

A Correlation of

SCOTT FORESMAN ■ ADDISON WESLEY

Mathematics

to the

**Indiana
Academic Standards for
Mathematics**

Grades K-6



G/M-202

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 *Indiana Academic Standards for Mathematics*. 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.

Table of Contents

Kindergarten.....	1
Grade One.....	6
Grade Two.....	12
Grade Three.....	20
Grade Four.....	30
Grade Five.....	40
Grade Six	49

**Scott Foresman – Addison Wesley Mathematics
to the
Indiana Academic Standards for Mathematics
Kindergarten**

Standard 1

Number Sense

Students understand the relationship between numbers and quantities up to 10, and that a set of objects has the same number in all situations regardless of the position or arrangement of the objects. * set: collection of objects, numbers, etc.*

- K.1.1 Match sets of objects one-to-one.**
Example: Take crayons from the box and give one to each student in the group. Explain what you are doing.
25I, 27A-27B, 27-28, 75I, 77A-77B, 77-78, 79A-79B, 79-80, 81-82, 83A-83B, 83-84, 85A-85B, 85-86
- K.1.2 Compare sets of up to ten objects and identify whether one set is equal to, more than, or less than another.**
Example: Compare the blocks in two boxes. Tell which box contains more blocks and explain the way in which you decided on your answer.
25I, 27A-27B, 27-28, 29A-29B, 29-30, 31A-31B, 31-32, 33A-33B, 33-34, 47A-47B, 47-48, 51J, 63A-63B, 63-64, 71A-71B, 71-72, 87A-87B, 87-88, 89A-89B, 89-90, 97A-97B, 97-98, 263I-263J, 269A-269B, 269-270
- K.1.3 Know that larger numbers describe sets with more objects in them than sets described by smaller numbers.**
Example: Understand that a set of 7 apples contains more apples than a set of 3 apples.
51J, 63A-63B, 63-64, 67A-67B, 67-68
- K.1.4 Divide sets of ten or fewer objects into equal groups.**
Example: Take 6 blocks and give the same number to each of 3 children.
217A-217B, 217-218
- K.1.5 Divide shapes into equal parts.**
Example: Divide a piece of paper into 4 equal pieces.
213A-213B, 213-214, 215A-215B, 215-216

K.1.6 Count, recognize, represent, name, and order a number of objects (up to 10).

Example: Count a group of seven pennies. Recognize that 7 is the number for this set.

53I, 53A-53B, 53-54, 55A-55B, 55-56, 57A-57B, 57-58, 59A-59B, 59-60, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 67A-67B, 67-68, 75I-75J, 71A-71B, 71-72, 77A-77B, 77-78, 79A-79B, 79-80, 81A-81B, 81-82, 83A-83B, 83-84, 85A-85B, 85-86, 87A-87B, 87-88, 89A-89B, 89-90, 91A-91B, 91-92, 97A-97B, 97-98, 233A-233B, 233-234

K.1.7 Find the number that is one more than or one less than any whole number* up to 10. **Example:** You have a bag of 7 apples. How many apples are in a box that holds one less than the bag of apples?

* whole numbers: 0, 1, 2, 3, etc.

65A-65B, 65-66, 91A-91B, 91-92, 223J, 235A-235B, 235-236, 237A-237B, 237-238

K.1.8 Use correctly the words one/many, none/some/all, more/less, and most/least.

Example: Take some of the blocks out of this box, but not all of them.

25I, 27A-27B, 27-28, 51J, 67A-67B, 67-68, 239A-239B, 239-240

K.1.9 Record and organize information using objects and pictures.

Example: Ask some of your friends what pets they have. Use pictures of animals to show the number of pets your friends have.

31A-31B, 31-32, 33A-33B, 33-34, 47A-47B, 47-48, 67A-67B, 67-68, 223A-223B, 223-224

Standard 2

Computation

Students understand and describe simple additions and subtractions.

K.2.1 Model addition by joining sets of objects (for any two sets with fewer than 10 objects when joined).

Example: Put together 3 pencils and 2 pencils. Count the total number of pencils.

223I, 225A-225B, 225-226, 227A-227B, 227-228, 229A-229B, 229-230, 231A-231B, 231-232, 235A-235B, 235-236, 239A-239B, 239, 243I-243J, 245A-245B, 245-246, 247A-247B, 247-248, 251A-251B, 251-252, 253A-253B, 253-254, 255A-255B, 255-256, 259A-259B, 259-260

K.2.2 Model subtraction by removing objects from sets (for numbers less than 10).

Example: From a pile of 9 crayons, take away 6 crayons. Count the number of crayons left in the pile.

237A-237B, 237-238, 239A-239B, 240, 263I-263J, 265A-265B, 265-266, 267A-267B, 267-268, 271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276

K.2.3 Describe addition and subtraction situations (for numbers less than 10). Example: In the last example, explain what operation you were using when you took away crayons from the pile.

251A-251B, 251-252, 253A-253B, 253-254, 255A-255B, 255-256, 259A-259B, 259-260, 271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276

Standard 3

Algebra and Functions

Students sort and classify objects.

K.3.1 Identify, sort, and classify objects by size, number, and other attributes. Identify objects that do not belong to a particular group.

Example: Find the squares in a collection of shapes. Sort these squares into large ones and small ones and explain how you decided which squares went in each pile.

1I-1J, 11A-11B, 11-12, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18, 19A-19B, 19-20, 21A-21B, 21-22, 71A-71B, 71-72

K.3.2 Identify, copy, and make simple patterns with numbers and shapes. Example: Make a pattern of squares and circles with one square, one circle, one square, one circle, etc.

25J, 35A-35B, 35-36, 37A-37B, 37-38, 39A-39B, 39-40, 41A-41B, 41-42, 43A-43B, 43-44, 45A-45B, 45-46, 95A-95B, 95-96

Standard 4

Geometry

Students identify common objects around them and describe their geometric features and position.

K.4.1 Identify and describe common geometric objects: circle, triangle, square, rectangle, and cube.

Example: Look for cubes and circles at home and at school.

20, 195I, 203A-203B, 203-204, 205A-205B, 205-206, 219A-219B, 219

K.4.2 Compare and sort common objects by position, shape, size, roundness, and number of corners.

Example: Compare the numbers of corners of triangles, squares, and rectangles.

1J, 9A-9B, 9-10, 45A-45B, 45-46, 219A-219B, 219-220

K.4.3 Identify and use the terms: inside, outside, between, above, and below.

Example: Tell when a block is inside or outside a box.

3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 21A-21B, 21

Standard 5

Measurement

Students understand the concept of time and units to measure it. They understand that objects have length, capacity, weight, and temperature, and that they can compare objects using these qualities.

K.5.1 Make direct comparisons of the length, capacity, weight, and temperature of objects and recognize which object is shorter, longer, taller, lighter, heavier, warmer, cooler or holds more.

Example: Hold two books side by side to see which is shorter. Hold one in each hand to see which is heavier.

131I-131J, 133A-133B, 133-134, 135A-135B, 135-136, 137A-137B, 137-138, 145A-145B, 145-146, 149A-149B, 149-150, 153A-153B, 153-154, 155A-155B, 155-156

K.5.2 Understand concepts of time: morning, afternoon, evening, today, yesterday, tomorrow, week, month, and year. Understand that clocks and calendars are tools that measure time.

Example: Use a calendar to find the number of days in the month of your birthday.

159I-159J, 161A-161B, 161-162, 163A-163B, 163-164, 165A-165B, 165-166, 167A-167B, 167-168, 171A-171B, 171-172, 173A-173B, 173-174, 175A-175B, 175-176

Standard 6

Problem Solving

Students make decisions about how to set up a problem.

K.6.1 Choose the approach, materials, and strategies to use in solving problems.

Example: Solve the problem: “There are four blocks on the table and a box of blocks that is closed. The teacher says that there are five blocks in the box. Find the number of blocks in all, without opening the box.”
Decide to draw a picture.

21A-21B, 22, 279A-279B, 279-280

K.6.2 Use tools such as objects or drawings to model problems.

Example: In the first example, draw a picture of the four blocks that you can see, and then draw five more blocks for the ones that you cannot see.

249A-249B, 250

Students solve problems in reasonable ways and justify their reasoning.

K.6.3 Explain the reasoning used with concrete objects and pictures.

Example: In the first example, count the number of blocks that you have drawn and write the number that represents the total.

19A-19B, 19-20, 255A-255B, 256

K.6.4 Make precise calculations and check the validity of the results in the context of the problem.

Example: In the first example, open the box of blocks and place them on the table. Count the total number of blocks on the table to see whether your drawing was correct.

227A-227B, 227-228, 249A-249B, 249-250, 267A-267B, 267-268, 273A-273B, 273-274, 275A-275B, 275-276

**Scott Foresman – Addison Wesley Mathematics
to the
Indiana Academic Standards for Mathematics**

Grade One

Standard 1

Number Sense

Students understand symbols, objects, and pictures used to represent numbers up to 100 and show an understanding of fractions.

1.1.1 Count, read, and write whole numbers* up to 100.

**whole numbers: 0, 1, 2, 3, etc.*

239I, 245A-245B, 245-246, 263A-263B, 263-264, 273, 279J, 285A-285B, 285-286

1.1.2 Count and group objects in ones and tens.

239I, 243A-243B, 243-244, 247A-247B, 247-248, 251A-251B, 251-252, 279I, 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288, 295A-295B, 295-296, 421A-421B, 421-422, 423A-423B, 423-424

1.1.3 Identify the number of tens and ones in numbers less than 100.

239I, 241A-241B, 241-242, 243A-243B, 243-244, 247A-247B, 247-248, 279I, 287A-287B, 287-288

1.1.4 Name the number that is one more than or one less than any number up to 100.

25A-25B, 25-26, 27A-27B, 27-28, 33A-33B, 33, 91A-91B, 91-92, 127A-127B, 127-128, 245A-245B, 245-246, 263A-263B, 263-264, 295A-295B, 295-296

1.1.5 Compare whole numbers up to 10 and arrange them in numerical order.

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

1.1.6 Match the number names first, second, third, etc. with an ordered set of up to 10 items.

267A-267B, 267-268, 269A-269B, 269

1.1.7 Recognize when a shape is divided into congruent (matching) parts.

155J, 181A-181B, 181-182, 183A-183B, 183-184, 193A-193B, 194

1.1.8 For a shape divided into 8 or fewer congruent (matching) parts, describe a shaded portion as “__ out of __ parts” and write the fraction.

183A-183B, 183-184, 185A-185B, 185-186, 189A-189B, 189-190

1.1.9 For a set of 8 or fewer objects, describe a subset as “__ out of __ parts” and write the fraction.

187A-187B, 187-188, 189A-189B, 189-190

1.1.10 Represent, compare, and interpret data using pictures and picture graphs.

7A-7B, 7-8, 45A-45B, 45-46, 61A-61B, 61-62, 65A-65B, 65-66, 125A-125B, 125-126, 187A-187B, 187-188, 191A-191B, 191-192, 251A-251B, 251-252, 307A-307B, 307-308, 309A-309B, 309-310, 319A-319B, 319-320, 339A-339B, 339-340

Standard 2

Computation

Students demonstrate the meaning of addition and subtraction and use these operations to solve problems.

1.2.1 Show the meaning of addition (putting together, increasing) using objects.

11A-11B, 11-12, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18, 21A-21B, 21-22, 25A-25B, 25-26, 33A-33B, 33-34, 43I, 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 57A-57B, 57-58, 71A-71B, 71-72, 79A-79B, 79, 89I-89J, 91A-91B, 91-92, 93A-93B, 93, 95A-95B, 95, 97A-97B, 97-98, 103A-103B, 103-104, 105A-105B, 105-106, 107A-107B, 107-108, 111A-111B, 111-112, 247A-247B, 247-248, 317A-317B, 317-318

1.2.2 Show the meaning of subtraction (taking away, comparing, finding the difference) using objects.

27A-27B, 27-28, 43J, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 67A-67B, 67-68, 69A-69B, 69-70, 71A-71B, 71-72, 75A-75B, 75-76, 77A-77B, 77-78, 79A-79B, 80, 123I-123J, 125A-125B, 125-126, 127A-127B, 127-128, 441A-441B, 441-442

1.2.3 Show equivalent forms of the same number (up to 20) using objects, diagrams, and numbers.

1J, 11A-11B, 13A-13B, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18, 21A-21B, 21-22, 33A-33B, 33-34, 43I-43J, 47A-47B, 47-48, 49A-49B, 49-50, 63A-63B, 63-64, 69A-69B, 69-70, 75A-75B, 75-76, 91A-91B, 91-92

1.2.4 Demonstrate mastery of the addition facts (for totals up to 20) and the corresponding subtraction facts.

89I-89J, 103A-103B, 103-104, 105A-105B, 105-106, 137A-137B, 137-138, 139A-139B, 139-140, 141A-141B, 141-142, 149, 269A-269B, 269-270, 415J, 417A-417B, 417-418, 419A-419B, 419-420, 421A-421B, 421-422, 423A-423B, 423-424, 425A-425B, 425-426, 427A-427B, 427-428, 435A-435B, 435-436, 437A-437B, 437-438,

439A-439B, 439-440, 443A-443B, 443-444, 445A-445B, 445-446, 447A-447B, 447-448

1.2.5 Understand the meaning of the symbols $+$, $-$, and $=$.

49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 57A-57B, 57-58, 65A-65B, 65-66, 67A-67B, 67-68, 69A-69B, 69-70, 71A-71B, 71-72, 77A-77B, 77-78, 79A-79B, 79-80

1.2.6 Understand the role of zero in addition and subtraction.

51A-51B, 51-52, 67A-67B, 67-68

1.2.7 Understand and use the inverse relationship between addition and subtraction facts (such as $4 + 2 = 6$, $6 - 2 = 4$, etc.) to solve simple problems.

83, 123I-123J, 129A-129B, 129-130, 137A-137B, 137-138, 139A-139B, 139-140, 141A-141B, 141-142, 415J, 435A-435B, 435-436, 437A-437B, 437-438, 439A-439B, 439-440, 443A-443B, 443-444

Standard 3

Algebra and Functions

Students use number sentences with the symbols $+$, $-$, and $=$ to solve problems.

1.3.1 Write and solve number sentences from problem situations involving addition and subtraction.

57A-57B, 57-58, 65A-65B, 65-66, 71A-71B, 71-72, 79A-79B, 79-80, 99A-99B, 99-100, 111A-111B, 111-112, 113A-113B, 113-114, 133A-133B, 133-134, 143A-143B, 143-144, 145A-145B, 145-146, 351A-351B, 351-352, 417A-417B, 417-418, 421A-421B, 422, 435A-435B, 436, 439A-439B, 440, 445A-445B, 445-446, 447A-447B, 447-448, 483A-483B, 483-484

1.3.2 Create word problems that match given number sentences involving addition and subtraction.

77B, 79A-79B, 80

1.3.3 Recognize and use the relationship between addition and subtraction.

83, 129-130, 139-140, 141-142

1.3.4 Create and extend number patterns using addition.

53A-53B, 54, 210, 269A-269B, 269-270, 273, 421A-421B, 422

Standard 4

Geometry

Students identify common geometric shapes, classify them by common attributes, and describe their relative position or their location in space.

- 1.4.1 Identify, describe, compare, sort, and draw triangles, rectangles, squares, and circles.**
155I, 165A-165B, 165-166, 167A-167B, 167-168, 169A-169B, 169-170
- 1.4.2 Identify triangles, rectangles, squares, and circles as the faces* of three-dimensional objects. *face: flat side, like the front of the cereal box**
155I, 161A-161B, 161-162
- 1.4.3 Classify and sort familiar plane and solid objects by position, shape, size, roundness, and other attributes. Explain the rule you used.**
155I, 159A-159B, 159-160, 161A-161B, 161-162, 167A-167B, 167-168
- 1.4.4 Identify objects as two- or three-dimensional.**
161A-161B, 161-162
- 1.4.5 Give and follow directions for finding a place or object.**
315A-315B, 315-316, 317A-317B, 317-318
- 1.4.6 Arrange and describe objects in space by position and direction: near, far, under, over, up, down, behind, in front of, next to, to the left or right of.**
1M-1N, 315A-315B, 315-316
- 1.4.7 Identify geometric shapes and structures in the environment and specify their location.**
157A-157B, 157, 193A-193B, 193-194

Standard 5

Measurement

Students learn how to measure length, as well as how to compare, order, and describe other kinds of measurement.

- 1.5.1 Measure the length of objects by repeating a non-standard unit or a standard unit.**
365A-365B, 365-366, 369A-369B, 369-370, 377A-377B, 377-378, 409

- 1.5.2 Use different units to measure the length of the same object and predict whether the measure will be greater or smaller when a different unit is used.**
369A-369B, 369-370
- 1.5.3 Recognize the need for a fixed unit of length.**
363I, 365B, 409
- 1.5.4 Measure and estimate the length of an object to the nearest inch and centimeter.**
371A-371B, 371-372, 375A-375B, 375-376, 377A-377B, 377-378
- 1.5.5 Compare and order objects according to area, capacity, weight, and temperature, using direct comparison or a non-standard unit.**
383A-383B, 383-384, 385A-385B, 385-386, 387A-387B, 387-388, 389A-389B, 389-390, 391A-391B, 391-392, 393A-393B, 393-394, 395A-395B, 395-396
- 1.5.6 Tell time to the nearest half-hour and relate time to events (before/after, shorter/longer).**
203I-203J, 205A-205B, 205-206, 207A-207B, 207-208, 209A-209B, 209-210, 211A-211B, 211-212, 219A-219B, 219-220, 221A-221B, 221-222, 223A-223B, 223-224, 233
- 1.5.7 Identify and give the values of pennies, nickels, and dimes.**
329I-329J, 331A-331B, 331-332, 333A-333B, 333-334, 335A-335B, 335-336, 337A-337B, 337-338, 339A-339B, 339-340, 343A-343B, 343-344, 353A-353B, 353-354

Standard 6

Problem Solving

Students make decisions about how to set up a problem.

- 1.6.1 Choose the approach, materials, and strategies to use in solving problems.**
99A-99B, 99-100, 113A-113B, 113-114, 229A-229B, 229-230, 319A-319B, 319-320, 397A-397B, 397-398, 425A-425B, 425-426, 427A-427B, 427-428, 443A-443B, 443-444
- 1.6.2 Use tools such as objects or drawings to model problems.**
111A-111B, 111-112, 191A-191B, 191-192, 441A-441B, 441-442

Students solve problems and justify their reasoning.

1.6.3 Explain the reasoning used and justify the procedures selected in solving a problem.

326, 368, 426B, 426

1.6.4 Make precise calculations and check the validity of the results in the context of the problem.

351A-351B, 351-352

1.6.5 Understand and use connections between two problems.

415J, 420, 421A-421B, 421-422, 445A-445B, 445-446

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Grade Two

Standard 1

Number Sense

Students understand the relationships among numbers, quantities, and place value in whole numbers up to 100. They understand that fractions may refer to parts of a set* and parts of a whole.*

** whole numbers: 0, 1, 2, 3, etc.*

** set: collection of objects, numbers, etc.*

2.1.1 Count by ones, twos, fives, and tens to 100.

Example: Count 74 pencils by groups of tens and twos.

79I, 81A-81B, 81-82, 83A-83B, 83-84, 99A-99B, 99-100, 109A-109B, 109-110, 163A-163B, 163-164, 327A-327B, 327-328, 467A-467B, 467-468

2.1.2 Identify the pattern of numbers in each group of ten, from tens through nineties.

Example: Where on a hundreds chart are the numbers 12, 22, 32, etc.?

99A-99B, 99-100, 165, 172

2.1.3 Identify numbers up to 100 in various combinations of tens and ones.

Example: $32 = 3 \text{ tens} + 2 \text{ ones} = 2 \text{ tens} + 12 \text{ ones}$, etc.

83A-83B, 83-84, 89A-89B, 89-90

2.1.4 Name the number that is ten more or ten less than any number 10 through 90.

Example: Name the number ten more than 54.

135A-135B, 135-136, 145A-145B, 145-146, 148, 167

2.1.5 Compare whole numbers up to 100 and arrange them in numerical order.

Example: Put the numbers in order of size: 95, 28, 42, 31.

91A-91B, 91-92, 115A-115B, 115-116, 123A-123B, 123-124, 163A-163B, 163-164

2.1.6 Match the number names *first, second, third*, etc. with an ordered set of up to 100 items.

Example: Identify the seventeenth letter of the alphabet.

103A-103B, 103-104

- 2.1.7 Identify odd and even numbers up to 100.**
Example: Find the odd numbers in this set: 44, 31, 100, 57, 28.
101A-101B, 101-102, 105A-105B, 105-106
- 2.1.8 Recognize fractions as parts of a whole or parts of a group (up to 12 parts).**
Example: Divide a cardboard rectangle into 8 equal pieces. Shade 5 pieces and write the fraction for the shaded part.
245I, 269A-269B, 269-270, 271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276, 277A-277B, 277-278
- 2.1.9 Recognize, name, and compare the unit fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$, and $\frac{1}{12}$.**
Example: Which is larger, $\frac{1}{3}$ or $\frac{1}{6}$? Explain your answer.
271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276, 277A-277B, 277-278, 283
- 2.1.10 Know that, when all fractional parts are included, the result is equal to the whole and to one.**
Example: What is another way of saying six sixths? Explain your answer.
245J, 269A-269B, 269-270, 275A-275B, 275-276
- 2.1.11 Collect and record numerical data in systematic ways.**
Example: Measure the hand span in whole centimeters of each student in your class. Keep a record of the answers they give you.
89A-89B, 89-90, 289J, 311A-311B, 311-312, 313A-313B, 313-314, 471
- 2.1.12 Represent, compare, and interpret data using tables, tally charts, and bar graphs.**
Example: Make a tally of your classmates' favorite colors and draw a bar graph. Name the color that is most popular and the color that is the favorite of the fewest people.
57A-57B, 57-58, 89A-89B, 89-90, 105A-105B, 105-106, 117A-117B, 117-118, 189A-189B, 189-190, 289J, 311A-311B, 311-312, 313A-313B, 313-314, 321A-321B, 321-322, 327A-327B, 327-328, 333, 405A-405B, 405-406, 439A-439B, 439-440

Standard 2

Computation

Students solve simple problems involving addition and subtraction of numbers up to 100.

- 2.2.1 Model addition of numbers less than 100 with objects and pictures.
Example: Use blocks to find the sum of 26 and 15.**

1I, 3A-3B, 3-4, 23A-23B, 23-24, 25A-25B, 25, 27A-27B, 27, 43A-43B, 41J, 43A-43B, 43, 45A-45B, 45-46, 47A-47B, 47-48, 51A-51B, 51-52, 53A-53B, 53-54, 73, 79I-79J, 83A-83B, 83-84, 135A-135B, 135-136, 137A-137B, 137-138, 139A-139B, 139-140, 159A-159B, 159-160, 173J, 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180

- 2.2.2 Add two whole numbers less than 100 with and without regrouping.
Example: $36 + 45 = ?$**

3A-3B, 3-4, 5A-5B, 5-6, 9A-9B, 9-10, 19A-19B, 19-20, 23A-23B, 23-24, 25A-25B, 25-26, 27A-27B, 27-28, 29A-29B, 29-30, 31A-31B, 31-32, 35, 41I, 43A-43B, 43-44, 45A-45B, 45-46, 47A-47B, 47-48, 51A-51B, 51-52, 53A-53B, 53-54, 69A-69B, 69-70, 73, 139A-139B, 139-140, 155A-155B, 155-156, 159A-159B, 159-160, 173I-173J, 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 185A-185B, 185-186, 189A-189B, 189-190, 193A-193B, 193-194, 197A-197B, 197-198, 199A-199B, 199-200, 203, 227A-227B, 227-228

- 2.2.3 Subtract two whole numbers less than 100 without regrouping.
Example: $86 - 55 = ?$**

13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18, 19A-19B, 19-20, 31A-31B, 31-32, 35, 41I, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 69A-69B, 69-70, 145A-145B, 145-146, 147A-147B, 147-148, 159A-159B, 159-160, 163A-163B, 163, 197A-197B, 197-198, 209I, 211A-211B, 211-212, 213A-213B, 213-214, 215A-215B, 215-216, 217A-217B, 217-218, 225A-225B, 225-226, 227A-227B, 227-228, 231A-231B, 231-232, 239, 377A-377B, 377-378

- 2.2.4 Understand and use the inverse relationship between addition and subtraction.**

Example: Understand that $89 - 17 = 72$ means that $72 + 17 = 89$.

27A-27B, 27-28, 29A-29B, 29-30, 41I, 63A-63B, 63-64, 65A-65B, 65-66, 227A-227B, 227-228, 239

- 2.2.5 Use estimation to decide whether answers are reasonable in addition problems.**

Example: Your friend says that $13 + 24 = 57$. Without solving, explain why you think the answer is wrong.

133I, 141A-141B, 141-142, 161A-161B, 161-162, 191A-191B, 191-192, 197A-197B, 197-198

- 2.2.6 Use mental arithmetic to add or subtract 0, 1, 2, 3, 4, 5, or 10 with numbers less than 100.**
Example: In a game, Mia and Noah are making addition problems. They make two two-digit numbers out of the four given numbers 1, 2, 3, and 4. Each number is used exactly once. The winner is the one who makes two numbers whose sum is the largest. Mia had 24 and 31; Noah had 21 and 43. Who won the game? How do you know? Show a way to beat both of them.

133I-133J, 135A-135B, 135-136, 137A-137B, 137-138, 145A-145B, 145-146, 167

Standard 3

Algebra and Functions

Students model, represent, and interpret number relationships to create and solve problems involving addition and subtraction.

- 2.3.1 Relate problem situations to number sentences involving addition and subtraction.**
Example: You have 13 pencils and your friend has 12 pencils. You want to know how many pencils you have altogether. Write a number sentence for this problem and use it to find the total number of pencils.

IJ, 5A-5B, 5-6, 9A-9B, 9-10, 17A-17B, 17-18, 19A-19B, 19-20, 29A-29B, 29-30, 31A-31B, 31-32, 57A-57B, 57-58, 67A-67B, 67-68, 69A-69B, 69-70, 221A-221B, 221-222, 233A-233B, 233-234, 235A-235B, 235-236, 279A-279B, 279-280, 377A-377B, 377-378

- 2.3.2 Use the commutative* and associative* rules for addition to simplify mental calculations and to check results.**
Example: Add the numbers 5, 17, and 13 in this order. Now add them in the order 17, 13, and 5. Which was easier? Why?

**commutative rule: the order when adding numbers makes no difference (e.g., $5 + 3 = 3 + 5$). Note that this rule is not true for subtraction.*

**associative rule: the grouping when adding numbers makes no difference (e.g., in $5 + 3 + 2$, adding 5 and 3 and then adding 2 is the same as 5 added to $3 + 2$). Note that this rule is not true for subtraction.*

23A-23B, 23-24, 27A-27B, 27-28, 41J, 49A-49B, 49-50

- 2.3.3 Recognize and extend a linear pattern by its rules.**
Example: One horse has 4 legs, two horses have 8 legs, and so on. Continue the pattern to find how many legs five horses have.

99A-99B, 99-100, 157A-157B, 157-158

- 2.3.4 Create, describe, and extend number patterns using addition and subtraction.**
Example: What is the next number: 23, 21, 19, 17, ...? How did you find your answer?
157A-157B, 157-158, 167, 413A-413B, 413-414

Standard 4

Geometry

Students identify and describe the attributes of common shapes in the plane and of common objects in space.

- 2.4.1 Construct squares, rectangles, triangles, cubes, and rectangular prisms* with appropriate materials.**
Example: Use blocks to make a rectangular prism.
**rectangular prism: box with 6 rectangles for sides, like a cereal box*
247B, 249A-249B, 249-250, 284
- 2.4.2 Describe, classify, and sort plane and solid geometric shapes (triangle, square, rectangle, cube, rectangular prism) according to the number and shape of faces*, and the number of edges and vertices*.**
Example: How many vertices does a cube have?
**face: flat side, like the front of the cereal box *vertices: corners (vertex: corner)*
247A-247B, 247-248, 265A-265B, 265-266
- 2.4.3 Investigate and predict the result of putting together and taking apart two- and three-dimensional shapes.**
Example: Use objects or a drawing program to find other shapes that can be made from a rectangle and a triangle. Use sketches or a drawing program to show several ways that a rectangle can be divided into three triangles.
248I, 249A-249B, 249-250, 251A-251B, 251-252, 255A-255B, 255-256, 284
- 2.4.4 Identify congruent* two-dimensional shapes in any position.**
Example: In a collection of rectangles, pick out those that are the same shape and size.
**congruent: same shape and size, like the front and back of the cereal box*
257A-257B, 257-258, 259A-259B, 259-260
- 2.4.5 Recognize geometric shapes and structures in the environment and specify their locations.**
Example: Look for combinations of shapes in the buildings around you.
245, 247B, 249B, 251B, 286

Standard 5

Measurement

Students understand how to measure length, temperature, capacity, weight, and time in standard units.

- 2.5.1 Measure and estimate length to the nearest inch, foot, yard, centimeter, and meter.**
Example: Measure the length of your classroom to the nearest foot.
343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348, 379A-379B, 379-380
- 2.5.2 Describe the relationships among inch, foot, and yard. Describe the relationship between centimeter and meter.**
Example: How many inches are in a yard?
343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348
- 2.5.3 Decide which unit of length is most appropriate in a given situation.**
Example: Would you use yards or inches to measure the length of your school books? Explain your answer.
343A-343B, 343-344, 345A-345B, 345-346, 383
- 2.5.4 Estimate area and use a given object to measure the area of other objects.**
Example: Make a class estimate of the number of sheets of notebook paper that would be needed to cover the classroom door. Then use measurements to compute the area of the door.
251A, 251B, 351-352
- 2.5.5 Estimate and measure capacity using cups and pints.**
Example: Make a reasonable estimate of the number of pints a juice pitcher holds.
339I, 353, 355A-355B, 355-356
- 2.5.6 Estimate weight and use a given object to measure the weight of other objects.**
Example: About how many jellybeans will you need to put on one side of a balance scale to balance with a box of chalk? Count out the number of jellybeans that you guessed would be needed and see whether your estimate was close. Explain the results of your estimation and weighing.
363A-363B, 363-364, 365A-365B, 365-366, 367A-367B, 367-368, 379A-379B, 379-380

- 2.5.7 Recognize the need for a fixed unit of weight.**
Example: Estimate the number of paperclips needed to balance with a box of chalk. Will it be the same as the number of jellybeans? Explain your answer.
341A, 363A-363B, 363-364
- 2.5.8 Estimate temperature. Read a thermometer in Celsius and Fahrenheit.**
Example: What do you think the temperature is today? Look at the thermometer to check.
369A-369B, 369-370
- 2.5.9 Tell time to the nearest quarter hour, be able to tell five-minute intervals, and know the difference between a.m. and p.m.**
Example: When does your favorite TV program start?
291A-291B, 291-292, 293A-293B, 293-294, 295A-295B, 295-296, 301A-301B, 301-302, 329A-329B, 329-330
- 2.5.10 Know relationships of time: seconds in a minute, minutes in an hour, hours in a day, days in a week, and days, weeks, and months in a year.**
Example: How many days are in a year?
289I, 303A-303B, 303-304, 305A-305B, 305-306
- 2.5.11 Find the duration of intervals of time in hours.**
Example: Your trip began at 9:00 a.m. and ended at 3:00 p.m. How long were you traveling?
299A-299B, 299-300, 329A-329B, 330
- 2.5.12 Find the value of a collection of pennies, nickels, dimes, quarters, half-dollars, and dollars.**
Example: You have 3 pennies, 4 nickels, and 2 dimes. How much money do you have? Explain your answer.
79J, 109A-109B, 109-110, 111A-111B, 111-112, 113A-113B, 113-114, 115A-115B, 115-116, 119A-119B, 119-120, 121A-121B, 121-122, 123A-123B, 123-124, 127

Standard 6

Problem Solving

Students make decisions about how to set up a problem.

- 2.6.1** Choose the approach, materials, and strategies to use in solving problems.

Example: Solve the problem: “Count the number of squares on the surface of a cube. Put two cubes together and count the number of visible squares. Repeat this step with 3, 4, 5, ... cubes in a line. Find a rule for the number of squares.” Use blocks to set up the problem.

1I, 19A-19B, 19-20, 163A-163B, 163-164, 193A-193B, 193-194, 197A-197B, 197-198, 231A-231B, 231-232, 265A-265B, 265-266

- 2.6.2** Use tools such as objects or drawings to model problems.

Example: In the first example, place blocks together. Each time you add a block, count the number of squares and record it.

1J, 29A-29B, 29-30, 209J, 231A-231B, 232, 465J, 473A-473B, 473-474, 475A-475B, 475-476, 479A-479B, 479-480, 483A-483B, 483-484

Students solve problems and justify their reasoning.

- 2.6.3** Explain the reasoning used and justify the procedures selected in solving a problem.

Example: In the first example, notice that the number goes up by 4 each time a block is added. Observe that, as you add each cube, you gain 6 squares but lose 2 where the blocks are joined.

3, 13, 19, 23, 25, 27, 29, 35, 43, 57, 61, 63, 64, 67, 81, 83, 91, 101, 109, 111, 113, 115, 119, 121, 135, 141, 145, 147, 149, 155, 157, 159, 161, 175, 181, 191, 193, 198, 213, 215, 217, 221, 225, 231, 249, 259, 261, 269, 273, 275, 277

- 2.6.4** Make precise calculations and check the validity of the results in the context of the problem.

Example: In the first example, check your results by setting out 10 blocks and counting the number of squares on each long side and then the two at the ends. See how this fits with your rule of adding 4 each time.

155A-155B, 155-156, 161A-161B, 161-162

- 2.6.5** Understand and use connections between two problems.

Example: Use the method of the problem you have just solved to find what happens when the cubes are not all in a line.

377A-377B, 377-378

**Scott Foresman – Addison Wesley Mathematics
to the
Indiana Academic Standards for Mathematics**

Grade Three

Standard 1

Number Sense

Students understand the relationships among numbers, quantities, and place value in whole numbers up to 1,000. They understand the relationship among whole numbers, simple fractions, and decimals. * whole numbers: 0, 1, 2, 3, etc.*

- 3.1.1** **Count, read, and write whole numbers up to 1,000.**
Example: Write 349 for the number “three hundred forty-nine”.
6A-6B, 6-7, 9
- 3.1.2** **Identify and interpret place value in whole numbers up to 1,000.**
Example: Understand that the 7 in 479 represents 7 tens or 70.
2J, 6A-6B, 6-7, 8A-8B, 8-9, 18A-18B, 18-21
- 3.1.3** **Use words, models, and expanded form to represent numbers up to 1,000.**
Example: Recognize that $492 = 400 + 90 + 2$.
6A-6B, 6-7, 8A-8B, 8-9, 128A-128B, 128-131, 150A-150B, 150-151
- 3.1.4** **Identify any number up to 1,000 in various combinations of hundreds, tens, and ones.**
Example: 325 can be written as 3 hundreds, 2 tens, and 5 ones, or as 2 hundreds, 12 tens, and 5 ones, etc.
2I, 8A-8B, 8-9, 146A-146B, 146-147
- 3.1.5** **Compare whole numbers up to 1,000 and arrange them in numerical order.**
Example: What is the smallest whole number you can make using the digits 4, 9, and 1? Use each digit exactly once.
18A-18B, 18-21, 22A-22B, 22-23, 168A-168B, 168-169
- 3.1.6** **Round numbers less than 1,000 to the nearest ten and the nearest hundred.**
Example: Round 548 to the nearest ten.
28A-28B, 28-31

- 3.1.7 Identify odd and even numbers up to 1,000 and describe their characteristics.**
Example: Find the even number: 47, 106, 357, 629.
24, 276A-276B, 276-277
- 3.1.8 Show equivalent fractions* using equal parts.**
Example: Draw pictures to show that $\frac{3}{5}$, $\frac{6}{10}$, and $\frac{9}{15}$ are equivalent fractions.
**equivalent fractions: fractions with the same value (e.g. $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, etc.)*
504A-504B, 504-505, 509
- 3.1.9 Identify and use correct names for numerators and denominators.**
Example: In the fraction $\frac{3}{5}$, name the numerator and denominator.
502A-502B, 502-503, 504B, 504
- 3.1.10 Given a pair of fractions, decide which is larger or smaller by using objects or pictures.**
Example: Is $\frac{3}{4}$ of a medium pizza larger or smaller than $\frac{1}{2}$ of a medium pizza? Explain your answer
506A-506B, 506-509, 511
- 3.1.11 Given a set* of objects or a picture, name and write a decimal to represent tenths and hundredths.**
Example: You have a pile of 100 beans and 72 of them are lima beans. Write the decimal that represents lima beans as a part of the whole pile of beans. * set: collection of objects, numbers, etc.
562I, 564A-564B, 564-565, 566A-566B, 566-567
- 3.1.12 Given a decimal for tenths, show it as a fraction using a place-value model.**
Example: Show the decimal 0.7 as a fraction using pennies.
562I, 564A-564B, 564-565, 571
- 3.1.13 Interpret data displayed in a circle graph and answer questions about the situation.**
Example: Have the students in your class choose the pizza they like best from these choices: cheese, sausage, pepperoni. Use a spreadsheet to enter the number of students who chose each kind and make a circle graph of the data. Determine the most popular and the least popular kind of pizza, and explain what the circle and each pie slice represent.
(opportunities to introduce circle graphs) 504B, 508, 510

- 3.1.14** Identify whether everyday events are certain, likely, unlikely, or impossible.
Example: It is raining in your neighborhood. Is it certain, likely, unlikely, or impossible that the tree in your front yard will get wet?
678J, 700A-700B, 700-701
- 3.1.15** Record the possible outcomes for a simple probability experiment.
Example: Predict how many heads and tails will occur if a coin is tossed 10 times. Have a partner toss a coin while you keep a tally of the outcomes. Exchange places with your partner and repeat the experiment. Explain your results to the class.
678J, 702A-702B, 702-703

Standard 2

Computation

Students solve problems involving addition and subtraction of whole numbers. They model and solve simple problems involving multiplication and division.

- 3.2.1** Add and subtract whole numbers up to 1,000 with or without regrouping, using relevant properties of the number system.
Example: $854 - 427 = ?$ Explain your method.
66A-66B, 66-69, 70A-70B, 70-71, 126A-126B, 126-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-137, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-155, 156A-156B, 156-157, 166A-166B, 166-167, 168A-168B, 168-169
- 3.2.2** Represent the concept of multiplication as repeated addition.
Example: Lynn made 3 baskets each week for 4 weeks. Draw a picture to show how many baskets she made.
258I, 260A-260B, 260-261, 262A-262B, 262-265
- 3.2.3** Represent the concept of division as repeated subtraction, equal sharing, and forming equal groups.
Example: Bob shared 10 cookies among 5 friends. Draw a picture to show how many cookies each friend got.
368J, 370A-370B, 370-371, 372A-372B, 372-373, 374A-374B, 374-377
- 3.2.4** Know and use the inverse relationship between multiplication and division facts, such as $6 \times 7 = 42$, $42 \div 7 = 6$, $7 \times 6 = 42$, $42 \div 6 = 7$.
Example: Find other facts related to $8 \times 3 = 24$.
384A-384B, 384-385, 386A-386B, 386-387, 388A-388B, 388-389, 390A-390B, 390-391, 392A-392B, 392-393

- 3.2.5 Show mastery of multiplication facts for 2, 5, and 10.**
Example: Know the answer to 6×5 .
276A-276B, 276-279, 280A-280B, 280-281, 282A-282B, 282-283, 284A-284B, 284-285
- 3.2.6 Add and subtract simple fractions with the same denominator.**
Example: Add $\frac{3}{8}$ and $\frac{1}{8}$. Explain your answer.
520A-520B, 520-521
- 3.2.7 Use estimation to decide whether answers are reasonable in addition and subtraction problems.**
Example: Your friend says that $79 - 22 = 27$. Without solving, explain why you think the answer is wrong.
64I-64J, 86A-86B, 86-89, 90A-90B, 90-91, 98A-98B, 98-101, 160A-160B, 160-161
- 3.2.8 Use mental arithmetic to add or subtract with numbers less than 100.**
Example: Subtract 35 from 86 without using pencil and paper.
80A-80B, 80-81, 82A-82B, 82-84, 94A-94B, 94-95, 96A-96B, 96-97, 166A-166B, 166-167

Standard 3

Algebra and Functions

Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number and functional relationships.

- 3.3.1 Represent relationships of quantities in the form of a numeric expression or equation.**
Example: Bill's mother gave him money to buy three drinks that cost 45 cents each at the concession stand. When he returned to the bleachers, he gave 25 cents change to his mother. Write an equation to find the amount of money Bill's mother originally gave him.
76A-76B, 76-77, 404A-404B, 404-405
- 3.3.2 Solve problems involving numeric equations.**
Example: Use your equation from the last example to find the amount of money that Bill's mother gave him, and justify your answer.
76A-76B, 76-77
- 3.3.3 Choose appropriate symbols for operations and relations to make a number sentence true.**
Example: What symbol is needed to make the number sentence $4 _ 3 = 12$ true?
168A-168B, 168-169

- 3.3.4 Understand and use the commutative* and associative* rules of multiplication.**
Example: Multiply the numbers 7, 2, and 5 in this order. Now multiply them in the order 2, 5, and 7. Which was easier? Why?
**commutative rule: the order when multiplying numbers makes no difference (e.g., $5 \times 3 = 3 \times 5$), but note that this rule is not true for division*
**associative rule: the grouping when multiplying numbers makes no difference (e.g., in $5 \times 3 \times 2$, multiplying 5 and 3 and then multiplying by 2 is the same as 5 multiplied by 3×2), but note that this rule is not true for division*
262A-262B, 262-265, 342A-342B, 342-343
- 3.3.5 Create, describe, and extend number patterns using multiplication.**
Example: What is the next number: 3, 6, 12, 24, ...? How did you find your answer?
258J, 276A-276B, 276-278, 340A-340B, 340-341, 612A-612B, 612-615
- 3.3.6 Solve simple problems involving a functional relationship between two quantities.**
Example: Ice cream sandwiches cost 20 cents each. Find the costs of 1, 2, 3, 4, ... ice cream sandwiches. What pattern do you notice? Continue the pattern to find the cost of enough ice cream sandwiches for the class.
72A-72B, 72-73, 270A-270B, 270-273, 344A-344B, 344-345, 588A-588B, 588-589
- 3.3.7 Plot and label whole numbers on a number line up to 10.**
Example: Mark the position of 7 on a number line up to 10.
18A-18B, 18-21, 22A-22B, 22-23, 191

Standard 4

Geometry

Students describe and compare the attributes of plane and solid geometric shapes and use their understanding to show relationships and solve problems.

- 3.4.1 Identify quadrilaterals* as four-sided shapes.**
Example: Which of these are quadrilaterals: square, triangle, rectangle?
**quadrilateral: a two-dimensional figure with four sides*
454A-454B, 454-455, 474A-474B, 474-475
- 3.4.2 Identify right angles in shapes and objects and decide whether other angles are greater or less than a right angle.**
Example: Identify right angles in your classroom. Open the classroom door until it makes a right angle with one wall and explain what you are doing.
444A-444B, 444-445, 474A-474B, 474-475

- 3.4.3 Identify, describe, and classify: cube, sphere*, prism*, pyramid, cone, cylinder.**
Example: Describe the faces of a pyramid and identify its characteristics.
**sphere: round ball like a baseball*
**prism: solid shape with fixed cross-section (a right prism is a solid shape with two parallel faces that are congruent polygons and other faces that are rectangles)*
426I, 428A-428B, 428-431, 432A-432B, 432-433, 474A-474B, 474-475
- 3.4.4 Identify common solid objects that are the parts needed to make a more complex solid object.**
Example: Describe and draw a house made from a prism and a pyramid.
429, 436B, 436-437, 439
- 3.4.5 Draw a shape that is congruent* to another shape.**
Example: Draw a triangle that is congruent to a given triangle. You may use a ruler and pencil or the drawing program on a computer.
**congruent: two figures that are the same shape and size*
456A-456B, 456-459
- 3.4.6 Use the terms point, line, and line segment in describing two-dimensional shapes.**
Example: Describe the way a triangle is made of points and line segments and how you know it is a triangle.
442A-442B, 442-443
- 3.4.7 Draw line segments and lines.**
Example: Draw a line segment three inches long.
442A-442B, 442-443, 533
- 3.4.8 Identify and draw lines of symmetry in geometric shapes (by hand or using technology).**
Example: Use pencil and paper or a drawing program to draw lines of symmetry in a square. Discuss your findings.
460A-460B, 460-461
- 3.4.9 Sketch the mirror image reflections of shapes.**
Example: Hold up a cardboard letter F to a mirror. Draw the letter and the shape you see in the mirror.
456A-456B, 456-459
- 3.4.10 Recognize geometric shapes and their properties in the environment and specify their locations.**
Example: Write the letters of the alphabet and draw all the lines of symmetry that you see.
428A-428B, 428-431, 433, 448, 453, 476A-476B, 476-477

Standard 5

Measurement

Students choose and use appropriate units and measurement tools for length, capacity, weight, temperature, time, and money.

- 3.5.1 Measure line segments to the nearest half-inch.**
Example: Measure the length of a side of a triangle.
532A-532B, 532-533, 534A-534B, 534-535
- 3.5.2 Add units of length that may require regrouping of inches to feet or centimeters to meters.**
Example: Add the lengths of three sheets of paper. Give your answer in feet and inches.
496J, 536A-536B, 536-537, 582A-582B, 582-583, 584A-584B, 584
- 3.5.3 Find the perimeter of a polygon*.**
Example: Find the perimeter of a table in centimeters. Explain your method.
**polygon: two-dimensional shape with straight sides (e.g., triangle, rectangle, pentagon)*
426J, 464A-464B, 464-467, 476A-476B, 476-477
- 3.5.4 Estimate or find the area of shapes by covering them with squares.**
Example: How many square tiles do we need to cover this desk?
426J, 468A-468B, 468-471, 476A-476B, 476-477
- 3.5.5 Estimate or find the volume of objects by counting the number of cubes that would fill them.**
Example: How many of these cubes will fill the box?
472A-472B, 472-473
- 3.5.6 Estimate and measure capacity using quarts, gallons, and liters.**
Example: This bottle holds one liter. Estimate how many liters the sink holds.
678I, 680A-680B, 680-683, 684A-684B, 684-685
- 3.5.7 Estimate and measure weight using pounds and kilograms.**
Example: Estimate the weight of your book bag in pounds.
690A-690B, 690-693, 694A-694B, 694-695
- 3.5.8 Compare temperatures in Celsius and Fahrenheit.**
Example: Measure the room temperature using a thermometer that has both Celsius and Fahrenheit units. If the temperature in the room measures 70°F, will the Celsius measurement be higher or lower?
696A-696B, 696-697

- 3.5.9** Tell time to the nearest minute and find how much time has elapsed.
Example: You start a project at 9:10 a.m. and finish the project at 9:42 a.m. How much time has passed?
190I, 192A-192B, 192-195, 196A-196B, 196-197, 198A-198B, 198-199, 658A-658B, 658-659, 688A-688B, 688-689
- 3.5.10** Find the value of any collection of coins and bills. Write amounts less than a dollar using the ¢ symbol and write larger amounts in decimal notation using the \$ symbol.
Example: You have 5 quarters and 2 dollar bills. How much money is that? Write the amount.
36A-36B, 36-39
- 3.5.11** Use play or real money to decide whether there is enough money to make a purchase.
Example: You have \$5. Can you buy two books that cost \$2.15 each? What about three books that cost \$1.70 each? Explain how you know.
36A-36B, 36, 40A-40B, 40-41, 90-91
- 3.5.12** Carry out simple unit conversions within a measurement system (e.g., centimeters to meters, hours to minutes).
Example: How many minutes are in 3 hours?
536A-536B, 536-537, 538A-538B, 538-539, 584A-584B, 584-587, 680A-680B, 680-683, 684A-684B, 684-685, 690A-690B, 690-693, 694A-694B, 694-695

Standard 6

Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

- 3.6.1** Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.
Example: Solve the problem: “Start with any number. If it is even, halve it. If it is odd, add 1. Do the same with the result and keep doing that. Find what happens by trying different numbers.” Try two or three numbers and look for patterns.
14A-14B, 14-15, 24A-24B, 24-27, 32A-32B, 32-33, 44A-44B, 44-45, 104A-104B, 104-105, 140A-140B, 140-143, 170A-170B, 170-171, 238A-238B, 238-239, 270A-270B, 270-273, 284A-284B, 284-285, 402A-402B, 402-403, 406A-406B, 406-407, 436A-436B, 436-439, 540A-540B, 540-541, 612A-612B, 612-615, 618A-618B, 618-621, 658A-658B, 658-659, 688A-688B, 688-689

- 3.6.2** Decide when and how to break a problem into simpler parts.
Example: In the first example, find what happens to all the numbers up to 10.

528A-528B, 528-529

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

- 3.6.3** Apply strategies and results from simpler problems to solve more complex problems.
Example: In the first example, use your results for the numbers up to 10 to find what happens to all the numbers up to 20.

85, 528A-528B, 528-529

- 3.6.4** Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.
Example: In the first example, explain what happens to all the numbers that you tried.

102A-102B, 102-103, 476A-476B, 476-477, 542A-542B, 542-543, 578A-578B, 578-579, 588A-588B, 588-589, 590A-590B, 590-591, 644A-644B, 644-645, 708A-708B, 708-709, 710A-710B, 710-711

- 3.6.5** Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.
Example: Measure the length and width of a room to the nearest meter to find how many student desks will fit in it. Would this be an accurate enough method if you were carpeting the room?

90A-90B, 90-91, 160A-160B, 160-161

- 3.6.6** Know and use strategies for estimating results of whole-number addition and subtraction.
Example: You buy 2 bags of candy for \$1.05 each. The cashier tells you that will be \$1.70. Does that surprise you? Why or why not?

64I-64J, 86A-86B, 86-89, 90A-90B, 90-91, 98A-98B, 98-101, 104A-104B, 104-105

- 3.6.7** Make precise calculations and check the validity of the results in the context of the problem.

Example: In the first example, notice that the result of adding 1 to an odd number is always even. Use this to check your calculations.

42A-42B, 42-43, 380A-380B, 380-381

Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

3.6.8 Decide whether a solution is reasonable in the context of the original situation.

Example: In the example about fitting desks into a room, would an answer of 1,000 surprise you?

42A-42B, 42-43, 380A-380B, 380-381

3.6.9 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

Example: Change the first example so that you multiply odd numbers by 2 or 3 or 4 or 5, before adding 1. Describe the pattern you see.

76A-76B, 76-77

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Grade Four

Standard 1

Number Sense

Students understand the place value of whole numbers and decimals to two decimal places and how whole numbers and decimals relate to simple fractions.*

**whole numbers: 0, 1, 2, 3, etc*

4.1.1 Read and write whole numbers up to 1,000,000.

Example: Read aloud the number 394,734.

4A-4B, 4-7, 8A-8B, 8-9, 10A-10B, 10-11

4.1.2 Identify and write whole numbers up to 1,000,000, given a place-value model.

Example: Write the number that has 2 hundred thousands, 7 ten thousands, 4 thousands, 8 hundreds, 6 tens, and 2 ones.

4A-4B, 4-7, 8A-8B, 8-9, 10A-10B, 10-11

4.1.3 Round whole numbers up to 10,000 to the nearest ten, hundred, and thousand.

Example: Is 7,683 closer to 7,600 or 7,700? Explain your answer.

20A-20B, 20-21

4.1.4 Order and compare whole numbers using symbols for “less than” (<), “equal to” (=), and “greater than” (>).

Example: Put the correct symbol in 328 ___ 142.

16A-16B, 16-19

4.1.5 Rename and rewrite whole numbers as fractions.

Example: $3 = \frac{6}{2} = \frac{9}{3} = \frac{?}{4} = \frac{?}{5}$.

530A-530B, 530-533

4.1.6 Name and write mixed numbers, using objects or pictures.

Example: You have 5 whole straws and half a straw. Write the number that represents these objects.

530A-530B, 530-533

- 4.1.7** Name and write mixed numbers as improper fractions, using objects or pictures.
Example: Use a picture of 3 rectangles, each divided into 5 equal pieces, to write $2\frac{3}{5}$ as an improper fraction.
530A-530B, 530-533
- 4.1.8** Write tenths and hundredths in decimal and fraction notations. Know the fraction and decimal equivalents for halves and fourths (e.g., $\frac{1}{2} = 0.5 = 0.50$, $\frac{7}{4} = 1\frac{3}{4} = 1.75$).
Example: Write $\frac{26}{100}$ and $\frac{23}{4}$ as decimals.
28A-28B, 28-29, 34A-34B, 34-37, 624A-624B, 624-627, 628A-628B, 628-629
- 4.1.9** Round two-place decimals to tenths or to the nearest whole number.
Example: You ran the 50-yard dash in 6.73 seconds. Round your time to the nearest tenth.
632A-632B, 632-633

Standard 2

Computation

Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among these operations. They extend their use and understanding of whole numbers to the addition and subtraction of simple fractions and decimals.

- 4.2.1** Understand and use standard algorithms* for addition and subtraction.
Example: $45,329 + 6,984 = ?$, $36,296 - 12,075 = ?$
**algorithm: a step-by-step procedure for solving a problem.*
76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-87
- 4.2.2** Represent as multiplication any situation involving repeated addition.
Example: Each of the 20 students in your physical education class has 3 tennis balls. Find the total number of tennis balls in the class.
124A-124B, 124-127, 154A-154B, 154-155
- 4.2.3** Represent as division any situation involving the sharing of objects or the number of groups of shared objects.
Example: Divide 12 cookies equally among 4 students. Divide 12 cookies equally so that each person gets 4 cookies. Compare your answers and methods.
146A-146B, 146-147, 154A-154B, 154-155

- 4.2.4 Demonstrate mastery of the multiplication tables for numbers between 1 and 10 and of the corresponding division facts.**
Example: Know the answers to 9×4 and $35 \div 7$.
122J, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-137, 150A-150B, 150-151
- 4.2.5 Use a standard algorithm to multiply numbers up to 100 by numbers up to 10, using relevant properties of the number system.**
Example: $67 \times 3 = ?$
254J, 270A-270B, 270-273
- 4.2.6 Use a standard algorithm to divide numbers up to 100 by numbers up to 10 without remainders, using relevant properties of the number system.**
Example: $69 \div 3 = ?$
380A-380B, 380-383
- 4.2.7 Understand the special properties of 0 and 1 in multiplication and division.**
Example: Know that $73 \times 0 = 0$ and that $42 \div 1 = 42$.
128A-128B, 128-131, 132A-132B, 132-135, 152A-152B, 152-153
- 4.2.8 Add and subtract simple fractions with different denominators, using objects or pictures.**
Example: Use a picture of a circle divided into 6 equal pieces to find $\frac{5}{6} - \frac{1}{3}$.
568A-568B, 568-569, 578A-578B, 578-579
- 4.2.9 Add and subtract decimals (to hundredths), using objects or pictures.**
Example: Use coins to help you find $\$0.43 - \0.29 .
638A-638B, 638-641
- 4.2.10 Use a standard algorithm to add and subtract decimals (to hundredths).**
Example: $0.74 + 0.80 = ?$
76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 642A-642B, 642-645
- 4.2.11 Know and use strategies for estimating results of any whole-number computations.**
Example: Your friend says that $45,329 + 6,984 = 5,213$. Without solving, explain why you think the answer is wrong.
60I, 68A-68B, 68-71, 72A-72B, 72-73, 254I, 258A-258B, 258-261, 316A-316B, 316-319, 364J, 368A-368B, 368-371
- 4.2.12 Use mental arithmetic to add or subtract numbers rounded to hundreds or thousands.**
Example: Add 3,000 to 8,000 without using pencil and paper.
62A-62B, 62-63, 64A-64B, 64-67

Standard 3

Algebra and Functions

Students use and interpret variables, mathematical symbols, and properties to write and simplify numerical expressions and sentences. They understand relationships among the operations of addition, subtraction, multiplication, and division.

- 4.3.1 Use letters, boxes, or other symbols to represent any number in simple expressions, equations, or inequalities (i.e., demonstrate an understanding of and the use of the concept of a variable).
Example: In the expression $3x + 5$, what does x represent?**

71, 94A-94B, 94-95, 98A-98B, 98-99, 100A-100B, 100-101, 160A-160B, 160-163, 164A-164B, 164-165, 688A-688B, 688-689, 690A-690B, 690-691

- 4.3.2 Use and interpret formulas to answer questions about quantities and their relationships.
Example: Write the formula for the area of a rectangle in words. Now let l stand for the length, w for the width, and A for the area. Write the formula using these symbols.**

464A-464B, 464-467, 468A-468B, 468-471, 476A-476B, 476-477

- 4.3.3 Understand that multiplication and division are performed before addition and subtraction in expressions without parentheses.
Example: You go to a store with 90¢ and buy 3 pencils that cost 20¢ each. Write an expression for the amount of money you have left and find its value.**

132A-132B, 132-135, 244, 288A-288B, 288-289

- 4.3.4 Understand that an equation such as $y = 3x + 5$ is a rule for finding a second number when a first number is given.
Example: Use the formula $y = 3x + 5$ to find the value of y when $x = 6$.**

100A-100B, 100-101, 166A-166B, 166-167, 692A-692B, 692-695

- 4.3.5 Continue number patterns using multiplication and division.
Example: What is the next number: 160, 80, 40, 20, ...? Explain your answer.**

122I, 164A-164B, 164-165, 256A-256B, 256-257, 366A-366B, 366-367

- 4.3.6 Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve problems.
Example: Find another way of writing $13 + 13 + 13 + 13 + 13$.**

122J, 124A-124B, 124-127, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 364J

4.3.7 Relate problem situations to number sentences involving multiplication and division.

Example: You have 150 jelly beans to share among the 30 members of your class. Write a number sentence for this problem and use it to find the number of jelly beans each person will get.

149, 154A-154B, 154-155, 160A-160B, 160-163, 185

4.3.8 Plot and label whole numbers on a number line up to 100. Estimate positions on the number line.

Example: Draw a number line and label it with 0, 10, 20, 30, ..., 90, 100. Estimate the position of 77 on this number line.

16A-16B, 16, 20A-20B, 20, 188J, 206B, 206, 212A-212B, 212-215, 664A-664B, 664-665, 688A-688B, 688-689

Standard 4**Geometry**

Students show an understanding of plane and solid geometric objects and use this knowledge to show relationships and solve problems.

4.4.1 Identify, describe, and draw rays, right angles, acute angles, obtuse angles and straight angles using appropriate mathematical tools and technology.

Example: Draw two rays that meet in an obtuse angle.

440A-440B, 440-443

4.4.2 Identify, describe and draw parallel, perpendicular, and oblique lines using appropriate mathematical tools and technology.

Example: Use the markings on the gymnasium floor to identify two lines that are parallel. Place a jump rope across the parallel lines and identify any obtuse angles created by the jump rope and the lines.

440A-440B, 440-443

4.4.3 Identify, describe, and draw parallelograms*, rhombuses*, and trapezoids*, using appropriate mathematical tools and technology.

Example: Use a geoboard to make a parallelogram. How do you know it is a parallelogram?

**parallelogram: a four-sided figure with both pairs of opposite sides parallel*

**rhombus: a parallelogram with all sides equal*

**trapezoid: a four-sided figure with one pair of opposite sides parallel*

444A-444B, 444-447

- 4.4.4 Identify congruent* quadrilaterals* and give reasons for congruence using sides, angles, parallels and perpendiculars.**
Example: In a collection of parallelograms, rhombuses, and trapezoids, pick out those that are the same shape and size and explain your decisions.
**congruent: two figures that are the same shape and size*
**quadrilateral: a two-dimensional figure with four sides*
452A-452B, 452-455
- 4.4.5 Identify and draw lines of symmetry in polygons.**
Example: Draw a rectangle and then draw all its lines of symmetry.
456A-456B, 456-457
- 4.4.6 Construct cubes and prisms* and describe their attributes.**
Example: Make a 6-sided prism from construction paper.
**prism: solid shape with fixed cross-section (right prism is a solid shape with two parallel faces that are congruent polygons and other faces that are rectangles)*
434A-434B, 434-437

Standard 5

Measurement

Students understand perimeter and area, as well as measuring volume, capacity, time, and money.

- 4.5.1 Measure length to the nearest quarter-inch, eighth-inch, and millimeter.**
Example: Measure the width of a sheet of paper to the nearest millimeter.
560J, 590A-590B, 590-591, 622J, 652A-652B, 652-653
- 4.5.2 Subtract units of length that may require renaming of feet to inches or meters to centimeters.**
Example: The shelf was 2 feet long. Jane shortened it by 8 inches. How long is the shelf now?
596A-596B, 596-599, 658A-658B, 658-661
- 4.5.3 Know and use formulas for finding the perimeters of rectangles and squares.**
Example: The length of a rectangle is 4 cm and its perimeter is 20 cm. What is the width of the rectangle?
464A-464B, 464-467

- 4.5.4** Know and use formulas for finding the areas of rectangles and squares.
Example: Draw a rectangle 5 inches by 3 inches. Divide it into one-inch squares and count the squares to find its area. Can you see another way to find the area? Do this with other rectangles.
468A-468B, 468-471
- 4.5.5** Estimate and calculate the area of rectangular shapes by using appropriate units, such as square centimeter (cm^2), square meter (m^2), square inch (in^2), or square yard (yd^2).
Example: Measure the length and width of a basketball court and find its area in suitable units.
468A-468B, 468-471
- 4.5.6** Understand that rectangles with the same area can have different perimeters and that rectangles with the same perimeter can have different areas.
Example: Make a rectangle of area 12 units on a geoboard and find its perimeter. Can you make other rectangles with the same area? What are their perimeters?
432J, 468A-468B, 468-471, 474A-474B, 474-475
- 4.5.7** Find areas of shapes by dividing them into basic shapes such as rectangles.
Example: Find the area of your school building.
468A-468B, 468-471
- 4.5.8** Use volume and capacity as different ways of measuring the space inside a shape.
Example: Use cubes to find the volume of a fish tank and a pint jug to find its capacity.
476A-476B, 476-477
- 4.5.9** Add time intervals involving hours and minutes.
Example: During the school week, you have 5 recess periods of 15 minutes. Find how long that is in hours and minutes.
188I, 196A-196B, 196-197, 198A-198B, 198-199
- 4.5.10** Determine the amount of change from a purchase.
Example: You buy a chocolate bar priced at \$1.75. How much change do you get if you pay for it with a five-dollar bill?
32A-32B, 32-33, 37, 39

Standard 6

Data Analysis and Probability

Students organize, represent, and interpret numerical and categorical data and clearly communicate their findings. They show outcomes for simple probability situations.

4.6.1 Represent data on a number line and in tables, including frequency tables.

Example: The students in your class are growing plants in various parts of the classroom. Plan a survey to measure the height of each plant in centimeters on a certain day. Record your survey results on a line plot.

188J, 206A-206B, 206-207, 230A-230B, 230-231

4.6.2 Interpret data graphs to answer questions about a situation.

Example: The line plot below shows the heights of fast-growing plants reported by third-grade students. Describe any patterns that you can see in the data using the words “most,” “few,” and “none.”

188J, 198A-198B, 198-199, 204A-204B, 204-205, 206A-206B, 206-207, 208A-208B, 208-211, 216A-216B, 216-219, 232A-232B, 232-233, 536A-536B, 536-537

4.6.3 Summarize and display the results of probability experiments in a clear and organized way.

Example: Roll a number cube 36 times and keep a tally of the number of times that 1, 2, 3, 4, 5, and 6 appear. Draw a bar graph to show your results.

686J, 704A-704B, 704-705, 706A-706B, 706-709, 710A-710B, 710-711

Standard 7

Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

4.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.

Example: Solve the problem: “Find a relationship between the number of faces, edges, and vertices of a solid shape with flat surfaces.” Try two or three shapes and look for patterns.

12A-12B, 12-13, 90A-90B, 90-91, 96A-96B, 96-97, 156A-156B, 156-157, 198A-198B, 198-199, 460A-460B, 460-461, 696A-696B, 696-697, 714A-714B, 714-715

- 4.7.2** Decide when and how to break a problem into simpler parts.
Example: In the first example, find what happens to cubes and rectangular solids.

156A-156B, 156-157, 538A-538B, 538-539, 648A-648B, 648-649, 714A-714B, 714-715

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

- 4.7.3** Apply strategies and results from simpler problems to solve more complex problems.

Example: In the first example, use your method for cubes and rectangular solids to find what happens to other prisms and to pyramids.

648A-648B, 648-649

- 4.7.4** Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, tools, and models to solve problems, justify arguments, and make conjectures.

Example: In the first example, make a table to help you explain your results to another student.

40A-40B, 40-41, 94A-94B, 94-95, 102A-102B, 102-103, 140A-140B, 140-143, 168A-168B, 168-169, 222A-222B, 222-223, 234A-234B, 234-235, 264A-264B, 264-267, 290A-290B, 290-291, 323, 326A-326B, 326-329, 474A-474B, 474-475, 478A-478B, 478-479, 512A-512B, 512-513, 540A-540B, 540-541, 584A-584B, 584-585, 602A-602B, 602-603, 666A-666B, 666-667

- 4.7.5** Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.

Example: In the first example, explain what happens with all the shapes that you tried.

12A-12B, 12-13, 24A-24B, 24-25, 342A-342B, 342-343, 460A-460B, 460-461, 538A-538B, 538-539, 662A-662B, 662-663

- 4.7.6** Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.

Example: You are telling a friend the time of a TV program. How accurate should you be: to the nearest day, hour, minute, or second?

60I, 72A-72B, 72-73, 600A-600B, 600-601

- 4.7.7** Know and use appropriate methods for estimating results of whole-number computations.
Example: You buy 2 CDs for \$15.95 each. The cashier tells you that will be \$49.90. Does that surprise you?
60I, 68A-68B, 68-71, 72A-72B, 72-73, 254I, 258A-258B, 258-261, 316A-316B, 316-319, 364J, 368A-368B, 368-371
- 4.7.8** Make precise calculations and check the validity of the results in the context of the problem.
Example: The buses you use for a school trip hold 55 people each. How many buses will you need to seat 180 people?
278A-278B, 278-281
- Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.*
- 4.7.9** Decide whether a solution is reasonable in the context of the original situation.
Example: In the last example, would an answer of 3.27 surprise you?
38A-38B, 38-39, 278A-278B, 278-281, 600A-600B, 600-601
- 4.7.10** Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.
Example: Change the first example so that you look at shapes with curved surfaces.
24A-24B, 24-25, 282A-282B, 282-283, 290A-290B, 290-291

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Grade Five

Standard 1

Number Sense

Students compute with whole numbers, decimals, and fractions and understand the relationship among decimals, fractions, and percents. They understand the relative magnitudes of numbers. They understand prime* and composite* numbers.*

**whole numbers: 0, 1, 2, 3, etc.*

**prime number: number that can be evenly divided only by 1 and itself (e.g., 2, 3, 5, 7, 11)*

**composite number: not a prime number (e.g., 4, 6, 8, 9, 10)*

- 5.1.1 Convert between numbers in words and numbers in figures, for numbers up to millions and decimals to thousandths.
Example: Write the number 198.536 in words.
2I, 4A-4B, 4-5, 8A-8B, 8-11**
- 5.1.2 Round whole numbers and decimals to any place value.
Example: Is 7,683,559 closer to 7,600,000 or 7,700,000? Explain your answer.
26A-26B, 26-27**
- 5.1.3 Arrange in numerical order and compare whole numbers or decimals to two decimal places by using the symbols for less than (<), equals (=), and greater than (>).
Example: Write from smallest to largest: 0.5, 0.26, 0.08.
6A-6B, 6-7, 12A-12B, 12-13, 237**
- 5.1.4 Interpret percents as a part of a hundred. Find decimal and percent equivalents for common fractions and explain why they represent the same value.
Example: Shade a 100-square grid to show 30%. What fraction is this?
426A-426B, 426-429, 644J, 668A-668B, 668-669, 670A-670B, 670-671**
- 5.1.5 Explain different interpretations of fractions: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.
Example: What fraction of a pizza will each person get when 3 pizzas are divided equally among 5 people?
392I-392J, 394A-394B, 394-397, 398A-398B, 398-399, 400A-400B, 400-401**

- 5.1.6 Describe and identify prime and composite numbers.**
Example: Which of the following numbers are prime: 3, 7, 12, 17, 18?
Justify your choices.

164A-164B, 164-167

- 5.1.7 Identify on a number line the relative position of simple positive fractions, positive mixed numbers, and positive decimals.**
Example: Find the positions on a number line of $1\frac{1}{4}$ and 1.4.

404A-404B, 404-405, 430A-430B, 430-431

Standard 2

Computation

Students solve problems involving multiplication and division of whole numbers and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals.

- 5.2.1 Solve problems involving multiplication and division of any whole numbers.**

Example: $2,867 \times 34 = ?$ Explain your method.

66A-66B, 66-67, 72A-72B, 72-75, 76A-76B, 76-77, 132A-132B, 132-135, 136A-136B, 136-137, 148A-148B, 148-151, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 168A-168B, 168-169, 200I-200J, 202A-202B, 202-203, 214A-214B, 214-217, 218A-218B, 218-221, 222A-222B, 222-223, 224A-224B, 224-225

- 5.2.2 Add and subtract fractions (including mixed numbers) with different denominators.**

Example: $3\frac{4}{5} - 2\frac{2}{3} = ?$

462A-462B, 462-463, 466A-466B, 466-469, 476A-476B, 476-477, 478A-478B, 478-481

- 5.2.3 Use models to show an understanding of multiplication and division of fractions.**

Example: Draw a rectangle 5 squares long and 3 squares wide. Shade $\frac{4}{5}$ of the rectangle, starting from the left. Shade $\frac{2}{3}$ of the rectangle, starting from the top. Look at the fraction of the squares that you have double-shaded and use that to show how to multiply $\frac{4}{5}$ by $\frac{2}{3}$.

458J, 490A-490B, 490-493, 496A-496B, 496-499, 502A-502B, 502-503

- 5.2.4 Multiply and divide fractions to solve problems.**

Example: You have $3\frac{1}{2}$ pizzas left over from a party. How many people can have $\frac{1}{4}$ of a pizza each?

496A-496B, 496-499, 500A-500B, 500-501

- 5.2.5 Add and subtract decimals and verify the reasonableness of the results.**
Example: Compute $39.46 - 20.89$ and check the answer by estimating.
2J, 38A-38B, 38-39, 40A-40B, 40-41
- 5.2.6 Use estimation to decide whether answers are reasonable in addition, subtraction, multiplication, and division problems.**
Example: Your friend says that $2,867 \times 34 = 20,069$. Without solving, explain why you think the answer is wrong.
28A-28B, 28-31, 38A-38B, 38-39, 40A-40B, 40-41, 64I, 68A-68B, 68-69, 72A-72B, 72-75, 86A-86B, 86-87, 130I-130J, 138A-138B, 138-141, 204A-204B, 204-207
- 5.2.7 Use mental arithmetic to add or subtract simple decimals.**
Example: Add 0.006 to 0.027 without using pencil and paper.
2J, 41

Standard 3

Algebra and Functions

Students use variables in simple expressions, compute the value of an expression for specific values of the variable, and plot and interpret the results. They use two-dimensional coordinate grids to represent points and graph lines.

- 5.3.1 Use a variable to represent an unknown number.**
Example: When a certain number is multiplied by 3 and then 5 is added, the result is 29. Let x stand for the unknown number and write an equation for the relationship.
100A-100B, 100-103, 104A-104B, 104-105
- 5.3.2 Write simple algebraic expressions in one or two variables and evaluate them by substitution.**
Example: Find the value of $5x + 2$ when $x = 3$.
100A-100B, 100-103, 108A-108B, 108-109, 176A-176B, 176-179, 540A-540B, 540-541, 542A-542B, 542-545, 550A-550B, 550-551, 554A-554B, 554-555, 602A-602B, 602-603, 610A-610B, 610-613, 706A-706B, 706-709
- 5.3.3 Use the distributive property* in numerical equations and expressions.**
Example: Rewrite $3(16 - 11)$ by removing the parentheses.
**distributive property: e.g., $3 \times (5 + 2) = 3 \times 5 + 3 \times 2$*
70A-70B, 70-71, 172A-172B, 172-173
- 5.3.4 Identify and graph ordered pairs of positive numbers.**
Example: Plot the points (3, 1), (6, 2), and (9, 3). What do you notice?
174A-174B, 174-175, 176A-176B, 176-177

- 5.3.5** Find ordered pairs (positive numbers only) that fit a linear equation, graph the ordered pairs, and draw the line they determine.
Example: For $x = 1, 2, 3,$ and $4,$ find points that fit the equation $y = 2x + 1.$ Plot those points on graph paper and join them with a straight line.
728A-728B, 728-729
- 5.3.6** Understand that the length of a horizontal line segment on a coordinate plane equals the difference between the x -coordinates and that the length of a vertical line segment on a coordinate plane equals the difference between the y -coordinates.
Example: Find the distance between the points $(2, 5)$ and $(7, 5)$ and the distance between the points $(2, 1)$ and $(2, 5).$
699, 724A-724B, 724-727
- 5.3.7** Use information taken from a graph or equation to answer questions about a problem situation.
Example: The speed (v feet per second) of a car t seconds after it starts is given by the formula $v = 12t.$ Find the car's speed after 5 seconds.
266A-266B, 266-269, 286A-286B, 286-287, 292A-292B, 292-293, 540A-540B, 540-541, 542A-542B, 542-545, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-555, 602A-602B, 602-603, 610A-610B, 610-613, 720A-720B, 720-721

Standard 4

Geometry

Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.

- 5.4.1** Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, triangles, and circles by using appropriate tools (e.g., ruler, compass, protractor, appropriate technology, media tools).
Example: Draw a rectangle with sides 5 in and 3 in.
328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 349, 363, 675
- 5.4.2** Identify, describe, draw, and classify triangles as equilateral*, isosceles*, scalene*, right*, acute*, obtuse*, and equiangular*.
Example: Draw an isosceles right triangle.
**equilateral triangle: all sides are congruent*
**isosceles triangle: at least two sides are congruent*
**scalene triangle: no sides are equal*
**right triangle: one angle measures 90 degrees*
**acute triangle: all angles are less than 90 degrees*
**obtuse triangle: one angle is more than 90 degrees*
**equiangular triangle: all angles are of equal measure*
326J, 342A-342B, 342-345, 349, 371

- 5.4.3 Identify congruent* triangles and justify your decisions by referring to sides and angles.**
Example: In a collection of triangles, pick out those that are the same shape and size and explain your decisions.
**congruent: two figures that are the same shape and size*
360A-360B, 360-363
- 5.4.4 Identify, describe, draw, and classify polygons*, such as pentagons and hexagons.**
Example: In a collection of polygons, pick out those with the same number of sides.
**polygon: two-dimensional shape with straight sides (e.g., triangle, rectangle, pentagon)*
326I, 340A-340B, 340-341, 346B, 349
- 5.4.5 Identify and draw the radius and diameter of a circle and understand the relationship between the radius and diameter.**
Example: On a circle, draw a radius and a diameter and describe the differences and similarities between the two.
336A-336B, 336-337
- 5.4.6 Identify shapes that have reflectional and rotational symmetry*.**
Example: What kinds of symmetries have the letters M, N, and O?
**reflectional and rotational symmetry: letter M has reflectional symmetry in a line down the middle; letter N has rotational symmetry around its center*
368A-368B, 368-371
- 5.4.7 Understand that 90° , 180° , 270° , and 360° are associated with quarter, half, three-quarters, and full turns, respectively.**
Example: Face the front of the room. Turn through four right angles. Which way are you now facing?
364A-364B, 364-367
- 5.4.8 Construct prisms* and pyramids using appropriate materials.**
Example: Make a square-based pyramid from construction paper.
**prism: solid shape with fixed cross-section (right prism is a solid shape with two parallel faces that are polygons and other faces that are rectangles)*
592I, 598A-598B, 598-601
- 5.4.9 Given a picture of a three-dimensional object, build the object with blocks.**
Example: Given a picture of a house made of cubes and rectangular prisms, build the house.
598A-598B, 599, 606A-606B, 607

Standard 5

Measurement

Students understand and compute the areas and volumes of simple objects, as well as measuring weight, temperature, time, and money.

- 5.5.1 Understand and apply the formulas for the area of a triangle, parallelogram, and trapezoid.**
Example: Find the area of a triangle with base 4 m and height 5 m.
552A-552B, 552-553, 554A-554B, 554-555
- 5.5.2 Solve problems involving perimeters and areas of rectangles, triangles, parallelograms, and trapezoids, using appropriate units.**
Example: A trapezoidal garden bed has parallel sides of lengths 14 m and 11 m and its width is 6 m. Find its area and the length of fencing needed to enclose it. Be sure to use correct units.
210-211, 526I-526J, 540A-540B, 540-541, 548A-548B, 548-549, 550A-550B, 550-551, 552A-552B, 552-553, 558A-558B, 558-559
- 5.5.3 Use formulas for the areas of rectangles and triangles to find the area of complex shapes by dividing them into basic shapes.**
Example: A square room of length 17 feet has a tiled fireplace area that is 6 feet long and 4 feet wide. You want to carpet the floor of the room, except the fireplace area. Find the area to be carpeted.
555, 558A-558B, 558-559, 571, 625
- 5.5.4 Find the surface area and volume of rectangular solids using appropriate units.**
Example: Find the volume of a shoe box with length 30 cm, width 15 cm, and height 10 cm.
592J, 602A-602B, 602-603, 610A-610B, 610-613
- 5.5.5 Understand and use the smaller and larger units for measuring weight (ounce, gram, and ton) and their relationship to pounds and kilograms.**
Example: How many ounces are in a pound?
620A-620B, 620-621, 622A-622B, 622-623
- 5.5.6 Compare temperatures in Celsius and Fahrenheit, knowing that the freezing point of water is 0°C and 32°F and that the boiling point is 100°C and 212°F .**
Example: What is the Fahrenheit equivalent of 50°C ? Explain your answer.
568A-568B, 568-569

- 5.5.7 Add and subtract with money in decimal notation.**
Example: You buy articles that cost \$3.45, \$6.99, and \$7.95. How much change will you receive from \$20?

191, 247, 248, 355, 449, 636

Standard 6

Data Analysis and Probability

Students collect, display, analyze, compare, and interpret data sets. They use the results of probability experiments to predict future events.

- 5.6.1 Explain which types of displays are appropriate for various sets of data.**
Example: Conduct a survey to find the favorite movies of the students in your class. Decide whether to use a bar, line, or picture graph to display the data. Explain your decision.

269, 273, 288A-288B, 288-291

- 5.6.2 Find the mean*, median*, mode*, and range* of a set of data and describe what each does and does not tell about the data set.**
Example: Find the mean, median, and mode of a set of test results and describe how well each represents the data.

**mean: the average obtained by adding the values and dividing by the number of values*

**median: the value that divides a set of data written in order of size into two equal parts*

**mode: the most common value in a set of data*

**range: the difference between the largest and the smallest values*

258I, 282A-282B, 282-285

- 5.6.3 Understand that probability can take any value between 0 and 1, events that are not going to occur have probability 0, events certain to occur have probability 1, and more likely events have a higher probability than less likely events.**

Example: What is the probability of rolling a 7 with a number cube?

296A-296B, 296-299, 302A-302B, 302-305

- 5.6.4 Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4, $\frac{3}{4}$).**

Example: What is the probability of rolling an odd number with a number cube?

258J, 302A-302B, 302-305

Standard 7

Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

- 5.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.**

Example: Solve the problem: “When you flip a coin 3 times, you can get 3 heads, 3 tails, 2 heads and 1 tail, or 1 head and 2 tails. Find the probability of each of these combinations.” Notice that the case of 3 heads and the case of 3 tails are similar. Notice that the case of 2 heads and 1 tail and the case of 1 head and 2 tails are similar.

14A-14B, 14-17, 18A-18B, 18-19, 32A-32B, 32-33, 42A-42B, 42-43, 44A-44B, 44-45, 66A-66B, 66-67, 80A-80B, 80-81, 84A-84B, 84-85, 103, 106A-106B, 106-107, 110A-110B, 110-111, 136A-136B, 136-137, 141, 144A-144B, 144-145, 180A-180B, 180-181, 202A-202B, 202-203, 226A-226B, 226-227, 230A-230B, 230-231, 238A-238B, 238-239, 300A-300B, 300-301, 306A-306B, 306-307, 372A-372B, 372-373, 406A-406B, 406-407, 438A-438B, 438-439, 484A-484B, 484-487, 506A-506B, 506-507, 538, 572A-572B, 572-573, 626A-626B, 626-627, 660A-660B, 660-661, 676A-676B, 676-677, 730A-730B, 730-731

- 5.7.2 Decide when and how to break a problem into simpler parts.**

Example: In the first example, decide to look at the case of 3 heads and the case of 2 heads and 1 tail.

32A-32B, 32-33, 352A-352B, 352-355, 434A-434B, 434-437

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

- 5.7.3 Apply strategies and results from simpler problems to solve more complex problems.**

Example: In the first example, begin with the situation where you flip the coin twice.

158A-158B, 158-159, 168A-168B, 168-169, 352A-352B, 352-355, 434A-434B, 434-437, 558A-558B, 558-559, 606A-606B, 606-607, 664A-664B, 664-665

- 5.7.4 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.**

Example: In the first example, make a table or tree diagram to show another student what is happening.

44A-44B, 44-45, 110A-110B, 110-111, 180A-180B, 180-181, 238A-238B, 238-239, 292A-292B, 292-293, 306A-306B, 306-307, 356A-356B, 356-357, 372A-372B, 372-

- 373, 438A-438B, 438-439, 506A-506B, 506-507, 562A-562B, 562-563, 564A-564B, 564-567, 570A-570B, 570-571, 572A-572B, 572-573, 626A-626B, 626-627, 660A-660B, 660-661, 664A-664B, 664-665, 676A-676B, 676-677, 720A-720B, 720-721, 730A-730B, 730-731
- 5.7.5 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.**
Example: You are buying a piece of plastic to cover the floor of your bedroom before you paint the room. How accurate should you be: to the nearest inch, foot, or yard? Explain your answer.
624A-624B, 624-625
- 5.7.6 Know and apply appropriate methods for estimating results of rational-number computations.**
Example: Will 7×18 be smaller or larger than 100? Explain your answer.
28A-28B, 28-31, 64I, 68A-68B, 68-69, 86A-86B, 86-87, 130I-130J, 138A-138B, 138-141, 204A-204B, 204-207, 474A-474B 474-475, 494A-494B, 494-495
- 5.7.7 Make precise calculations and check the validity of the results in the context of the problem.**
Example: A recipe calls for $\frac{3}{8}$ of a cup of sugar. You plan to double the recipe for a party and you have only one cup of sugar in the house. Decide whether you have enough sugar and explain how you know.
42A-42B, 42-43, 156A-156B, 156-157, 210A-210B, 210-211
- Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.***
- 5.7.8 Decide whether a solution is reasonable in the context of the original situation.**
Example: In the first example about flipping a coin, check that your probabilities add to 1.
42A-42B, 42-43, 156A-156B, 156-157, 210A-210B, 210-211
- 5.7.9 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.**
Example: Find the probability of each of the combinations when you flip a coin 4 times.
76A-76B, 76-77, 200J, 222A-222B, 222-223, 504A-504B, 504-505

**Scott Foresman – Addison Wesley Mathematics
to the
Indiana Academic Standards for Mathematics**

Grade Six

Standard 1

Number Sense

Students compare and order positive and negative integers, decimals, fractions, and mixed numbers. They find multiples* and factors*.*

**positive and negative integers: ..., -3, -2, -1, 0, 1, 2, 3, ...*

**multiples: e.g., multiples of 7 are 7, 14, 21, 28, etc.*

**factors: e.g., factors of 12 are 1, 2, 3, 4, 6, 12*

6.1.1 Understand and apply the basic concept of negative numbers (e.g., on a number line, in counting, in temperature, in “owing”).

Example: The temperature this morning was -6° and now it is 3° . How much has the temperature risen? Explain your answer.

406I, 408A-408B, 408-409, 410A-410B, 410-411

6.1.2 Interpret the absolute value of a number as the distance from zero on a number line, and find the absolute value of real numbers.

Example: Use a number line to explain the absolute values of -3 and of 7 .

408A-408B, 408-409

6.1.3 Compare and represent on a number line positive and negative integers, fractions, decimals (to hundredths), and mixed numbers.

Example: Find the positions on a number line of 3.56 , -2.5 , $1\frac{5}{6}$, and -4 .

78A-78B, 78-79, 176-179, 406I, 408A-408B, 408-409, 410A-410B, 410-411, 412A-412B, 412-413

6.1.4 Convert between any two representations of numbers (fractions, decimals, and percents) without the use of a calculator.

Example: Write $\frac{5}{8}$ as a decimal and as a percent.

140J, 172A-172B, 172-175, 176A-176B, 176-179, 251, 358A-358B, 358-361, 362A-362B, 362-363

6.1.5 Recognize decimal equivalents for commonly used fractions without the use of a calculator.

Example: Know that $\frac{1}{3} = 0.333\dots$, $\frac{1}{2} = 0.5$, $\frac{2}{5} = 0.4$, etc.

140J, 172A-172B, 172-175

- 6.1.6 Use models to represent ratios.**
Example: Divide 27 pencils to represent the ratio 4:5.
298I, 300A-300B, 302A-302B, 312A-312B, 312-313
- 6.1.7 Find the least common multiple* and the greatest common factor* of whole numbers. Use them to solve problems with fractions (e.g., to find a common denominator to add two fractions or to find the reduced form for a fraction).**
Example: Find the smallest number that both 12 and 18 divide into. How does this help you add the fractions $\frac{5}{12}$ and $\frac{7}{18}$?
**least common multiple: e.g., least common multiple of 4 and 6 is 12*
**greatest common factor: e.g., greatest common factor of 18 and 42 is 6*
150A-150B, 150-151, 152A-152B, 152-153, 164A-164B, 164-167, 206A-206B, 206-209, 218A-218B, 218-219, 220A-220B, 220-223

Standard 2

Computation

Students solve problems involving addition, subtraction, multiplication, and division of integers. They solve problems involving fractions, decimals, ratios, proportions, and percentages.

- 6.2.1 Add and subtract positive and negative integers.**
Example: $17 + -4 = ?$, $-8 - 5 = ?$
406J, 418A-418B, 418-421, 422A-422B, 422-425
- 6.2.2 Multiply and divide positive and negative integers.**
Example: Continue the pattern: $3 \times 2 = ?$, $2 \times 2 = ?$, $1 \times 2 = ?$, $0 \times 2 = ?$, $-1 \times 2 = ?$, $-2 \times 2 = ?$, etc.
426A-426B, 426-427, 428A-428B, 428-429
- 6.2.3 Multiply and divide decimals.**
Example: $3.265 \times 0.96 = ?$, $56.79 \div 2.4 = ?$
74J, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 106A-106B, 106-109, 112A-112B, 112-113
- 6.2.4 Explain how to multiply and divide positive fractions and perform the calculations.**
Example: Explain why $\frac{5}{8} \div \frac{15}{16} = \frac{5}{8} \times \frac{16}{15} = \frac{2}{3}$.
246I, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-269, 270A-270B, 270-271

- 6.2.5** Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation.

Example: You want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door $27\frac{1}{2}$ inches wide. How far from each edge should you place the bar? Explain your method.

204-204B, 204-205, 206A-206B, 206-209, 218A-218B, 218-219, 220A-220B, 220-223, 224A-224B, 224-225, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-269, 270A-270B, 270-271, 278A-278B, 278-279, 290, 398, 530-531, 686, 734

- 6.2.6** Interpret and use ratios to show the relative sizes of two quantities. Use the notations: a/b , a to b , $a:b$.

Example: A car moving at a constant speed travels 130 miles in 2 hours. Write the ratio of distance to time and use it to find how far the car will travel in 5 hours.

298I-298J, 300A-300B, 300-301, 302A-302B, 302-305, 306A-306B, 306-309, 312A-312B, 312-313

- 6.2.7** Understand proportions and use them to solve problems.

Example: Sam made 8 out of 24 free throws. Use a proportion to show how many free throws Sam would probably make out of 60 attempts.

316A-316B, 316-317, 318A-318B, 318-321, 322A-322B, 322-323, 324A-324B, 324-325, 330A-330B, 330-333, 334A-334B, 334-335

- 6.2.8** Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips.

Example: In a sale, everything is reduced by 20%. Find the sale price of a shirt whose pre-sale price was \$30.

352I-352J, 366A-366B, 366-367, 370A-370B, 370-371, 380A-380B, 380-383, 386A-386B, 386-387

- 6.2.9** Use estimation to decide whether answers are reasonable in decimal problems.

Example: Your friend says that $56.79 \div 2.4 = 2.36625$. Without solving, explain why you think the answer is wrong.

74I-74J, 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103

- 6.2.10** Use mental arithmetic to add or subtract simple fractions and decimals.
Example: Subtract $\frac{1}{6}$ from $\frac{1}{2}$ without using pencil and paper.

86A-86B, 86-89, 224A-224B, 224-225, 226A-226B, 226-227

Standard 3

Algebra and Functions

Students write verbal expressions and sentences as algebraic expressions and equations. They evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results. They investigate geometric relationships and describe them algebraically.

- 6.3.1 Write and solve one-step linear equations and inequalities in one variable and check the answers.**
Example: The area of a rectangle is 143 cm^2 and the length is 11 cm. Write an equation to find the width of the rectangle and use it to solve the problem. Describe how you will check to be sure that your answer is correct.
- 2J, 44A-44B, 44-47, 48A-48B, 48-51, 112A-112B, 112-113, 116A-116B, 116-119, 276A-276B, 276-277, 430A-430B, 430-431, 696I, 698A-698B, 698-699, 700A-700B, 700-703, 710A-710B, 710-711
- 6.3.2 Write and use formulas with up to three variables to solve problems.**
Example: You have P dollars in a bank that gives r% simple interest per year. Write a formula for the amount of interest you will receive in one year. Use the formula to find the amount of interest on \$80 at 6% per year.
- 328A-328B, 328-329, 386A-386B, 386-387, 564A-564B, 564-567, 568A-568B, 568-569, 570A-570B, 570-571, 572A-572B, 572-575, 576A-576B, 576-579, 580A-580B, 580-581, 590A-590B, 590-593, 594A-594B, 594-597
- 6.3.3 Interpret and evaluate mathematical expressions that use grouping symbols such as parentheses.**
Example: Find the values of $10 - (7 - 3)$ and of $(10 - 7) - 3$.
- 24A-24B, 24-27, 30A-30B, 30-31
- 6.3.4 Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations.**
Example: Write in symbols: add 19 and 34 and double the result.
- 24A-24B, 24-27, 30A-30B, 30-31
- 6.3.5 Use variables in expressions describing geometric quantities.**
Example: Let l, w, and P be the length, width, and perimeter of a rectangle. Write a formula for the perimeter in terms of the length and width.
- 192, 480A-480B, 480-483, 496A-496B, 496-499, 500A-500B, 500-501, 564A-564B, 564-567, 568A-568B, 568-569, 570A-570B, 570-571, 572A-572B, 572-575, 576A-576B, 576-579, 580A-580B, 580-581

- 6.3.6 Apply the correct order of operations and the properties of real numbers (e.g., identity, inverse, commutative*, associative*, and distributive* properties) to evaluate numerical expressions. Justify each step in the process.**

Example: Simplify $3(4 - 1) + 2$. Explain your method.

**commutative: the order when adding or multiplying numbers makes no difference (e.g., $5 + 3 = 3 + 5$), but note that this is not true for subtraction or division*

**associative: the grouping when adding or multiplying numbers makes no difference (e.g., in $5 + 3 + 2$, adding 5 and 3 and then adding 2 is the same as 5 added to $3 + 2$), but note that this is not true for subtraction or division*

**distributive: e.g., $3(5 + 2) = 3 \times 5 + 3 \times 2$*

24A-24B, 24-27, 28A-28B, 28-29, 30A-30B, 30-31

- 6.3.7 Identify and graph ordered pairs in the four quadrants of the coordinate plane.**

Example: Plot the points (3, -1), (-6, 2) and (9, -3). What do you notice?

440A-440B, 440-443

- 6.3.8 Solve problems involving linear functions with integer* values. Write the equation and graph the resulting ordered pairs of integers on a grid.**

Example: A plant is 3 cm high the first time you measure it (on Day 0).

Each day after that the plant grows by 2 cm. Write an equation connecting the height and the number of the day and draw its graph.

**integers: ..., -3, -2, -1, 0, 1, 2, 3, ...*

444A-444B, 444-447, 448A-448B, 448-449, 696I-696J, 716A-716B, 716-717, 718A-718B, 718-721

- 6.3.9 Investigate how a change in one variable relates to a change in a second variable.**

Example: In the last example, what do you notice about the shape of the graph?

696J, 718A-718B, 718-721

Standard 4

Geometry

Students identify, describe, and classify the properties of plane and solid geometric shapes and the relationships between them.

- 6.4.1 Identify and draw vertical*, adjacent*, complementary*, and supplementary* angles and describe these angle relationships. Example: Draw two parallel lines with another line across them. Identify all pairs of supplementary angles.**

**vertical angles: angles 1 and 3, or 2 and 4*

**adjacent angles: angles 1 and 2 or 2 and 3, etc.*

**complementary angles: two angles whose sum is 90°*

**supplementary angles: two angles whose sum is 180° (angles 1 and 2)*

470I, 480A-480B, 480-483

- 6.4.2 Use the properties of complementary, supplementary, and vertical angles to solve problems involving an unknown angle. Justify solutions. Example: Find the size of the supplement to an angle that measures 122° . Explain how you obtain your answer.**

480A-480B, 480-483

- 6.4.3 Draw quadrilaterals* and triangles from given information about them. Example: Draw a quadrilateral with equal sides but no right angles.**

**quadrilateral: a two-dimensional figure with four sides*

496A-496B, 496-499, 500A-500B, 500-501

- 6.4.4 Understand that the sum of the interior angles of any triangle is 180° and that the sum of the interior angles of any quadrilateral is 360° . Use this information to solve problems. Example: Find the size of the third angle of a triangle with angles of 73° and 49° .**

496A-496B, 496-499, 500A-500B, 500-501

- 6.4.5 Identify and draw two-dimensional shapes that are similar*. Example: Draw a rectangle similar to a given rectangle, but twice the size.**

**similar: figures that have the same shape but may not have the same size*

506A-506B, 506-509

- 6.4.6 Draw the translation (slide) and reflection (flip) of shapes. Example: Draw a square and then slide it 3 inches horizontally across your page. Draw the new square in a different color.**

470J, 510A-510B, 510-511

6.4.7 Visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids.

Example: Draw a picture of an arrangement of rectangular blocks from the top, front, and right-hand side.

586A-586B, 586-589, 593

Standard 5**Measurement**

Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems. They calculate with temperature and money, and choose appropriate units of measure in other areas.

6.5.1 Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles. Example: A triangular sheet of metal is about 1 foot across. Describe the units and tools you would use to measure its weight, its angles, and the lengths of its sides.

64, 476A-476B, 476-479, 540I-540J, 546A-546B, 546-549, 550A-550B, 550-551, 554A-554B, 554-557, 568A-568B, 568-569, 572A-572B, 572-575, 580A-580B, 580-581, 590A-590B, 590-593, 594A-594B, 594-597

6.5.2 Understand and use larger units for measuring length by comparing miles to yards and kilometers to meters.

Example: How many meters are in a kilometer?

542A-542B, 542-545, 546A-546B, 546-549

6.5.3 Understand and use larger units for measuring area by comparing acres and square miles to square yards and square kilometers to square meters.

Example: How many square meters are in a square kilometer?

568A-568B, 568-569, 572A-572B, 572-575

6.5.4 Understand the concept of the constant π as the ratio of the circumference to the diameter of a circle. Develop and use the formulas for the circumference and area of a circle.

Example: Measure the diameter and circumference of several circular objects. (Use string to find the circumference.) With a calculator, divide each circumference by its diameter. What do you notice about the results?

540J, 576A-576B, 576-579, 580A-580B, 580-581

- 6.5.5** Know common estimates of π (3.14, $22/7$) and use these values to estimate and calculate the circumference and the area of circles. Compare with actual measurements.
Example: Find the area of a circle of radius 15 cm.
576A-576B, 576-579, 580A-580B, 580-581
- 6.5.6** Understand the concept of significant figures and round answers to an appropriate number of significant figures.
Example: You measure the diameter of a circle as 2.47 m and use the approximation 3.14 for π to calculate the circumference. Is it reasonable to give 7.7558 m as your answer? Why or why not?
550A-550B, 550-551, 576A-576B, 576-579, 580A-580B, 580-581
- 6.5.7** Construct a cube and rectangular box from two-dimensional patterns and use these patterns to compute the surface area of these objects.
Example: Find the total surface area of a shoe box with length 30 cm, width 15 cm, and height 10 cm.
586A-586B, 586-589, 590A-590B, 590-593
- 6.5.8** Use strategies to find the surface area and volume of right prisms* and cylinders using appropriate units.
Example: Find the volume of a cylindrical can 15 cm high and with a diameter of 8 cm.
**right prism: a three-dimensional shape with two congruent ends that are polygons and all other faces are rectangles*
590A-590B, 590-593, 594A-594B, 594-597
- 6.5.9** Use a formula to convert temperatures between Celsius and Fahrenheit.
Example: What is the Celsius equivalent of 100°F? Explain your method.
722A-722B, 722-723
- 6.5.10** Add, subtract, multiply, and divide with money in decimal notation.
Example: Share \$7.25 among five people.
86A-86B, 86-89, 94A-94B, 94-97, 98A-98B, 98-99, 100A-100B, 100-103

Standard 6

Data Analysis and Probability

Students compute and analyze statistical measures for data sets. They determine theoretical and experimental probabilities and use them to make predictions about events.

- 6.6.1 Organize and display single-variable data in appropriate graphs and stem-and-leaf plots*, and explain which types of graphs are appropriate for various data sets.**

Example: A stem-and-leaf diagram shows a set of test scores for your class

** stem-and-leaf plot: see diagram in the first example*

618I, 632A-632B, 632-633, 636A-636B, 636-637, 638A-638B, 638-641, 642A-642B, 642-645, 648A-648B, 648-649, 674A-674B, 674-675

- 6.6.2 Make frequency tables for numerical data, grouping the data in different ways to investigate how different groupings describe the data.**

Understand and find relative and cumulative frequency for a data set.

Use histograms of the data and of the relative frequency distribution, and a broken line graph for cumulative frequency, to interpret the data.

Example: A bag contains pens in three colors. Nine students each draw a pen from the bag without looking, then record the results in the frequency table shown. Complete the column showing relative frequency.

628A-628B, 628-631

- 6.6.3 Compare the mean*, median*, and mode* for a set of data and explain which measure is most appropriate in a given context.**

Example: Twenty students were given a science test and the mean, median and mode were as follows: mean = 8.5, median = 9, mode = 10.

What does the difference between the mean and the mode suggest about the twenty quiz scores?

** mean: the average obtained by adding the values and dividing by the number of values*

** median: the value that divides a set of data (written in order of size) into two equal parts*

** mode: the most common value in a set of data*

624A-624B, 624-627

- 6.6.4** Show all possible outcomes for compound events in an organized way and find the theoretical probability of each outcome.
Example: A box contains four cards with the numbers 1 through 4 written on them. Show a list of all the possible outcomes if you draw two cards from the box without looking. What is the theoretical probability that you will draw the numbers one and two? Explain your answer.
- 618J, 654A-654B, 654-657, 658A-658B, 658-661, 662A-662B, 662-663, 668A-668B, 668-671
- 6.6.5** Use data to estimate the probability of future events.
Example: Teams A and B have played each other 3 times this season and Team A has won twice. When they play again, what is the probability of Team B winning? How accurate do you think this estimate is?
- 664A-664B, 664-667
- 6.6.6** Understand and represent probabilities as ratios, measures of relative frequency, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable.
Example: The weather forecast says that the chance of rain today is 30%. Should you carry an umbrella? Explain your answer.
- 662A-662B, 662-663, 664A-664B, 664-667, 672A-672B, 672-673

Standard 7

Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

- 6.7.1** Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
Example: Solve the problem: “Develop a method for finding all the prime numbers up to 100.” Notice that any numbers that 4, 6, 8, ... divide into also divide exactly by 2, and so you do not need to test 4, 6, 8,
- 20A-20B, 20-21, 36A-36B, 36-37, 54A-54B, 54-55, 120A-120B, 120-121, 156A-156B, 156-157, 180A-180B, 180-181, 182A-182B, 182-183, 212A-212B, 212-213, 228A-228B, 228-229, 280A-280B, 280-281, 388A-388B, 388-389, 434A-434B, 434-437, 450A-450B, 450-451, 490A-490B, 490-491, 520A-520B, 520-521, 560A-560B, 560-561, 582A-582B, 582-583, 598A-598B, 598-599, 676A-676B, 676-677, 716A-716B, 716-717, 724A-724B, 724-725

6.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem.
Example: In the first example, decide that you need to test only the prime numbers as divisors, and explain it in the same way as for 4, 6, 8,
31, 35, 212A-212B, 212-213, 560A-560B, 560-561, 639, 640, 661

6.7.3 Decide when and how to break a problem into simpler parts.
Example: In the first example, decide to find first those numbers not divisible by 2.
180A-180B, 180-181, 374A-374B, 374-377

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

6.7.4 Apply strategies and results from simpler problems to solve more complex problems.
Example: In the first example, begin by finding all the prime numbers up to 10.
374A-374B, 374-377, 490A-490B, 490-491

6.7.5 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.
Example: In the first example, use a hundreds chart to cross off all multiples of 2 (except 2), then all multiples of 3 (except 3), then all multiples of 5 (except 5), etc. Explain why you are doing this.
264A-264B, 264-265, 278A-278B, 278-279, 324A-324B, 324-325, 362A-362B, 362-363, 512A-5123B, 512-513, 560A-560B, 560-561, 674A-674B, 674-675

6.7.6 Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.
Example: Calculate the perimeter of a rectangular field that needs to be fenced. How accurate should you be: to the nearest kilometer, meter, centimeter, or millimeter? Explain your answer.
226A-226B, 226-227, 550A-550B, 550-551

6.7.7 Select and apply appropriate methods for estimating results of rational-number computations.
Example: Measure the length and height of the walls of a room to find the total area. Estimate an answer by imagining meter squares covering the walls.
2I, 16A-16B, 16-17, 18A-18B, 18-19, 82A-82B, 82-83, 216A-216B, 216-217, 226A-226B, 226-227, 256A-256B, 256-257, 368A-368B, 368-369, 540I

- 6.7.8** Use graphing to estimate solutions and check the estimates with analytic approaches.
Example: Use a graphing calculator to estimate the coordinates of the point where the straight line $y = 8x - 3$ crosses the x-axis. Confirm your answer by checking it in the equation.

696J, 718A-718B, 718-721

- 6.7.9** Make precise calculations and check the validity of the results in the context of the problem.
Example: In the first example, check whether some of the numbers not crossed out are in fact primes.

116A-116B, 116-119, 560A-560B, 560-561, 706A-706B, 706-707

Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

- 6.7.10** Decide whether a solution is reasonable in the context of the original situation.
Example: In the first example, decide whether your method was a good one — did it find all the prime numbers efficiently?

52A-52B, 52-53, 98A-98B, 98-99, 706A-706B, 706-707

- 6.7.11** Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.
Example: Use a hundreds chart to find all the numbers that are multiples of both 2 and 3.

374A-374B, 374-377, 414A-414B, 414-415, 490A-490B, 490-491