

A Correlation of

SCOTT FORESMAN ■ ADDISON WESLEY

Mathematics

to the

Nebraska
Mathematics Standards
Grades K-6



G/M-207

Introduction

This document demonstrates the high degree of success students will achieve when using **Scott Foresman – Addison Wesley Mathematics** in meeting the objectives of the Nebraska Mathematics Standards. Correlation page references are to the Teacher Edition, which contains facsimile Pupil Edition pages.

Scott Foresman – Addison Wesley Mathematics was carefully developed to reflect the specific needs of students and teachers at every grade level, while maintaining an overall primary goal: to have math make sense from every perspective. This program is based on scientific research that describes how children learn mathematics well and on classroom-based evidence that validates proven reliability.

● Reaching All Learners

Scott Foresman – Addison Wesley Mathematics addresses the needs of every student through structured instruction that makes concepts easier for students to grasp. Lessons provide step-by-step examples that show students how to think about and solve the problem. Built-in leveled practice in every lesson allows the teacher to customize instruction to match students' abilities. Reaching All Learners, featured in the Teacher Edition, helps teachers meet the diverse needs of the classroom with fun and stimulating activities that are easy to incorporate directly into the lesson plan.

● Test Prep

Scott Foresman - Addison Wesley Mathematics builds understanding through connections to prior knowledge, math strands, other subjects and the real world. It provides practice for maximum results and offers assessment in a variety of ways. Besides carefully placed reviews at the end of each Section, an important Test Prep strand runs throughout the program. Writing exercises prepare students for open-ended and short-or extended-response questions on state and national tests. Spiral review in a test format help students keep their test-taking skills sharp.

● Priority on problem solving:

Problem-solving instruction is systematic and explicit. Reading connections help children with problem-solving skills and strategies for math. Reading for Math Success encourages students to use the reading skills and strategies they already know to solve math problems.

● Instructional Support

In the Teacher Edition, the Lesson Planner provides an easy, at-a-glance planning tool. It identifies objectives, math understandings, focus questions, vocabulary, and resources for each lesson in the chapter. Professional Development at the beginning of each chapter in the Teacher Edition includes a Skills Trace as well as Math Background and Teaching Tips for each section in the chapter.

Ancillaries help to reach all learners with practice, problem solving, hands-on math, language support, assessment and teacher support. Technology resources for both the student and the teacher provide a whole new dimension to math instruction by helping to create motivating and engaging lessons.

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**Scott Foresman – Addison Wesley Mathematics
to the
Nebraska Mathematics Standards**

Kindergarten

1.1 NUMERATION/NUMBER SENSE

1.1.1 By the end of first grade, students will recognize, write, and orally express the sequential order of the number system.

51I, 101K-101L, 115A-115B, 115-116, 289A-289B, 289-290, 302

Example indicators:

-Recognize and write numerals from 0-100.

55A-55B, 55-56, 59A-59B, 59-60, 61A-61B, 61-62, 81A-81B, 81-82, 85A-85B, 85-86, 101K, 105A-105B, 105-106, 105-106, 107A-107B, 107-108, 109A-109B, 109-110, 111A-111B, 111-112, 117A-117B, 289A-289B, 289-290, 291A-291B, 291-292

-Count forward by 1s, 2s, 5s and 10s up to 100.

101J, 101L, 113A-113B, 113-114, 115A-115B, 115-116, 285I-285J, 285K-285L, 285N-285O, 285-286, 287A-287B, 287-288, 293A-293B, 293-294, 295A-295B, 295-296, 297A-297B, 297-298, 299A-299B, 299-300, 301-302

-Count backward from 10 to 0 by 1s.

66, 74-75, 83A-83B, 83-84

-Identify ordinal positions of first, second, third, through tenth.

51L, 69A-69B, 69-70, 75L, 93A-93B, 93-94, 98

1.1.2 By the end of first grade, students will demonstrate ways of representing numbers and compare relations among numbers.

63A-63B, 63-64, 65A-65B, 65-66, 71A-71B, 75J, 88A-88B, 88-89, 89A-89B, 89-90, 91A-91B, 91-92, 99-100, 129-130, 223I-223J, 223K-223L, 223M-223N

Example indicators:

-Count objects to demonstrate one-to-one correspondence.

53A-53B, 53-54, 57A-57B, 57-58, 75I, 76, 77A-77B, 77-78, 79A-79B, 79-80, 83A-83B, 103A-103B, 103-104

-Use comparison vocabulary (bigger, smaller, more, less, equal, higher, and lower).

27A-27B, 27-28, 29A-29B, 29-30, 51J, 51K, 52, 63A-63B, 63-64, 67A-67B, 88A-88B, 88-89, 89A-89B, 89-90, 121A-121B, 121-122, 224, 269A-269B, 269-270

-Identify and represent wholes into equal parts for the fractions of one-half and one-fourth.

196, 211A-211B, 211-212, 213A-213B, 213-214, 215A-215B, 222

-Connect number words and numerals to the quantities they represent.

51K, 55A-55B, 55-56, 59A-59B, 61A-61B, 61-62, 75L, 81A-81B, 81-82, 85A-85B, 85-86, 105A-105B, 105-106, 107A-107B, 107-108, 109A-109B, 109-110, 111A-111B, 111-112, 117A-117B, 117-118

-Demonstrate place value in the base-ten number system using models.

115A-115B, 115-116, 127, 285I, 287A-287B, 291A-291B, 291-292

1.1.3 By the end of first grade, students will identify numbers and applications in everyday situations.

123A-123B, 123-124, 167A-167B, 167-168

Example indicators:

-Identify how numbers are used in counting situations (setting the table and passing out candy treats).

51L, 97A-97B

-Identify how numbers are used for identification (room numbers and phone numbers).

51K, 75K

-Recognize and demonstrate the value of a collection of pennies, nickels, dimes, and quarters whose total value is 100 cents or less.

179A-179B, 179-180, 181A-181B, 181-182, 183A-183B, 183-184, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 192

1.1.4 By the end of first grade, students will demonstrate the value of numbers (0-20) using concrete objects.

51K-51L, 53A, 55A, 57A-57B, 59A, 65A, 77A, 79A, 85A, 103A-103B, 103-104, 105A, 109A, 111A, 117A

1.2 COMPUTATION/ESTIMATION

1.2.1 By the end of first grade, students will demonstrate the concepts of addition and subtraction up to 10.

223I, 223K-223L, 235A-235B, 235-236, 237A-237B, 237-238, 247A-247B, 247-248, 248A-248B, 248-249, 259A-259B, 259-260, 263I-263J, 263K-263L, 265A-265B, 267A-267B, 267-268, 279-280, 281-282, 283-284

Example indicators:

-Demonstrate the value of basic facts using concrete objects.

225A-225B, 225-226, 227A-227B, 229A-229B, 231A-231B, 231-232, 239A-239B, 239-240, 243I

-Recognize the symbols + and - as representing the operations of addition and subtraction.

251A-251B, 251-252, 253A-253B, 253-254, 255A-255B, 255-256, 262, 271A-271B, 271-272, 275A-275B, 275-276, 277A-277B, 277-278

-Recognize the symbol = represents equal quantities.

253A-253B, 253-254, 255A-255B, 255-256, 273A-273B, 273-274, 275A-275B, 275-276, 277A-277B, 277-278

-Solve problems involving one-step solutions related to children's experiences.

217A-217B, 217-218, 243J, 243K-243L, 245A-245B, 245-246, 257A-257B, 257-258

-Demonstrate strategies for whole number computation.

273A-273B, 275A-275B, 277A-277B, 279A-279B, 279-280

-Compute efficiently and accurately basic number facts for addition and subtraction.

273-274, 275-276, 277-278, 279-280, 281A-281B, 281-282, 283-284

1.2.2 By the end of first grade, students will justify estimations to mathematical problems.

101L, 119A-119B

Example indicator:

-Make estimations and comparisons to actual results.

119-120, 131K-131L, 141A-141B, 141-142, 143A-143B, 143-144, 147A-147B, 147-148, 151A-151B

1.3 MEASUREMENT

1.3.1 By the end of first grade, students will measure two or more items or sets using nonstandard units of measure and compare attributes.

131K-131L, 133A-133B, 133-134, 137A-137B, 137-138, 145A-145B, 145-146, 155A-155B, 155-156, 157-158

Example indicators:

-Compare attributes of items (length-shorter/longer, height-taller/shorter, weight-heavier/lighter, and temperature-hotter/colder).

131I-131J, 135A-135B, 135-136, 149A-149B, 149-150, 153A-153B

-Measure items using nonstandard units (human foot, hand span, new pencil, toothpick, block, and paper clip).

139A-139B, 139-140, 141-142, 147-148, 151A-151B, 151-152

1.3.2 By the end of first grade, students will identify tools of measurement and their appropriate use (clocks, calendar, ruler, balance scale, and thermometer).

123A-123B, 151A-151B, 151-152, 153A-153B, 153-154, 161A-161B, 167A-167B, 167-168, 173A-173B, 175A-175B

1.3.3 By the end of first grade, students will tell time to the half-hour using an analog and digital clock.

159J, 173A-173B, 173-174, 175A-175B, 175-176, 191A-191B, 191

1.3.4 By the end of first grade, students will identify the different units of measurement used in their environment (cents, dollars, pounds, gallons, liters, meters, miles, minutes, and hours).

173A-173B, 173-174, 175A-175B, 175-176, 179A-179B, 179-180, 181A-181B, 181-182, 183A-183B, 183-184, 187A-187B, 187-188

1.3.5 By the end of first grade, students will identify past, present, and future as orientations in time.

159I, 159K-159L, 163A-163B, 163-164, 171A-171B, 171-172

1.4 GEOMETRY/SPATIAL CONCEPTS

1.4.1 By the end of first grade, students will compare relative position (left/right, above/below, over/under, up/down, and near/far).

1-2, 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-10, 21A-21B, 21-22, 207A-207B, 207-208, 244

1.4.2 By the end of first grade, students will identify, describe, and create circles, squares, triangles, and rectangles.

195I-915J, 195K-195L, 201A-201B, 201-202, 203A-203B, 203-204, 205A-205B, 205-206

Example indicators:

-Construct congruent shapes and designs using manipulatives.

209A-209B, 209-210

-Identify and describe common geometric shapes in their environment.

195K, 195M-195N, 197A-197B, 197-198, 206, 219A-219B, 219

1.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

1.5.1 By the end of first grade, students will collect information about objects and events in their environment (favorite candy bar, number of siblings, and number of pets).

31B, 32, 33A-33B, 33-34

1.5.2 By the end of first grade, students will organize and display collected information using objects and pictures.

31A, 33A-33B, 33-34, 68

1.5.3 By the end of first grade, students will compare and interpret information from displayed data (more, less, and fewer).

25I, 25K, 27A-27B, 27-28, 47A-47B, 47-48, 67A-67B, 67-68

1.5.4 By the end of first grade, students will describe the process used in data collection and analysis.

31-32, 47A-47B

1.6 ALGEBRAIC CONCEPTS

1.6.1 By the end of first grade, students will identify, describe, extend, and create patterns (objects, sounds, movements, shapes, numbers, and colors).

25J, 25L, 35A-35B, 37A-37B, 37-38, 39A-39B, 39-40, 41A-41B, 41-42, 43A-43B, 43-44, 45A-45B, 45-46, 49-50, 95A-95B, 95-96

1.6.2 By the end of first grade, students will sort and classify objects according to one or more attributes (size, shape, color, and thickness).

1J, 11A-11B, 11-12, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18, 19A-19B, 19-20, 199A-199B, 199-200

1.6.3 By the end of first grade, students will identify and describe patterns in their environment.

25L, 37B

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Grade One

1.1 NUMERATION/NUMBER SENSE

1.1.1 By the end of first grade, students will recognize, write, and orally express the sequential order of the number system.

245A-245B, 245-246, 263A-263B, 263-264, 265A-265B, 265-266, 299A-299B, 299-300

Example indicators:

•Recognize and write numerals from 0-100.

1K, 239J, 245-246

•Count forward by 1s, 2s, 5s and 10s up to 100.

243A-243B, 243A-243B, 243-244, 253, 255A-255B, 255-256, 257A-257B, 257-258, 269A-269B, 269-270, 271, 273-274, 277-278

•Count backward from 10 to 0 by 1s.

246, 277

•Identify ordinal positions of first, second, third, through tenth.

239K-239L, 240, 267A-267B, 267-268

1.1.2 By the end of first grade, students will demonstrate ways of representing numbers and compare relations among numbers.

77A-77B, 77-78, 297A-297B, 297-298

Example indicators:

•Count objects to demonstrate one-to-one correspondence.

1K-1L, 239I, 241A-241B, 241-242

•Use comparison vocabulary (bigger, smaller, more, less, equal, higher, and lower).

25A-25B, 25-26, 27A-27B, 27-28, 29A-29B, 29-30, 31A-31B, 31-32, 35-36, 75A-75B, 75-76, 81-82, 301A-301B

•Identify and represent wholes into equal parts for the fractions of one-half and one-fourth.

155J, 156, 181A-181B, 181-182, 183A-183B, 183-184, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 195

-Connect number words and numerals to the quantities they represent.

40, 241-242, 243-244, 293

-Demonstrate place value in the base-ten number system using models.

241A-241B, 241-242, 246A-246B, 246-247, 251A-251B, 251-252, 279I-279J, 280, 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288, 291A-291B, 291-292, 293-294, 303A-303B, 303-304, 305, 327, 459-460

1.1.3 By the end of first grade, students will identify numbers and applications in everyday situations.

399-400

Example indicators:

-Identify how numbers are used in counting situations (setting the table and passing out candy treats).

241A

-Identify how numbers are used for identification (room numbers and phone numbers).

This objective is covered in the Kindergarten curriculum.

-Recognize and demonstrate the value of a collection of pennies, nickels, dimes, and quarters whose total value is 100 cents or less.

329I-329J, 329K-329L, 330, 335A-335B, 335-336, 337A-337B, 337-338, 339A-339B, 339-340, 341, 345A-345B, 345-346, 355, 357-358, 359, 361-362, 458

1.1.4 By the end of first grade, students will demonstrate the value of numbers (0-20) using concrete objects.

241A-241B, 241-242, 247A-247B, 247-248

1.2 COMPUTATION/ESTIMATION

1.2.1 By the end of first grade, students will demonstrate the concepts of addition and subtraction up to 10.

11-12, 13-14, 15-16, 16-17, 19-20, 21-22, 23, 51A-51B, 51-52, 57A-57B, 57-58, 59-60, 67A-67B, 67-68, 69A-69B, 69-70, 73-74, 95A-95B, 95-96, 99A-99B, 99-100, 109-110, 120, 131-132, 143A-143B, 143-144, 152, 154A-154B, 416, 445A-445B, 445-446

Example indicators:**•Demonstrate the value of basic facts using concrete objects.**

11A-11B, 13A-13B, 15A-15B, 16A-16B, 21A-21B, 43I-43J, 47A-47B, 47-48, 63A-63B, 63-64, 75A, 91A, 103A, 105A, 107A, 141A, 417, 419A, 419-420, 423-424, 435-436, 441-442, 449, 459A, 459, 463A-463B, 465A-465B, 471-472, 473-474, 485-486, 491

•Recognize the symbols + and - as representing the operations of addition and subtraction.

49A-49B, 49-50, 65A-65B, 65-66

•Recognize the symbol = represents equal quantities.

49A-49B, 49-50, 65A-65B, 65-66

•Solve problems involving one-step solutions related to children's experiences.

45A-45B, 45-46, 55-56, 71A-71B, 71-72, 79A-79B, 79-80, 86, 133A-133B, 133-134, 191A-191B, 191-192, 289-290, 291-292, 349-350, 351A-351B, 351-352, 353A-353B, 353-354, 405-406, 454

•Demonstrate strategies for whole number computation.

61A-61B, 61-62, 89I-89J, 89K-89L, 91A-91B, 91-92, 93A-93B, 93-94, 95A-95B, 95-96, 97A-97B, 97-98, 103A-103B, 105A-105B, 105-106, 107A-107B, 107-108, 111A-111B, 111-112, 113A-113B, 113-114, 123I, 123K-123L, 125A-125B, 125-126, 127A-127B, 127-128, 129A-129B, 129-130, 137A-137B, 137-138, 139A-139B, 145A-145B, 145-146, 295A-295B, 295-296, 417A-417B, 417-418, 419A-419B, 421A-421B, 421-422, 423A-423B, 425A-425B, 425-426, 427A-427B, 427-428, 435A-435B, 437A-437B, 439A-439B, 439-440, 441A-441B, 441-442, 443A-443B, 443, 447A-447B, 452, 457I, 459A-459B, 459-460, 461A-461B, 461-462, 463A-463B, 463-464, 465A-465B, 465-466, 471A-471B, 473A-473B, 475A-475B, 475-476, 477A-477B, 477-478, 483A-483B, 483-484, 488, 490

•Compute efficiently and accurately basic number facts for addition and subtraction.

53A-53B, 53-54, 87-88, 88A-88B, 91-92, 97-98, 101-102, 104, 105-106, 115-116, 121-122, 125-126, 127-128, 129-130, 35-136, 139-140, 141-142, 147-148, 153-154, 328B, 415J, 418, 426, 428, 437-438, 444, 447-448, 455-456

1.2.2 By the end of first grade, students will justify estimations to mathematical problems.

249A-249B, 249-250, 323

Example indicator:

•Make estimations and comparisons to actual results.

365A-365B, 365-366, 371-372, 372-374, 375-376, 381, 383-384, 413

1.3 MEASUREMENT

1.3.1 By the end of first grade, students will measure two or more items or sets using nonstandard units of measure and compare attributes.

365-366, 369A-369B, 377A-377B, 379A-379B, 379-380, 414

Example indicators:

•Compare attributes of items (length-shorter/longer, height-taller/shorter, weight-heavier/lighter, and temperature-hotter/colder).

363I, 412

•Measure items using nonstandard units (human foot, hand span, new pencil, toothpick, block, and paper clip).

367-368, 389A-389B, 389-390, 409

1.3.2 By the end of first grade, students will identify tools of measurement and their appropriate use (clocks, calendar, ruler, balance scale, and thermometer).

207A-207B, 207-208, 209A-209B, 389A-389B, 389-390, 395A-395B, 395-396, 397A-397B, 397-398

1.3.3 By the end of first grade, students will tell time to the half-hour using an analog and digital clock.

204, 207-208, 209-210, 211A-211B, 211-212, 215A-215B, 215-216, 217, 229A-229B, 229-230, 233-234, 237-238

1.3.4 By the end of first grade, students will identify the different units of measurement used in their environment (cents, dollars, pounds, gallons, liters, meters, miles, minutes, and hours).

203I, 205A-205B, 205-206, 213-214, 221A-221B, 221-222, 225A-225B, 225-226, 227A-227B, 227-228, 236, 331A-331B, 331-332, 333A-333B, 333-334, 343A-343B, 343-344, 347A-347B, 347-348, 371A-371B, 371-372, 373A-373B, 375A-375B, 383A-383B, 383-384, 385A-385B, 385-386, 387A-387B, 387-388, 391A-391B, 391-392, 393A-393B, 393-394, 395A-395B, 395-396, 405A-405B

1.3.5 By the end of first grade, students will identify past, present, and future as orientations in time.

203J, 203K-203L, 219A-219B, 219-220

1.4 GEOMETRY/SPATIAL CONCEPTS

1.4.1 By the end of first grade, students will compare relative position (left/right, above/below, over/under, up/down, and near/far).

173A-173B, 173-174, 179, 198, 200, 315A-315B, 315-316, 317A-317B

1.4.2 By the end of first grade, students will identify, describe, and create circles, squares, triangles, and rectangles.

155I, 157A-157B, 157-158, 159A-159B, 159-160, 161A-161B, 161-162, 163, 165A-165B, 165-166, 167A-167B, 167-168, 201

Example indicators:

-Construct congruent shapes and designs using manipulatives.

169A-169B, 169-170

-Identify and describe common geometric shapes in their environment.

165A-165B, 165-166, 193A-193B, 193-194

1.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

1.5.1 By the end of first grade, students will collect information about objects and events in their environment (favorite candy bar, number of siblings, and number of pets).

309A, 309-310, 311A-311B, 311-312

1.5.2 By the end of first grade, students will organize and display collected information using objects and pictures.

177A-177B, 177-178, 324

1.5.3 By the end of first grade, students will compare and interpret information from displayed data (more, less, and fewer).

175-176, 223A-223B, 223-224, 251-252, 319A-319B, 319-320, 356, 429-430, 479-480, 481A-481B, 481-482

1.5.4 By the end of first grade, students will describe the process used in data collection and analysis.

309A-309B, 309-310, 313A-313B, 313-314, 401A-401B, 401-402, 403A-403B, 403-404, 407

1.6 ALGEBRAIC CONCEPTS

1.6.1 By the end of first grade, students will identify, describe, extend, and create patterns (objects, sounds, movements, shapes, numbers, and colors).

1I, 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9-10, 33A-33B, 33-34, 37, 256, 259-260, 261A-261B, 261-262

1.6.2 By the end of first grade, students will sort and classify objects according to one or more attributes (size, shape, color, and thickness).

307A-307B, 307-308

1.6.3 By the end of first grade, students will identify and describe patterns in their environment.

7A-7B, 7, 33B

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Grade Two

4.1 NUMERATION/NUMBER SENSE

4.1.1 By the end of fourth grade, students will demonstrate place value of whole numbers through the millions and decimals to the hundredth place.

79I, 81A-81B, 81-82, 83A-83B, 83-84, 391A-391B, 390-391, 392A-392B, 392-393, 415A-415B, 415-416

Example indicators:

•Read and write numerals (in digits and words) through the millions place and decimals to the hundredth place.

85A-85B, 85-86, 93, 407A-407B, 407-408

•Order and compare whole numbers through the millions place and decimals to the hundredth place using the symbols $<$, $>$, and $=$.

91A-91B, 91-92, 93, 97A-97B, 97-98, 409A-409B, 409-410, 419, 423-424

•Round whole numbers to the nearest named place, such as rounding 1,234 to the nearest hundred would be 1,200.

95A-95B, 95-96

4.1.2 By the end of fourth grade, students will write and illustrate equivalences of whole numbers in expanded form, decimals, and fractions.

245J, 269A-269B, 269-270, 271A-271B, 271-272, 273A-273B, 273-274, 275-276, 277A-277B, 277-278, 281, 288

Example indicators:

•Write numbers in expanded form, such as $432 = 400 + 30 + 2$.

395A-395B, 395-396

•Represent equivalent fractions with denominators of 2, 4, 5, 8 and 10 ($\frac{1}{2} = \frac{2}{4}$) using concrete objects.

279A-279B

•Write equivalent decimals ($.4 = .40$).

This objective is first addressed in the third grade curriculum.

-Write decimals as fractions using denominators of 10 and 100 (.68 = 68/100).

This objective is first addressed in the third grade curriculum.

4.1.3 By the end of fourth grade, students will describe and apply relationships between whole numbers, decimals, and fractions by order, comparison, and operation.

15A-15B, 15-16, 35-36

Example indicators:

-Order and compare whole numbers, common fractions, and decimals using the symbols $<$, $>$, and $=$.

283, 389I-389J, 399A-399B, 399-400

-Illustrate mathematical concepts by using objects and drawing pictures or diagrams (subtraction as the opposite of addition and multiplication as repeated addition).

23A-23B, 23-24, 27A-27B, 27-28

-Solve and check a mathematical problem by using the related facts.

67A-67B, 67-68, 172A-172B, 227A-227B, 227-228, 239

4.1.4 By the end of fourth grade, students will identify examples of positive and negative numbers and zero.

This objective is first addressed in the fifth grade curriculum.

Example indicator:

-Demonstrate simple concepts of positive and negative numbers (a thermometer for temperature or distances to the right or left of zero on a number line).

Preparation for this objective can be found on pages 369-370 which introduce the thermometer.

4.1.5 By the end of fourth grade, students will make change and count out in amounts up to \$20.00.

109A-109B, 109-110, 111A-111B, 111-112, 113A-113B, 113-114, 115A-115B, 115-116, 117A-117B, 117-118, 123A-123B, 123-124, 127-128, 130, 132

Example indicators:

-Count back change from purchase price to amount given using fewest coins possible.

119A-119B, 119-120

-Calculate change through subtraction and choose correct bills and coins to make this amount.

121A-121B, 121-122, 125, 133K-133L, 134, 225A-225B, 225-226

4.2 COMPUTATION/ESTIMATION

4.2.1 By the end of fourth grade, students will estimate, add, subtract, multiply, and divide whole numbers without and with calculators and solve word problems.

1I-1J, 1K-1L, 3A-3B, 3-4, 5A-5B, 5-6, 7-8, 11-12, 13A-13B, 13-14, 17A-17B, 17-18, 20-21, 31A-31B, 31-32, 33-34, 39-40, 41I-41J, 43-44, 56A-56B, 56-57, 59-60, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 71-72, 73-74, 77-78, 78A-78B, 133J, 141A-141B, 141-142, 149A-149B, 149-150, 151, 155A-155B, 155-156, 169-170, 173I-173J, 173K-173L, 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 183, 185A-185B, 185-186, 191A-191B, 191-192, 193A-193B, 193-194, 197A-197B, 197-198, 204, 209I-209J, 209K-209L, 211A-211B, 211-212, 213A-213B, 213-214, 215A-215B, 215-216, 217A-217B, 217-218, 223-224, 229A-229B, 229-230, 231A-231B, 231-232, 237-238, 240, 242, 243-244, 397-398, 401A-401B, 401-402, 425I-425J, 426, 429A-429B, 429-430, 443A-443B, 443-444, 445A-445B, 445-446, 447A-447B, 447-448, 453A-453B, 453-454, 455A-455B, 455-456, 460, 463-464, 465I-465J, 466, 467A-467B, 467-468, 469A-469B, 469-470, 477-478, 479A-479B, 479-480, 483A-483B, 483-484, 493-494

Example indicators:

-Demonstrate with accuracy and reasonable speed the basic facts of addition (1-20), subtraction (1-20), multiplication (1-144), and division (1-44).

25A-25B, 25-26, 29A-29B, 29-30, 43A-43B, 43-44, 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 133I, 135A-135B, 135-136, 137A-137B, 137-138, 139A-139B, 139-140, 143, 145A-145B, 145-146, 147A-147B, 147-148, 171-172, 174, 469A-469B, 469-470, 471A-471B, 471-472, 473A-473B, 473-474, 475A-475B, 475-476, 485A-485B, 485-486, 497-498

-Add and subtract accurately five-digit numbers including columns of numbers.

187A-187B, 187-188, 199A-199B, 199-200, 207-208, 242B, 427A-427B, 427-428, 431A-431B, 431-432, 433A-433B, 433-434, 435A-435B, 435-436, 449A-449B, 449-450, 451A-451B, 451-452, 459

-Multiply up to a three-digit number by a two-digit number.

This objective is first addressed in the fourth grade curriculum.

-Divide up to a three-digit number by a one-digit divisor.

This objective is first addressed in the third grade curriculum.

-Choose correct operation and solve word problems.

9A-9B, 9-10, 19A-19B, 19-20, 21, 31-32, 69A-69B, 69-70, 76, 161A-161B, 161-162, 163A-163B, 163-164, 201, 206, 219, 221A-221B, 221-222, 224, 225A-225B, 225-226, 233A-233B, 233-234, 235A-235B, 235-236, 377A-377B, 377-378, 422, 462, 487A-487B, 487-488, 489A-489B, 489-490, 496

4.2.2 By the end of fourth grade, students will estimate, add, and subtract decimals without and with calculators and solve word problems.

This objective is first addressed in the third grade curriculum.

Example indicator:**-Add and subtract decimals to the hundredth place.**

This objective is first addressed in the third grade curriculum.

4.2.3 By the end of fourth grade, students will estimate, add, and subtract fractions with like denominators without calculators and solve word problems.

This objective is first addressed in the third grade curriculum.

Example indicator:**-Solve problems involving fractions of halves, fourths, and eighths using the operations of addition and subtraction.**

This objective is first addressed in the third grade curriculum.

4.3 MEASUREMENT**4.3.1 By the end of fourth grade, students will estimate, measure, and solve word problems using metric units for linear measure, area, mass/weight, capacity, and temperature.**

379A-379B, 379-380

Example indicators:**-Use the appropriate units of measurement.**

347A-347B, 357A, 367A-367B, 368, 383

-Estimate and accurately measure length to the nearest meter or centimeter and calculate area.

347A-347B, 347-348

-Estimate and accurately measure mass/weight to the nearest gram.

367A-367B, 367-368

-Estimate and accurately measure capacity to the nearest milliliter.

357A-357B, 357-358

-Measure and read temperature accurately to the nearest degree using Celsius thermometer.

369A-369B, 369-370

4.3.2 By the end of fourth grade, students will estimate, measure, and solve word problems using standard units for linear measure, area, mass/weight, capacity, and temperature.

353A-353B, 353-354, 359A-359B, 359-360, 363A-363B, 363-364, 365-366, 379A-379B, 379-380

Example indicators:

-Use the appropriate units of measurement.

343A-343B, 343-344, 345A-345B, 345-346, 355A-355B, 355-356, 365A-365B, 367A-367B, 383

-Estimate and accurately measure length to the nearest yard, foot, inch, and quarter inch and calculate area.

343A-343B, 343-344, 345A-345B, 345-346, 351A-351B, 351-352, 386

-Estimate and accurately measure mass/weight to the nearest ounce and pound.

365A-365B, 365-366

-Estimate and accurately measure capacity to the nearest fluid ounce.

355A-355B, 355-356

-Measure and read temperature accurately to the nearest degree using Fahrenheit thermometer.

336, 369A-369B, 369-370

4.3.3 By the end of fourth grade, students will tell and write correct time to the minute using an analog clock.

299A-299B, 299-300, 309, 329-330, 337

Example indicators:

-Set an analog clock to a given time.

291A-291B, 291-292, 329

-State time in different ways (8:35, 35 minutes after 8:00, or 25 minutes until 9:00).

293A-293B, 293-294, 295A-295B, 295-296, 305A-305B, 305-306, 307

-Identify time of day (am, pm, noon, and midnight).

289K-289L, 301A-301B, 301-302, 329A-329B

4.3.4 By the end of fourth grade, students will measure and determine the perimeter of a many-sided figure without a formula using standard and metric units of measure.

351A-351B, 351-352, 384, 387

4.4 GEOMETRY/SPATIAL CONCEPTS

4.4.1 By the end of fourth grade, students will identify, describe, and create two- and three-dimensional geometric shapes.

247A-247B, 247-248, 249A-249B, 249-250, 251A-251B, 251-252, 253, 255A-255B, 255-256, 265-266, 285

4.4.2 By the end of fourth grade, students will identify and draw points, lines, line segments, rays, and angles.

265-266, 284

4.4.3 By the end of fourth grade, students will identify, analyze, and compare two-dimensional geometric figures using congruence, symmetry, similarity, and simple transformations.

245I, 245K-245L, 246, 257A-257B, 257-258, 259A-259B, 259-260, 261A-261B, 261-262, 263-264, 265A-265B, 265-266, 267, 279-280, 284, 286, 287

4.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

4.5.1 By the end of fourth grade, students will collect, organize, record, and interpret data and describe the findings.

87-88, 89A-89B, 89-90, 189A-189B, 189-190, 313A-313B, 313-314, 325A-325B, 325-326

Example indicators:

-Collect, organize, and interpret data in line plots, tables, charts, and graphs (pie graphs, bar graphs, and pictographs).

289J, 319A-319B, 319-320, 321A-321B, 321-322, 323A-323B, 323-324, 437-438, 439A-439B, 439-440

-Draw valid conclusions from displayed data.

315A-315B, 315-316, 317, 327A-327B, 327-328, 331, 333, 337-338,
405A-405B, 405-406

-Investigate and record patterns in a simple probability situation in an organized way.

339J, 339K-339L, 340, 373A-373B, 373-374, 375A-375B, 375-376, 381, 383

4.6 ALGEBRAIC CONCEPTS

4.6.1 By the end of fourth grade, students will use and interpret variables and mathematical symbols to write and solve one-step equations.

5A-5B, 5-6, 17A-17B, 17-18

Example indicators:

-Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations to demonstrate the beginning concept of a variable and writing formulas.

443A-443B, 443-444

-Identify and use various indicators of multiplication (parentheses, \times , $*$) and division, ($/$, \div).

469A-469B, 469-470, 485A-485B, 485-486

4.6.2 By the end of fourth grade, students will identify, describe, and extend arithmetic patterns, using concrete materials and tables.

99A-99B, 99-100, 101A-101B, 101-102, 157A-157B, 157-158, 165, 311A-311B,
311-312, 413-414, 417, 419

Example indicator:

-Use Input/Output or function box to identify and extend patterns.

167-168

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Grade Three

4.1 NUMERATION/NUMBER SENSE

4.1.1 By the end of fourth grade, students will demonstrate place value of whole numbers through the millions and decimals to the hundredth place.

2J, 16-17, 34-35, 44A-44B, 44-45, 46-47, 60-61, 62

Example indicators:

-Read and write numerals (in digits and words) through the millions place and decimals to the hundredth place.

6A-6B, 6-7, 10A-10B, 10-11, 12A-12B, 12-13, 56-57

-Order and compare whole numbers through the millions place and decimals to the hundredth place using the symbols $<$, $>$, and $=$.

18A-18B, 18-19, 20-21, 22A-22B, 22-23, 31, 50, 57, 58

-Round whole numbers to the nearest named place, such as rounding 1,234 to the nearest hundred would be 1,200.

28A-28B, 28-29, 30-31, 50, 58

4.1.2 By the end of fourth grade, students will write and illustrate equivalences of whole numbers in expanded form, decimals, and fractions.

168A-168B, 168-169, 548, 557, 561I, 571, 580-581, 590A

Example indicators:

-Write numbers in expanded form, such as $432 = 400 + 30 + 2$.

8A-8B, 8-9, 10B, 10-11, 12-13, 50, 56

-Represent equivalent fractions with denominators of 2, 4, 5, 8 and 10 ($1/2 = 2/4$) using concrete objects.

498A-498B, 498-499, 500-501, 502A-502B, 502-503, 504A-504B, 504-505, 514-515, 522A-522B, 522-523, 524, 530-531, 548, 554-555, 558-559

-Write equivalent decimals ($.4 = .40$).

568A-568B, 568-569

-Write decimals as fractions using denominators of 10 and 100 ($.68 = 68/100$).

564A-564B, 564-565, 566A-566B, 566-567, 571, 575, 602, 606

4.1.3 By the end of fourth grade, students will describe and apply relationships between whole numbers, decimals, and fractions by order, comparison, and operation.

512A-512B, 512-513, 516A-516B, 516-517, 542A-542B, 542-543, 570, 575, 596

Example indicators:

-Order and compare whole numbers, common fractions, and decimals using the symbols $<$, $>$, and $=$.

506A-506B, 506-507, 508-509, 568A-568B, 568-569, 603, 607

-Illustrate mathematical concepts by using objects and drawing pictures or diagrams (subtraction as the opposite of addition and multiplication as repeated addition).

66-67, 82B, 104A, 126, 128A, 128-129, 130-131, 132-133, 134, 145A-145B, 145, 148, 150, 152, 170A, 258I, 260A-260B, 260-261, 262A-262B, 262-263, 264-265, 266A-266B, 266-267, 274-275, 276A-276B, 276-277, 280A-280B, 300, 306, 310, 314I, 316A, 316, 318A-318B, 318, 320A-320B, 320-321, 324A-324B, 324-325, 338A-338B, 338-339, 342A, 342, 346A-346B, 348A-348B, 350-351, 360-361, 368I-368J, 370, 372A-372B, 372-373, 374A-374B, 374-375, 382-383, 386B, 398A-398B, 398-399, 406A-406B, 412-413, 418-419, 422, 436B, 518A-518B, 518-519, 610I-610J, 612A-612B, 612, 618A, 618, 626A-626B, 626-627, 628, 630A-630B, 632A-632B, 632, 648A-648B, 648, 650B, 650-651, 652A, 652, 656A, 658A-658B, 663, 664-665, 675, 688A

-Solve and check a mathematical problem by using the related facts.

70-71, 258J, 384A-384B, 384-385, 386A, 386-387, 388A-388B, 388-389, 390A-390B, 390-391, 392A-392B, 392-393, 396A-396B

4.1.4 By the end of fourth grade, students will identify examples of positive and negative numbers and zero.

This objective is first addressed in the fifth grade curriculum.

Example indicator:

-Demonstrate simple concepts of positive and negative numbers (a thermometer for temperature or distances to the right or left of zero on a number line).

Preparation for this objective can be found on pages 696-697 which introduce the thermometer.

4.1.5 By the end of fourth grade, students will make change and count out in amounts up to \$20.00.

36A-36B, 36-37, 38-39, 49, 63, 135, 285, 436A, 687

Example indicators:

-Count back change from purchase price to amount given using fewest coins possible.

40A-40B, 40-41, 59

-Calculate change through subtraction and choose correct bills and coins to make this amount.

41, 51, 163

4.2 COMPUTATION/ESTIMATION

4.2.1 By the end of fourth grade, students will estimate, add, subtract, multiply, and divide whole numbers without and with calculators and solve word problems.

64I-64J, 70A-70B, 70-71, 78-79, 80A-80B, 80-81, 82A-82B, 82-83, 84-85, 86A-86B, 86-87, 88-89, 90A-90B, 90-91, 92-93, 94A-94B, 94-95, 96A-96B, 96-97, 98A-98B, 98-99, 100-101, 104A-104B, 106-107, 108-109, 110-111, 116-117, 118-119, 122-123, 124I, 126A-126B, 126-127, 132A-132B, 132-133, 134, 144-145, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153, 154, 156A-156B, 156-157, 158-159, 172-173, 176-177, 182-183, 184-185, 186-187, 188-189, 282A-282B, 342B, 343, 370A-370B, 371, 376-377, 386A, 386-387, 388A-388B, 388-389, 390A-390B, 390-391, 392A-392B, 392-393, 394-395, 396, 398A-398B, 404A-404B, 404-405, 408-409, 410-411, 614-615, 616A-616B, 616-617, 624-625, 630-631, 633, 634, 636A-636B, 636-637, 640A-640B, 640-641, 646-647, 664-665, 670-671, 672-673, 674-675, 676-677, 306, 308, 309, 310-311

Example indicators:

-Demonstrate with accuracy and reasonable speed the basic facts of addition (1-20), subtraction (1-20), multiplication (1-144), and division (1-44).

66A-66B, 66-67, 68-69, 278, 280-281, 282-283, 287, 290, 292A-292B, 292-293, 294B, 296-297, 309, 312-313, 317, 319, 322-323, 326-327, 328A-328B, 328-329, 336-337, 341, 350, 354, 360-361, 364-365, 367, 389, 391, 393, 397, 403, 420-421, 423, 424-425

-Add and subtract accurately five-digit numbers including columns of numbers.

136A-136B, 136-137, 166A, 166-167, 170B

-Multiply up to a three-digit number by a two-digit number.

This objective is first addressed in the fourth grade curriculum.

-Divide up to a three-digit number by a one-digit divisor.

622A-622B, 622-623, 624-625, 649, 650A-650B, 650-651, 652A-652B, 652-653, 654-655, 660-661, 673, 676

-Choose correct operation and solve word problems.

14A-14B, 14-15, 32A-32B, 32-33, 42A-42B, 42-43, 51, 74-75, 76A-76B, 76-77, 102A-102B, 102-103, 104-105, 117, 119, 138-139, 140B, 140-141, 142-143, 155, 160A-160B, 160-161, 170-171, 238-239, 284A-284B, 284-285, 301, 346-347, 348-349, 363, 378-379, 380B, 380-381, 400, 406-407, 413, 434-435, 438-439, 526-527, 528A-528B, 540A-540B, 540-541, 590-591, 656A-656B, 656-657, 658-659

4.2.2 By the end of fourth grade, students will estimate, add, and subtract decimals without and with calculators and solve word problems.

124J, 162A-162B, 162-163, 294-295

Example indicator:**-Add and subtract decimals to the hundredth place.**

164, 572A-572B, 572-573, 574, 596, 603, 607

4.2.3 By the end of fourth grade, students will estimate, add, and subtract fractions with like denominators without calculators and solve word problems.

510A-510B, 510-511

Example indicator:**-Solve problems involving fractions of halves, fourths, and eighths using the operations of addition and subtraction.**

520A-520B, 520-521, 549

4.3 MEASUREMENT**4.3.1 By the end of fourth grade, students will estimate, measure, and solve word problems using metric units for linear measure, area, mass/weight, capacity, and temperature.**

722-723, 724, 726, 728

Example indicators:**-Use the appropriate units of measurement.**

582B, 584A, 585, 586, 594-595, 605, 609, 684A-684B, 685, 694A, 695

-Estimate and accurately measure length to the nearest meter or centimeter and calculate area.

582A-582B, 582-583, 584A-584B, 584-585, 586-587, 597, 604-605, 608-609

-Estimate and accurately measure mass/weight to the nearest gram.

694A-694B, 694-695, 716, 727

-Estimate and accurately measure capacity to the nearest milliliter.

684A-684B, 684-685, 716, 726

-Measure and read temperature accurately to the nearest degree using Celsius thermometer.

696A-696B, 696-697, 717

4.3.2 By the end of fourth grade, students will estimate, measure, and solve word problems using standard units for linear measure, area, mass/weight, capacity, and temperature.

472A-472B, 472-473, 584-585, 592, 678I, 698-699, 710A-710B, 710-711

Example indicators:

-Use the appropriate units of measurement.

532, 536, 538, 547, 561, 680, 690

-Estimate and accurately measure length to the nearest yard, foot, inch, and quarter inch and calculate area.

468A-468B, 468-469, 470-471, 496J, 532A-532B, 532-533, 534A-534B, 534-535, 536A-536B, 536-537, 538A-538B, 538-539, 544-545, 557, 560-561, 562J, 593

-Estimate and accurately measure mass/weight to the nearest ounce and pound.

690A-690B, 690-691, 692-693, 716, 723, 727

-Estimate and accurately measure capacity to the nearest fluid ounce.

680A-680B, 680-681, 682-683, 716, 722, 726, 728

-Measure and read temperature accurately to the nearest degree using Fahrenheit thermometer.

696A-696B, 696-697, 717, 724, 728

4.3.3 By the end of fourth grade, students will tell and write correct time to the minute using an analog clock.

190I, 192A-192B, 196A, 196, 198A-198B, 198-199, 200A-200B, 200-201, 202-203, 238A-238B, 244, 250, 254, 687

Example indicators:

•Set an analog clock to a given time.

196B, 238B

•State time in different ways (8:35, 35 minutes after 8:00, or 25 minutes until 9:00).

192, 194, 197

•Identify time of day (am, pm, noon, and midnight).

193, 195

4.3.4 By the end of fourth grade, students will measure and determine the perimeter of a many-sided figure without a formula using standard and metric units of measure.

426J, 464A-464B, 464-465, 466, 476A-476B, 478-479, 491, 495

4.4 GEOMETRY/SPATIAL CONCEPTS

4.4.1 By the end of fourth grade, students will identify, describe, and create two- and three-dimensional geometric shapes.

426I, 428A-428B, 428-429, 430-431, 432A-432B, 432-433, 440-441, 446A-446B, 446-447, 448, 450-451, 452, 454A-454B, 454-455, 462-463, 482, 488-489, 490, 492-493, 494

4.4.2 By the end of fourth grade, students will identify and draw points, lines, line segments, rays, and angles.

442A-442B, 442-443, 444A-444B, 444-445, 450A-450B, 462-463, 476-477, 482, 488, 493, 578-579

4.4.3 By the end of fourth grade, students will identify, analyze, and compare two-dimensional geometric figures using congruence, symmetry, similarity, and simple transformations.

449, 456A-456B, 456-457, 458-459, 460A-460B, 460-461, 467, 474A-474B, 474-475, 483, 490, 494

4.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

4.5.1 By the end of fourth grade, students will collect, organize, record, and interpret data and describe the findings.

204A-204B, 204-205, 206-207, 218A-218B, 218-219, 220-221, 243, 244-245, 251, 252-253, 255, 256-257, 453

Example indicators:

-Collect, organize, and interpret data in line plots, tables, charts, and graphs (pie graphs, bar graphs, and pictographs).

190J, 208A-208B, 208-209, 210-211, 212A-212B, 222A-22B, 222-223, 224, 226A-226B, 226-227, 228A-228B, 228-229, 230-231, 232A-232B, 232-233, 236A-236B, 236-237, 240-241

-Draw valid conclusions from displayed data.

212-213, 214-215, 216A-216B, 216-217, 234-235, 268-269, 642-643, 644A-644B, 644-645

-Investigate and record patterns in a simple probability situation in an organized way.

678J, 700A-700B, 700-701, 702A-702B, 702-703, 704A-704B, 704-705, 706-707, 708A-708B, 708-709, 712-713, 714-715, 717, 724-725, 729

4.6 ALGEBRAIC CONCEPTS

4.6.1 By the end of fourth grade, students will use and interpret variables and mathematical symbols to write and solve one-step equations.

74-75, 76A-76B, 76-77

Example indicators:

-Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations to demonstrate the beginning concept of a variable and writing formulas.

168-169, 265, 374A-374B, 375, 385, 629

-Identify and use various indicators of multiplication (parentheses, \times , $*$) and division, ($/$, \div).

260A-260B, 260-261, 370A-370B, 370-371

4.6.2 By the end of fourth grade, students will identify, describe, and extend arithmetic patterns, using concrete materials and tables.

2I, 24A-24B, 24-25, 26-27, 58, 270A-270B, 270-271, 272-273, 286A-286B, 286, 288A-288B, 288-289, 294A, 301, 308, 314J, 330-331, 332A-322B, 332-333, 334-335, 340A-340B, 340, 362, 366, 399, 401, 402A, 402, 588A-588B, 588-589, 592, 605, 609, 612-613, 618B, 618-619, 320, 664, 670, 674

Example indicator:

•Use Input/Output or function box to identify and extend patterns.

72A-72B, 72-73, 274-275, 291, 300, 311, 344A-344B, 344-345, 350-351, 352-353,
354,363, 367

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Grade Four

4.1 NUMERATION/NUMBER SENSE

4.1.1 By the end of fourth grade, students will demonstrate place value of whole numbers through the millions and decimals to the hundredth place.

2I, 14-15, 22A-22B, 22-23, 28A-28B, 28-29, 40-41, 46-47

Example indicators:

-Read and write numerals (in digits and words) through the millions place and decimals to the hundredth place.

4A-4B, 4-5, 6-7, 8A-8B, 8-9, 10A-10B, 10-11, 34A-34B, 34-35, 40A-40B, 52, 55, 56, 59, 678, 682

-Order and compare whole numbers through the millions place and decimals to the hundredth place using the symbols $<$, $>$, and $=$.

16A-16B, 16-17, 18-19, 26-27, 53, 57, 71, 630A-630B, 630-631, 672, 678

-Round whole numbers to the nearest named place, such as rounding 1,234 to the nearest hundred would be 1,200.

20A-20B, 20-21, 53, 57, 68A-68B, 68-69, 114, 254I, 258A-258B, 258-259, 298, 316A-316B, 316, 350, 356, 679

4.1.2 By the end of fourth grade, students will write and illustrate equivalences of whole numbers in expanded form, decimals, and fractions.

47, 498I, 530A-530B, 530-531, 532-533, 540A-540B, 542-543, 547, 552, 555, 558, 632A-632B, 632-633, 634-635, 682

Example indicators:

-Write numbers in expanded form, such as $432 = 400 + 30 + 2$.

4-5, 8-9, 52, 56

-Represent equivalent fractions with denominators of 2, 4, 5, 8 and 10 ($\frac{1}{2} = \frac{2}{4}$) using concrete objects.

500A-500B, 500-501, 502A-502B, 502-503, 512A, 514-515, 516A-516B, 516-517, 518-519, 520A-520B, 520-521, 528-529, 552, 555, 556

-Write equivalent decimals ($.4 = .40$).

34B, 35, 36-37, 59, 624A, 627

-Write decimals as fractions using denominators of 10 and 100 (.68 = 68/100).

624A-624B, 624-625, 626, 628A-628B, 628-629

4.1.3 By the end of fourth grade, students will describe and apply relationships between whole numbers, decimals, and fractions by order, comparison, and operation.

504A-504B, 504-505, 506-507, 508A-508B, 508-509, 512B, 514-515, 522A-522B, 666A-666B, 666-667, 679

Example indicators:

-Order and compare whole numbers, common fractions, and decimals using the symbols $<$, $>$, and $=$.

498J, 522-523, 524A-524B, 524-525, 526-527, 528-529, 534A-534B, 534-535, 554, 556, 558-559, 562-563, 572-573, 614, 618, 630A-630B, 630-631, 672, 682

-Illustrate mathematical concepts by using objects and drawing pictures or diagrams (subtraction as the opposite of addition and multiplication as repeated addition).

82B, 85, 102B, 122J, 124A-124B, 124-125, 126, 129, 131, 132A-132B, 132-133, 145, 146, 148A-148B, 150A-150B, 168A-168B, 180-181, 184, 254J, 256B, 262B, 262, 264A-264B, 264-265, 266-267, 270B, 270, 273, 292A-292B, 305, 320A-320B, 320-321, 322, 364I-364J, 372A-372B, 372-373, 374A-374B, 374-375, 384A-384B, 390A-390B, 396A-396B, 396, 412A, 418

-Solve and check a mathematical problem by using the related facts.

82, 148A-148B, 148-149, 150A-150B, 158, 174, 181, 185

4.1.4 By the end of fourth grade, students will identify examples of positive and negative numbers and zero.

This objective is first addressed in the fifth grade curriculum.

Example indicator:

-Demonstrate simple concepts of positive and negative numbers (a thermometer for temperature or distances to the right or left of zero on a number line).

Preparation for this objective can be found on pages 664-665 and 673 which introduce the thermometer.

4.1.5 By the end of fourth grade, students will make change and count out in amounts up to \$20.00.

28A-28B, 30A-30B, 30-31, 42-43, 54, 58, 600A

Example indicators:

-Count back change from purchase price to amount given using fewest coins possible.

2J, 31, 32A-32B, 32-33, 55, 59

-Calculate change through subtraction and choose correct bills and coins to make this amount.

59

4.2 COMPUTATION/ESTIMATION

4.2.1 By the end of fourth grade, students will estimate, add, subtract, multiply, and divide whole numbers without and with calculators and solve word problems.

60I, 62A-62B, 62-63, 64A-64B, 64-65, 66-67, 72A-72B, 72-73, 74-75, 79, 152A-152B, 152-153, 154A-154B, 154-155, 258A-258B, 258-259, 260-261, 262A-262B, 262-263, 268-269, 270A-270B, 270-271, 272, 274A-274B, 274-275, 283, 284-285, 286A-286B, 288A-288B, 288-289, 294-295, 298-299, 312J, 316-317, 318-319, 368A-368B, 368-369, 370, 384-385, 402A-402B, 402-403, 418-419

Example indicators:

-Demonstrate with accuracy and reasonable speed the basic facts of addition (1-20), subtraction (1-20), multiplication (1-144), and division (1-44).

130, 134-135, 144-145, 150-151, 158-159, 184, 186

-Add and subtract accurately five-digit numbers including columns of numbers.

70-71, 76A-76B, 76-77, 78-79, 80A-80B, 80-81, 82A-82B, 82-83, 84-85, 86A-86B, 86-87, 92-93, 102A, 108, 115, 119, 120, 136-137, 314A-314B, 314-315

-Multiply up to a three-digit number by a two-digit number.

320A-320B, 320-321, 322-323, 330-331, 332A-332B, 332-333, 334, 336A-336B, 336-337, 338A-338B, 338-339, 340A-340B, 340-341, 344A-344B, 346-347, 350, 358-359, 360-361, 362-363

-Divide up to a three-digit number by a one-digit divisor.

372A-372B, 372-373, 376-377, 378-379, 380A-380B, 380-381, 382-383, 386A-386B, 386-387, 388-389, 390-391, 392A-392B, 392-393, 400-401, 408A-408B, 408-409, 410, 418, 424-425, 426-427, 428-429, 430-431

-Choose correct operation and solve word problems.

12A-12B, 12-13, 24A-24B, 24-25, 38A-38B, 38-39, 47, 67, 94A-94B, 94-95,
102-103, 146-147, 156A-156B, 156-157, 168-169, 182,186, 278A-278B, 278-279,
280-281, 282A-282B, 282, 290A-290B, 290-291, 292-293, 344-345, 412-413,
414-415, 419, 478-479, 540, 696A-696B, 712-713, 714A-714B, 714-715, 716B, 717-
178, 723, 729, 730, 732-733

4.2.2 By the end of fourth grade, students will estimate, add, and subtract decimals without and with calculators and solve word problems.

622I, 636A-636B, 636-637, 650, 672

Example indicator:**-Add and subtract decimals to the hundredth place.**

638A-638B, 638-639, 640-641, 642A-642B, 642-643, 644-645, 651, 679, 680, 683,
684

4.2.3 By the end of fourth grade, students will estimate, add, and subtract fractions with like denominators without calculators and solve word problems.

560I, 562A-562B, 562-563, 602A, 608, 614-615, 618-619

Example indicator:**-Solve problems involving fractions of halves, fourths, and eighths using the operations of addition and subtraction.**

564A-564B, 564-565, 566-567, 568A-568B, 568-569, 570, 572-573, 574A-574B,
574-575, 576-577, 578A-578B, 578-579, 580-581, 586-587

4.3 MEASUREMENT**4.3.1 By the end of fourth grade, students will estimate, measure, and solve word problems using metric units for linear measure, area, mass/weight, capacity, and temperature.**

658A-658B, 658-659, 660-661

Example indicators:**-Use the appropriate units of measurement.**

652-653, 673, 680, 684

-Estimate and accurately measure length to the nearest meter or centimeter and calculate area.

652A-653A, 673, 684

-Estimate and accurately measure mass/weight to the nearest gram.

656A-656B, 681, 685

-Estimate and accurately measure capacity to the nearest milliliter.

654A-654B, 681, 684

-Measure and read temperature accurately to the nearest degree using Celsius thermometer.

664A-664B, 664-665, 673, 681, 685

4.3.2 By the end of fourth grade, students will estimate, measure, and solve word problems using standard units for linear measure, area, mass/weight, capacity, and temperature.

476A-476B, 476-477, 480, 560J, 596A-596B, 596-597, 598-599, 600-601, 602B, 602-603, 604-605, 609, 621, 622J, 673

Example indicators:

-Use the appropriate units of measurement.

588-589, 592-593, 594-595, 616-617, 620, 654-655, 656-657, 671

-Estimate and accurately measure length to the nearest yard, foot, inch, and quarter inch and calculate area.

468A-468B, 468-469, 470-471, 472-473, 474A-474B, 474-475, 480-481, 485, 493, 497, 588A-588B, 588-589, 590A-590B, 590-591, 616, 620, 666B

-Estimate and accurately measure mass/weight to the nearest ounce and pound.

594A-594B, 594-595, 617, 620, 621

-Estimate and accurately measure capacity to the nearest fluid ounce.

592A-592B, 592-593, 620

-Measure and read temperature accurately to the nearest degree using Fahrenheit thermometer.

664A-664B, 664-665, 673, 681, 685

4.3.3 By the end of fourth grade, students will tell and write correct time to the minute using an analog clock.

188I, 190A-190B, 190-191, 192A-192B, 192-193, 194, 196, 202, 240

Example indicators:

-Set an analog clock to a given time.

196A-196B, 197, 234A

-State time in different ways (8:35, 35 minutes after 8:00, or 25 minutes until 9:00).

191, 246, 250

-Identify time of day (am, pm, noon, and midnight).

190A-190B, 190-191, 234B

4.3.4 By the end of fourth grade, students will measure and determine the perimeter of a many-sided figure without a formula using standard and metric units of measure.

432J, 464A-464B, 464-465, 466-467, 474A-474B, 474-475, 478A-478B, 480-481, 483, 485, 493, 496, 648A, 648

4.4 GEOMETRY/SPATIAL CONCEPTS

4.4.1 By the end of fourth grade, students will identify, describe, and create two- and three-dimensional geometric shapes.

434A-434B, 434-435, 436-437, 438A-438B, 438-439, 444A-444B, 444-445, 446-447, 448A-448B, 448-449, 450-451, 459B, 460A-460B, 460-461, 484, 491, 494

4.4.2 By the end of fourth grade, students will identify and draw points, lines, line segments, rays, and angles.

432I, 440A-440B, 440-441, 442-443, 445, 450-451, 484, 490, 494

4.4.3 By the end of fourth grade, students will identify, analyze, and compare two-dimensional geometric figures using congruence, symmetry, similarity, and simple transformations.

452A-452B, 452-453, 454-455, 456A-456B, 456-457, 458A-458B, 458-459, 459A, 460, 478B, 491, 492, 495, 496

4.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

4.5.1 By the end of fourth grade, students will collect, organize, record, and interpret data and describe the findings.

212A-212B, 212-213, 214-215, 224-225, 226A-226B, 226-227, 228, 234-235, 236-237, 239, 240-241, 248, 252-253, 462-463, 662A-662B, 662-663

Example indicators:

-Collect, organize, and interpret data in line plots, tables, charts, and graphs (pie graphs, bar graphs, and pictographs).

188J, 204A-204B, 204-205, 206A-206B, 206-207, 208A-208B, 208-209, 210-211, 216A-216B, 216-217, 218-219, 222A-222B, 222-223, 230A-230B, 230-231, 249, 399, 536A-536B, 536-537, 541, 542, 555, 559

-Draw valid conclusions from displayed data.

196A-196B, 196-197, 220-221, 229, 232A-232B, 232-233, 247, 251, 342-343, 582-583, 584A-584B, 584-585, 696-697

-Investigate and record patterns in a simple probability situation in an organized way.

686J, 700A-700B, 700-701, 702-703, 704A-704B, 704-705, 706A-706B, 706-707, 708-709, 710A-710B, 710-711, 716A, 720-721, 723, 729, 730, 732-733

4.6 ALGEBRAIC CONCEPTS

4.6.1 By the end of fourth grade, students will use and interpret variables and mathematical symbols to write and solve one-step equations.

71, 104-105, 109, 117, 121, 162-163, 170-171, 173, 175, 183, 187, 688A-688B, 688-689, 692A-692B, 692-693, 694-695, 722, 728, 731

Example indicators:

-Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations to demonstrate the beginning concept of a variable and writing formulas.

98A-98B, 98-99, 100A-100B, 100-101, 166A-166B, 166, 335, 394-395, 396-397, 398, 690A-690B, 690-691, 728, 731

-Identify and use various indicators of multiplication (parentheses, \times , $*$) and division, ($/$, \div).

96A-96B, 96-97, 160A-160B, 160-161, 167

4.6.2 By the end of fourth grade, students will identify, describe, and extend arithmetic patterns, using concrete materials and tables.

88-89, 90A-90B, 90-91, 116, 120, 122I, 128-129, 136A-136B, 136-137, 138-139, 140A-140B, 140-141, 142-143, 146B, 256-257, 304, 308, 312I, 314B, 314, 343, 351, 356, 366A-366B, 366-367, 406A-406B, 406-407, 640-641, 686I

Example indicator:

-Use Input/Output or function box to identify and extend patterns.

60J, 127, 164A-164B, 164-165, 170-171, 175, 183, 187

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Grade Five

8.1 NUMERATION/NUMBER SENSE

8.1.1 By the end of eighth grade, students will recognize natural numbers whole numbers, integers, and rational numbers.

4A-4B, 4-5, 56-57, 60-61, 712A-712B, 712-713, 714, 722-723

8.1.2 By the end of eighth grade, students will determine equivalencies among fractions, decimals, and percents.

8A, 8-9, 10, 12A-12B, 12-13, 14A-14B, 14-15, 16, 392I-392J, 394A-394B, 394-395, 396-397, 400A-400B, 400-401, 402A-402B, 402-403, 404A-404B, 404-405, 410A-410B, 410-411, 412A-412B, 412-413, 438A, 444-445, 450-451, 454-455, 458I

Example indicators:

•Find the equivalencies among fractions, decimals, and percents.

426A-426B, 426-427, 428-429, 430A-430B, 430-431, 443, 444, 453, 457, 469, 644J, 668A-668B, 668-669, 670A-670B, 670-671, 676A-676B, 678-679, 683, 690

•Solve problems with appropriate equivalencies.

416A-416B, 416-417, 420A-420B, 420-421, 422-423, 424-425, 451, 462A-462B, 462-463, 464A-464B, 464-465, 648A-648B, 648-649, 650-651, 656-657, 672A-672B, 672-673

8.1.3 By the end of eighth grade, students will write and use numbers in expanded exponential form and scientific notation.

50

Example indicators:

•Write numbers in expanded form using exponential notation.

17

•Express small and large numbers using scientific notation.

This objective is first addressed in the sixth grade curriculum.

8.1.4 By the end of eighth grade, students will identify and display numbers including prime and composite, factors and multiples, divisibility, powers, and properties.

103, 162A-162B, 162-163, 164A-164B, 164-165, 166-167, 186, 194, 198, 414A-414B, 414-415, 452, 456, 464-465

Example indicator:

•Properties of numbers may include, but not be limited to, order of operations, commutative, associative, distributive, identity, and inverse.

22-23, 25, 66A-66B, 66-67, 70A-70B, 70-71, 116, 122, 126, 172A-172B, 172-173

8.2 COMPUTATION/ESTIMATION

8.2.1 By the end of eighth grade, students will add, subtract, multiply, and divide decimals and proper, improper, and mixed fractions with uncommon and common denominators with and without the use of technology.

2J, 24, 36A-36B, 38A-38B, 38-39, 40A-40B, 40-41, 44A, 50, 57, 62-63, 64J, 84A-84B, 84-85, 91, 92A-92B, 92-93, 94A-94B, 94-95, 96-97, 116, 124, 127, 128, 236-237, 240-241, 245, 250, 253, 454, 458J, 460A-460B, 460-461, 466A-466B, 466-467, 468-469, 470-471, 472A-472B, 472-473, 476A-476B, 476-477, 478A-478B, 478-479, 480-481, 488-489, 496A-496B, 496-497, 498-499, 500A-500B, 500-501, 508-509, 512-513, 518-519, 520-521, 522-523, 525

8.2.2 By the end of eighth grade, students will identify the appropriate operation and do the correct calculations when solving word problems.

18A-18B, 18-19, 42A-42B, 42-43, 44-45, 110-111, 135, 168A-168B, 180-181, 194, 238-239, 245, 250, 256, 352A, 406A-406B, 406-407, 504A-504B, 504-505, 506-507, 513

8.2.3 By the end of eighth grade, students will solve problems involving whole numbers, integers, and rational numbers (fractions, decimals, ratios, proportions, and percents) with and without the use of technology.

36A-36B, 36-37, 57, 62, 72A-72B, 72-73, 74-75, 76A-76B, 76-77, 88A-88B, 88-89, 90, 122, 126-127, 128, 132A-132B, 132-133, 134, 136A-136B, 136-137, 152A-152B, 152-153, 154, 156A-156B, 156-157, 158A-158B, 158-159, 186, 197, 198, 202A-202B, 202-203, 214B, 214-215, 216-217, 218A-218B, 218-219, 220-221, 222A-222B, 222-223, 224A-224B, 224-225, 228-229, 230A-230B, 230-231, 232A-232B, 232-233, 234A-234B, 234-235, 238A-238B, 244, 250-251, 252, 254-255, 256-257, 398A-398B, 398-399, 490A-490B, 490-491, 492, 494A-494B, 494-495, 502A-502B, 502-503, 506A-506B, 508-509, 520, 524, 644I, 646A-646B, 646-647, 648A-648B, 648-649, 650-651, 652A-652B, 652-653, 656-657, 674-675, 676-677, 678-679, 682, 688, 690-691, 693, 716A-716B, 716-717, 718A-718B, 718-719, 722-723, 736, 730A-730B, 730-731, 743, 744, 746

Example indicators:

•Use proportions to solve scale-model problems with fractions and decimals.

662A-662B, 662-663, 666, 683, 689

•Problems should be of increasing level of difficulty and involve real-life situations.

32A-32B, 32-33, 148A-148B, 148-149, 150-151, 160A-160B, 160-161, 168-169, 193, 226A-226B, 226-227, 236, 482-483

8.2.4 By the end of eighth grade, students will apply the order of operations to solve problems with and without the use of technology.

172A-172B, 172-173, 187, 193, 195, 199

Example indicator:

•Evaluate all types of numerical expressions, including grouping symbols and exponents.

207

8.2.5 By the end of eighth grade, students will apply strategies of estimation when solving problems with and without the use of technology.

130J, 138A-138B, 140, 208-209

Example indicators:

•Properly round to an appropriate place value if context permits.

26A-26B, 26-27, 58

•Perform estimation prior to calculation.

28A-28B, 28-29, 30-31, 58-59, 62, 64I, 86A-86B, 86-87, 122, 124, 126-127, 192-193, 196, 206, 210A, 218A-218B, 218-219, 474A-474B, 474-475, 476A-476B, 476-477, 478A-478B, 478-479, 480, 488-489, 494A-494B, 494-495, 500-501, 690, 693

•Without a calculator, estimate square roots of whole numbers up to one hundred to the nearest whole number.

This objective is first addressed in the sixth grade curriculum.

•Use compatible numbers to perform mental math.

22-23, 25, 51, 61, 68A-68B, 68-69, 86A, 86, 116, 130I, 138-139, 204A-204B, 204-205, 214A, 244, 250

-Use estimation to check reasonableness of an answer.

59, 74

8.3 MEASUREMENT

8.3.1 By the end of eighth grade, students will select measurement tools and measure quantities for temperature, time, money, distance, angles, area, perimeter, volume, capacity, and weight/mass in standard and metric units at the designated level of precision.

210B, 210-211, 526J, 532A-532B, 532-533, 534A-534B, 534-535, 540A-540B, 540-541, 564A-564B, 564-565, 566, 568A-568B, 568-569, 570A-570B, 570-571, 574-575, 579, 584, 588, 616A, 631

8.3.2 By the end of eighth grade, students will convert units within measurement systems using standard and metric, given conversion factors.

528A-528B, 528-529, 530-531, 535, 536A-536B, 536-537, 538-539, 546-547, 562A-562B, 562-563, 571, 572-573, 578, 584, 587, 588, 591, 614A-614B, 614-615, 616B, 616-617, 618-619, 620A-620B, 620-621, 622A-622B, 622-623, 628, 628-629, 633, 639, 640, 642-643

Example indicators:

- Convert between various units of area and various units of volume (square foot to square yards and cubic decimeters to liters, etc.).

526I, 550-551

- Check solutions to problems using unit analysis (feet/second to miles/hour).

584, 654A-654B, 654-655, 656-657, 689, 692

8.4 GEOMETRY/SPATIAL CONCEPTS

8.4.1 By the end of eighth grade, students will identify, describe, compare, and classify two-and three-dimensional geometric figures such as plane figures like polygons and circles; solid figures like prisms, pyramids, cones, spheres, and cylinders; and lines, line segments, rays, angles, parallel and perpendicular lines.

326I, 328A-328B, 328-329, 330-331, 332A-332B, 332-333, 334-335, 336A-336B, 336-337, 338-339, 340A-340B, 340-341, 342A-342B, 342-343, 346A-346B, 356B, 356-357, 358-359, 372A-372B, 378-379, 384-385, 388-389, 548A-548B, 587, 591, 592I, 594A-594B, 594-595, 596-597, 598A-598B, 598-599, 600-601, 608-609, 632, 638, 641

8.4.2 By the end of eighth grade, students will use geometric properties, the Pythagorean theorem, and the relationships of congruence, similarity, and symmetry.

360A-360B, 360-361, 362-363, 368A-368B, 368-369, 370, 386-387, 390-391, 438-439

8.4.3 By the end of eighth grade, students will use formulas to solve problems involving perimeter and area of a square, rectangle, parallelogram, trapezoid and triangle, as well as the area and circumference of circles.

343, 344-345, 346-347, 348-349, 352B, 352, 385, 389, 540A-540B, 540-541, 542A-542B, 542-543, 544-545, 546-547, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-555, 556-557, 558A-558B, 558-559, 560-561, 572A-572B, 572-573, 578-579, 585, 586, 589, 590, 624A-624B, 624-625

8.4.4 By the end of eighth grade, students will solve problems given formulas for volume and surface area of rectangular prisms, cylinders, and cones.

592J, 602A-602B, 602-603, 608, 610A-610B, 610-611, 612-613, 618-619, 626A-626B, 627, 632, 638-639, 641, 642

8.4.5 By the end of eighth grade, students will apply transformations to two-and three-dimensional geometric figures.

This objective is first addressed in the sixth grade curriculum.

Example indicator:

· **Draw geometric figures using translations or slides, rotations or turns, reflections or flips, and scale.**

364A-364B, 364-365, 366-367, 379, 387, 391, 606B

8.4.6 By the end of eighth grade, students will use geometric terms and representations to describe the physical world.

340, 346B, 348, 351, 355, 372-373, 604-605

8.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

8.5.1 By the end of eighth grade, students will collect, construct, and interpret data displays and compute mean, median, and mode.

78-79, 80A-80B, 80-81, 123, 127, 258I, 260A-260B, 260-261, 434A-434B, 434-435, 436-437, 666

Example indicator:

- Select appropriate representations of data when constructing data displays (graphs, tables, or charts).

276A-276B, 276-277, 278-279, 300A-300B, 300-301

8.5.2 By the end of eighth grade, students will read and interpret tables, charts, and graphs to make comparisons and predictions.

262A-262B, 262-263, 264-265, 266A-266B, 266-267, 268-269, 270A-270B, 270-271, 272-273, 274-275, 286A-286B, 286-287, 292A-292B, 292-293, 312-313, 318, 320, 324, 658-659, 661, 664A-664B, 664-665

8.5.3 By the end of eighth grade, students will conduct experiments or simulations to demonstrate theoretical probability and relative frequency.

258I, 302A-302B, 302-303, 304

Example indicator:

- Compare the results of a simulation (relative frequency) to the theoretical probability (a three color spinner or a coin).

296-297, 298-299, 321, 325

8.5.4 By the end of eighth grade, students will identify statistical methods and probability for making decisions.

296A-296B, 321

Example indicators:

- Identify the use of appropriate sampling techniques.

260A-260B, 260-261

- Identify the use of appropriate charts and graphs.

288A-288B, 288-289, 290-291, 319, 320, 323, 660A-660B

- Identify the use of measures of central tendency (mean, median, and mode) appropriately.

282A-282B, 282-283, 284-285, 306A-306B, 306-307, 312, 319, 323

8.6 ALGEBRAIC CONCEPTS**8.6.1 By the end of eighth grade, students will demonstrate knowledge and use of the one- and two-dimensional coordinate systems.**

174A-174B, 174-175, 176A-176B, 185, 195, 199, 688, 691, 699

Example indicators:**•Order numbers on a number line.**

8A, 12B, 430-431, 457, 712A-712B, 712-713, 714, 722, 736, 745

•Graph ordered pairs on a coordinate plane.

724A-724B, 724-725, 726-727, 732-733, 737, 744, 747

•Generate a table of ordered pairs to graph an equation in two variables.

728A-728B, 728-729, 732, 744, 747

8.6.2 By the end of eighth grade, students will apply algebraic concepts and operations to solve linear equations and word problems.

100A-100B, 100-101, 102-103, 104A-104B, 104-105, 108A-108B, 108-109, 117, 125, 128-129, 694I, 704-705, 706A-706B, 706-707, 708-709, 710-711

Example indicators:**•Solve multi-step equations with one variable.**

484A-484B, 484-485, 486-487, 489

•Use order of operations to evaluate algebraic expressions for given replacement values of the variables.

This objective is first addressed in the sixth grade curriculum.

•Recognize and apply commutative, associative, distributive, inverse, and identity properties, and the properties of zero.

696A-696B, 696-697, 698, 700A-700B, 700-701, 702A-702B, 702-703, 736, 745

8.6.3 By the end of eighth grade, students will describe and represent relations, using tables, graphs, and rules.

14-15, 102, 106A-106B, 106-107, 125, 129, 176A-176B, 176-177, 178-179, 195, 353, 652A-652B, 652-653, 660A-660B, 660-661, 694J, 720A-720B, 720-721

Example indicator:**•Use variables to recognize and describe patterns.**

This objective is first addressed in the sixth grade curriculum.

**Scott Foresman – Addison Wesley Mathematics
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Grade Six

8.1 NUMERATION/NUMBER SENSE

8.1.1 By the end of eighth grade, students will recognize natural numbers whole numbers, integers, and rational numbers.

4A-4B, 4, 5, 6, 7, 406E-406F, 406I-406J, 406, 407, 408A-408B, 408, 409, 410A-410B, 410, 411, 412A-412B, 412, 413

8.1.2 By the end of eighth grade, students will determine equivalences among fractions, decimals, and percents.

44A-44B, 44, 45, 46, 47, 78, 79, 164A-164B, 166, 167, 172A-172B, 172, 173, 174, 175, 176A-176B, 176, 177, 178, 179, 251, 358A-358B, 358, 359, 360, 361

Example indicators:

•Find the equivalencies among fractions, decimals, and percents.

172A-172B, 172, 173, 174, 175, 176A-176B, 176, 177, 178, 179, 358A-358B, 358, 359, 360, 361

•Solve problems with appropriate equivalencies.

44A-44B, 44, 45, 46, 47, 172A-172B, 172, 173, 174, 175, 176A-176B, 176, 177, 178, 179, 251, 358A-358B, 358, 359, 360, 361

8.1.3 By the end of eighth grade, students will write and use numbers in expanded exponential form and scientific notation.

8A-8B, 8, 9, 10, 11, 110A-110B, 110, 111

Example indicators:

•Write numbers in expanded form using exponential notation.

8A-8B, 8, 9, 10, 11

•Express small and large numbers using scientific notation.

110A-110B, 110, 111

8.1.4 By the end of eighth grade, students will identify and display numbers including prime and composite, factors and multiples, divisibility, powers, and properties.

8A-8B, 8, 9, 10, 11, 24A-24B, 24, 25, 26, 2728A-28B, 28, 29, 30A-30B, 30, 31, 44A-44B, 44, 45, 46, 47, 106A-106B, 106, 107, 108, 109, 142A-142B, 142, 143, 144, 145, 146A-146B, 146, 147, 148, 149, 150A-150B, 150, 151, 152A-152B, 152, 153

Example indicator:

•Properties of numbers may include, but not be limited to, order of operations, commutative, associative, distributive, identity, and inverse.

24A-24B, 24, 25, 26, 2728A-28B, 28, 29, 30A-30B, 30, 31, 44A-44B, 44, 45, 46, 47

8.2 COMPUTATION/ESTIMATION

8.2.1 By the end of eighth grade, students will add, subtract, multiply, and divide decimals and proper, improper, and mixed fractions with uncommon and common denominators with and without the use of technology.

202, 203, 204A-204B, 204, 205, 206A-206B, 206, 207, 208, 209, 216A-216B, 216, 217, 218A-218B, 218, 219, 220A-220B, 220, 221, 222, 223, 2461-246J, 246, 247, 248A-248B, 248, 249, 250, 251, 252A-252B, 252, 253, 254, 255, 266A-266B, 266, 267, 268, 269, 270A-270B, 27, 271, 276A,-276B, 276, 277

8.2.2 By the end of eighth grade, students will identify the appropriate operation and do the correct calculations when solving word problems.

414A-414B, 414, 415

8.2.3 By the end of eighth grade, students will solve problems involving whole numbers, integers, and rational numbers (fractions, decimals, ratios, proportions, and percents) with and without the use of technology.

48A-48B, 48, 49, 50, 51, 52A-52B, 52, 53, 86A-86B, 86, 87, 88, 89, 90A-90B, 90, 91, 92, 93, 94A-94B, 94, 95, 96, 97, 100A,-100B, 100, 101, 102, 103, 202I-202J, 202, 203, 204A-204B, 204, 205, 206A-206B, 206, 207, 208, 209, 216A-216B, 216, 217, 218A-218B, 218, 219, 220A-220B, 220, 221, 222, 223, 2461-246J, 246, 247, 248A-248B, 248, 249, 250, 251, 252A-252B, 252, 253, 254, 255, 266A-266B, 266, 267, 268, 269, 270A-270B, 27, 271, 276A,-276B, 276, 277, 298I-298J, 298, 299, 300A-300B, 300, 301, 316A-316B, 316, 317318A-318B, 318, 319, 322A-322B, 322, 323, 384A-384B, 384, 385, 386A-386B, 386, 387, 388A-388B, 388, 389, 392, 393, 394, 395, 418A-418B, 418, 419, 420, 421, 422A-422B, 422, 423, 424, 425, 426A-426B, 426, 427, 428A-428B, 428, 429, 430A-430B, 430, 431, 432, 433, 434A-434B, 434, 435, 436, 437

Example indicators:

-Use proportions to solve scale-model problems with fractions and decimals.

330A-330B, 330, 331, 332, 333

-Problems should be of increasing level of difficulty and involve real-life situations.

384A-384B, 384, 385, 386A-386B, 386, 387, 388A-388B, 388, 389, 392, 393, 394, 395

8.2.4 By the end of eighth grade, students will apply the order of operations to solve problems with and without the use of technology.

24A-24B, 24, 25, 26, 27

Example indicator:

-Evaluate all types of numerical expressions, including grouping symbols and exponents.

40A-40B, 40, 41, 42, 43

8.2.5 By the end of eighth grade, students will apply strategies of estimation when solving problems with and without the use of technology.

16A-16B, 16, 17, 18A-18B, 18, 19, 82A-82B, 82, 83, 170A-170B, 170, 171, 216A-216B, 216, 217, 256A-256B, 256, 257, 319, 368A-368B, 368, 369

Example indicators:

-Properly round to an appropriate place value if context permits.

14A-14B, 14, 15, 80A-80B, 80, 81

-Perform estimation prior to calculation.

82, 83

-Without a calculator, estimate square roots of whole numbers up to one hundred to the nearest whole number.

9-10

-Use compatible numbers to perform mental math.

30A-30B, 30, 31, 32A-32B, 32, 33, 34, 35, 366A-366B, 366, 367

-Use estimation to check reasonableness of an answer.

16, 17, 18, 19, 82, 83

8.3 MEASUREMENT

8.3.1 By the end of eighth grade, students will select measurement tools and measure quantities for temperature, time, money, distance, angles, area, perimeter, volume, capacity, and weight/mass in standard and metric units at the designated level of precision.

476A-476B, 476, 477, 478, 479, 540I-540J, 540, 541, 542A-542B, 542, 543, 544, 545, 546A-546B, 546, 547, 548, 549, 550A-550B, 550, 551, 554A-554B, 554, 555, 556, 557, 564A-564B, 564, 565, 566, 567, 568A-568B, 568, 569, 572A-572B, 572, 573, 574, 575, 576A-576B, 576, 577, 578, 579, 580A-580B, 580, 581, 590A-590B, 590, 591, 592, 593, 594A-594B, 594, 595, 596, 597, 722A-722B, 722, 723, 724A-724B, 724, 725

8.3.2 By the end of eighth grade, students will convert units within measurement systems using standard and metric, given conversion factors.

552A-552B, 552, 553, 722A-722B, 722, 723

Example indicators:

- **Convert between various units of area and various units of volume (square foot to square yards and cubic decimeters to liters, etc.).**

552A-552B, 552, 553

- **Check solutions to problems using unit analysis (feet/second to miles/hour).**

306A-306B, 306, 307, 308, 309

8.4 GEOMETRY/SPATIAL CONCEPTS

8.4.1 By the end of eighth grade, students will identify, describe, compare, and classify two- and three-dimensional geometric figures such as plane figures like polygons and circles; solid figures like prisms, pyramids, cones, spheres, and cylinders; and lines, line segments, rays, angles, parallel and perpendicular lines.

470I-470J, 470, 471, 472A-472B, 472, 473, 474, 475, 476A-476B, 476, 477, 478, 478, 480A-480B, 480, 481, 482, 483, 484A-484B, 484, 485, 486, 487, 494A-494B, 494, 495, 496A-496B, 496, 497, 498, 499, 500A-500B, 500, 501, 502A-502B, 502, 503, 586A-586B, 586, 587, 588, 589

8.4.2 By the end of eighth grade, students will use geometric properties, the Pythagorean theorem, and the relationships of congruence, similarity, and symmetry.

499, 506A-506B, 506, 507, 514A-514B, 514, 515

8.4.3 By the end of eighth grade, students will use formulas to solve problems involving perimeter and area of a square, rectangle, parallelogram, trapezoid and triangle, as well as the area and circumference of circles.

564A-564B, 564, 565, 566, 567, 568A-568B, 568, 569, 570A-570B, 570, 571, 572A-572B, 572, 573, 574, 575, 576A-576B, 576, 577, 578, 579, 580A-580B, 580, 581

8.4.4 By the end of eighth grade, students will solve problems given formulas for volume and surface area of rectangular prisms, cylinders, and cones.

590A-590B, 590, 591, 592, 593, 594A-594B, 594, 595, 596, 597

8.4.5 By the end of eighth grade, students will apply transformations to two- and three-dimensional geometric figures.

510A-510B, 510, 511

Example indicator:

- Draw geometric figures using translations or slides, rotations or turns, reflections or flips, and scale.

510A-510B, 510, 511

8.4.6 By the end of eighth grade, students will use geometric terms and representations to describe the physical world.

488, 489, 490A-490B, 490, 491, 520A-520B, 520, 521, 598A-598B, 598, 599

8.5 DATA ANALYSIS, PROBABILITY, AND STATISTICAL CONCEPTS

8.5.1 By the end of eighth grade, students will collect, construct, and interpret data displays and compute mean, median, and mode.

624A-624B, 624, 625, 626, 627, 628A-628B, 628, 629, 630, 631, 632A-632B, 632, 633, 636A-636B, 636, 637, 638A-638B, 638, 639, 640, 641, 642A-642B, 642, 643, 644, 645, 646, 647, 648A-648B, 648, 649, 650, 651

Example indicator:

- Select appropriate representations of data when constructing data displays (graphs, tables, or charts).

620A-620B, 620, 621, 622, 623

8.5.2 By the end of eighth grade, students will read and interpret tables, charts, and graphs to make comparisons and predictions.

628A-628B, 628, 629, 630, 631, 632A-632B, 632, 633, 636A-636B, 636, 637, 638A-638B, 638, 639, 640, 641, 642A-642B, 642, 643, 644, 645, 646, 647, 648A-648B, 648, 649, 650, 651

8.5.3 By the end of eighth grade, students will conduct experiments or simulations to demonstrate theoretical probability and relative frequency.

662A-662B, 662, 663, 664A-664B, 664, 665, 666, 667

Example indicator:

-Compare the results of a simulation (relative frequency) to the theoretical probability (a three color spinner or a coin).

662A-662B, 662, 663, 664A-664B, 664, 665, 666, 667

8.5.4 By the end of eighth grade, students will identify statistical methods and probability for making decisions.

654A-654B, 654, 655, 656, 657, 658A-658B, 658, 659, 660, 661

Example indicators:

-Identify the use of appropriate sampling techniques.

654A-654B, 654, 655, 656, 657, 658A-658B, 658, 659, 660, 661

-Identify the use of appropriate charts and graphs.

628A-628B, 628, 629, 630, 631, 632A-632B, 632, 633, 636A-636B, 636, 637,

638A-638B, 638, 639, 640, 641, 642A-642B, 642, 643, 644, 645, 646, 647,

648A-648B, 648, 649, 650, 651

-Identify the use of measures of central tendency (mean, median, and mode) appropriately.

624A-624B, 624, 625, 626, 627

8.6 ALGEBRAIC CONCEPTS

8.6.1 By the end of eighth grade, students will demonstrate knowledge and use of the one- and two-dimensional coordinate systems.

78A-78B, 78, 79, 440A-440B, 440, 441, 442, 443, 447, 448A-448B, 448, 449

Example indicators:

-Order numbers on a number line.

78A-78B, 78, 79

-Graph ordered pairs on a coordinate plane.

440A-440B, 440, 441, 442, 443, 447

-Generate a table of ordered pairs to graph an equation in two variables.

448A-448B, 448, 449

8.6.2 By the end of eighth grade, students will apply algebraic concepts and operations to solve linear equations and word problems.

28A-28B, 28, 29, 40A-40B, 40, 41, 42, 43, 45, 48A-48B, 48, 49, 50, 51, 52A-52B, 52, 53, 444, 445, 446, 447

Example indicators:

-Solve multi-step equations with one variable.

40A-40B, 40, 41, 42, 43, 48A-48B, 48, 49, 50, 51, 52A-52B, 52, 53,

-Use order of operations to evaluate algebraic expressions for given replacement values of the variables.

444, 445, 446, 447

-Recognize and apply commutative, associative, distributive, inverse, and identity properties, and the properties of zero.

28A-28B, 28, 29, 45

8.6.3 By the end of eighth grade, students will describe and represent relations, using tables, graphs, and rules.

444A-444B, 444, 445, 445, 447, 448A-448B, 448, 449, 450A-450B, 450, 451

Example indicator:

-Use variables to recognize and describe patterns.

444A-444B, 444, 445, 445, 447, 448A-448B, 448, 449, 450A-450B, 450, 451