

A Correlation of

SCOTT FORESMAN ■ ADDISON WESLEY
Mathematics

© 2005

to the

Minnesota
Academic Standards

Grades K-6



G/M-224

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 Minnesota Academic 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
Minnesota Academic Standards**

Kindergarten

These standards and benchmarks are to be used as a source document for identifying what all students should know and be able to do to demonstrate mathematical proficiency. To determine grade level placement of specific standards and benchmarks, judgment by experienced teachers was used to determine at what grade level 80% of children would master the specific material.

The current document identifies the grade at which mastery of each concept is expected but does not identify when those concepts are introduced and reinforced. Schools must determine where in their curriculum these concepts would be introduced and reinforced so that they may be assessed at the indicated grade level.

Teachers must develop and enrich students' knowledge of mathematics beyond what is outlined in this document. It is critical for teachers to recognize the entire progression of standards and benchmarks before and after their grade level.

The grade level designations in the K-2 Minnesota Academic Standards are strongly recommended. However, school districts may place the K-2 standards at grade levels that accommodate their particular curriculum, provided that all standards have been mastered by the end of grade 2.

I. MATHEMATICAL REASONING

Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

Reasoning lies at the heart of mathematical proficiency. As such, it is an essential strand of mathematics. The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Create and solve word problems using actions, objects, words, pictures, or numbers.

67A-67B, 67, 68, 125-126, 185-186, 217A-217B, 217, 218

2. Estimate and check that answers are reasonable.

119-120, 127-128, 141A-141B, 141-142, 147A-147B, 147-148, 151A-151B, 151-152

3. Explain to others how a problem was solved.

47-48, 21-22, 71A-71B, 71-72, 97-98, 127A-127B, 127-128, 155A-155B, 155-156, 239A-239B, 239-240, 299-300

II. NUMBER SENSE, COMPUTATION, AND OPERATIONS**A. Number Sense****Standard:** Represent quantities using whole numbers and understand relationships among whole numbers.***The student will:*****1. Count forward to 31, backward from 10.**

115A-115B, 115-116

2. Count the number of objects in a set and identify the quantity.

291A, 291B, 291-292

3. Compare the number of objects in two or more sets.

27A, 29A

4. Given a number, identify one more or one less.

235A-235B, 235-236, 237A-237B, 237-238

B. Computation and Operation**Standard:** Add and subtract whole numbers up to 6 in real-world and mathematical problems.***The student will:*****1. Recognize the number of objects up to 6, without counting.**

Related Content: 53A, 53B, 53-54, 55A, 55B, 55-56, 57A-57B, 57-58, 59A-59B, 59-60

2. Add and subtract whole numbers up to 6, using concrete objects.

227A-227B, 227-228

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Sort, classify and compare objects based on their attributes. Understand simple repeating patterns.

The student will:

1. Sort objects in a set by one attribute such as size, shape, color or thickness.

37A-37B, 37-38, 39A-39B, 39-40, 217A-217B, 217-218

2. Identify an object that does not belong in a set.

13A, 13B, 13-14, 15A, 15B, 15-16, 17A, 17B, 17-18

3. Recognize, describe and extend repeating patterns involving up to three elements using objects, pictures, sounds or movements.

35A-35B, 35-36, 43A-43B, 43-44, 95A-95B, 95-96, 217A-217B, 217-218, 297-298

B. Algebra (Algebraic Thinking)

(Standards under this heading may be locally determined.)

35A-35B, 35-36, 37A-37B, 37-38, 39A-39B, 39-40, 41A-41B, 41-42, 43A-43B, 43-44, 45A-45B, 45-46, 63A-63B, 63-64, 65A-65B, 65-66, 87A-87B, 87-88, 91A-91B, 91-92, 95A-95B, 95-96, 113A-113B, 113-114, 121A-121B, 121-122, 255A-255B, 255-256, 275A-275B, 275-276, 293A-293B, 293-294, 295A-295B, 295-296, 297A-297B, 297-298

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Depict data with objects and pictures.

The student will:

1. Represent data about classmates or their surroundings by using objects or pictures.

29A-29B, 29-30, 31, 31A-31B, 32, 33A-33B, 33-34

B. Probability (Standards under this heading may be locally determined.)

Students are introduced to this concept in Grade 1.

V. SPATIAL SENSE, GEOMETRY, AND MEASUREMENT

A. Spatial Sense

Standard: Understand meaning of terms used to describe location and placement of objects.

The student will:

1. Locate and describe placement of objects with terms such as: on, inside, outside, above, below, over, under, beside, between, in front of, behind, next to, top, bottom.

3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8

B. Geometry

Standard: Sort two- and three-dimensional shapes.

The student will:

1. Sort two- and three-dimensional shapes according to their geometrical attributes.

209A-209B, 209-210, 219-220

C. Measurement

Standard: Understand terms and comparative language used in various measurement situations. Identify tools to measure time. Identify coins.

The student will:

1. Compare and order objects by length, weight, volume, temperature or size and use appropriate vocabulary such as longer than, holds more, smaller.

139A-139B, 139-140, 141A-141B, 141-142, 147A-147B, 147-148, 151A-151B, 151-152, 153A-153B, 153-154

2. Know that clocks and calendars are instruments to measure time.

173A, 173B, 173-174, 175A, 175B, 175-176

3. Recognize the following coins: penny, nickel, dime and quarter.

179A-179B, 179-180, 181A-181B, 181-182, 183A-183B, 183-184, 187A-187B, 187-188

4. Compare and order events based on time and use appropriate vocabulary such as yesterday, today or tomorrow to describe relative time.

159, 169-170

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GRADE ONE

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Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Create and solve word problems using actions, objects, words, pictures or numbers.

6, 9A, 11, 12, 13A, 13B, 13, 14, 15, 23A, 24, 31A, 31, 32, 33, 34, 39, 77A, 77B, 78, 79A, 79B, 80, 81, 83, 85, 91A, 91B, 91-92, 93A, 93B, 94, 111A, 111B, 111-112, 133A, 133B, 136, 215A, 215B, 215-216, 229B, 229, 230, 287A, 287B, 289-290, 291A, 291B, 291-292, 293, 319A, 319B, 326, 327, 339A, 339B, 342

2. Estimate and check that answers are reasonable.

62, 79A, 84, 86, 113A, 113B, 119, 167A, 168, 173A, 175-176, 205A, 206, 211A, 213-214, 221A, 221B, 221-222, 223A, 224, 229A, 238, 281A, 281-282, 291A, 291, 299A, 299-300, 347A, 349-350, 359, 363, 427A, 427-428, 431A, 431, 442, 443A, 444, 453, 467A, 467B, 467-468, 469, 473A, 474, 483A, 492

3. Explain to others how a problem was solved.

3, 14, 22, 34, 77A, 77B, 78, 79A, 79B, 80, 81, 83, 85, 91A, 91B, 91-92, 93A, 93B, 94, 111A, 111B, 111-112, 133A, 133B, 136, 215A, 215B, 215-216, 229B, 229, 230, 287A, 287B, 289-290, 291A, 291B, 291-292, 293, 319A, 319B, 326, 327, 339A, 339B, 342

II. NUMBER SENSE, COMPUTATION AND OPERATIONS**A. Number Sense**

Standard: Understand place value, ways of representing whole numbers and relationships among whole numbers. Understand the concept of one half.

The student will:**1. Read, write numerals for, compare and order numbers to 120.**

R1, R2, R3, R5, R6, R7, 3B, 4, 5, 6, 7, 8, 9B, 10, 21B, 21, 22, 23A, 23B, 23-26, 29-32, 33A, 38, 41, 241B, 241-242, 243A, 243B, 243-244, 303A, 303B, 305, 319A, 319B, 323, 328

2. Count by 2s to 30 and by 5s to 120.

255A, 255B, 255-256, 257A, 257B, 257-258, 259, 269A, 269B, 269, 271, 274, 275, 278, 331B, 332, 335A, 335B, 335-336, 337A, 337B, 337-338, 339A, 339B, 341, 458, 483A, 486

3. Count backwards from 30.

245A, 246, 277

4. Demonstrate understanding of odd and even quantities up to 12.

239, 265A, 265B, 265-266, 269, 271, 278, 306, 354, 417A, 417B, 417-418

5. Represent whole numbers up to 20 in various ways, maintaining equality.

181A, 181B, 181-182, 183A, 183B, 183-184, 185A, 185-186, 189-190, 193A, 195, 202, 218, 492A

6. Identify one half of a set of concrete objects.

183A, 183B, 183-184, 187B, 187-188, 195, 202, 232

B. Computation and Operation

Standard: Add and subtract one-digit whole numbers in real-world and mathematical problems.

The student will:

1. Use one-digit addition and subtraction to solve real-world and mathematical problems.

16, 19A, 19B, 19, 20, 21A, 75-76, 81, 88, 152, 285-286, 492B

2. Find the sum of three one-digit numbers.

116, 120, 427A, 427B 427-428, 450, 453, 487

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Sort, classify and compare objects based on their attributes. Understand repeating patterns.

The student will:

1. Sort, classify, and compare objects in a set in more than one way.

R15, R16, 307A, 307B, 307-308, 311A, 311B, 311-312

2. Recognize, describe, and extend repeating patterns involving up to four elements.

R11, R12, 1, 27A, 27B, 27, 28, 29A, 29B, 29, 30, 31A, 31B, 33, 34, 35, 36, 37, 42, 74, 166, 194

B. Algebra (Algebraic Thinking)

(Standards under this heading may be locally determined.)

3-4, 5-6, 7-8, 21-22, 23-24, 27-28, 29-32, 33-34, 50, 51-52, 53-54, 55-56, 57-58, 59, 65, 66, 67-68, 69-70, 71-72, 73, 77-78, 80, 81, 82, 83, 84, 85, 87-88, 88A-88B, 93-94, 99-100, 101, 103, 105, 109, 110, 111-112, 114, 115, 116, 119, 120, 121, 122, 131-132, 148, 149, 150, 154A, 166, 177-178, 193, 194, 196, 238A, 238B, 239, 241-242, 243-244, 257-258, 263-264, 274, 276, 278, 279, 280, 297-298, 301, 302, 308, 315-316, 331-332, 333-334, 335-336, 337-338, 341, 342, 343-344, 345-346, 347-348, 349-350, 351-352, 355, 361-362, 414A, 415, 421-422, 423-424, 435-436, 437-438, 439-440, 441-442, 443-444, 445-446, 447, 448, 449, 452, 455, 456, 458, 459-460, 470, 471-472, 473-474, 485, 486, 487, 491, 492A, 492B

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Gather and record data in real-world and mathematical problems.

The student will:

1. Gather and record data about classmates and their surroundings in a simple graph.

R15, R16, 175-176, 177A, 177B, 177-178, 251A, 251B, 251-252, 277, 309A, 309B, 309-310, 311A, 311B, 311-312, 319A, 319B, 324, 354, 356, 479-480, 481A, 481B, 481-482

2. Identify patterns in simple graphs.

175-176, 251A, 251B, 251-252, 277, 279, 280, 289-290, 309A, 309B, 309-310, 311A, 311B, 311-312, 313A, 313B, 313-314, 315A, 315B, 315-316, 320, 321, 324, 328, 356, 364, 414A, 434, 479-480, 481A, 481B, 481-482

B. Probability

(Standards under this heading may be locally determined.)

259-260, 349-350, 364, 434

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: Explore the concept of symmetry in real-world situations.

The student will:

1. Explore symmetry of objects and designs through mirrors or paper folding.

183-184, 199, 414B

B. Geometry

Standard: Use attributes of two- and three-dimensional shapes to identify them and distinguish between them.

The student will:

1. Sort and describe two- and three-dimensional shapes according to their geometrical attributes.

R9, R10, 7A, 31A, 167-168, 197, 198, 307-308, 492B

C. Measurement

Standard: Measure length, time, and money using appropriate tools or units to solve real world and mathematical problems.

The student will:

1. Estimate and measure length and capacity using non-standard units.

363, 414A, 414B, 450, 492A

2. Tell time to hour and half-hour on analog and digital clocks.

5A, 207A, 207B, 207-208, 209A, 209B, 209-210, 211-212, 213-214, 215-216, 217, 221-222, 230, 231, 233, 238, 238B, 275, 356

3. Using a calendar, identify the date, day of the week, month, year, yesterday, today and tomorrow.

19A, 225-226, 227-228, 230, 231, 237, 238B, 254, 267, 272, 434, 470

4. Combine pennies, nickels or dimes to equal one dollar.

329, 347A, 347B, 347-348, 353B, 357

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Minnesota Academic Standards**

GRADE TWO

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Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Create and solve word problems using actions, objects, words, pictures or numbers.

1J, 5A, 5B, 5, 6, 7, 8, 9A, 9, 10, 11, 13A, 14, 17A, 17B, 17, 18, 19A, 20, 21, 25A, 27A, 29A, 29, 30, 31, 32, 37, 38, 106, 232, 266, 316, 319-320

2. Estimate and check that answers are reasonable.

9A, 15, 17A, 18, 29, 133I, 141A, 141B, 141-142, 143, 149A, 149B, 149-150, 151, 170, 171-172, 191A, 191-192, 197A, 197B, 197-198, 201, 208, 229A, 229B, 229-230, 236, 237, 239, 244, 244B, 362, 492, 498A-498B

3. Explain to others how a problem was solved.

3A, 9B, 9, 10, 13, 15A, 26, 28, 98, 106, 110, 136, 148, 232, 266, 296, 316, 322, 326, 348, 354, 370, 468

II. NUMBER SENSE, COMPUTATION AND OPERATIONS**A. Number Sense**

Standard: Understand place value, ways of representing whole numbers and relationships among whole numbers. Understand the concept of unit fractions.

The student will:

1. Read, write with numerals, compare and order numbers to 999.

1I, 4, 5A, 5, 6, 7, 8, 9B, 9, 10, 11, 13A, 13B, 13, 14, 15A, 15B, 15, 16, 17, 18, 19A, 19B, 19, 20, 23, 24, 25, 26, 27, 28, 29A, 29B, 31A, 31B, 38, 39, 40, 55-56, 76, 78A-78B, 81-82, 83-84, 85A, 85B, 85-86, 87-88, 91A, 91B, 91-82, 95A, 95B, 95-96, 97A, 97B, 97-98, 115-116, 126, 128, 130, 131, 163A, 163B, 164, 168, 166, 170, 172A-172B, 204, 206, 219-220, 240, 242, 338A-338B, 369-370, 389J, 399A, 399-400, 407A, 407B, 407-408, 409A, 409B, 409-410, 419, 424A-424B, 498A-498B

2. Count by 2s, 5s, 10s from any given whole number.

3A, 100, 340, 390, 401-402, 422

3. Understand and demonstrate the significance of groups of 10 in the base 10 number system.

81A, 81B, 81-82, 83A, 83B, 83-84

4. Represent numbers in equivalent ways.

23, 24, 25A, 25B, 27A, 27B, 54, 89-90, 117A, 117B, 117-118, 121A, 121B, 121-122, 128, 130, 159A, 159B, 159-160, 240, 338B, 401-402, 424A-425B

5. Recognize, name, compare and represent unit fractions with drawings or concrete materials.

245J, 269A, 269B, 269-270, 271A, 271B, 271-272, 273A, 273B, 273-274, 275A, 275B, 275-276, 277A, 277-278, 283, 424A-425B

B. Computation and Operation

Standard: Compute fluently and make reasonable estimates with whole numbers in real world and mathematical problems.

The student will:

1. Use one- and two-digit addition and subtraction to solve real-world and mathematical problems.

1I, 1L, 1, 2, 3B, 3, 4, 5A, 5B, 5, 6, 7, 8, 9A, 9B, 9, 10, 11, 12, 13, 14, 15A, 15B, 15, 16, 17A, 17B, 17, 18, 19A, 19B, 19, 20, 21, 22, 23A, 23B, 23, 24, 25A, 25B, 25, 26, 27A, 27B, 27, 28, 29, 30, 31A, 31B, 31, 32, 33, 34, 38, 39, 40, 41I, 41J, 43A, 43B, 43-44, 45A, 45B, 45-46, 47A, 47B, 47-48, 49A, 49B, 49-50, 51A, 51B, 51-52, 53A, 53B, 53-54, 61A, 61B, 61-62, 63A, 63B, 63-64, 65-66, 67-68, 73, 74, 76, 78A-78B, 135A, 135B, 135-136, 137A, 137B, 137-138, 139A, 139B, 139-140, 145A, 145B, 145-146, 147A, 147B, 147-148, 163A, 163B, 168, 218, 239, 244A, 338A-338B, 351-352, 377A, 377B, 377-378, 415A, 415B, 424A-424B, 498A-498B

2. Demonstrate understanding of the relationships between odd and even numbers in addition and subtraction such as, odd + odd = even or odd - even = odd.

101A, 101B, 101-102, 105-106, 107, 126, 131-132, 410

3. Understand the concept of multiplication as repeated addition or in rectangular arrays.

467A, 467B, 467-468, 465I, 469A, 469B, 469-470, 471A, 471B, 471-472, 475A, 475B, 475-476, 477, 479A, 479B, 479-480, 481, 489A, 489B, 489-490, 494, 495, 496, 497-498

4. Understand the concept of division as repeated subtraction or sharing equally.

483A, 483B, 483-484, 485B, 485A, 485B, 485-486, 489A, 489B, 489, 491, 497-498

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Understand repeating, growing and shrinking patterns.

The student will:

1. Recognize, create and extend repeating, growing and shrinking patterns using numbers, concrete objects and pictures.

25A, 73, 74, 99A, 99B, 99-100, 107, 132, 157A, 157B, 157-158, 165, 167, 172, 182, 244A, 306, 408, 411, 412, 413A, 413B, 413-414, 417, 420, 423-424, 476, 481, 497-498

B. Algebra (Algebraic Thinking)

Standard: Understand basic properties of addition and subtraction.

The student will:

1. Describe what happens when zero is added to a number or subtracted from a number.

9A, 12, 10, 25B, 36, 393, 395, 397

2. Generate equivalent expressions for a given number such as $24 = 17 + 7$ or $24 = 100 - 76$.

23A, 23B, 25, 26, 35, 227A, 227B, 227-228

3. Determine the truth-value of an equation such as: true or false? $7 = 5 + 1$.

221A, 221B, 221-222, 223, 224, 479-480

4. Understand that adding two numbers in any order results in the same sum.

23A-23B, 23-24, 27-28, 33, 36

5. Understand that grouping numbers in multiple addend problems, in any order, results in the same sum.

181A, 181B, 181-183

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY**A. Data and Statistics**

Standard: Collect and represent data in real-world and mathematical problems.

The student will:

1. Collect and record categorical data.

311A, 311-312, 313A, 313, 319A, 319B, 319, 322, 442

2. Create pictographs and real-object graphs to represent data.

31B, 311-312, 313, 319, 322, 333

3. Identify patterns in graphs or data sets.

327A-327B, 327-328, 413A, 413B, 413-414

B. Probability

(Standards under this heading may be locally determined.)

373A-373B, 373-374, 375A-375B, 375-376

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: *Understand the concept of symmetry and apply to simple drawings.*

The student will:

1. Create symmetrical patterns and designs.

261A, 261B, 261-262, 266, 267, 280, 286, 287-288, 332

B. Geometry

Standard: Use attributes of two- and three-dimensional shapes to identify them and distinguish between them.

The student will:

1. Investigate and predict the results of putting together and taking apart two- and three dimensional shapes.

248, 256, 263-264, 284

2. Sort, classify, compare and describe two- and three-dimensional objects according to their geometrical attributes.

3A, 23A, 245I, 246, 247-248, 249A, 249B, 249-250, 251A, 251B, 251-252, 253, 255A, 255B, 255-256, 257-258, 265A, 265B, 265-266, 267, 282, 284, 285, 287-288, 318

C. Measurement

Standard: Measure length, time, temperature and money using appropriate tools and units to solve real-world and mathematical problems.

The student will:

1. Estimate standard and nonstandard linear measurements, then measure to check answer.

9A, 13A, 339I, 341A, 341B, 341-342, 343-344, 345A, 345-346, 347-348, 353A, 353B, 353, 361, 363A, 363B, 363, 371, 379, 384, 386, 387-388, 442, 482, 498A-498B

2. Tell time to the quarter hour, half hour and hour using analog and digital clocks, distinguishing between a.m. and p.m.

29A, 34, 290, 291A, 291B, 291-292, 293A, 293B, 293-294, 295A, 295B, 295-296, 299A, 299B, 299-300, 306, 307, 318, 329A, 329B, 329-330, 334, 337, 362, 404, 416, 458, 482

3. Know relationships among units of time such as minutes in an hour, days in a month and weeks in a year.

303A, 303B, 303-304, 307, 372

4. Read and write amounts of money using \$ for dollar, ¢ for cents, and proper placement of the decimal point with amounts of money.

114, 115A, 115B, 115-116, 117-118, 121A, 121B, 121-122, 123A, 123B, 123, 125, 127, 184, 238, 282, 318, 424A-425B

5. Combine coins to create amounts up to one dollar.

19A, 22, 23A, 29A, 113A, 113B, 113-114, 115B, 115-116, 121A, 121B, 122

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GRADE THREE

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Teachers must develop and enrich students' knowledge of mathematics beyond what is outlined in this document. It is critical for teachers to recognize the entire progression of standards and benchmarks before and after their grade level.

I. MATHEMATICAL REASONING

Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Communicate, reason and represent situations mathematically.

4A, 8, 9, 10A, 10B, 14B, 19, 23, 25, 30, 38, 41, 68, 72, 85, 134, 148, 154, 194, 197, 199, 201, 209, 218, 220, 227, 233, 277, 278, 280, 283, 329, 370, 386, 391, 400, 429, 430, 433, 442, 443, 445, 447, 448, 451, 452, 455, 457, 458, 461, 465, 466, 469, 470, 472, 473, 475, 499, 503, 505, 510, 511, 513, 516, 517, 519, 521, 523, 533, 535, 539, 585, 614, 617, 623, 628, 631, 637, 639, 641, 644-645, 651, 654, 681, 685, 695, 697, 701, 702, 703

2. Solve problems by distinguishing relevant from irrelevant information, sequencing and prioritizing information and breaking multi-step problems into simpler parts.

14A, 14B, 15, 32A, 32B, 32, 33, 44, 45, 51, 284A, 284B, 284-285, 528A, 528B, 528-529, 578A, 578B, 578-579

3. Evaluate the reasonableness of the solution by considering appropriate estimates and the context of the original problem.

98A, 98B, 99, 630A, 630, 633

4. Know when it is appropriate to estimate and when an exact answer with whole numbers, fractions or decimals is needed.

160A, 160B, 160-161, 510A, 510B, 510-511, 616A, 616B, 616, 622A, 622B, 622

5. Express a written problem in suitable mathematical language, solve the problem and interpret the result in the original context.

2, 3, 8A, 42A, 42B, 42, 43, 104A, 104B, 104-105, 170A, 170B, 170-171, 238A, 238B, 238-239, 294A, 294B, 294-295, 348A, 348B, 348-349, 406A, 406B, 406-407, 476A, 476B, 476-477, 542A, 542B, 542-543, 658A, 658B, 658-659, 710A, 710B, 710-711

6. Support mathematical results using pictures, numbers and words to explain why the steps in a solution are valid and why a particular solution method is appropriate.

8A, 76A, 76B, 76-78, 140A, 140B, 140-143, 236A, 236B, 236-237, 270A, 270B, 270-273, 332A, 332B, 332-335, 380A, 380B, 380-381, 436A, 436B, 436-439, 528A, 528B, 528-529, 578A, 578B, 578-579, 644A, 644B, 644-645, 688A, 688B, 688-689

II. NUMBER SENSE, COMPUTATION AND OPERATIONS

A. Number Sense

Standard: Represent whole numbers in various ways to quantify information and to solve real world and mathematical problems. Understand the concept of decimals and common fractions.

The student will:

1. Read, write with numerals, compare and order whole numbers to 9,999.

4A, 6, 7, 8, 9, 10A, 10B, 11, 18B, 18, 19, 20, 21, 22A, 22B, 22-23, 34, 35, 50, 53, 76A, 76B, 76-77

2. Represent up to 4-digit whole numbers in various ways maintaining equivalence, such as $3206 = (32 \times 100) + 6$ or $3206 = 3200 + 6$.

8, 9

3. Know how fractions are related to the whole, such as four-fourths equal a whole or three fourths equal three of four equal parts of a whole.

498A, 498B, 498, 499, 500, 501, 514

4. Represent and write fractions with pictures, models and numbers.

499, 502A, 502B, 502-503, 504A, 504B, 504-505, 506A, 506B, 506-509, 510A, 510B, 510-511, 512A, 512B, 512-513, 516A, 516B, 516-517, 518A, 518B, 518-519, 520A, 520B, 520-521, 523, 564A, 564B, 564-565, 571

B. Computation and Operation

Standard: Compute fluently and make reasonable estimates with whole numbers in real world and mathematical problems. Understand addition and subtraction and how they relate to one another. Understand the concepts of multiplication and division.

The student will:

1. Use addition of up to three whole number addends, containing up to four digits each in real-world and mathematical problems.

6, 7, 8, 9, 12, 13, 16, 82A, 82B, 82-85, 126A, 126B, 126-127, 128A, 128B, 128-135, 136A, 136B, 136-137

2. Use subtraction with up to three digit whole numbers in real-world and mathematical problems.

94A, 94B, 94-95, 148A, 148B, 148-149, 150A, 150B, 150-151, 152A, 152B, 152-155

3. Use the inverse relationship of addition and subtraction to compute and check results.

70A, 70B, 70-71, 78, 79

4. Demonstrate mastery of basic addition facts for addends 0 through 9, without a calculator.

66A, 66B, 67

5. Demonstrate mastery of subtraction facts that are inverses of the basic addition facts, without a calculator.

70A, 70B, 70-71, 78, 79

6. Demonstrate an understanding of the multiplication facts through 10 using concrete models.

10A, 10, 276A, 276B, 276-279, 280A, 280B, 280-281, 282A, 282B, 282-283, 286A, 286B, 286-287, 288A, 288B, 288-291, 316A, 316B, 316-317, 318A, 318B, 318-319, 320A, 320B, 320-323, 324A, 324B, 324-327

7. Use models to solve multiplication and division problems and use number sentences to record the solutions.

266A, 266B, 266-267, 374A, 374B, 374-377

Related Content: 76A, 76B, 76-77

III. PATTERNS, FUNCTIONS AND ALGEBRA**A. Patterns and Functions**

Standard: Understand and describe patterns in numbers and shapes.

The student will:

1. Create and identify patterns in numbers and shapes and explain how to extend those patterns.

6A, 12A, 24A, 24, 25A, 25, 26, 27, 52, 259, 276A, 276B, 277, 280A, 280B, 281, 282A, 282B, 282, 286B, 286, 288A, 288B, 288-289, 332A, 332B, 332-335, 340A, 340B, 340-341, 344A, 344B, 344-345, 402A, 402B, 402-403, 504A, 504B, 505, 685, 694A, 695

B. Algebra (Algebraic Thinking)

Standard: Add and subtract whole numbers in the correct order to solve real-world and mathematical problems.

The student will:

1. Identify a missing number or operation in a simple arithmetic equation such as $3 _ 4 = 7$ or $9 - _ = 2$.

86A, 89, 288A, 288B, 291, 293, 612B, 614, 680B, 682

2. Use the properties of addition and subtraction that involve ordering, grouping and the number 0, to do simple computations with whole numbers.

66A, 66B, 66, 67, 156A, 156B, 156-157

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Represent and interpret data in real-world and mathematical problems.

The student will:

1. Read and interpret data from circle graphs using halves, thirds and quarters.

Related Content: 236A, 236B, 236-237, 426

2. Collect data using observations or surveys and represent the data with pictographs and line plots with appropriate title and key.

208A, 208B, 208-211, 212A, 212B, 212-215, 226A, 226B, 226-227

B. Probability

Standard: Explore the basic concept of probability.

700A, 700B, 700-701, 702A, 702B, 702-703, 704A, 704B, 704-707

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: Understand the concept of reflection symmetry as applied to geometric shapes. Understand how representations of shapes are affected by various motions.

The student will:

1. Identify lines of symmetry in geometric shapes.

460A, 460B, 460-461, 462, 483

2. Recognize and predict the position and orientation of a shape after a single flip, slide or turn.

456A, 456B, 456, 457

B. Geometry

Standard: Classify shapes by specified attributes. Identify simple shapes within complex shapes.

The student will:

1. Identify, describe and classify two-dimensional shapes according to number and length of sides and kinds of angles.

432A, 432B, 432-433, 444A, 444B, 444-445

2. Identify common two- and three-dimensional shapes that are components of more complex shapes.

432A, 432B, 432-433

C. Measurement

Standard: Measure and calculate length, time, weight, temperature and money using appropriate tools and units to solve real-world and mathematical problems.

The student will:

1. Select an appropriate tool and identify the appropriate unit to measure time, length, weight and temperature.

54, 192A, 192B, 192-195, 196A, 196B, 196-197, 198A, 198B, 198-199, 532A, 532B, 532-533, 534A, 534B, 534-535, 536A-536B, 536-537, 538A, 538B, 538-539, 690A, 690B, 690-693, 696A, 696B, 696-697

2. Find the perimeter of a polygon with whole number sides.

426J, 464A, 464B, 464-467

3. Know relationships between units of length in a system of measurement, such as 12 inches equals 1 foot or 100 centimeters equals 1 meter.

532A, 532B, 532-533, 534A, 534B, 534-535, 536A-536B, 536-537, 538A, 538B, 538-539

4. Tell time to the minute using digital and analog time.

10A, 192A, 192B, 192, 196A, 196B, 196-197

5. Determine elapsed time to the minute.

198A, 198B, 198-199

6. Make change using as few coins as possible up to a dollar.

40A, 40, 41, 47

Scott Foresman – Addison Wesley Mathematics to the Minnesota Academic Standards

GRADE FOUR

These standards and benchmarks are to be used as a source document for identifying what all students should know and be able to do to demonstrate mathematical proficiency. To determine grade level placement of specific standards and benchmarks, judgment by experienced teachers was used to determine at what grade level 80% of children would master the specific material.

The current document identifies the grade at which mastery of each concept is expected but does not identify when those concepts are introduced and reinforced.. Schools must determine where in their curriculum these concepts would be introduced and reinforced so that they may be assessed at the indicated grade level.

Teachers must develop and enrich students' knowledge of mathematics beyond what is outlined in this document. It is critical for teachers to recognize the entire progression of standards and benchmarks before and after their grade level.

I. MATHEMATICAL REASONING

Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Communicate, reason and represent situations mathematically.

6, 7, 21, 23, 24, 26, 28A-28B, 28-29, 56, 63, 84, 91, 95, 134, 137, 151, 155, 191, 218, 227, 228, 229, 230, 233, 256, 259, 289, 381, 391, 405, 435, 436, 439, 442, 446, 448, 449, 453, 457, 458, 459, 466, 470, 474, 477, 506, 523, 535, 575, 576, 577, 580, 589, 595, 625, 629, 636, 653, 656, 657, 659, 664, 665, 690, 693, 705, 706, 707, 711

2. Solve problems by distinguishing relevant from irrelevant information, sequencing and prioritizing information and breaking multi-step problems into simpler parts.

4A, 6, 9, 12, 16A, 18, 21, 23, 24, 24A-24B, 24-25, 26, 29, 31, 33, 36, 40-41, 47, 156A, 156B, 156-157, 648A, 648B, 648-649, 696A, 696B, 696-697

3. Evaluate the reasonableness of the solution by considering appropriate estimates and the context of the original problem.

9, 101, 286B, 286, 333

4. Know when it is appropriate to estimate and when an exact answer with whole numbers, fractions or decimals is needed.

22B, 53, 258A, 258B, 258, 368A, 368B, 368, 600A, 600B, 600-601, 627

5. Express a written problem in suitable mathematical language, solve the problem and interpret the result in the original context.

40A, 40-41, 102A, 102B, 102-103, 168A, 168B, 168-169, 234A, 234B, 234-235, 292A, 292B, 292-293, 344A, 344B, 344-345, 412A, 412B, 412-413, 478A, 478B, 478-479, 540A, 540B, 540-541, 602A, 602B, 602-603, 666A, 666B, 666-667, 716A, 716B, 716-717

6. Support mathematical results using pictures, numbers, and words to explain why the steps in a solution are valid and why a particular solution method is appropriate.

90A, 90B, 90-91, 140A, 140B, 140-143, 222A, 222B, 222-223, 278A, 278B, 278-281, 326A, 326B, 326-329, 396A, 396B, 396-400, 474A, 474B, 474-475, 512A, 512B, 512-513, 584A, 584B, 584-585, 648A, 648B, 648-649, 714A, 714B, 714-715

II. NUMBER SENSE, COMPUTATION AND OPERATIONS

A. Number Sense

Standard: Represent whole numbers in various ways to quantify information and to solve real-world and mathematical problems. Understand the concept of fractions and decimals.

The student will:

1. Read and write whole numbers to 100,000, in numerals and words.

2, 4, 5, 6, 7, 8B, 9, 10A, 10B, 11, 14, 15, 22A, 22B, 22-23, 26, 52, 56, 628A, 628B, 628-629

2. Compare and order whole numbers.

16A, 16B, 16-19, 26, 27, 46, 48, 49, 50, 53, 57

3. Use fractions and decimals to solve problems representing parts of a whole, parts of a set and division of whole numbers by whole numbers in real-world and mathematical problems.

502A, 502B, 502-503, 624A, 624B, 624-625

4. Use rounding and estimation with whole numbers to solve real-world and mathematical problems.

20A-20B, 20-21, 26, 46, 48, 49, 53, 57, 68A, 68B, 68, 315, 316A, 316B, 316-319

B. Computation and Operation

Standard: Compute fluently and make reasonable estimates with whole numbers in real world and mathematical problems. Understand the meanings of arithmetic operations and how they relate to one another.

The student will:**1. Use addition and subtraction of multi-digit whole numbers to solve multi-step real world and mathematical problems.**

156A, 156B, 156-157

2. Add up to three whole numbers containing up to three digits each, without a calculator.

62A, 62B, 62-63, 76B, 76-79, 80A, 80B, 80-81

3. Subtract whole numbers containing up to three digits each, without a calculator.

64A, 64B, 64-67, 82A, 82B, 82-85

4. Demonstrate mastery of multiplication facts for the numbers 0-10, without a calculator.

270A, 270-273, 274A, 274B, 274-275

5. Use multiplication and division of whole numbers to solve simple real-world and mathematical problems.

128A, 128B, 128-131, 150A, 150B, 150-151, 152A, 152B, 152-153, 154A, 154B, 154-155, 404A, 404B, 404-405, 406A, 406B, 406-407, 408A, 408B, 408-411, 414, 415, 418, 419, 420

6. Use the inverse relationship of multiplication and division to compute and check results.

82A, 82B, 82, 148A, 148B, 148-149, 150A, 150B, 150-151, 174, 184, 421

7. Multiply single digit multiples of powers of ten such as 300×60 or 70×3 , mentally.

314A, 314B, 314-315

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Understand and describe patterns in tables and graphs.

204-205, 206-207, 208-211, 212-215, 216-219, 222-223

The student will:

1. Examine and describe patterns in tables and graphs.

90-91, 140-143, 216

B. Algebra (Algebraic Thinking)

Standard: Apply arithmetic operations in the correct order to compute with whole numbers in real-world and mathematical problems.

The student will:

1. Identify a missing number or operation in a simple arithmetic equation such as

$3 _ 4 = 12$ or $45 / _ = 9$.

9, 100A, 100B, 100-101, 130, 166A, 166B, 166-167

2. Use the properties of arithmetic that involve ordering, grouping and the numbers 1 and 0, to do simple computations with whole numbers.

62A, 62B, 62, 128A, 128B, 129-131, 132, 288A, 288-289

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Represent and interpret data in real-world and mathematical problems.

The student will:

1. Collect data using observations or surveys and represent the data with tables and graphs with labeling.

140A, 140B, 140-143, 204A, 204B, 204-205, 208B, 208-211, 216A, 216B, 216-219, 230A, 230B, 230-231, 236, 237, 704-705

2. Use mathematical language to describe a set of data.

206, 226A-226B, 226-229, 236, 241, 242

B. Probability

Standard: Model simple probabilities by displaying the outcomes for real-world and mathematical problems.

The student will:

1. Express outcomes of random experiments verbally and numerically such as 3 out of 4 or $\frac{3}{4}$.

700-701, 706A, 706B, 706-709, 710B, 710-711

2. Use physical models and pictures to represent possible arrangements of two or three objects.

700B, 702, 704A, 704B, 704, 705, 706A, 706B, 706, 707, 708, 709, 710B, 711

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: Understand spatial relationships and describe them using language such as congruent, similar, parallel and perpendicular.

The student will:

1. Identify congruent and similar figures.

452A, 452B, 452-455, 458A, 458B, 458-459, 462, 463, 485

2. Identify parallel and perpendicular lines.

440A, 440B, 440, 441, 442, 443, 484, 550

B. Geometry

Standard: Use attributes of two- and three-dimensional shapes to identify them and distinguish between them.

The student will:

1. Identify, describe, and classify two- and three-dimensional shapes by their attributes.

434A, 434B, 434, 435, 436, 437, 438A, 438B, 438-439, 448A-448B, 448-449, 450, 451, 460A, 460B, 460-461, 478A, 478B, 478-479, 484, 490, 494

2. Identify right angles in geometric figures or in appropriate objects and determine whether other angles are greater or less than a right angle.

440A, 440B, 441, 442, 443, 444B, 444, 445, 446, 447, 451, 460A, 460B

C. Measurement

Standard: Measure and calculate length and area using appropriate tools and units to solve real-world and mathematical problems. Make change with money.

The student will:

1. Find the area and perimeter of a rectangle by measuring, using a grid, or using a formula, and label the answer with appropriate units.

464A, 464B, 464-467, 468A, 468B, 468-471, 480, 496, 497

2. Understand that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas.

432J, 468B, 468-471

3. Make change using as few coins and bills as possible up to \$20.

32A, 32B, 32-33, 39, 42, 48, 55

**Scott Foresman – Addison Wesley Mathematics
to the
Minnesota Academic Standards**

GRADE FIVE

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I. MATHEMATICAL REASONING

Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Communicate, reason and represent situations mathematically.

5, 8A, 10, 12A, 16, 18B, 18, 22, 24, 27, 28A, 28, 32A-32B, 32-33, 34, 38A, 42B, 42, 44-45, 46, 69, 74, 95, 104, 109, 134, 139, 140, 163, 168, 175, 177, 178, 205, 206, 222, 235, 261, 269, 272, 277, 283, 284, 289, 290, 291, 296, 297, 298, 300, 301, 302, 303, 304, 329, 330, 331, 334, 337, 341, 344, 347, 348, 361, 362, 365, 366, 369, 394, 396, 397, 399, 401, 403, 411, 415, 416, 419, 427, 461, 463, 468, 476, 480, 492, 495, 501, 503, 530, 533, 535, 543, 548, 553, 555, 562, 563, 564, 565, 567, 568, 569, 594, 595, 596, 599, 600, 602, 603, 607, 613, 614, 615, 620, 623, 624, 625, 647, 671, 697, 698, 701, 703, 707, 714, 719, 724, 729

2. Solve problems by distinguishing relevant from irrelevant information, sequencing and prioritizing information and breaking multi-step problems into simpler parts.

4A, 42B, 226B, 226-227, 352A, 352B, 352-355, 406A, 406B, 406-407

3. Evaluate the reasonableness of the solution by considering appropriate estimates and the context of the original problem.

18A-18B, 18, 22-23, 24, 27, 28A, 28B, 28, 30-31, 32-33, 35, 37, 42B, 58, 68A, 68B, 69, 138A, 139, 140, 169, 204B, 205, 206, 234B, 236, 494A, 494B, 495

4. Know when it is appropriate to estimate and when an exact answer with whole numbers, fractions or decimals is needed.

28A, 28B, 28, 30-31, 42B, 68A, 68B, 68-69, 138A, 138B, 138-141, 204A, 204B, 205, 206, 218A, 218B, 218-221, 494B, 495, 624A, 624B, 624-625

5. Express a written problem in suitable mathematical language, solve the problem and interpret the result in the original context.

292A, 292B, 292-293, 570A, 570B, 570-571, 664A, 664B, 664-665, 720A, 720B, 720-721

6. Support mathematical results using pictures, numbers, and words to explain why the steps in a solution are valid and why a particular solution method is appropriate.

80A, 80B, 80-81, 144A, 144B, 144-145, 210A, 210B, 210-211, 226B, 226-227, 276A, 276B, 276-279, 352A, 352B, 352-355, 434A, 434B, 434-437, 484A, 484B, 484-487, 558A, 558B, 558-559, 606A, 606B, 606-607, 660A, 660B, 660-661, 706A, 706B, 706-709

7. Organize, record and communicate math ideas coherently and clearly.

4-5, 8A, 18B, 44-45, 110A, 110B, 110-111, 180A, 180B, 180-181, 238A, 238B, 238-239, 306A, 306B, 306-307, 372A, 372B, 372-373, 438A, 438B, 438-439, 506A, 506B, 506-507, 572A, 572B, 572-573, 626A, 626B, 626-627, 676A, 676B, 676-677, 730A, 730B, 730-731

II. NUMBER SENSE, COMPUTATION AND OPERATIONS

A. Number Sense

Standard: Represent fractions, decimals and whole numbers in a variety of ways, to quantify information and to solve real-world and mathematical problems. Understand the concept of negative numbers.

The student will:**1. Read and write numbers up to three decimal places in numerals and words.**

8A, 8, 9, 10-11, 12A-12B, 12-13, 14, 20, 21, 29, 30-31, 38B, 38-39, 40-41, 84A, 84B, 84-85, 86A, 86B, 86-87, 430A, 430B, 430-431

2. Represent and compare positive and negative integers symbolically and on the number line and use them to solve real-world and mathematical problems.

8A, 8, 12B, 26A-26B, 712A, 712B, 712-715, 716A, 716B, 717, 718B, 718-719

3. Recognize equivalent common fractions, decimals and percentages.

8A, 8B, 9, 10, 21, 410A, 410B, 410-413, 462-463, 668A, 668B, 668-669

4. Use a variety of estimation strategies such as rounding, truncation, over- and underestimation and decide when an estimated solution is appropriate.

3, 26A-26B, 26-27, 28A-28B, 28-31, 68A, 68B, 68-69, 86A, 86B, 86-87, 88B, 91, 138A, 138B, 138-141, 204A, 204B, 204-207

B. Computation and Operation

Standard: Compute fluently and make reasonable estimates with fractions, decimals, and whole numbers, in real-world and mathematical problems. Understand the meanings of arithmetic operations and how they relate to one another.

The student will:**1. Use addition, subtraction, multiplication and division of multi-digit whole numbers to solve multi-step, real-world and mathematical problems.**

34, 36A, 36B, 36-37, 42A, 72A, 72B, 72-75, 88-91, 152A, 152B, 152-155, 214A, 214-217, 226B, 226-227, 234B, 234-237

2. Add and subtract numbers with up to two decimal places in real-world or mathematical problems.

38A, 38B, 38-39, 40A-40B, 40, 41, 44A, 62, 63

3. Add and subtract, without a calculator, numbers containing up to five digits such as $546.23 - 84.1$.

36B, 36, 37, 38B, 38-39, 40-41, 47, 63

4. Multiple, without a calculator, a two-digit whole number or decimal by a two-digit whole number or decimal, such as 3.2×3.4 .

72B, 72-75, 88-91, 92A, 92B, 92, 94A, 94B, 94-97, 98, 99

5. Multiple, without a calculator, a three-digit whole number or decimal by a one-digit whole number or decimal such as 3.51 divided by 3.

88A, 88B, 89, 90, 91, 92A, 98

6. Model simple problems, arising from concrete situations, involving the addition and subtraction of common fractions and mixed numbers as well as fractions where the common denominator equals one of the denominators.

460A, 460B, 460-461, 462A, 462B, 462, 463, 464A, 465

7. Interpret percents as a part of a hundred.

668A, 668B, 668-669, 670A, 670B, 670-671, 672A, 672B, 672-675

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Understand and describe patterns in numbers, shapes, tables and graphs.

The student will:

1. Identify patterns in numbers, shapes, tables, and graphs and explain how to extend those patterns.

14-15, 16-17, 20, 66A, 66-67, 75, 84B, 84-85, 136A, 136B, 136-137, 142-143, 144A, 144B, 144-145, 202A, 202-203, 492

B. Algebra (Algebraic Thinking)

Standard: Represent mathematical relationships using equations.

The student will:

1. Evaluate numeric expressions in real-world and mathematical problems.

38A, 100A, 100B, 100-103, 104, 105

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Represent data and use various measures associated with data to draw conclusions and identify trends.

The student will:

1. Determine whether or not a given graph matches a given data set.

276B, 276, 277, 668A, 668B, 668, 669

2. Use fractions and percentages to compare data sets.

668A, 668B, 668, 669

3. Collect data using measurements, surveys or experiments and represent the data with tables and graphs with labeling.

260A, 260B, 260-261, 269, 280, 296B, 296, 297, 312

4. Find mean, mode, median, and range of a data set.

258I, 270B, 270-273, 282A, 282B, 282-285, 294, 295, 306B, 307, 312, 319

B. Probability

Standard: Model simple probabilities by displaying the outcomes for real-world and mathematical problems.

The student will:

1. Represent all possible outcomes for a simple probability problem with tables and grids, and draw conclusions from the results.

300A, 300B, 300-301, 302A, 302B, 302-305, 308, 309, 310-311, 321, 652A, 652B, 652-653

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: Understand the concepts of reflection and rotation symmetry as applied to two dimensional shapes.

The student will:**1. Identify reflection and rotation symmetries in two-dimensional shapes and designs.**

364A, 364B, 364-365, 368A, 368B, 370

B. Geometry**Standard:** Sort, classify, compare and describe two- and three-dimensional objects.***The student will:*****1. Sort three-dimensional objects according to number and shape of faces, number of edges and vertices.**

594A, 594B, 594-597, 613

2. Classify, compare and identify acute, right and obtuse angles.

332A, 332B, 332-335, 338, 380, 388

3. Classify polygons as regular or irregular.

340A, 340B, 340-341, 358, 361

4. Know the sum of the angles in triangles and quadrilaterals.

340-341, 342A, 342-345, 346-349

C. Measurement**Standard:** Measure and calculate length, area and capacity using appropriate tools and units to solve real-world and mathematical problems.**The student will:****1. Find the area and perimeter of a triangle by measuring or using a grid, and label the answer with appropriate units.**

540-541, 554A, 554B, 554-555

2. Use a two-dimensional pattern of a cube or rectangular box to compute the surface area.

548A, 548B, 548-549, 602B, 602-603

3. Select and apply the appropriate units and tools to measure perimeter, area and capacity.

540A, 540B, 540-541, 548A, 548B, 548, 550A, 550B, 550-551, 552A, 552B, 552-553, 554A, 554B, 554-555, 614A, 614B, 614-615, 616A, 616B, 616-617

**Scott Foresman – Addison Wesley Mathematics
to the
Minnesota Academic Standards**

GRADE SIX

These standards and benchmarks are to be used as a source document for identifying what all students should know and be able to do to demonstrate mathematical proficiency. To determine grade level placement of specific standards and benchmarks, judgment by experienced teachers was used to determine at what grade level 80% of children would master the specific material.

The current document identifies the grade at which mastery of each concept is expected but does not identify when those concepts are introduced and reinforced.. Schools must determine where in their curriculum these concepts would be introduced and reinforced so that they may be assessed at the indicated grade level.

Teachers must develop and enrich students' knowledge of mathematics beyond what is outlined in this document. It is critical for teachers to recognize the entire progression of standards and benchmarks before and after their grade level.

I. MATHEMATICAL REASONING

Standard: Apply skills of mathematical representation, communication and reasoning throughout the remaining four content strands.

Note about assessment of this standard: The Mathematical Reasoning standards will primarily be assessed within the context of the standards in the remaining four content strands. The depth of mathematical reasoning will increase as the skill level in the four other strands increases.

The student will:

1. Assess the reasonableness of a solution by comparing the solution to appropriate graphical or numerical estimates or by recognizing the feasibility of a solution in a given context.

17, 20A, 26, 31, 53, 54-55, 318A, 318, 319, 648A, 648, 650A, 651, 654A, 656, 664A, 664B, 666

2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.

476B, 476-479, 480A, 480-483

3. Translate a problem described verbally or by tables, diagrams or graphs, into suitable mathematical language, solve the problem mathematically and interpret the result in the original context.

54A, 54B, 54-55, 120A, 120B, 120-121, 182A, 182B, 182-183, 228A, 228B, 228-229, 280A, 280B, 280-281, 334A, 334B, 334-335, 388A, 388B, 388-389, 450A, 450B, 450-451, 491, 520A, 520B, 520-521, 598A, 598B, 598-599, 676A, 676B, 676-677, 724A, 724B, 724-725

4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.

37, 52, 67, 116A, 116B, 116-119, 122, 156A, 156B, 156-157, 158, 212A, 212B, 212-213, 214, 264A, 264B, 264, 312A, 312B, 312-313, 374A, 374B, 374-377, 434A, 434B, 434-437, 490A, 490B, 490-491, 560A, 560B, 560-561, 648A, 648B, 648-649, 706A, 706B, 706-707

5. Determine whether or not relevant information is missing from a problem.

502A, 582B, 582-283, 584, 585

6. Use accurately common logical words and phrases such as “and,” “or,” “if ... then ...,” “unique,” “only if.”

512A, 512B, 512-513

II. NUMBER SENSE, COMPUTATION AND OPERATIONS

A. Number Sense

Standard: Use positive and negative rational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.

The student will:

1. Order and compare integers, fractions, decimals and mixed numbers with $>$, $<$, and $=$. Locate and compare positive and negative rational numbers on a number line.

3, 78A, 78B, 78-79, 408B, 408-409, 410B, 410-411

2. Use rounding and estimation with integers, decimals and fractions to solve real-world and mathematical problems.

3, 14A-14B, 14-15, 16A-16B, 16-17, 18A-18B, 18-19, 64, 80A, 80B, 80-81, 82A, 82B, 82, 170B, 170-171, 182A, 184, 216A, 216B, 216-217, 230, 256A, 256B, 256-257, 318B, 319, 357, 360, 368A, 368B, 368-369, 371, 381, 553

B. Computation and Operation

Standard: Compute fluently and make reasonable estimates with positive and negative rational numbers in real-world and mathematical problems. Understand the meanings of arithmetic operations and factorization, and how they relate to one another. Appropriately use calculators and other technologies to solve problems.

The student will:

1. Determine the prime factorization of positive integers.

146A, 146B, 147-149, 150, 158

2. Determine the least common multiple and the greatest common divisor of whole numbers.

152A, 152B, 152-153, 158, 202

3. Use addition, subtraction, multiplication and division of multi-digit whole and decimal numbers to solve multi-step real-world and mathematical problems.

82A, 82B, 82, 86A, 86B, 86-89, 90A, 90B, 90-93, 94B, 94-97, 100A, 100B, 100-104, 141, 203, 470

4. Multiply and divide, without a calculator, numbers containing up to three digits by numbers containing up to two digits, such as $347 \div 83$ or 4.91×9.2 .

82A, 82, 83, 100B, 100, 101, 102, 103, 104, 105

5. Find quotients with remainders and be able to express the remainder in various ways depending on the context of the problem.

98A, 98B, 98-99

6. Use the relationship between moving the decimal point and the operations of multiplication or division by powers of ten to simplify calculations.

106A, 106B, 106-109, 120A, 122

7. Add, subtract, multiply and divide common fractions and mixed numbers as well as fractions where the common denominator equals one of the denominators.

161, 168B, 169, 202-205, 206A, 206B, 206-209, 212A, 214, 218A, 218B, 218-219, 220A, 220-223, 228A, 230, 248-251, 252A, 252B, 252-255, 258A, 258B, 258-259, 266A, 266B, 266-269, 270A, 270B, 270-271

8. Find, represent and use percentages in real-world and mathematical problems, including percentages greater than 100% and less than 1%.

354A, 354B, 354-357, 370A, 370B, 370-371

9. Apply the correct order of operations and grouping symbols when using calculators and other technologies.

24A, 24B, 24-27, 38, 40B, 43, 53

10. Know, use and translate calculator notational conventions to mathematical notation.

11, 102, 109, 167, 425, 499, 580, 657, 667

11. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.

11, 102, 109, 167, 425, 499, 580, 657, 667

III. PATTERNS, FUNCTIONS AND ALGEBRA

A. Patterns and Functions

Standard: Demonstrate understanding of the rectangular coordinate system.

The student will:

1. Demonstrate understanding of the four quadrants in a rectangular coordinate system by writing and plotting ordered pairs.

440A, 440B, 440-443, 448A, 448B, 448, 449, 457, 471

B. Algebra (Algebraic Thinking)

Standard: Apply arithmetic operations in the correct order to simplify and evaluate numeric expressions in real-world and mathematical problems.

The student will:

1. Apply the correct order of operations including addition, subtraction, multiplication, division and grouping symbols to simplify and evaluate numeric expressions.

8A-8B, 8-9, 24A, 24B, 24-27, 40-43, 60

IV. DATA ANALYSIS, STATISTICS AND PROBABILITY

A. Data and Statistics

Standard: Represent data and use various measures associated with data to draw conclusions and identify trends.

The student will:

1. Collect, organize and represent categorical and numerical data with tables and bar graphs.

40A, 43, 620A, 620B, 620-623, 624A, 624B, 624-627, 636A, 636B, 636-637

2. Understand the differences and appropriate use of mean, median and mode.

624A, 624B, 624-627

3. Find the median and possible outliers.

624A, 624B, 624-627, 628A, 628B, 629

B. Probability

Standard: Calculate and express probabilities numerically, and apply probability concepts to solve real-world and mathematical problems.

The student will:

1. Generate and display data in graphs and tables to estimate experimental probabilities.

636A, 636B, 636-637, 638A, 638B, 638-641, 642A, 642B, 642-645, 664A, 664B, 664

2. Represent all possible outcomes for a probability problem with tables, grids and tree diagrams to calculate probabilities and draw conclusions from the results.

654A, 654B, 654, 655, 656, 658B, 658, 661, 662A, 662B, 663, 664A, 664B, 664, 665, 666, 667, 668A, 668B, 668-671, 672A, 672B, 672, 673

V. SPATIAL SENSE, GEOMETRY AND MEASUREMENT

A. Spatial Sense

Standard: Recognize the relationship between different representations of two- and three dimensional shapes. Understand the effect of various transformations.

The student will:

1. Create models of three-dimensional geometric shapes from two-dimensional representations.

586A, 586B, 586, 590A, 590B, 591, 594A, 594B, 586, 591, 594-597

2. Predict the position and orientation of simple geometric shapes under transformations such as reflections, rotations and translations.

510A, 510B, 510, 511, 514A, 514B, 514, 515

3. Identify symmetries in three-dimensional shapes.

514A, 514B, 514-515

B. Geometry

Standard: Identify a variety of simple geometric figures by name, calculate various quantities associated with them and use appropriate tools to draw them.

The student will:

1. Use facts about angles including the relationship between complementary angles, supplementary angles and the angles within triangles to solve real-world and mathematical problems.

480A, 480B, 480-481, 482-483, 496A, 496B, 496-498

2. Classify triangles as equilateral, isosceles or scalene, and right, acute or obtuse.

496A, 496B, 496, 498, 499

3. Find the area and circumference of a circle given the radius or diameter using common approximations of pi where appropriate.

576A, 576B, 576-579, 580A, 580B, 580-581

4. Measure, identify, and draw perpendicular and parallel lines, angles and rectangles by using appropriate tools such as straightedge, ruler, compass, protractor or software.

472A, 472B, 473, 476A, 476B, 476, 480A, 480B, 483, 484A, 484B, 484, 487

C. Measurement

Standard: Make calculations of time, length, area and volume within standard measuring systems, using good judgment in choice of units.

The student will:

1. Solve problems requiring conversion of units within the U.S. customary system, and within the metric system.

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

2. Express measures of time and distance as fractions, mixed numbers and decimals to solve real-world and mathematical problems.

554A, 554B, 554-557

3. Find the area and perimeter of rectangles, squares, triangles and parallelograms by measuring, using a grid or using a formula.

564A, 564B, 564-567, 568A, 568B, 568-569, 570A, 570B, 570-571, 572A, 572B, 572-574