.

16B, 16–17, 17B, 80B, 80–81, 81B, 84B, 84–85, 85B, 219, 279, 323, 332B, 332–333, 333B, 373

- **Recognize and use mathematics in other curriculum areas and in their daily lives.**

These are some of the many examples.

18B, 18–19, 19B, 28B, 28–30, 31B, 36B, 38, 39, 41, 41B, 42B, 42–43, 43B, 44B, 44–46, 233, 238B, 238–240, 272, 283, 283B

- **Link concepts and procedures.**

These are some of the many examples.

98B, 98–99, 99B, 142B, 142–143, 143B, 254B, 254–255, 255B, 296B, 296–298, 299B, 326B, 326–327, 327B, 354B, 354–355, 355B

- **Use mathematical skills, concepts, and applications in other disciplines (e.g., graphs in social studies, patterns in art, or music and geometry in technology education).**

These are some of the many examples.

39, 52, 57, 75, 94, 162, 194, 233, 238B, 238–240, 266, 288, 293, 344, 362, 400, 446, 466

**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations**

Grade Five

Number and Operations

M(N&O)–5–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 9,999,999 through equivalency, composition, decomposition, or place value using models, explanations, or other representations; and positive fractional numbers (proper, mixed number, and improper) (halves, fourths, eighths, thirds, sixths, twelfths, fifths, or powers of ten (10, 100, 1000)), decimals (to thousandths), or benchmark percents (10%, 25%, 50%, 75% or 100%) as a part to whole relationship in area, set, or linear models using models, explanations, or other representations.

4B, 4–5, 5B, 10B, 10–11, 11B, 28B, 28–29, 29B, 220B, 220–222, 223B, 224B, 224–225, 225B, 242B, 242–243, 243B, 398B, 398–399, 399B

M(N&O)–5–2 Demonstrates understanding of the relative magnitude of numbers by ordering, comparing, or identifying equivalent positive fractional numbers, decimals, or benchmark percents within number formats (fractions to fractions, decimals to decimals, or percents to percents); or integers in context using models or number lines.

12B, 12–13, 13B, 228B, 228–229, 229B, 230B, 230–231, 231B, 400B, 400–401, 401B, 412B, 412–413, 413B

M(N&O)–5–3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting decimals and positive proper fractions with unlike denominators.

42B, 42–43, 43B, 44B, 44–45, 45B, 262B, 262–263, 264B, 264–265, 265B

M(N&O)–5–3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the meaning of a remainder with respect to division of whole numbers using models, explanations, or solving problems.

110B, 110–112, 113B, 113

M(N&O)–5–4 Accurately solves problems involving multiple operations on whole numbers or the use of the properties of factors, multiples, prime, or composite numbers; and addition or subtraction of fractions (proper) and decimals to the hundredths place. (Division of whole numbers by up to a two-digit divisor.) (IMPORTANT: Applies the conventions of order of operations with and without parentheses.)

These are some of the many examples.

42B, 42–43, 44B, 44–45, 45B, 46B, 46–48, 49B, 60B, 60–61, 61B, 67, 102B, 102–103, 106B, 106–108, 108B, 126B, 126–127, 127B, 158B, 158–160, 161B, 188B, 188–189, 256B, 256–258, 259B, 260–261, 262B, 262–263, 263B, 264B, 264–265, 265B

M(N&O)–5–5 No standard at this grade

M(N&O)–5–6 Mentally calculates change back from \$1.00, \$5.00, and \$10.00; calculates multiplication and related division facts to a product of 144; multiplies a two-digit whole number by a one-digit whole number (e.g., 45×5), two-digit whole numbers that are multiples of ten (e.g., 50×60), a three digit whole number that is a multiple of 100 by a two- or three digit number which is a multiple of 10 or 100, respectively (e.g., 400×50 , 400×600); and divides 3- and 4-digit multiples of powers of ten by their compatible factors (e.g., $360 \div 6$; $360 \div 60$; $3600 \div 6$; $3600 \div 60$; $3600 \div 600$; $360 \div 12$; $360 \div 120$; $3600 \div 12$; $3600 \div 120$; $3600 \div 1200$).

(IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

43, 47, 60B, 60–61, 61B, 64B, 64–66, 67B, 84B, 84–85, 85B, 122B, 122–123, 123B, 128B, 128–129, 129B, 243

M(N&O)–5–7 Makes estimates in a given situation by identifying when estimation is appropriate, selecting the appropriate method of estimation, determining the level of accuracy needed given the situation, analyzing the effect of the estimation method on the accuracy of results, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.

(IMPORTANT: The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

30B, 30–32, 33B, 62B, 62–63, 63B, 86B, 86–87, 87B, 124B, 124–125, 125B, 136B, 136–137, 137B, 174B, 174–175, 175B, 184B, 184–185, 185B

M(N&O)–5–8 Applies properties of numbers (odd, even, and divisibility) and field properties (commutative, associative, identity, and distributive) to solve problems and to simplify computations.

24B, 24–25, 58B, 58–59, 59B, 60B, 60, 109, 156B, 156–157, 157B, 223

Geometry and Measurement

M(G&M)–5–1 Uses properties or attributes of angles (right, acute, or obtuse) or sides (number of congruent sides, parallelism, or perpendicularity) to identify, describe, classify, or distinguish among different types of triangles (right, acute, obtuse, equiangular, or equilateral) or quadrilaterals (rectangles, squares, rhombi, trapezoids, or parallelograms).

208B, 208–209, 209B, 210B, 210–211, 211B

M(G&M)–5–2 No standard at this grade

M(G&M)–5–3 Uses properties or attributes (shape of bases, number of lateral faces, or number of bases) to identify, compare, or describe three-dimensional shapes (rectangular prisms, triangular prisms, cylinders, spheres, pyramids, or cones).

322B, 322–324, 325B, 326B, 326–327, 327B

M(G&M)–5–4 No standard at this grade

M(G&M)–5–5 Demonstrates conceptual understanding of similarity by describing the proportional effect on the linear dimensions of triangles and rectangles when scaling up or down while preserving angle measures, or by solving related problems (including applying scales on maps). Describes effects using models or explanations.

These pages prepare students for this Grade Level Expectation.

308B, 308, 472B, 472–473, 473B

M(G&M)–5–6 Demonstrates conceptual understanding of perimeter of polygons, and the area of rectangles or right triangles through models, manipulatives, or formulas, the area of polygons or irregular figures on grids, and volume of rectangular prisms (cubes) using a variety of models, manipulatives, or formulas. Expresses all measures using appropriate units.

300B, 300–302, 303B, 304B, 304–305, 305B, 306B, 306–307, 307B, 308B, 308–309, 309B, 332B, 332–334, 335B

M(G&M)–5–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

348B, 348–349, 349B, 350B, 350–351, 351B, 352B, 352–353, 353B, 354B, 354–355, 355B, 356B, 356–357, 357B, 358B, 358–360, 361B, 362B, 362–363, 363B, 364B, 364–365, 365B

M(G&M)–5–8 No standard at this grade

M(G&M)–5–9 Demonstrates understanding of spatial relationships using location and position by interpreting and giving directions between locations on a map or coordinate grid (all four quadrants); plotting points in four quadrants in context (e.g., games, mapping, identifying the vertices of polygons as they are reflected, rotated, and translated); and determining horizontal and vertical distances between points on a coordinate grid in the first quadrant.

414B, 414–416, 417B, 418B, 418–419, 419B

M(G&M)–5–10 Demonstrates conceptual understanding of spatial reasoning and visualization by building models of rectangular and triangular prisms, cones, cylinders, and pyramids from two- or three-dimensional representations.

326B, 326–327, 327B

Functions and Algebra

M(F&A)–5–1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, or in problem situations; and writes a rule in words or symbols for finding specific cases of a linear relationship.

14B, 14–15, 17B, 33, 77, 148B, 203, 325, 382B, 382–383, 385B, 404B, 404–405, 405B

M(F&A)–5–2 Demonstrates conceptual understanding of linear relationships ($y = kx$) as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change (e.g., tell a story given a line graph about a trip).

These pages prepare students for this Grade Level Expectation.

420B, 420–421, 421B

M(F&A)–5–3 Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write linear algebraic expressions involving any two of the four operations; or by evaluating linear algebraic expressions using whole numbers.

148B, 148–149, 151B, 152B, 152–154, 155B, 376B, 376–377, 377B, 378B, 378–379, 379B, 382B, 382–383, 385B, 420B, 420–421, 421B

M(F&A)–5–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions (expressions consistent with the parameters of M(F&A)–5–3), by solving one-step linear equations of the form $ax = c$, $x \pm b = c$, or $x/a = c$, where a , b , and c are whole numbers with $a \neq 0$; or by determining which values of a replacement set make the equation (multi-step of the form $ax \pm b = c$ where a , b , and c are whole numbers with $a \neq 0$) a true statement (e.g., $2x + 3 = 11$, $\{x: x = 2, 3, 4, 5\}$).

110B, 110–112, 113B, 376B, 376–377, 377B, 378B, 378–379, 379B, 380B, 380–381, 381B, 386B–386–388, 389B, 420B, 420–421, 421B

Data, Statistics, and Probability

M(DSP)–5–1 Interprets a given representation (tables, bar graphs, circle graphs, or line graphs) to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–5–2.)

430B, 430–431, 431B, 432B, 432–435, 435B, 436B, 436–438, 439, 439B, 440B, 440–442, 443, 443B, 444B, 444–445, 445B, 446B, 446–448, 449, 449B, 450B, 450–451, 451B, 452B, 452–453, 453B, 454B, 454–455, 455B

M(DSP)–5–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode) or range to analyze situations, or to solve problems.

450–451, 451B, 452B, 452–453, 453B

M(DSP)–4–3 Organizes and displays data using tables, bar graphs, or line graphs to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.

446B, 446–448, 449, 449B, 454B, 454–455, 455B

M(DSP)–5–3 Identifies or describes representations or elements of representations that best display a given set of data or situation, consistent with the representations required in M(DSP)–5–1. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–5–2.)

430B, 430–431, 431B, 432B, 432–435, 435B, 436B, 436–438, 439, 439B, 440B, 440–442, 443, 443B, 444B, 444–445, 445B, 446B, 446–448, 449, 449B, 450B, 450–451, 451B, 452B, 452–453, 453B, 454B, 454–455, 455B

M(DSP)–5–4 No standard at this grade

M(DSP)–5–5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the likelihood of an event as a fraction and tests the prediction through experiments; and determines if a game is fair.
492B, 492–493, 493B

M(DSP)–5–5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the experimental or theoretical probability of an event and expresses the result as a fraction.
492B, 492–493, 493B

M(DSP)–5–6 In response to a teacher or student generated question or hypothesis decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions; and asks new questions and makes connections to real world situations. (IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–5–2.)
430B, 430–431, 431B, 432B, 432–435, 435B, 436B, 436–438, 439, 439B, 440B, 440–442, 443, 443B, 444B, 444–445, 445B, 446B, 446–448, 449, 449B, 450B, 450–451, 451B, 452B, 452–453, 453B, 454B, 454–455, 455B

Problem Solving, Reasoning, and Proof

M(PRP)–5–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Determine the reasonableness of solutions to real world problems.**

42, 44, 45, 46, 62, 86, 88B, 88–89, 89B, 108, 124, 128, 181, 268, 420

- **Generalize solutions and apply strategies to new problem situations.**

These are some of the many examples.

14B, 14–16, 17B, 34B, 34–36, 37B, 46B, 46–48, 49B, 74B, 74–76, 77B, 126B, 126–127, 127B, 138B, 138–139, 139B, 162B, 162–163, 163B, 188B, 188–190, 191B, 288B, 288–289, 289B, 340B, 340–341, 341B

- **Add to the repertoire of problem-solving strategies (e.g., looking for similar problems) and use those strategies in more sophisticated ways.**

These are some of the many examples.

14B, 14–16, 17B, 46B, 46–48, 49B, 74B, 74–76, 77B, 126B, 126–127, 127B, 138B, 138–139, 139B, 162B, 162–163, 163B, 188B, 188–190, 191B, 288B, 288–289, 289B, 340B, 340–341, 341B, 366B, 366–367, 367B, 386B, 386–388, 389B

- **Solve problems with multiple solutions, recognize when a problem has no solution, and recognize problems where more information is needed.**

46B, 46–48, 49B, 126B, 126–127, 127B, 138B, 138–139, 139B, 188B, 188–190, 191B

- **Translate results of a computation into solutions that fit the real-world problem (e.g., when a computation shows that one needs 3.2 gallons of paint to paint a room, how much paint do you buy?).**

These are some of the many examples.

34B, 34–36, 37B, 46B, 46–48, 49B, 74B, 74–76, 77B, 126B, 126–127, 127B, 162B, 162–163, 163B, 188B, 188–190, 191B, 288B, 288–289, 289B, 422B, 422–423B

M(PRP)–5–2 Students will use mathematical reasoning and proof and be able to:

- **Draw conclusions and solve problems using elementary deductive reasoning and reasoning by analogy.**

These are some of the many examples.

40, 97, 139, 162B, 162–163, 163B, 227, 266, 299, 302, 309, 311, 365, 421, 423, 442, 445, 451, 453

- **Make and defend conjectures and generalizations.**

212B, 212–213, 213B

- **Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.**

These are some of the many examples.

5A, 9A, 11A, 13A, 17A, 27A, 29A, 33A, 37A, 41A, 43A, 45A, 49A, 59A, 61A, 63A, 67A, 71A

- **Recognize the pervasive use and power of reasoning as a part of mathematics.**

These are some of the many examples.

40, 97, 139, 162B, 162–163, 163B, 227, 266, 299, 302, 309, 311, 365, 421, 423, 442, 445, 451, 453

Communication, Connections, and Representations

M(CCR)–5–1 Students will communicate their understanding of mathematics and be able to:

- **Discuss mathematical ideas and write convincing arguments.**

These are some of the many examples.

5A, 9A, 11A, 13A, 17A, 27A, 29A, 33A, 37A, 41A, 43A, 45A, 49A, 59A, 61A, 63A, 67A, 71A

- **Understand, explain, analyze, and evaluate mathematical arguments and conclusions presented by others.**

These are some of the many examples.

30B, 38B, 62B, 84B, 102B, 128B, 152B, 226B, 256B, 268B, 284B, 300B, 330B, 348B, 382B, 400B, 432B

- **Ask clarifying and extending questions related to mathematics they have heard or read about.**

These are some of the many examples.

28B, 38B, 64B, 70B, 94B, 98B, 106B, 126B, 152B, 180B, 204B, 256B, 298B, 336B, 352B, 398B, 412B, 436B, 470B

- **Understand and appreciate the economy and power of mathematical symbolism and its role in the development of mathematics.**

These are some of the many examples.

8, 9, 11, 32, 35, 36, 37B, 40, 43, 46B, 47, 48, 49B, 63, 63B, 64B, 66

- **Demonstrate an understanding of mathematical concepts and relationships through a variety of methods (e.g., writing, graphing, charts, diagrams, number sentences, or symbols).**

These are some of the many examples.

5A, 9A, 11A, 13A, 17A, 27A, 29A, 33A, 34–35, 37A, 41A, 43A, 45A, 49A, 59A, 61A, 63A, 67A, 71A, 74–75

- **Use a variety of technologies (e.g., computers, calculators, video, probes) to represent and communicate mathematical ideas.**

17, 37, 49, 77, 101, 109, 113, 151, 241, 325, 441, 467, 491

M(CCR)–5–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Use physical models and diagrams to represent important mathematical ideas (e.g., multiplication).**

These are some of the many examples.

41, 74B, 74–76, 77B, 101, 110B, 110–112, 113B, 133, 162B, 162–163, 163B, 340B, 340–341, 341B, 478B, 478–479, 479B

- **Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.**

These are some of the many examples.

34B, 34–35, 37B, 74B, 74–76, 77B, 101, 110B, 110–112, 113B, 288B, 288–289, 289B, 340B, 340–341, 341B, 386B, 386–387, 389B, 478B, 478–479, 479B

- **Recognize equivalent representations of concepts and procedures and translate among them as appropriate (for example, understand how the addition of whole numbers, fractions, and decimals are related).**

These are some of the many examples.

224B, 224–225, 225B, 226B, 226–227, 227B, 228B, 228–229, 229B, 286B, 286–287, 287B, 376B, 376–377, 377B, 400B, 400–401, 401B

M(CCR)–5–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **See mathematics as an integrated whole.**

These are some of the many examples.

2E, 22E, 120E, 144E, 246B, 246–247, 247B, 294E, 346E, 386B, 386–388, 389B, 394E, 410E, 478B, 478–479, 479B, 484E

- **Recognize relationships among different topics in mathematics.**

These are some of the many examples.

102B, 102–104, 105B, 122B, 122–123, 123B, 148B, 148–150, 151B, 286B, 286–287, 287B, 326B, 326–327, 327B, 400B, 400–401, 401B, 418B, 418–419, 419B

- **Recognize and use mathematics in other curriculum areas and in their daily lives.**

These are some of the many examples.

35, 40, 69, 70B, 71, 75, 76, 77, 126B, 126–127, 128B, 128–129, 246B, 246–247, 247B

- **Link concepts and procedures.**

These are some of the many examples.

42B, 42–43, 60B, 60–61, 84B, 84–85, 98B, 98–99, 170B, 170–171, 178B, 178–179, 204B, 204–205, 262B, 262–263, 306B, 306–307, 332B, 332–334

- **Use mathematical skills, concepts, and applications in other disciplines (e.g., graphs in social studies, patterns in art, or music and geometry in technology education).**

These are some of the many examples.

9, 27, 41, 71, 151, 161, 237, 246B, 246–247, 247B, 254, 276, 294, 346, 361

**Scott Foresman – Addison Wesley enVisionMATH
to the
Tri-State Grade Level Expectations**

Grade Six

Number and Operations

M(N&O)–6–1 Demonstrates conceptual understanding of rational numbers with respect to ratios (comparison of two whole numbers by division a/b , $a : b$, and $a \div b$, where $b \neq 0$); and rates (e.g., a out of b , 25%) using models, explanations, or other representations.

300B, 300–301, 301B, 302B, 302–303, 305B, 306B, 306–307, 307B, 308B, 308–309, 309B, 322B, 322–323, 323B, 324B, 324–325, 325B

M(N&O)–6–2 Demonstrates understanding of the relative magnitude of numbers by ordering or comparing numbers with whole number bases and whole number exponents (e.g., 3^3 , 4^3), integers, or rational numbers within and across number formats (fractions, decimals, or whole number percents from 1–100) using number lines or equality and inequality symbols.

4B, 4–6, 7B, 8B, 8–9, 9B, 10B, 10–12, 13B, 14B, 14–16, 17B, 22B, 22–23, 23B, 128B, 128–130, 131B, 222B, 222–223, 223B, 224B, 225, 225B, 226B, 226–227, 229B

M(N&O)–6–3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting positive fractions and integers; and multiplying and dividing fractions and decimals.

162B, 162–163, 163B, 166B, 166–168, 169B, 190B, 190–191, 191B, 206B, 206–207, 207B, 230B, 230–232, 233, 233B, 234B, 234–236, 237, 237B

M(N&O)–6–3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the meaning of a power by representing the relationship between the base (whole number) and the exponent (whole number) (e.g., 3^3 , 4^3); and the effect on the magnitude of a whole number when multiplying or dividing it by a whole number, decimal, or fraction.

82B, 82–83, 83B

(N&O)–6–4 Accurately solves problems involving single or multiple operations on fractions (proper, improper, and mixed), or decimals; and addition or subtraction of integers; percent of a whole; or problems involving greatest common factor or least common multiple.

(IMPORTANT: *Applies the conventions of order of operations with and without parentheses.*)

These are some of the many examples.

162B, 162–163, 163B, 166B, 166–168, 169B, 172B, 172–173, 173B, 174B, 174–176, 177, 177B, 192B, 192–193, 193B, 206B, 206–207, 207B, 210B, 210–211, 211B, 230B, 230–232, 233, 233B, 234B, 234–236, 237, 237B

M(N&O)–6–5 No standard listed at this grade.

M(N&O)–6–6 Uses a variety of mental computation strategies to solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answers; and mentally calculates change back from \$5.00, \$10.00, \$20.00, \$50.00, and \$100.00; multiplies a two-digit whole number by a one-digit number whole number (e.g., 45×5), two-digit whole numbers that are multiples of ten (e.g., 50×60), a three-digit whole number that is a multiple of 100 by a two- or three-digit number which is a multiple of 10 or 100, respectively (e.g., 400×50 , 400×600); divides 3- and 4-digit multiples of powers of ten by their compatible factors (e.g., $360 \div 6$; $360 \div 60$; $3600 \div 6$; $3600 \div 60$; $3600 \div 600$; $360 \div 12$; $360 \div 120$; $3600 \div 12$; $3600 \div 120$; $3600 \div 1200$); and determines the part of a whole number using benchmark percents (1%, 10%, 25%, 50%, and 75%).

(IMPORTANT: The intent of this GLE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

18B, 18–20, 21B, 40B, 40–41, 41B, 42B, 42–44, 45B, 65, 96B, 96–97, 97B, 362B, 362–363, 363B

M(N&O)–6–7 Makes estimates in a given situation by identifying when estimation is appropriate, selecting the appropriate method of estimation, determining the level of accuracy needed given the situation, analyzing the effect of the estimation method on the accuracy of results, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.

(IMPORTANT: The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.)

These are some of the many examples.

62B, 62–63, 63B, 170B, 170–171, 171B, 188B, 188–189, 189B, 208B, 208–209, 209B, 352B, 352–353, 353B, 362B, 362–363, 363B

M(N&O)–6–8 Applies properties of numbers (odd, even, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity [including the multiplicative property of one, e.g., $1 = 2/2$ and $2/2 \times 3/4 = 6/8$, so $3/4 = 6/8$], distributive, and additive inverses) to solve problems and to simplify computations.

34B, 34–35, 35B, 36B, 36–38, 39B, 40B, 40–41, 41B, 120B, 120–121, 123B

Geometry and Measurement

M(G&M)–6–1 Uses properties or attributes of angles (right, acute, or obtuse) or sides (number of congruent sides, parallelism, or perpendicularity) to identify, describe, classify, or distinguish among different types of triangles (right, acute, obtuse, equiangular, scalene, isosceles, or equilateral) or quadrilaterals (rectangles, squares, rhombi, trapezoids, or parallelograms).

266B, 266–268, 269, 269B, 270B, 270–272, 273, 273B, 274B, 274–276, 277B, 278B, 278–281, 281B

M(G&M)–6–2 No standard listed at this grade.

M(G&M)–6–3 Uses properties or attributes (shape of bases, number of lateral faces, number of bases, number of edges, or number of vertices) to identify, compare, or describe three-dimensional shapes (rectangular prisms, triangular prisms, cylinders, spheres, pyramids, or cones).

454B, 454–456, 457B, 458, 469

M(G&M)–6–4 Demonstrates conceptual understanding of congruency by predicting and describing the transformational steps (reflections, translations, and rotations) needed to show congruence (including the degree of rotation) and as the result of composing and decomposing two- and three-dimensional objects using models or explanations; and using line and rotational symmetry to demonstrate congruent parts within a shape.

284B, 284–286, 287B, 288B, 288–289, 289B, 455–456, 457B, 458

M(G&M)–6–5 Demonstrates conceptual understanding of similarity by describing the proportional effect on the linear dimensions of polygons or circles when scaling up or down while preserving the angles of polygons, or by solving related problems (including applying scales on maps). Describes effects using models or explanations.

330B, 330–332, 333B, 334B, 334–335, 335B

M(G&M)–6–6 Demonstrates conceptual understanding of perimeter of polygons, the area of quadrilaterals or triangles, and the volume of rectangular prisms by using models, formulas, or by solving problems; and demonstrates understanding of the relationships of circle measures (radius to diameter and diameter to circumference) by solving related problems. Expresses all measures using appropriate units.

426B, 426–428, 429, 429B, 430B, 430–432, 433B, 434B, 434–436, 437, 437B, 438B, 438–441, 441B, 447, 462B, 462–463, 463B

M(G&M)–6–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

400–403, 403B, 404B, 404–407, 407B, 408B, 408–410, 411B, 412B, 412–413, 413B, 414B, 414–416, 417, 417B

M(G&M)–6–8 No standard listed at this grade.

M(G&M)–6–9 No standard listed at this grade.

M(G&M)–6–10 No standard listed at this grade.

Functions and Algebra

M(F&A)–6–1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or in problem situations; or writes a rule in words or symbols for finding specific cases of a linear relationship; or writes a rule in words or symbols for finding specific cases of a nonlinear relationship; and writes an expression or equation using words or symbols to express the generalization of a linear relationship (e.g., twice the term number plus 1 or $2n + 1$).

48B, 48–49, 49B, 214B, 214–215, 215B, 290B, 290–291, 291B, 376B, 376–377, 377B, 378B, 378–379, 379B, 527

M(F&A)–6–2 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by constructing or interpreting graphs of real occurrences and describing the slope of linear relationships (faster, slower, greater, or smaller) in a variety of problem situations; and describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.

386B, 386–387, 389B

M(F&A)–6–3 Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write linear algebraic expressions involving any of the four operations and consistent with order of operations expected at this grade level; or by evaluating linear algebraic expressions (including those with more than one variable); or by evaluating an expression within an equation (e.g., determine the value of y when $x = 4$ given $y = 3x - 2$).

46B, 46–47, 47B, 50B, 50–52, 53, 53B, 238B, 238–239, 239B, 240B, 240, 241B

M(F&A)–6–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions (expressions consistent with the parameters of M(F&A)–6–3), solving multi-step linear equations of the form $ax \pm b = c$, where a , b , and c are whole numbers with $a \neq 0$.

96B, 96–97, 97B, 101, 372B, 372–373, 375B, 380B, 380–381, 381B, 382B, 382–384, 385, 385B, 479

Data, Statistics, and Probability

M(DSP)–6–1 Interprets a given representation (circle graphs, line graphs, or stem-and-leaf plots) to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.

(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–6–2.)

476B, 476–478, 479B, 480B, 480–482, 483, 483B, 498B, 498–499, 499B

M(DSP)–6–2 Analyzes patterns, trends or distributions in data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode) or dispersion (range) to analyze situations, or to solve problems.

490B, 490–492, 493, 493B, 497, 498B, 498–499, 499B, 500B, 500–501, 501B

M(DSP)–6–3 Organizes and displays data using tables, line graphs, or stem-and-leaf plots to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.

(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–6–2.)

488B, 488–489, 489B, 494B, 494–496, 497, 497B, 498B, 498–499, 499B

M(DSP)–6–4 Uses counting techniques to solve problems in context involving combinations or simple permutations using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, orsc others).

520B, 520–522, 523, 523B, 524B, 524–526, 527B

M(DSP)–6–5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the theoretical probability of an event and test the prediction through experiments and simulations; and designs fair games.

530B, 530–532, 533, 533B

M(DSP)–6–5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the experimental or theoretical probability of an event in a problem-solving situation.

530B, 530–532, 533, 533B

M(DSP)–6–6 In response to a teacher or student generated question or hypothesis decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions; and asks new questions and makes connections to real world situations.

(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–6–2.)

488B, 488–489, 489B, 494B, 494–496, 497, 497B, 498B, 498–499, 499B, 500B, 500–501, 501B, 502B, 502–504, 505, 505B, 506B, 506–509, 509B

Problem Solving, Reasoning, and Proof

M(PRP)–8–1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- **Use problem-solving strategies appropriately and effectively for a given situation.**

These are some of the many examples.

84B, 84–86, 87B, 110B, 110–112, 113B, 136B, 136–137, 137B, 154B, 154–155, 155B, 178B, 178–179, 179B, 290–291, 291B, 328B, 328–329, 329B, 390B, 390–391, 391B, 418B, 418–419, 419B

- **Determine, collect and organize the relevant information needed to solve real-world problems.**

These are some of the many examples.

24B, 24–25, 25B, 110B, 110–112, 113B, 136B, 136–137, 137B, 154B, 154–155, 155B, 194B, 194–195, 195, 290B, 290–291, 291B, 328B, 328–329, 329B, 390B, 390–391, 391B, 418B, 418–419, 419B, 488B, 488–489, 489B

- **Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.**

These are some of the many examples.

50B, 50–52, 53B, 84B, 84–86, 87B, 110B, 110–112, 113B, 136B, 136–137, 137B, 154B, 154–155, 155B, 178B, 178–179, 179B, 194B, 194–195, 195, 328B, 328–329, 329B, 390B, 390–391, 391B, 418B, 418–419, 419B, 488B, 488–489, 489B

- **Use technology when appropriate to solve problems.**

39, 105, 157, 229, 234, 273, 313, 333, 361, 385, 447, 483, 493, 533

- **Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.**

These are some of the many examples.

24B, 24–25, 25B, 84B, 84–86, 87B, 110B, 110–112, 113B, 136B, 136–137, 137B, 154B, 154–155, 155B, 178B, 178–179, 179B, 194B, 194–195, 195, 290B, 290–291, 291B, 390B, 390–391, 391B

M(PRP)–8–2 Students will use mathematical reasoning and proof and be able to:

- **Draw logical conclusions and make generalizations using deductive and inductive reasoning.**

These are some of the many examples.

165, 187, 390B, 390–391, 391B, 413, 418B, 418–419, 419B, 466B, 466–467, 469B, 499, 504, 509

- **Formulate, test, and justify mathematical conjectures and arguments.**

136B, 136–137, 137B, 510B, 510–511, 511B

- **Construct and determine the validity of a mathematical argument or a solution.**

These are some of the many examples.

84B, 84–86, 87B, 110B, 110–112, 113B, 136B, 136–137, 137B, 154B, 154–155, 155B, 178B, 178–179, 179B, 290B, 290–291, 291B, 390B, 390–391, 391B

- **Apply mathematical reasoning skills in other disciplines.**

These are some of the many examples.

7, 17, 45, 63B, 65, 66B, 69, 131, 177, 200, 237, 249, 260, 277, 305, 347, 398, 402, 403, 406, 407, 430B, 433, 441, 465, 523

Communication, Connections, and Representations

M(CCR)–8–1 Students will communicate their understanding of mathematics and be able to:

- **Articulate ideas clearly and logically in both written and oral form.**

These are some of the many examples.

3, 7A, 12, 13A, 19, 20, 23A, 25A, 35A, 119, 122, 125A, 131A, 143, 145, 149A, 187A, 249, 301A, 417A, 523A

- **Present, share, explain, and justify thinking with others and build upon the ideas of others to solve problems.**

These are some of the many examples.

8B, 10B, 14B, 18B, 22B, 46B, 48B, 64B, 66B, 70B, 96B, 98B, 120B, 124B, 126B, 144B, 162B, 188B, 206B, 222B

- **Use mathematical symbols and notation.**

These are some of the many examples.

8B, 8–9, 9B, 22B, 22–23, 23B, 32B, 32–33, 33B, 224B, 224–225, 225B, 226B, 226–228, 266, 389, 442B, 442–443, 443B

- **Formulate questions, conjectures, definitions, and generalizations about data, information, and problem situations.**

These are some of the many examples.

136B, 136–137, 137B, 390B, 390–391, 391B, 476B, 476–478, 479B, 484B, 484–486, 487B, 506B, 506–508, 509B

M(CCR)–8–2 Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

- **Use models and technology to develop equivalent representations of the same mathematical concept.**

These are some of the many examples.

96B, 96–97, 97B, 344B, 345, 444B, 444–446, 447B, 466B, 466–468, 469B, 476, 480, 483, 488B, 488–489, 489B

- **Use and create representations to solve problems and organize their thoughts and ideas.**

These are some of the many examples.

24B, 24–25, 25B, 50B, 50–51, 102B, 102–103, 110B, 110–111, 154B, 154–155, 155B, 178B, 178–179, 179B, 214B, 214–215, 215B, 290B, 290–291, 291B, 488B, 488–489, 489B, 536B, 536–537, 537B

- **Convert between representations (e.g., a table of values, an equation, and a graph may all be representations of the same function).**

These are some of the many examples.

348B, 348–349, 349B, 380B, 380–381, 381B, 476B, 476–478, 479B, 480B, 480–482, 483B, 484B, 484–486, 487B, 494B, 494–496, 497B,

M(CCR)–8–3 Students will recognize, explore, and develop mathematical connections and be able to:

- **Connect new mathematical ideas to those already studied and build upon them.**

These are some of the many examples.

13, 73, 109, 123, 131, 134B, 134–135, 135B, 153, 169, 310B, 310–311, 313B, 348B, 348–349, 349B, 358B, 358–359, 461

- **Understand that many real-world applications require an understanding of mathematical concepts (e.g., personal finance, running a business, building a house, following a recipe, or sending a rocket to the moon).**

These are some of the many examples.

45, 63B, 65, 66B, 69, 131, 184, 200, 260, 298, 320, 347, 398, 402, 403, 406, 407, 430B, 433, 465

- **Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.**

These are some of the many examples.

24B, 24–25, 25B, 50B, 50–51, 53B, 178B, 178–179, 179B, 290B, 290–291, 291B, 328B, 328–329, 329B, 488B, 488–489, 489B, 536B, 536–537, 537B

- **Explain in oral and written form the relationships among various mathematical concepts (e.g., the relationship between exponentiation and multiplication).**

These are some of the many examples.

96B, 96–97, 97B, 150B, 150–151, 185, 201, 221, 242, 310B, 310–311, 313B, 348B, 348–349, 349B, 357, 380B, 380–381, 381B, 389