

A Correlation of

SCOTT FORESMAN ■ ADDISON WESLEY

Mathematics

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to the

Tennessee Curriculum Standards, Learning Expectations, and Accomplishments Grades K-6



T/M-146A

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 Tennessee Curriculum Standards, Learning Expectations, and Accomplishments. Correlation page references are to the Teacher’s Edition and associated Student Edition.

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

● Reaching All Learners

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

● Test Prep

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

● Priority on problem solving:

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

● Instructional Support

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

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

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**Scott Foresman – Addison Wesley Mathematics
to the
Tennessee Curriculum Standards,
Learning Expectations, and Accomplishments**

Kindergarten

NUMBER AND OPERATIONS

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

K.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

K: 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, 69A-69B, 69-70, 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, 89-0, 91A-91B, 91-92, 93A-93B, 93-94, 103A-013B, 103-104, 105A-105B, 105-106, 107A-107B, 107-108, 109A-109B, 109-110, 111A-111B, 111-112, 115A-115B, 115-116, 117A-117B, 117-118, 121A-121B, 121-122

a. count sets of objects up to 20;

K: 53A-53B, 53-54, 57A-57B, 57-58, 77A-77B, 77-78, 79A-79B, 79-80, 83A-83B, 83-84, 103A-103B, 103-104

b. count by ones and tens to 50;

K: 53A-53B, 53-54, 57A-57B, 57-58, 77A-77B, 77-78, 79A-79B, 79-80, 83A-83B, 83-84, 103A-103B, 103-104, 115A-115B, 115-116, 287A-287B, 287-288, 295A-295B, 295-296

c. count backward from 10 to 1;

K: related material: 237-238

d. match quantities up to twenty with numerals;

K: 55A-55B, 55-56, 59A-59B, 59-60, 81A-81B, 81-82, 85A-85B, 85-86, 105A-105B, 105-106, 107A-107B, 107-108, 109A-109B, 109-110, 111A-111B, 111-112

e. recognize equivalent sets of objects;

K: 27A-27B, 27-28

f. write numerals up to twenty;

K: 55A-55B, 55-56, 59A-59B, 59-60, 81A-81B, 81-82, 85A-85B, 85-86, 105A-105B, 105-106, 107A-107B, 107-108, 109A-109B, 109-110, 111A-111B, 111-112

g. represent quantities up to 20 on ten-frames;

K: 83A-83B, 83-84

h. determine whether a figure has been divided in halves;

K: 213A-213B, 213-214

i. name and identify coins and their values;

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

j. order numbers less than 20;

K: 65A-65B, 65-66, 91A-91B, 91-92

k. express the relationship between two numbers less than 20 using the words less than, more than, or equal to;

K: 63A-63B, 63-64, 87A-87B, 87-88, 89A-89B, 89-90, 121A-121B, 121-122

l. identify the position of a whole number less than 20 on the number line;

K: 91A-91B, 91-92

m. apply the language of ordinal numbers up to tenth.

K: 69A-69B, 69-70, 93A-93B, 93-94

K.1.2 Understand meanings of operations and how they relate to one another.

K: 225A-225B, 225-226, 227A-227B, 227-228, 229A-229B, 229-230, 231A-231B, 231-232, 235A-235B, 235-236, 237A-237B, 237-238, 245A-245B, 245-246, 247A-247B, 247-248, 265A-265B, 265-266, 267A-267B, 267-268, 269A-269B, 269-270

a. use manipulatives to develop strategies for addition and subtraction of whole numbers;

K: 225A-225B, 225-226, 227A-227B, 227-228, 229A-229B, 229-230, 231A-231B, 231-232, 235A-235B, 235-236, 237A-237B, 237-238

b. use a variety of strategies to solve simple verbal story problems involving numbers 0 to 10.

K: 245A-245B, 245-246

K.1.3 Solve problems, compute fluently, and make reasonable estimates.

K: 251A-251B, 251-252, 253A-253B, 253-254, 255A-255B, 255-256, 257A-257B, 257-258, 271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276, 277A-277B, 277-278

a. use words, actions, pictures, or manipulatives to solve problems;

K: 251A-251B, 251-252, 253A-253B, 253-254, 255A-255B, 255-256, 257A-257B, 257-258, 271A-271B, 271-272, 273A-273B, 273-274, 275A-275B, 275-276, 277A-277B, 277-278

b. use pictures or objects, such as a ten frame, to show one more or one less than any number to 20;

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

c. explain the reasonableness of a solution.

K: related material: 253A-253B, 253-254, 255A-255B, 255-256, 273A-273B, 273-274, 275A-275B, 275-276

ALGEBRA

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

K.2.1 Sort and classify objects by size, number, and other properties.

K: 11A-11B, 11-12, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18

a. sort objects by color, size, shape, and kind;

K: 11A-11B, 11-12, 13A-13B, 13-14, 15A-15B, 15-16, 17A-17B, 17-18

b. communicate using mathematical terms appropriately.

K: 11-12, 13-14, 15-16, 17-18

K.2.2 Represent and analyze patterns and functions.

K: 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, 297A-297B, 297-298

a. identify patterns in the environment, in arrangements of objects, or in pictures;

K: 35B, 37B, 39B, 41B, 43B, 45B, 95B, 297B

- b. recognize and extend a concrete, visual, or auditory two- or three-part repeating pattern;**

K: 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, 297A-297B, 297-298

- c. create and describe a simple repeating pattern.**

K: 45A-45B, 45-46

K.2.3 Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics.

K: 27-28, 29-30, 31-32, 33-34, 53-54, 57-58, 77-78, 79-80, 83-84, 103-104, 125-126, 217-218, 247-248, 267-268, 291-292

- a. use manipulatives or pictures to demonstrate addition and subtraction sentences written symbolically involving numbers 0 to 5;**

K: 255A-255B, 255-256, 275A-275B, 275-276

- b. read and explain simple addition and subtraction number sentences written symbolically.**

K: 255A-255B, 255-256, 275A-275B, 275-276

K.2.4 Illustrate general properties of operations.

[no accomplishments for this learning expectation at the Kindergarten level].

K: 225A-225B, 225-226, 227A-227B, 227-228, 229A-229B, 229-230, 231A-231B, 231-232, 235A-235B, 235-236, 237A-237B, 237-238

K.2.5 Analyze change in various contexts.

[no accomplishments for this learning expectation at the Kindergarten level].

K: 35-36, 37-38, 39-40, 41-42, 43-44, 45-46, 95-96, 297-298

GEOMETRY

Content Standard 3.0

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

K.3.1 Analyze characteristics and properties of geometric shapes.

K: 197A-197B, 197-198, 199A-199B, 199-200, 201A-201B, 201-202, 203A-203B, 203-204, 205A-205B, 205-206

- a. **recognize and name circles, squares, triangles, and rectangles when shown in various positions;**
K: 203A-203B, 203-204, 205A-205B, 205-206
- b. **recognize examples of circles, squares, triangles, and rectangles in the environment and as faces of three-dimensional objects;**
K: 201A-201B, 201-202, 203B, 205B
- c. **recognize basic properties of and similarities and differences between simple geometric figures (e.g., number of sides, corners);**
K: 197A-197B, 197-198, 199A-199B, 199-200, 201A-201B, 201-202, 203A-203B, 203-204, 205A-205B, 205-206
- d. **create circles, squares, rectangles, and triangles;**
K: 203B, 205B
- e. **create structures using three-dimensional shapes;**
K: 197B, 199B, 201B
- f. **combine two-dimensional shapes to make pictures.**
K: 209B, 209-210

K.3.2 Specify locations and describe spatial relationships.

K: 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-10

- a. **use directional terms in a variety of situations (e.g., over, under, forward, backward, between, right, left).**
K: 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-10

K.3.3 Recognize and apply flips, slides, and turns.

[no accomplishments for this learning expectation at the Kindergarten level].

K: 207A-207B, 207-208

MEASUREMENT**Content Standard 4.0**

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

K.4.1 Demonstrate understanding of units of measure and measurable attributes of objects.

K: 133A-133B, 133-134, 135A-135B, 135-136, 137A-137B, 137-138, 139A-139B, 139-140, 141A-141B, 141-142, 145A-145B, 145-146, 147A-147B, 147-148, 149A-149B, 149-150, 151A-151B, 151-152, 153A-153B, 153-154, 171A-171B, 171-172, 173A-173B, 173-174, 175A-175B, 175-176

a. demonstrate understanding of the concept of length;

K: 133A-133B, 133-134, 135A-135B, 135-136, 137A-137B, 137-138, 139A-139B, 139-140, 141A-141B, 141-142

b. compare the length, weight, and capacity of two objects;

K: 133A-133B, 133-134, 135A-135B, 135-136, 137A-137B, 137-138, 145A-145B, 145-146, 149A-149B, 149-150

c. use words to describe time (e.g., day, night, morning, afternoon, yesterday, today, tomorrow);

K: 163A-163B, 163-164

d. use words to describe temperature (e.g., hot, warm, cool, cold).

K: 153A-153B, 153-154

K.4.2 Apply appropriate techniques and tools to determine measurements.

K: 139A-139B, 139-140, 141A-141B, 141-142, 151A-151B, 151-152, 153A-153B, 153-154

a. measure and estimate length using a variety of non-standard units;

K: 139A-139B, 139-140, 141A-141B, 141-142

b. distinguish between light and heavy objects;

K: 149A-149B, 149-150

c. tell time to the hour;

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

d. recognize a thermometer as a way of measuring temperature;

K: 153A-153B, 153-154

e. recognize a calendar as a way of measuring time.

K:161A-161B, 161-162, 163A-163B, 163-164, 165A-165B, 165-166, 167A-167B, 167-168

Data Analysis and Probability**Content Standard 5.0**

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

K.5.1 Develop, select, and use appropriate methods to collect, organize, display, and analyze data.

K: 27A-27B, 27-28, 29A-29B, 29-30, 31A-31B, 31-32, 33A-33B, 33-34

a. represent and compare data using concrete objects, pictures, and simple graphs.

K:27A-27B, 27-28, 29A-29B, 29-30, 31A-31B, 31-32, 33A-33B, 33-34

K.5.2 Apply the basic concepts of probability.

K: Preparation: 213A-213B, 213-214, 215A-215B, 215-216

b. describe events related to students' experiences as likely or unlikely.

K: Preparation: 213A-213B, 213-214, 215A-215B, 215-216

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Grade One

NUMBER AND OPERATIONS

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

1.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

1: 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-12, 91A-91B, 91-92, 125A-125B, 125-126, 127A-127B, 127-128, 183A-183B, 183-184, 185A-185B, 185-186, 243A-243B, 243-244, 247A-247B, 247-248, 255A-255B, 255-256, 257A-257B, 257-258, 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288

a. count by twos, fives, and tens to 100;

1: 255A-255B, 255-256, 257A-257B, 257-258

b. count a group of objects by ones to 100;

1: 91A-91B, 91-92

c. count a group of objects by twos, fives, and tens up to 30;

1: 243A-243B, 243-244, 247A-247B, 247-248, 255A-255B, 255-256, 257A-257B, 257-258

d. count forward or backward by one beginning with any number less than 100;

1: 91A-91B, 91-92, 125A-125B, 125-126, 127A-127B, 127-128

e. recognize the place value of a digit in numbers to 99;

1: 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288

f. read and write numerals up to 100;

1: 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-12

g. count by tens from any number using a hundred chart;

1: 243A-243B, 243-244, 247A-247B, 247-248

- h. use manipulatives to model whole numbers to 99 (e.g., base-ten blocks, sticks, straws);**
1: 3A-3B, 3-4, 5A-5B, 5-6, 7A-7B, 7-8, 9A-9B, 9-12, 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288
- i. identify odd and even whole numbers to 50;**
1: 265A-265B, 265-266
- j. model halves and fourths of a single object or figure;**
1: 183A-183B, 183-184, 185A-185B, 185-186
- k. model halves and fourths of a set of objects;**
1: 187A-187B, 187-188
- l. match the spoken, written, concrete, and pictorial representations of $\frac{1}{2}$ and $\frac{1}{4}$;**
1: 183A-183B, 183-184, 185A-185B, 185-186, 187A-187B, 187-188
- m. recognize one whole as two halves or four fourths;**
1: 181A-181B, 181-182
- n. count the value of a set of coins up to fifty cents;**
1: 345A-345B, 345-346
- o. order whole numbers less than 100;**
1: 31A-31B, 31-32, 301A-301B, 301-302
- p. represent numbers in flexible ways using a variety of materials (e.g., 23 as 23 ones, 1 ten and 13 ones, and/or 2 tens and 3 ones);**
1: 281A-281B, 281-282, 283A-283B, 283-284, 285A-285B, 285-286, 287A-287B, 287-288
- q. apply the language of ordinal numbers up to twelfth;**
1: 267A-267B, 267-268
- r. compare two numbers using the appropriate symbol (i.e., $<$, $>$, $=$);**
1: 29A-29B, 29-30, 31A-31B, 31-32, 297A-297B, 297-298
- s. use a number line or hundred grid to determine one more or one less than any number to 50.**
1: 295A-295B, 295-296

1.1.2 Understand meanings of operations and how they relate to one another.

1: 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 67A-67B, 67-68, 69A-69B, 69-70, 141A-141B, 141-142

a. explain the reasonableness of a solution;

1: 141A-141B, 141-142, 439A-439B, 439-440

b. solve simple story problems involving addition and subtraction with numbers less than 20;

1: 91A-91B, 91-92, 93A-93B, 93-94, 95A-95B, 95-96, 97A-97B, 97-98, 103A-103B, 103-104, 105A-105B, 105-106, 107A-107B, 107-108, 125A-125B, 125-126, 127A-127B, 127-128, 129A-129B, 129-130, 417A-417B, 417-418, 419A-419B, 419-420, 425A-425B, 425-426, 435A-435B, 435-436, 437A-437B, 437-438, 439A-439B, 439-440

c. develop story problems that illustrate basic addition and subtraction facts.

1: 45A-45B, 45-46, 61A-61B, 61-62

1.1.3 Solve problems, compute fluently, and make reasonable estimates.

1: 91A-91B, 91-92, 93A-93B, 93-94, 95A-95B, 95-96, 97A-97B, 97-98, 103A-103B, 103-104, 105A-105B, 105-106, 107A-107B, 107-108, 125A-125B, 125-126, 127A-127B, 127-128, 129A-129B, 129-130, 417A-417B, 417-418, 419A-419B, 419-420, 425A-425B, 425-426, 435A-435B, 435-436, 437A-437B, 437-438, 439A-439B, 439-440; 459A-459B, 459-460, 461A-461B, 461-462, 463A-463B, 463-464, 465A-465B, 465-466, 471A-471B, 471-472, 473A-473B, 473-474, 475A-475B, 475-476, 477A-477B, 477-478

a. use words, actions, pictures, and manipulatives to solve problems;

1: 45A-45B, 45-46, 61A-61B, 61-62, 75A-75B, 75-76

b. use pictures or objects, such as ten frames, to show one more or one less than any number to 99;

1: 25A-25B, 25-26, 27A-27B, 27-28

c. estimate the number of objects in a group and explain the reasoning for the estimate;

1: 249A-249B, 249-250

d. explain and justify solutions and strategies in problem solving;

1: 7A-7B, 7-8, 21A-21B, 21-22, 33A-33B, 33-34, 57A-57B, 57-58, 71A-71B, 71-72, 79A-79B, 79-80, 99A-99B, 99-100, 111A-111B, 111-112, 113-113B, 113-114, 133A-133B, 133-134, 143A-143B, 143-144, 145A-145B, 145-146, 431A-431B, 431-432, 445A-445B, 445-446, 447A-447B, 447-448, 467A-467B, 467-468, 481A-481B, 481-482, 483A-483B, 483-484

e. use a variety of strategies to add and subtract two-digit whole numbers (e.g., counting up or back, taking away, doubles plus one, comparison, number relationships, modeling);

1: 459A-459B, 459-460, 461A-461B, 461-462, 463A-463B, 463-464, 465A-465B, 465-466, 471A-471B, 471-472, 473A-473B, 473-474, 475A-475B, 475-476, 477A-477B, 477-478

f. use calculators in problem-solving situations.

1: 38, 84, 118, 150, 198, 234, 274, 324, 358, 410, 452, 488

ALGEBRA

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

1.2.1 Sort and classify objects by size, number, and other properties.

1: 307A-307B, 307-308

a. sort objects by two attributes;

1: 307A-307B, 307-308

b. describe how objects in a group are alike and how they are different.

1: 307A-307B, 307-308

1.2.2 Represent and analyze patterns and functions.

1: 27A-27B, 27-28, 29A-29B, 29-30, 255A-255B, 255-256, 257A-257B, 257-258, 261A-261B, 261-262

a. identify and describe growing patterns found in literature, in the environment, in physical arrangements, and in pictures;

1: 27B, 29B, 255B, 257B, 261B

b. translate a repeating pattern from one medium to another (e.g., red-blue-blue to snap-clap-clap);

1: 29A-29B, 29-30

c. create, describe, and extend concrete, visual, auditory, and number patterns;

1: 27A-27B, 27-28, 29A-29B, 29-30, 255A-255B, 255-256, 257A-257B, 257-258, 261A-261B, 261-262

d. identify the unit of a two-part repeating pattern.

1: 27A-27B, 27-28

1.2.3 Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics.

1: 11-12, 13-14, 15-16, 17-18, 25-26, 27-28, 47-48, 63-64, 75-76, 97-98, 125-126, 245-246, 291-292, 309-310, 311-312, 313-314, 431-432, 481-482

a. use manipulatives to demonstrate addition and subtraction sentences written symbolically involving numbers 0-20;

1: 47A-47B, 47-48, 63A-63B, 63-64

b. communicate and use mathematical terms and symbols appropriately;

1: 22, 34, 46, 66, 80, 114, 117, 138, 146, 149, 178, 188, 194, 220, 230, 252, 270, 272, 273, 294, 310, 314, 320, 323, 328B, 340, 354, 356, 368, 382, 406, 409, 414B, 426, 434, 448, 451, 470, 482, 484, 489, 492B

c. interpret and solve simple open addition sentences.

1: 261A-261B, 261-262

1.2.4 Illustrate general properties of operations.

1: 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 67A-67B, 67-68, 69A-69B, 69-70

a. apply the commutative property of addition.

1: 93A-93B, 93-94

1.2.5 Analyze change in various contexts.

[no accomplishments for this learning expectation at the first grade level].

1: 27A-27B, 27-28, 29A-29B, 29-30, 255A-255B, 255-256, 257A-257B, 257-258, 261A-261B, 261-262

GEOMETRY**Content Standard 3.0**

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

1.3.1 Analyze characteristics and properties of geometric shapes.

1: 157A-157B, 157-158, 159A-159B, 159-160, 161A-161B, 161-162, 165A-165B, 165-166, 167A-167B, 167-168

- a. **recognize basic properties of and similarities and differences between simple geometric figures (e.g., number of sides, corners);**
1: 159A-159B, 159-160, 167A-167B, 167-168
- b. **predict and describe the results of putting together and taking apart two- and three-dimensional geometric figures.**
1: related material: 161-162

1.3.2 Specify locations and describe spatial relationships.

1: 173A-173B, 173-174

- a. **uses directional terms in a variety of situations (e.g., over, under, forward, backward, between, right, left);**
1: related material: 173-174
- b. **apply spatial sense to create a figure from memory;**
1: 157B, 165B, 167B
- c. **identify the position of a whole number on the number line.**
1: 97A-97B, 97-98, 125A-125B, 125-126

1.3.3 Recognize and apply flips, slides, and turns.

[no accomplishments for this learning expectation at the first grade level].

1:173A-173B, 173-174

MEASUREMENT

Content Standard 4.0

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

1.4.1 Demonstrate understanding of units of measure and measurable attributes of objects.

1: 365A-365B, 365-366, 369A-369B, 369-370, 371A-371B, 371-372, 373A-373B, 373-374, 375A-375B, 375-376, 383A-383B, 383-384, 385A-385B, 385-386, 387A-387B, 387-388, 389A-389B, 389-390, 391A-391B, 391-392, 393A-393B, 393-394, 397A-397B, 397-398

- a. **compare and order objects according to length, capacity, and weight;**
1: 365A-365B, 365-366, 383A-383B, 383-384, 389A-389B, 389-390

b. recognize the need for standard units of measurement.

1: 371A-371B, 371-372, 373A-373B, 373-374, 375A-375B, 375-376, 385A-385B, 385-386, 387A-387B, 387-388, 391A-391B, 391-392, 393A-393B, 393-394

1.4.2 Apply appropriate techniques and tools to determine measurements.

1: 365A-365B, 365-366, 371A-371B, 371-372, 373A-373B, 373-374, 375A-375B, 375-376, 383A-383B, 383-384, 385A-385B, 385-386, 387A-387B, 387-388, 389A-389B, 389-390, 391A-391B, 391-392, 393A-393B, 393-394, 397A-397B, 397-398

a. demonstrate understanding of the concept of length;

1: 365A-365B, 365-366, 371A-371B, 371-372, 373A-373B, 373-374, 375A-375B, 375-376

b. measure and estimate length using a variety of non-standard units;

1: 365A-365B, 365-366, 371A-371B, 371-372, 373A-373B, 373-374, 375A-375B, 375-376

c. measure to the nearest inch or centimeter;

1: 371A-371B, 371-372, 375A-375B, 375-376

d. measure weight to nearest pound or kilogram;

1: 391A-391B, 391-392, 393A-393B, 393-394

e. recognize a calendar is a way of measuring time;

1: 225A-225B, 225-226, 227A-227B, 227-228

f. describe the relationship between days and months;

1: 225A-225B, 225-226, 227A-227B, 227-228

g. read and write time to the hour and half-hour;

1: 209A-209B, 209-210, 211A-211B, 211-212

h. compare units of time;

1: 205A-205B, 205-206, 207A-207B, 207-208

i. use a thermometer to measure temperature.

1: 395A-395B, 395-396

DATA ANALYSIS AND PROBABILITY**Content Standard 5.0**

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

1.5.1 Develop, select, and use appropriate methods to collect, organize, display, and analyze data.

1: 309A-039B, 309-310, 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316

a. represent and interpret data using concrete objects, pictures, pictographs, and bar graphs.

1: 309A-039B, 309-310, 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316

1.5.2 Apply the basic concepts of probability.

1: 401A-401B, 401-402, 403A-403B, 403-404

a. describe events related to students' experiences as likely or unlikely.

1: 403A-403B, 403-404

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Grade Two

NUMBER AND OPERATIONS

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

2.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

2: 81A-81B, 81-82, 83A-83B, 83-84, 85A-85B, 85-86, 95A-95B, 95-96, 97A-97B, 97-98, 99A-99B, 99-100, 101A-101B, 101-102, 391A-391B, 391-392, 393A-393B, 393-394, 395A-395B, 395-396, 397A-397B, 397-398, 399A-399B, 399-400, 401A-401B, 401-402

a. count a set of objects to 100 using an efficient grouping strategy (e.g., two's, three's, five's, ten's);

2: 81A-81B, 81-82

b. count forward and backward by one from any number less than 999;

2: 81A-81B, 81-82, 393A-393B, 393-394

c. read and write numerals to 999;

2: 81A-81B, 81-82, 83A-83B, 83-84, 85A-85B, 85-86, 391A-391B, 391-392, 393A-393B, 393-394, 395A-395B, 395-396

d. recognize the place value of a digit in numbers to 999;

2: 81A-81B, 81-82, 83A-83B, 83-84, 85A-85B, 85-86, 391A-391B, 391-392, 393A-393B, 393-394, 395A-395B, 395-396, 397A-397B, 397-398, 399A-399B, 399-400, 401A-401B, 401-402

e. identify odd and even numbers to 100;

2: 101A-101B, 101-102

f. use concrete models or pictures to show whether a fraction is less than a half, more than a half, or equal to a half;

2: 269A-269B, 269-270, 271A-271B, 271-272, 275A-275B, 275-276

- g. match the spoken, written, concrete, and pictorial representations of halves, thirds, and fourths;**
2: 269A-269B, 269-270, 271A-271B, 271-272, 277A-277B, 277-278
- h. compare the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$;**
2: 271A-271B, 271-272
- i. count the value of a set of coins up to one dollar;**
2: 113A-113B, 113-114, 115A-115B, 115-116, 117A-117B, 117-118
- j. order whole numbers less than 1000;**
2: 409A-409B, 409-410
- k. compare two numbers using the appropriate symbol (i.e., $<$, $>$, $=$);**
2: 399A-399B, 399-400
- l. represent numbers to 999 in flexible ways using a variety of materials (e.g., 23 as 23 ones, 1 ten and 13 ones, and/or 2 tens and 3 ones);**
2: 81A-81B, 81-82, 83A-83B, 83-84, 391A-391B, 391-392, 393A-393B, 393-394
- m. apply the language of ordinal numbers up to twentieth.**
2: 103A-103B, 103-104

2.1.2 Understand meanings of operations and how they relate to one another.

- 2: 3A-3B, 3-4, 13A-13B, 13-14, 15A-15B, 15-16, 467A-467B, 467-478, 469A-469B, 469-470, 471A-471B, 471-472, 473A-473B, 473-474, 475A-475B, 475-476, 483A-483B, 483-484, 485A-485B, 485-486
- a. develop a story problem that illustrates a given addition or subtraction number sentence;**
2: 5
 - b. use the number line to demonstrate addition and subtraction;**
2: 61A-61B, 61-62
 - c. write and identify number sentences that describe situations involving addition and subtraction;**
2: 5A-5B, 5-8, 9A-9B, 9-10, 17A-17B, 17-18, 23A-23B, 23-24, 25A-25B, 25-26, 27A-27B, 27-28, 29A-29B, 29-30, 57A-57B, 57-58
 - d. write and explain related addition and subtraction sentence.**
2: 27A-27B, 27-28, 227A-227B, 227-228

2.1.3 Solve problems, compute fluently, and make reasonable estimates.

2: 43A-43B, 43-44, 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 57A-57B, 57-58, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66, 135A-135B, 135-136, 137A-137B, 137-138, 139A-139B, 139-140, 141A-141B, 141-142, 145A-145B, 145-146, 147A-147B, 147-148, 149A-149B, 149-150, 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 191A-191B, 191-192, 193A-193B, 193-194

a. solve story problems involving numbers to 100;

2: 9A-9B, 9-10, 19A-19B, 19-20, 31-32, 57A-57B, 57-58, 67A-67B, 67-68, 69-70, 89A-89B, 89-90, 105A-105B, 105-106, 123-124, 155A-155B, 155-156, 161A-161B, 161-162, 163-164

b. check for the reasonableness of solutions;

2: 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 191A-191B, 191-192, 193A-193B, 193-194, 227A-227B, 227-228

c. use calculators in problem-solving situations;

2: 36, 74, 128, 168, 204, 240, 284, 334, 384, 420, 460, 494

d. add and subtract efficiently and accurately with single-digit numbers;

2: 3A-3B, 3-4, 13A-13B, 13-14, 15A-15B, 15-16, 43A-43B, 43-44, 45A-45B, 45-46, 47A-47B, 47-48, 49A-49B, 49-50, 51A-51B, 51-52, 53A-53B, 53-54, 57A-57B, 57-58, 61A-61B, 61-62, 63A-63B, 63-64, 65A-65B, 65-66

e. use a variety of strategies and representations to add and subtract two-digit whole numbers;

2: 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 191A-191B, 191-192, 193A-193B, 193-194, 227A-227B, 227-228

f. explain and justify solution strategies used in problem solving;

2: 9A-9B, 9-10, 19A-19B, 19-20, 31-32, 57A-57B, 57-58, 67A-67B, 67-68, 69-70, 89A-89B, 89-90, 105A-105B, 105-106, 123-124, 155A-155B, 155-156, 161A-161B, 161-162, 163-164

g. use estimation to justify the reasonableness of a computation.

2: 175A-175B, 175-176, 177A-177B, 177-178, 179A-179B, 179-180, 181A-181B, 181-182, 185A-185B, 185-186, 187A-187B, 187-188, 189A-189B, 189-190, 191A-191B, 191-192, 193A-193B, 193-194, 227A-227B, 227-228

ALGEBRA

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

2.2.1 Sort and classify objects by size, number, and other properties.

2: related material: 313A-313B, 313-314, 315A-315B, 315-316

a. sort objects by two or more attributes;

2: related material: 313A-313B, 313-314, 315A-315B, 315-316

b. identify the rules by which objects or numbers have been sorted.

2: related material: 313A-313B, 313-314, 315A-315B, 315-316

2.2.2 Represent and analyze patterns and functions.

2: 157A-157B, 157-158, 413A-413B, 413-414

a. extend a growing pattern;

2: 413A-413B, 413-414

b. identify the unit of a three-part repeating pattern;

2: 157A-157B, 157-158, 413A-413B, 413-414

c. translate a repeating pattern from one medium to another (e.g., red-blue-blue to snap-clap-clap);

2: related material: 157A-157B, 157-158, 413A-413B, 413-414

d. determine the output for a particular input given the one-operation function rule involving addition and subtraction.

2: 157A-157B, 157-158, 413A-413B, 413-414

2.2.3 Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics.

2: 67A-67B, 67-68, 81A-81B, 81-82, 99A-99B, 99-100, 115A-115B, 115-116, 189A-189B, 189-190, 251A-251B, 251-252, 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316, 319A-319B, 319-320, 321A-321B, 321-322, 323A-323B, 323-324, 439A-439B, 439-440, 479A-479B, 479-480

a. interpret and solve open sentences that involve addition or subtraction;

2: Preparation: 99A-99B, 99-100, 413A-413B, 413-414, 467A-467B, 467-468

b. use the language and symbols of mathematics appropriately to communicate mathematical thinking;

2: 67A-67B, 67-68, 81A-81B, 81-82, 99A-99B, 99-100, 115A-115B, 115-116, 189A-189B, 189-190, 251A-251B, 251-252, 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316, 319A-319B, 319-320, 321A-321B, 321-322, 323A-323B, 323-324, 439A-439B, 439-440, 479A-479B, 479-480

c. use manipulatives to demonstrate addition and subtraction sentences written symbolically involving numbers 0-20.

2: 3A-3B, 3-4, 13A-13B, 13-14

2.2.4 Illustrate general properties of operations.

2: 3A-3B, 3-4, 13A-13B, 13-14, 15A-15B, 15-16

a. apply the commutative property of addition;

2: 5A-5B, 5-8, 9A-9B, 9-10

b. show that subtraction is not commutative;

2: 13A-13B, 13-14

c. apply the addition and subtraction properties of zero.

2: 27A-27B, 27-28L

2.2.5 Analyze change in various contexts.

2: 321A-321B, 321-322, 323A-323B, 323-324

a. describe qualitative change (e.g., a student growing taller);

2: 321A-321B, 321-322

b. describe quantitative change (e.g., a student growing two inches in one year).

2: 323A-323B, 323-324

GEOMETRY**Content Standard 3.0**

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

2.3.1 Analyze characteristics and properties of geometric shapes.

2: 247A-247B, 247-248, 249A-249B, 249-250, 255A-255B, 255-256

a. recognize, name, build, draw, and compare two- and three-dimensional geometric figures;

2: 247A-247B, 247-248, 249A-249B, 249-250, 255A-255B, 255-256

b. describe attributes and parts of two- and three-dimensional geometric figures;

2: 247A-247B, 247-248, 249A-249B, 249-250, 255A-255B, 255-256

c. recognize shapes that have line symmetry;

2: 259A-259B, 259-260

d. investigate and predict the results of putting together and taking apart two- and three-dimensional geometric figures.

2: 255A-255B, 255-256

2.3.2 Specify locations and describe spatial relationships.

2: 61A-61B, 61-62, 325A-325B, 325-326

a. identify the position of whole numbers on the number line.

2: 61A-61B, 61-62

2.3.3 Recognize and apply flips, slides, and turns.

2: 259A-259B, 259-260

a. illustrate flips, slides, and turns using concrete and pictorial materials.

2: 259A-259B, 259-260

MEASUREMENT**Content Standard 4.0**

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

2.4.1 Demonstrate understanding of units of measure and measurable attributes of objects.

2: 343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348, 355A-355B, 355-356, 357A-357B-357-358, 365A-365B, 365-366, 367A-367B, 367-368, 369A-369B, 369-370

a. compare and order objects according to length, capacity, and weight;

2: 341A-341B, 341-342, 353A-353B, 353-354, 363A-363B, 363-364

b. demonstrate understanding of the concepts of perimeter and area;

2: preparation: 343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348

c. identify the measurable attributes of objects in the environment.

2: 343B, 345B, 347B, 355B, 357B 365B, 367B, 369B

2.4.2 Apply appropriate techniques and tools to determine measurements.

2: 343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348, 355A-355B, 355-356, 357A-357B-357-358, 365A-365B, 365-366, 367A-367B, 367-368, 369A-369B, 369-370

a. read and write time to the hour, half-hour, and quarter-hour;

2: 291A-291B, 291-292, 293A-293B, 293-294, 295A-295B, 295-296

b. relate days, dates, weeks, and months to a calendar;

2: 303A-303B, 303-304

c. explain the relationship between inches and feet;

2: 343A-343B, 343-344, 345A-345B, 345-346

d. measure length to the nearest centimeter, foot, half-inch, and inch;

2: 343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348

e. use strategies to make estimates of length and time;

2: 297A-297B, 297-298, 341A-341B, 341-342

f. solve problems involving elapsed time in hour intervals;

2: 299A-299B, 299-300

- g. measure and estimate weight and capacity using a variety of non-standard units;**
2: 355A-355B, 355-356, 357A-357B-357-358, 365A-365B, 365-366, 367A-367B, 367-368
- h. find area and perimeter using non-standard units;**
2: preparation: 343A-343B, 343-344, 345A-345B, 345-346, 347A-347B, 347-348
- i. read thermometers with Fahrenheit and Celsius scales.**
2: 369A-369B, 369-370

DATA ANALYSIS AND PROBABILITY

Content Standard 5.0

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

2.5.1 Develop, select, and use appropriate methods to collect, organize, display, and analyze data.

- 2: 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316, 319A-319B, 319-320, 321A-321B, 321-322, 323A-323B, 323-324, 325A-325B, 325-326, 327A-327B, 327-328
- a. pose questions and gather data to answer the questions;**
2: 311A-311B, 311-312, 313A-313B, 313-314, 315A-315B, 315-316
- b. read, interpret, and create tables using tally marks;**
2: 311A-311B, 311-312, 313A-313B, 313-314
- c. create pictographs and bar graphs;**
2: 319A-319B, 319-320, 321A-321B, 321-322
- d. read and interpret tables, bar graphs, and pictographs.**
2: 319A-319B, 319-320, 321A-321B, 321-322

2.5.2 Apply the basic concepts of probability.

- 2: 373A-373B, 373-374, 375A-375B, 375-376
- a. predict outcomes of events based on data gathered and displayed;**
2: 373A-373B, 373-374, 375A-375B, 375-376
- b. explain whether an event is likely or unlikely.**
2: 373A-373B, 373-374

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Grade Three

NUMBER AND OPERATIONS

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

3.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

3: 4A-4B, 4-5, 6A-6B, 6-7, 8A-8B, 8-9, 10A-10B, 10-11, 12A-12B, 12-13

a. count by tens, hundreds, or thousands from any whole number;

3: 25A-25B, 25-27, 73, 261

b. skip count by tens from any whole number less than 1000;

3: related material: 25-27, 73, 261

c. read and write whole numbers to 9999;

3: 4A-4B, 4-5, 6A-6B, 6-7, 8A-8B, 8-9, 10A-10B, 10-11, 12A-12B, 12-13

d. represent numbers to 9999 in flexible ways using a variety of materials;

3: 4A-4B, 4-5, 6A-6B, 6-7, 8A-8B, 8-9, 10A-10B, 10-11, 12A-12B, 12-13

e. identify whole numbers as odd or even;

3: 24, 258

f. name the place value of a given digit in whole numbers to 10,000's;

3: 6A-6B, 6-7, 8A-8B, 8-9, 10A-10B, 10-11

g. write whole numbers up to 10,000 in expanded form (e.g., 873 as $800 + 70 + 3$);

3: 6A-6B, 6-7, 10A-10B, 10-11

h. connect the spoken, written, concrete, and pictorial representations of fractions with denominators up to ten;

3: 498A-498B, 498-501, 502A-502B, 502-503, 512A-512B, 512-513

- i. compare unit fractions with denominators up to ten;**
3: 506A-506B, 506-509
- j. compare and order decimal amounts in the context of money;**
3: 568A-568B, 568-571
- k. count the value of combinations of coins and bills up to \$5;**
3: 36A-36B, 36-39
- l. make change from a transaction that is less than a dollar;**
3: related material: 40A-40B, 40-41
- m. order whole numbers to 10,000;**
3: 22A-22B, 22-23
- n. compare whole numbers to 9999 using the appropriate symbol (i.e., <, >, =).**
3: 18A-18B, 18-21

3.1.2 Understand meanings of operations and how they relate to one another.

3: 66A-66B, 66-69, 70A-70B, 70-71, 260A-260B, 260-261, 262A-262B, 262-265, 266A-266B, 266-269, 370A-370B, 370-371, 372A-372B, 372-373, 374A-374B, 374-379, 384A-384B, 384-385

- a. relate skip counting to multiplication;**
3: 260A-260B, 260-261
- b. connect division to sharing situations;**
3: 370A-370B, 370-371
- c. demonstrate multiplication using repeated addition (e.g., arrays);**
3: 260A-260B, 260-261, 262A-262B, 262-265
- d. write and identify number sentences that describe real-world situations involving addition, subtraction, and multiplication;**
3: 76A-76B, 76-77
- e. write and explain related addition and subtraction sentences.**
3: 70A-70B, 70-71

3.1.3 Solve problems, compute fluently, and make reasonable estimates.

- 3:** 86A-86B, 86-89, 98A-98B, 98-101, 126A-126B, 126-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-155, 156A-156B, 156-157, 160A-160B, 160-161, 162A-162B, 162-165, 166A-166B, 166-167
- a. use a variety of thinking strategies to add and subtract whole numbers (e.g., sums of ten, doubles plus one);**
3: 66A-66B, 66-69, 70A-70B, 70-71, 126A-126B, 126-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 152A-152B, 152-155, 156A-156B, 156-157
- b. explain the reasonableness of a solution;**
3: 633-634
- c. relate adding doubles to multiplying by two;**
3: 276A-276B, 276-279
- d. use known multiplication facts to determine a related product (e.g., 9×7 is 7 less than 10×7);**
3: 316A-316B, 316-317, 318A-318B, 318-319, 320A-320B, 320-323, 324A-324B, 324-327
- e. use the multiplication facts 0, 1, 2, 5, and 10 as a factor;**
3: 276A-276B, 276-279, 280A-280B, 280-281, 282A-282B, 282-283, 286A-286B, 286-287
- f. explain and justify solution strategies in problem solving;**
3: 14A-14B, 14-15, 32A-32B, 32-33, 42A-42B, 42-43, 44-45, 76A-76B, 76-77, 102A-102B, 102-103, 104-105, 140A-140B, 140-143, 160A-160B, 160-161, 170-171, 216A-216B, 216-217, 236A-236B, 236-237, 238-239, 270A-270B, 270-273, 284A-284B, 284-285, 294-295, 332A-332B, 332-333, 346A-346B, 346-347, 348-349, 380A-380B, 380-381, 404A-404B, 404-405, 406-407, 436A-436B, 436-439, 474A-474B, 474-475, 476-477, 528A-528B, 528-529, 540A-540B, 540-541, 578A-578B, 578-579, 588A-588B, 588-589, 590-591, 644A-644B, 644-645, 656A-656B, 656-657, 658-659, 698A-698B, 698-699, 708A-708B, 708-709, 710-711

- g. select and apply an appropriate problem-solving strategy (e.g., organized list, guess and check, diagram, table);**
3: 14A-14B, 14-15, 32A-32B, 42A-42B, 42-43, 76A-76B, 76-77, 102A-102B, 102-103, 104-105, 140A-140B, 160A-160B, 160-161, 216A-216B, 216-217, 236A-236B, 236-237, 270A-270B, 270-273, 284A-284B, 284-285, 332A-332B, 332-333, 346A-346B, 346-347, 380A-380B, 380-381, 404A-404B, 404-405, 436A-436B, 436-439, 474A-474B, 474-475, 528A-528B, 528-529, 540A-540B, 540-541, 578A-578B, 578-579, 588A-588B, 588-589, 644A-644B, 644-645, 656A-656B, 656-657, 698A-698B, 698-699, 708A-708B, 708-709
- h. mentally calculate the sum or difference of any two numbers up to 100;**
3: 80A-80B, 80-81, 82A-82B, 82-85, 94A-94B, 94-95, 96A-96B, 96-97
- i. use strategies to estimate in problem-solving situations.**
3: 86A-86B, 86-89, 90A-90B, 90-91, 98A-98B, 98-101, 160A-160B, 160-161

ALGEBRA

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

3.2.1 Sort and classify objects by size, number, and other properties.

3: related material: 72-75, 344-345

- a. sort objects by two or more attributes;**
3: related material: 72-75, 344-345
- b. devise, carry out, and explain a sorting scheme for a group of objects;**
3: related material: 72-75, 344-345
- c. identify the rules by which objects or numbers have been sorted.**
3: 72A-72B, 72-75, 344A-344B, 344-345

3.2.2 Represent and analyze patterns and functions.

3: 8A-8B, 8-9, 24A-24B, 24-27, 72A-72B, 72-75, 340A-340B, 340-341, 344A-344B, 344-345

- a. recognize, describe, extend, translate, and create patterns;**
3: 8A-8B, 8-9, 24A-24B, 24-27, 72A-72B, 72-75, 340A-340B, 340-341, 344A-344B, 344-345

b. describe a growing pattern;**3:** 24A-24B, 24-27, 340A-340B, 340-341**c. determine the output for a particular input given a one-operation function rule involving addition, subtraction, or multiplication.****3:** 72A-72B, 72-75, 344A-344B, 344-345**3.2.3 Use concrete, pictorial, and verbal representations to develop an understanding of the language and symbols of mathematics.****3:** 140A-140B, 140-143, 204A-204B, 204-207, 208A-208B, 208-211, 226A-226B, 226-227, 228A-228B, 228-231, 232A-232B, 232-235, 236A-236B, 236-237, 270A-270B, 270-273**a. describe the commutative properties of addition and multiplication with words or symbols;****3:** 66, 68-69, 263-265**b. interpret and solve open sentences that involve addition, subtraction, and multiplication;****3:** 344A-344B, 344-345**c. use the language and symbols of mathematics appropriately to communicate mathematical thinking;****3:** 140A-140B, 140-143, 204A-204B, 204-207, 208A-208B, 208-211, 226A-226B, 226-227, 228A-228B, 228-231, 232A-232B, 232-235, 236A-236B, 236-237, 270A-270B, 270-273**d. demonstrate understanding that an equation is a number sentence stating two quantities are equal.****3:** 168A-168B, 168-169**3.2.4 Illustrate general properties of operations.****3:** 66A-66B, 66-69, 70A-70B, 70-71, 260A-260B, 260-261, 262A-262B, 262-265**a. apply the commutative property of addition and multiplication;****3:** 66, 68-69, 263-265**b. show that subtraction is not commutative;****3:** 70-71**c. apply the addition and subtraction properties of zero;****3:** 156A-156B, 156-157

- d. **apply the zero and identity properties of multiplication;**
3: 286A-286B, 286-287
- e. **use arrays to represent the commutative property of multiplication.**
3: 262A-262B, 262-265

3.2.5 Analyze change in various contexts.

- 3: 208A-208B, 208-211, 212A-212B, 212-215, 228A-228B, 228-231, 232A-232B, 232-235
- a. **describe qualitative change (e.g., a student growing taller);**
3: 212A-212B, 212-215, 228A-228B, 228-231
 - b. **describe quantitative change (e.g., a student growing two inches in one year).**
3: 208A-208B, 208-212, 232A-232B, 232-235

GEOMETRY

Content Standard 3.0

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

3.3.1 Analyze characteristics and properties of geometric shapes.

- 3: 428A-428B, 428-431, 432A-432B, 432-435, 442A-442B, 442-443, 444A-444B, 444-445, 446A-446B, 446-449, 450A-450B, 450-453, 454A-454B, 454-455
- a. **recognize, name, build, draw, and compare two- and three-dimensional geometric figures;**
3: 428A-428B, 428-431, 432A-432B, 432-435, 446A-446B, 446-449, 450A-450B, 450-453, 454A-454B, 454-455
 - b. **recognize congruent geometric figures;**
3: 456A-456B, 456-459
 - c. **identify and draw lines of symmetry in two-dimensional designs and shapes;**
3: 460A-460B, 460-461
 - d. **identify and draw horizontal and vertical lines;**
3: 442A-442B, 442-443

e. identify and draw diagonals of polygons.**3:** preparation: 446A-446B, 446-449**3.3.2 Specify locations and describe spatial relationships.****3:** 218A-218B, 218-221, 512A-512B, 512-513**a. identify the position of $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ on the number line;****3:** 512A-512B, 512-513**b. identify a location on a grid using whole number coordinates.****3:** 218A-218B, 218-221**3.3.3 Recognize and apply flips, slides, and turns.****3:** 456A-456B, 457-459**a. predict and describe the results of sliding, flipping, and turning in two-dimensional shapes.****3:** 457-459**MEASUREMENT****Content Standard 4.0**

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

3.4.1 Demonstrate understanding of units of measure and measurable attributes of objects.**3:** 464A-464B, 464-467, 468A-468B, 468-471, 472A-472B, 472-473, 532A-532B, 532-533, 534A-534B, 534-535, 536A-536B, 536-537, 538A-538B, 538-539, 582A-582B, 582-583, 584A-584B, 584-587, 680A-680B, 680-683, 684A-684B, 684-687, 690A-690B, 690-693, 694A-694B, 694-695, 696A-696B, 696-697**a. determine when an estimate of a measurement is sufficient;****3:** 533, 535, 582-583, 618, 681, 682, 685, 691, 697**b. demonstrate understanding of the concepts of perimeter, area, and capacity.****3:** 464A-464B, 466A-467, 468A-468B, 468-471, 472A-472B, 472-473

3.4.2 Apply appropriate techniques and tools to determine measurements.

3: 200-201, 464-467, 468-471, 472-473, 532-533, 534-535, 536-537, 538-539, 582-583, 584-587, 680-683, 684-687, 690-693, 694-695, 696-697

a. solve real-world problems using a calendar;

3: 200A-200B, 200-201

b. use strategies to estimate length, perimeter, area, capacity, weight, time, and temperature;

3: 533, 535, 582-583, 618, 681, 682, 685, 691, 697

c. explain the relationships among inches, feet, and yards;

3: 536A-536B, 536-537, 538A-538B, 538-539

d. measure length to the nearest centimeter, foot, half-inch, and inch;

3: 532A-532B, 532-533, 534A-534B, 534-535, 536A-536B, 536-537, 538A-538B, 538-539, 582A-582B, 582-583, 584A-584B, 584-587

e. measure the capacity of a container in liters, cups, pints, quarts, and gallons;

3: 680A-680B, 680-683, 684A-684B, 684-687

f. measure to the nearest ounce, pound, kilogram, and gram;

3: 690A-690B, 690-693, 694A-694B, 694-695

g. find the perimeter of polygons;

3: 464A-464B, 464-467

h. select and apply appropriate standard units to measure length, area, capacity, weight, time, and temperature.

3: 464A-464B, 464-467, 468A-468B, 468-471, 472A-472B, 472-473, 532A-532B, 532-533, 534A-534B, 534-535, 536A-536B, 536-537, 538A-538B, 538-539, 582A-582B, 582-583, 584A-584B, 584-587, 680A-680B, 680-683, 684A-684B, 684-687, 690A-690B, 690-693, 694A-694B, 694-695, 696A-696B, 696-697

i. solve real-world problems involving measurement and elapsed time to the half-hour;

3: 198A-198B, 198-199

j. read thermometers with Fahrenheit and Celsius scales;

3: 696A-696B, 696-697

k. read and write time up to five-minute intervals.

3: 192A-192B, 192-195, 196A-196B, 196-197

DATA ANALYSIS AND PROBABILITY**Content Standard 5.0**

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

3.5.1 Develop, select, and use appropriate methods to collect, organize, display, and analyze data.

3: 204A-204B, 204-207, 208A-208B, 208-211, 212A-212B, 212-215, 222A-222B, 222-223, 226A-226B, 226-227, 228A-228B, 228-231, 232A-232B, 232-235, 236A-236B, 236-237

a. pose questions and gather data to answer questions;

3: 204A-204B, 204-207

b. read, interpret, and create tables using tally marks;

3: 204A-204B, 204-207

c. create pictographs and bar graphs;

3: 226A-226B, 226-227, 228A-228B, 228-231

d. read and interpret tables, bar graphs, and pictographs.

3: 204A-204B, 204-207, 212A-212B, 212-215

3.5.2 Apply the basic concepts of probability.

3: 700A-700B, 700-701, 702A-702B, 702-703, 704A-704B, 704-707

a. make and justify predictions based on data gathered and displayed;

3: 704A-704B, 704-707

b. identify all possible outcomes of a simple experiment (e.g., spinner, coin toss, number cubes);

3: 702A-702B, 702-703

c. explain whether an event is certain, possible, or impossible;

3: 700A-700B, 700-701

d. explain whether an event is likely or unlikely.

e. 3: 700A-700B, 700-701

**Scott Foresman – Addison Wesley Mathematics
to the
Tennessee Curriculum Standards,
Learning Expectations, and Accomplishments**

Grade Four

NUMBER AND OPERATIONS

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

4.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

4: 4A-4B, 4-7, 8A-8B, 8-9, 28A-28B, 28-29, 34A-34B, 34-37, 500A-500B, 500-501, 502A-502B, 502-503, 504A-504B, 504-507, 624A-624B, 624-627

a. read and write numbers from hundredths to hundred-thousands;

4: 4A-4B, 4-7, 8A-8B, 8-9, 28A-28B, 28-29, 34A-34B, 34-35

b. recognize the place value of a given digit from hundredths to hundred-thousands;

4: 4A-4B, 4-7, 8A-8B, 8-9, 10A-10B, 10-11, 28A-28B, 28-29

c. compare and order whole numbers using the appropriate symbols (i.e., $>$, $<$, $=$);

4: 16A-16B, 16-19, 522A-522B, 522-523, 524A-524B, 524-527, 534A-534B, 534-536, 630A-630B, 630-631

d. model fractions as parts of unit wholes, as part of a set, as locations on number lines, and as divisions of whole numbers;

4: 500A-500B, 500-501, 502A-502B, 502-503

e. recognize and generate equivalent forms of whole numbers and commonly used fractions and decimals;

4: 516A-516B, 516-517, 520A-520B, 520-521, 530A-530B, 530-531

f. use models to compare and order commonly used fractions;

4: 524A-524B, 524-525

g. use concrete and pictorial representations to compare decimals;

4: 28A-28B, 28-29, 34A-34B, 34-35

h. use various models to represent, order, and compare whole numbers and commonly used fractions and mixed numbers (e.g., number lines, base ten blocks, Venn diagrams, hundreds boards);

4: 16A-16B, 16-19, 522A-522B, 522-523, 524A-524B, 524-527, 534A-534B, 534-536, 630A-630B, 630-631

i. communicate and use mathematical language and symbols correctly.

4: 203, 301, 302-303, 421, 422-423, 603, 635, 651, 662A-662B, 662-663, 669, 675, 676-677, 715, 717, 719, 725, 726-727

4.1.2 Understand meanings of operations and how they relate to one another.

4: 62A-62B, 62-63, 64A-64B, 64-65, 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 124A-124B, 124-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153

a. explain the relationship between addition and subtraction;

4: 6A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89

b. explain the relationship between multiplication and division;

4: 148A-148B, 148-149

c. communicate the effects of addition, subtraction, multiplication, and division on size and order of numbers.

4: 62A-62B, 62-63, 64A-64B, 64-65, 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 124A-124B, 124-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153

4.1.3 Solve problems, compute fluently, and make reasonable estimates.

4: 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 270A-270B, 270-273, 274A-274B, 274-277, 332A-332B, 332-335, 336A-336B, 336-337, 380A-380B, 380-383, 386A-386B, 386-389, 390A-390B, 390-391

a. use strategies to estimate the results of whole-number computations;

4: 62A-62B, 62-63, 64A-64B, 64-67, 68A-68B, 68-71, 72A-72B, 72-73, 258A-258B, 258-261, 316A-316B, 316-319, 368A-368B, 368-371, 636A-636B, 636-637

b. explain the reasonableness of results;

4: 62A-62B, 62-63, 64A-64B, 64-67, 68A-68B, 68-71, 72A-72B, 72-73, 258A-258B, 258-261, 316A-316B, 316-319, 368A-368B, 368-371, 636A-636B, 636-637

- c. add and subtract fractions with like denominators;**
4: 564A-564B, 564-567, 574A-574B, 574-577
- d. multiply and divide efficiently and accurately with single-digit whole numbers;**
4: 124A-124B, 124-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153
- e. add, subtract, and multiply decimals (includes monetary units);**
4: 76A-76B, 76-79, 82A-82B, 82-85, 638A-638B, 638-641, 642A-642B, 642-647
- f. select appropriate methods and tools for computing with whole numbers (e.g., mental computation, estimation, calculators, paper and pencil, guess and check);**
4: 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 270A-270B, 270-273, 274A-274B, 274-277, 332A-332B, 332-335, 336A-336B, 336-337, 380A-380B, 380-383, 386A-386B, 386-389, 390A-390B, 390-391
- g. solve real-world problems involving one-step addition, subtraction, and multiplication;**
4: 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 270A-270B, 270-273, 274A-274B, 274-277, 332A-332B, 332-335, 336A-336B, 336-337
- h. identify missing information and/or too much information in real-world problems;**
4: 696A-696B, 696-697
- i. apply logical reasoning to solve real-world problems;**
4: 584A-584B, 584-585
- j. select the appropriate computational and operational method to solve problems;**
4: 86A-86B, 86-89, 338A-338B, 338-339
- k. solve real-world problems using whole numbers, fractions, and decimals.**
4: 12A-12B, 12-13, 24A-24B, 24-25, 38A-38B, 38-39, 40-41, 90A-90B, 90-91, 94A-94B, 94-95, 102-103, 140A-140B, 140-143, 156A-156B, 156-157, 168-169, 198A-198B, 198-199, 222A-222B, 222-223, 234-235, 278A-278B, 278-281, 290A-290B, 290-291, 292-293, 326A-326B, 326-329, 342A-342B, 342-343, 344-345, 384A-384B, 384-385, 396A-396B, 396-399, 412-413, 512A-512B, 512-513, 538A-538B, 538-539, 540-541, 584A-584B, 584-858, 600A-600B, 600-601, 602-603, 648A-648B, 648-649, 662A-662B, 662-663, 666-667

ALGEBRA

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

4.2.1 Understand patterns, relations, and functions.

4: 10A-10B, 10-11, 90A-90B, 90-91, 366A-366B, 366-367, 641

a. generalize and extend geometric and numerical patterns;

4: 10A-10B, 10-11, 90A-90B, 90-91, 366A-366B, 366-367, 641

b. represent and analyze patterns and functions using words, tables, and graphs;

4: 10A-10B, 10-11, 90A-90B, 90-91, 366A-366B, 366-367, 641

c. identify and describe a function rule.

4: 164A-164B, 164-165, 692A-692B, 692-695

4.2.2 Represent and analyze mathematical situations and structures using algebraic symbols.

4: 94A-94B, 94-95, 96A-96B, 96-97, 98A-98B, 98-99, 100A-100B, 100-101, 160A-160B, 106-103, 166A-166B, 166-167, 690A-690B, 690-691, 692A-692B, 692-695

a. interpret and solve open sentences that involve addition, subtraction, multiplication, and division;

4: 100A-100B, 100-101, 166A-166B, 166-167, 692A-692B, 692-695

b. represent the idea of a variable as an unknown quantity using a letter or a symbol;

4: 94A-94B, 94-95, 96A-96B, 96-97, 98A-98B, 98-99, 100A-100B, 100-101, 160A-160B, 106-103, 166A-166B, 166-167, 690A-690B, 690-691, 692A-692B, 692-695

c. demonstrate an understanding that an equation is a number sentence stating two quantities are equal.

4: 100A-100B, 100-101, 166A-166B, 166-167, 692A-692B, 692-695

4.2.3 Illustrate general properties of operations.

4: 62A-62B, 62-63, 64A-64B, 64-65, 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 124A-124B, 124-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153

a. apply commutative, associative, zero, and identity properties.

4: 62A-62B, 62-63, 64A-64B, 64-65, 76A-76B, 76-79, 80A-80B, 80-81, 82A-82B, 82-85, 86A-86B, 86-89, 124A-124B, 124-127, 128A-128B, 128-131, 132A-132B, 132-135, 136A-136B, 136-139, 146A-146B, 146-147, 148A-148B, 148-149, 150A-150B, 150-151, 152A-152B, 152-153

4.2.4 Analyze change in various contexts.

4: 692A-692B, 692-695

a. investigate how a change in one variable relates to a change in a second variable.

4: 692A-692B, 692-695

GEOMETRY**Content Standard 3.0**

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

4.3.1 Analyze characteristics and properties of two- and three-dimensional shapes.

4: 434A-434B, 434-437, 438A-438B, 438-439, 440A-440B, 440-443, 444A-444B, 444-447, 448A-448B, 448-449

a. identify, compare, and analyze attributes of two- and three-dimensional shapes;

4: 434A-434B, 434-437, 438A-438B, 438-439, 440A-440B, 440-443, 444A-444B, 444-447, 448A-448B, 448-449

b. develop and use mathematical language to describe the attributes of geometric figures;

4: 434A-434B, 434-437, 438A-438B, 438-439, 440A-440B, 440-443, 444A-444B, 444-447, 448A-448B, 448-449

c. draw points, lines, line segments, rays, and angles;

4: 440A-440B, 440-443

- d. describe characteristics of lines and angles (e.g., parallel, perpendicular, intersecting, right, acute, obtuse);**
4: 440A-440B, 440-443
- e. describe and compare properties of two- and three-dimensional geometric figures;**
4: 434A-434B, 434-437, 438A-438B, 438-439, 440A-440B, 440-443, 444A-444B, 444-447, 448A-448B, 448-449
- f. investigate and describe the results of subdividing and combining two-dimensional geometric figures;**
4: related material: 452-455
- g. recognize congruent geometric figures;**
4: 452A-452B, 452-455
- h. draw lines of symmetry for two-dimensional geometric figures.**
4: 456A-456B, 456-457

4.3.2 Specify locations and describe spatial relationships using coordinate geometry.

4: 452, 454-455

- a. use appropriate mathematical language to find and specify points on a grid using whole number coordinates.**
4: 452, 454-455, 692-695

4.3.3 Apply transformations and use symmetry to analyze mathematical situations.

4: 452A-452B, 452-455, 456A-456B, 456-457

- a. investigate, predict, and describe the results of transformations of two-dimensional geometric figures (i.e., slides, flips, turns);**
4: 452A-452B, 452-455
- b. describe a motion that will show that two shapes are congruent.**
4: 452-455

4.3.4 Use visualization, spatial reasoning, and geometric modeling to solve problems.

4: 434A-434B, 434-437, 438A-438B, 438-439, 440A-440B, 440-443, 444A-444B, 444-447, 448A-448B, 448-449

a. construct and draw two- and three-dimensional geometric figures;

4: 434B, 438B, 440B, 444B

b. create and describe mental images of objects, patterns, and paths;

4: 452A-452B, 452-455, 456A-456B, 456-457

c. use geometric models to solve real-world problems.

4: 437, 439, 443, 447, 449

MEASUREMENT**Content Standard 4.0**

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

4.4.1 Understand measurable attributes of objects and the units, systems, and processes of measurement.

4: 464A-464B, 464-467, 468A-468B, 468-473, 588A-588B, 588-589, 652A-652B, 652-653

a. demonstrate understanding of the concepts of length, perimeter, area, weight, capacity, volume, time, and angle measure;

4: 464A-464B, 464-467, 468A-468B, 468-473, 474A-474B, 474-475, 588A-588B, 588-589, 590A-590B, 590-591, 592A-592B, 592-593, 594A-594B, 594-595, 596A-596B, 596-597, 652A-652B, 652-653, 654A-65B, 654-655, 656A-656B, 656-657

b. apply appropriate estimation strategies using standard units of measure;

4: 588-589, 652-653

c. demonstrate understanding that measurements are approximations;

4: 588-589, 652-653

d. demonstrate understanding of the relationships among the units within a system of linear measurement;

4: 588A-588B, 588-589, 590A-590B, 590-591, 592A-592B, 592-593, 594A-594B, 594-595, 596A-596B, 596-597, 652A-652B, 652-653, 654A-65B, 654-655, 656A-656B, 656-657

- e. explore perimeter and area using a variety of models (e.g., geoboards, graph paper).

4: 464A-464B, 464-467, 468A-468B, 468-471

4.4.2 Apply appropriate techniques, tools, and formulas to determine measurements.

4: 464A-464B, 464-467, 468A-468B, 468-473, 474A-474B, 474-475, 588A-588B, 588-589, 590A-590B, 590-591, 592A-592B, 592-593, 594A-594B, 594-595, 596A-596B, 596-597, 652A-652B, 652-653, 654A-65B, 654-655, 656A-656B, 656-657

- a. select and use tools to measure weight and volume;

4: 474A-474B, 474-475, 594A-594B, 594-595

- b. measure length to the nearest $\frac{1}{4}$ inch;

4: 590A-590B, 590-591

- c. tell time to the nearest minute;

4: 190A-190B, 190-191

- d. read and record temperature using Fahrenheit and Celsius scales;

4: 664A-664B, 664-665

- e. develop strategies for estimating the perimeters and areas of geometric figures;

4: 464-467, 468-471

- f. apply the formula for finding the area of a rectangle;

4: 468A-468B, 468-471

- g. solve real-world problems involving measurement and elapsed time to the quarter hour.

4: 196A-196B, 196-197, 464-467, 468-473, 474-475, 588-589, 590-591, 592-593, 594-595, 596-597, 652-653, 654-655, 656-657

DATA ANALYSIS AND PROBABILITY**Content Standard 5.0**

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

4.5.1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer questions.

4: 204A-204B, 204-205, 206A-206B, 206-207, 208A-208B, 208-211, 216A-216B, 216-221, 226A-226B, 226-229, 230A-230B, 230-231, 232A-232B, 232-233

a. collect data using observations, surveys, and experiments;

4: 230A-230B, 230-231

b. understand how data-collection methods affect the nature of the data set;

4: 230A-230B, 230-231

c. represent data using tables, pictographs, line graphs, and bar graphs;

4: 204A-204B, 204-205, 206A-206B, 206-207, 208A-208B, 208-211, 216A-216B, 216-221

d. interpret data displayed in tables, pictographs, line graphs, and bar graphs;

4: 204A-204B, 204-205, 206A-206B, 206-207, 208A-208B, 208-211, 216A-216B, 216-221

e. evaluate how well various representations show the collected data.

4: 232A-232B, 232-233

4.5.2 Select and use appropriate statistical methods to analyze data.

4: 226A-226B, 226-229

a. explore measures of central tendency (i.e., mean, median, mode).

4: 226A-226B, 226-229

4.5.3 Make and justify predictions based on data.

4: 216-221

a. make predictions based on data;

4: 216-221

b. design investigations to address a question.

4: 230-231

4.5.4 Understand and apply basic concepts of probability.

4: 700A-700B, 700-703, 706A-706B, 706-709, 710A-710B, 710-713

a. describe the likelihood or chance of events as certain, possible, or impossible;

4: 700A-700B, 700-703

b. explain whether an event is likely or unlikely;

4: 700A-700B, 700-703

c. predict the probability of outcomes of simple experiments.

4: 710A-710B, 710-713

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Grade Five

Number and Operations

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

5.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

5: 4A-4B, 4-5, 6A-6B, 6-7, 8A-8B, 8-11, 14A-14B, 14-17, 26A-26B, 26-27, 84A-84B, 84-85, 394A-394B, 394-397, 398A-398B, 398-399, 400A-400B, 400-401, 404A-404B, 404-405

a. read and write numbers from thousandths to millions;

5: 4A-4B, 4-5, 6A-6B, 6-7, 8A-8B, 8-11, 14A-14B, 14-17

b. name the place value of a given digit from thousandths to millions;

5: 8A-8B, 8-11, 14A-14B, 14-17

c. use various models to show relationships among whole numbers, fractions, mixed numbers, and decimals (e.g., number lines, base ten blocks, Venn diagrams, hundreds boards);

5: 12A-12B, 12-13, 394A-394B, 394-397, 400A-400B, 400-401, 404A-404B, 404-405, 426A-426B, 426-429, 430A-430B, 430-433

d. communicate using mathematical language and symbols;

5: 52-53, 118-119, 188-189, 246-247, 314-315, 380-381, 446-447, 514-515, 580-581, 634-635, 684-685, 738-739

e. model proper fractions, improper fractions, and mixed numbers;

5: 394A-394B, 394-397, 400A-400B, 400-401, 404A-404B, 404-405

f. show the relationship between improper fractions and mixed numbers;

5: 400A-400B, 400-401, 404A-404B, 404-405

g. recognize and generate equivalent forms of commonly used fractions, decimals, and percents (e.g., $\frac{1}{10}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$);

5: 412A-412B, 400A-400B, 400-401, 404A-404B, 404-405, 412-413, 426A-426B, 426-429, 430A-430B, 430-433

h. recognize relationships among commonly used fractions and decimals.**5:** 426A-426B, 426-429, 430A-430B, 430-433**5.1.2 Understand meanings of operations and how they relate to one another.****5:** 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161, 202A-202B, 202-203, 214A-214B, 214-217, 218A-218B, 218-221, 224A-224B, 224-225, 230A-230B, 230-231, 232A-232B, 232-233, 234A-234B, 234-237, 460A-460B, 460-461, 462A-462B, 462-463, 464A-464B, 464-465, 466A-466B, 466-469, 472A-472B, 472-473, 474A-474B, 474-475, 476A-476B, 476-477, 478A-478B, 478-483**a. use commutative, associative, and identity properties;****5:** 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161**b. explain and demonstrate the inverse nature of addition and subtraction;****5:** 36-37**c. explain and demonstrate the inverse nature of multiplication and division;****5:** 132-135, 148-151**d. communicate the effects of addition, subtraction, multiplication, and division on size and order of numbers.****5:** 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161**5.1.3 Solve problems, compute fluently, and make reasonable estimates.****5:** 32A-32B, 32-33, 42A-42B, 42-43, 44-45, 80A-80B, 80-81, 104A-104B, 104-105, 110-111, 144A-144B, 144-145, 168A-168B, 168-169, 180-181, 210A-210B, 210-211, 226A-226B, 226-227, 238-239, 276A-276B, 276-279, 272A-272B, 272-273, 306-307, 352A-352B, 352-355, 356A-356B, 356-357, 372-373, 406A-406B, 406-407, 434A-434B, 434-437, 438-439, 484A-484B, 484-487, 504A-504B, 504-505, 506-507, 558A-558B, 558-559, 570A-570B, 570-571, 572-573, 606A-606B, 606-607, 624A-624B, 624-625, 626-627, 660A-660B, 660-661, 664A-664B, 664-665, 676-677, 706A-706B, 706-709, 720A-720B, 720-721, 730-731

- a. select appropriate methods and tools for computations (e.g., mental computation, estimation, calculators, paper and pencil);**
5: 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161, 202A-202B, 202-203, 214A-214B, 214-217, 218A-218B, 218-221, 224A-224B, 224-225, 230A-230B, 230-231, 232A-232B, 232-233, 234A-234B, 234-237, 460A-460B, 460-461, 462A-462B, 462-463, 464A-464B, 464-465, 466A-466B, 466-469, 472A-472B, 472-473, 474A-474B, 474-475, 476A-476B, 476-477, 478A-478B, 478-483
- b. explain why one form of a number might be more useful for computation than another form;**
5: 502-503
- c. recognize reasonable estimates for operations;**
5: 28A-28B, 28-31, 68A-68B, 68-70, 86A-86B, 86-87, 138A-138B, 138-143, 204A-204B, 204-209, 474A-474B, 474-475, 494A-494B, 494-495, 672A-672B, 672-675
- d. add, subtract, multiply, and divide whole numbers and decimals;**
5: 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161, 202A-202B, 202-203, 214A-214B, 214-217, 218A-218B, 218-221, 224A-224B, 224-225, 230A-230B, 230-231, 232A-232B, 232-233, 234A-234B, 234-237
- e. use models, benchmarks, and equivalent forms to add and subtract commonly used fractions with like and unlike denominators;**
5: 460A-460B, 460-461, 462A-462B, 462-463, 464A-464B, 464-465, 466A-466B, 466-469, 472A-472B, 472-473, 474A-474B, 474-475, 476A-476B, 476-477, 478A-478B, 478-483
- f. identify missing information and/or too much information in real-world problems;**
5: 406A-406B, 406-407
- g. solve multi-step real-world problems;**
5: 226A-226B, 226-227, 238-239, 276A-276B, 276-279, 272A-272B, 272-273, 306-307, 352A-352B, 352-355, 356A-356B, 356-357, 372-373, 406A-406B, 406-407, 434A-434B, 434-437, 438-439, 484A-484B, 484-487, 504A-504B, 504-505, 506-507, 558A-558B, 558-559, 570A-570B, 570-571, 572-573, 606A-606B, 606-607, 624A-624B, 624-625, 626-627, 660A-660B, 660-661, 664A-664B, 664-665, 676-677, 706A-706B, 706-709, 720A-720B, 720-721, 730-731

h. solve real-world problems using decimals, fractions, and percents.

5: 84-85, 86-87, 88-91, 92-93, 94-97, 460-461, 462-463, 464-465, 466-469, 472-473, 474-475, 476-477, 478-483, 490-493, 494-493, 496-499, 500-501, 502-503

Algebra

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

5.2.1 Represent and analyze patterns, relations, and functions.

5: 14A-14B, 14-17, 66A-66B, 66-67, 84A-84B, 84-85, 106A-106B, 106-107, 136A-136B, 136-137, 728A-728B, 728-729

a. generalize and extend geometric and numerical patterns;

5: 14A-14B, 14-17, 66A-66B, 66-67, 84A-84B, 84-85, 106A-106B, 106-107, 136A-136B, 136-137, 728A-728B, 728-729

b. represent and analyze patterns and functions using words, tables, and graphs;

5: 14A-14B, 14-17, 66A-66B, 66-67, 84A-84B, 84-85, 106A-106B, 106-107, 136A-136B, 136-137, 728A-728B, 728-729

c. apply basic function rules.

5: 106A-106B, 106-107, 728A-728B, 728-729

5.2.2 Represent and analyze mathematical situations and structures using algebraic symbols.

5: 100A-100B, 100-103, 104A-104B, 104-105, 106A-106B, 106-107, 108A-108B, 108-109, 172A-172B, 172-173, 174A-174B, 174-175, 176A-176B, 176-179, 696A-696B, 696-699, 700A-700B, 700-701, 702A-702B, 702-705, 706A-706B, 706-709, 728A-728B, 728-729

a. demonstrate understanding that an equation is a number sentence stating two quantities are equal;

5: 108A-108B, 108-109, 700A-700B, 700-701, 702A-702B, 702-705, 706A-706B, 706-709, 728A-728B, 728-729

b. solve open sentences using informal methods and knowledge of operations;

5: 108A-108B, 108-109, 700A-700B, 700-701, 702A-702B, 702-705

c. represent the idea of a variable as an unknown quantity using a letter or a symbol;

5: 100A-100B, 100-103, 104A-104B, 104-105, 106A-106B, 106-107, 108A-108B, 108-109, 172A-172B, 172-173, 174A-174B, 174-175, 176A-176B, 176-179, 696A-696B, 696-699, 700A-700B, 700-701, 702A-702B, 702-705, 706A-706B, 706-709, 728A-728B, 728-729

d. express mathematical relationships using equations.

5: 706A-706B, 706-709

5.2.3 Illustrate general properties of operations.

5: 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161

a. apply commutative, associative, zero, distributive, and identity properties;

5: 36A-36B, 36-37, 38A-38B, 38-39, 40A-40B, 40-41, 88A-88B, 88-91, 94A-94B, 94-97, 152A-152B, 152-155, 156A-156B, 156-157, 158A-158B, 158-159, 160A-160B, 160-161

b. show that division is not commutative.

5: 132-135, 148-151

5.2.4 Analyze change in various contexts.

5: 106A-106B, 106-107, 728A-728B, 728-729

a. investigate how a change in one variable relates to a change in a second variable;

5: 106A-106B, 106-107, 728A-728B, 728-729

b. use a variety of methods to compare and describe situations involving constant and/or varying rates of change.

5: 106A-106B, 106-107, 728A-728B, 728-729

Geometry**Content Standard 3.0**

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

5.3.1 Analyze characteristics and properties of two- and three-dimensional shapes.

- 5:** 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 340A-340B, 340-341, 342A-342B, 342-345, 346A-346B, 346-351, 594A-594B, 594-597, 598A-598B, 598-601
- a. identify, compare, and analyze attributes of two- and three-dimensional figures;**
5: 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 340A-340B, 340-341, 342A-342B, 342-345, 346A-346B, 346-351, 594A-594B, 594-597, 598A-598B, 598-601
- b. use the attributes of geometric figures to develop definitions;**
5: 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 340A-340B, 340-341, 342A-342B, 342-345, 346A-346B, 346-351, 594A-594B, 594-597, 598A-598B, 598-601
- c. draw points, lines, line segments, rays, and angles;**
5: 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337
- d. identify and describe the attributes of a circle using appropriate mathematical language (e.g., radius, diameter, center);**
5: 336A-336B, 336-337
- e. use properties to classify geometric figures;**
5: 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 340A-340B, 340-341, 342A-342B, 342-345, 346A-346B, 346-351, 594A-594B, 594-597, 598A-598B, 598-601
- f. investigate and describe the results of subdividing and combining geometric figures;**
5: 368A-368B, 368-371
- g. compare and contrast congruent and symmetrical geometric figures;**
5: 368A-368B, 368-371
- h. describe characteristics of lines and angles (e.g., parallel, perpendicular, intersecting, right, acute, obtuse);**
5: 328A-328B, 328-331, 332A-332B, 332-335

- i. make and test hypothesis about geometric properties;**

5: 335, 337, 362

- j. explore similarity.**

5: 360A-360B, 360-363

5.3.2 Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

5: 724A-724B, 724-727

- a. describe location and movement using appropriate mathematical language;**

5: 364A-364B, 364-367

- b. find and specify points in Quadrant I of a coordinate system.**

5: 724A-724B, 724-727

5.3.3 Apply transformations and use symmetry to analyze mathematical situations.

5: 364A-364B, 364-367

- a. investigate, predict, and describe the results of transformations of two-dimensional figures (i.e., slides, flips, turns);**

5: 364A-364B, 364-367

- b. describe line and rotational symmetry in two-dimensional figures;**

5: 368A-368B, 368-371

- c. describe a motion or a series of motions that will show that two shapes are congruent.**

5: 360A-360B, 360-363

5.3.4 Use visualization, spatial reasoning, and geometric modeling to solve problems.

5: 328A-328B, 328-331, 332A-332B, 332-335, 336A-336B, 336-337, 340A-340B, 340-341, 342A-342B, 342-345, 346A-346B, 346-351, 594A-594B, 594-597, 598A-598B, 598-601

- a. construct and draw two- and three-dimensional geometric figures;**

5: 340B, 342B, 346B, 594B, 598B

- b. create and describe mental images of objects, patterns, and paths;**
5: 360-363, 364-367, 368-371
- c. build a three-dimensional object from a two-dimensional representation (nets) of that object;**
5: 598A-598B, 598-601
- d. use visualization and spatial reasoning to solve real-world problems.**
5: 328-331, 332-335, 336-337, 340-341, 342-345, 346-351, 594-597, 598-601

Measurement

Content Standard 4.0

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

5.4.1 Understand measurable attributes of objects and the units, systems, and processes of measurement.

- 5: 332A-332B, 332-335, 532A-532B, 532-533, 540A-540B, 540-541, 548A-548B, 548-549, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-557
- a. demonstrate understanding of the concepts of length, perimeter, circumference, area, weight, capacity, volume, elapsed time, and angle measure;**
5: 332A-332B, 332-335, 532A-532B, 532-533, 540A-540B, 540-541, 548A-548B, 548-549, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-557
- b. demonstrate understanding that measurements are approximations;**
5: 529, 530, 537, 538, 541, 544, 549, 603, 613, 615, 617, 621
- c. understand how differences in units affect precision;**
5: 528A-528B, 528-531, 534A-534B, 534-535
- d. demonstrate understanding of the relationships among the units within the same system of measurements;**
5: 528A-528B, 528-531, 534A-534B, 534-535
- e. explore what happens to measurements of a two-dimensional shape when the shape is changed in some way (e.g., perimeter, area).**
5: 540-541, 548-549

5.4.2 Apply appropriate techniques, tools, and formulas to determine measurements.

5: 332A-332B, 332-335, 532A-532B, 532-533, 540A-540B, 540-541, 548A-548B, 548-549, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-557

a. apply and explain appropriate estimation strategies using standard units of measure;

5: 529, 530, 537, 538, 541, 544, 549, 603, 613, 615, 617, 621

b. select and apply appropriate standard units to measure length, perimeter, area, capacity, volume, weight, time, temperature, and angles;

5: 332A-332B, 332-335, 532A-532B, 532-533, 540A-540B, 540-541, 548A-548B, 548-549, 550A-550B, 550-551, 552A-552B, 552-553, 554A-554B, 554-557

c. select and use appropriate tools for measuring in real-world situations;

5: 332-335, 532-533, 540-541, 548-549, 550-551, 552-553, 554-557

d. solve real-world problems involving measurement and elapsed time;

5: 332-335, 532-533, 540-541, 548-549, 550-551, 552-553, 554-557, 564-567

e. read and record temperature using Fahrenheit and Celsius scales;

5: 568A-568B, 568-569

f. develop, understand, and use formulas to find the area of parallelograms and triangles;

5: 552A-552B, 552-553, 554A-554B, 554-557

g. explain and demonstrate how scale in maps and drawings shows relative size and distance;

5: 662A-662B, 662-663

h. develop informal strategies to determine the surface area and volume of rectangular solids.

5: 602A-602B, 602-605, 610A-610B, 610-613

Data Analysis and Probability**Content Standard 5.0**

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

5.5.1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer questions.

5: 260A-260B, 260-261, 262A-262B, 262-265, 266A-266B, 266-269, 270A-270B, 270-275, 282A-282B, 282-285, 286A-286B, 286-287, 288A-288B, 288-291

a. collect data using observations, surveys, and experiments;

5: 260A-260B, 260-261

b. understand how data-collection methods affect the nature of the data set;

5: 260A-260B, 260-261

c. represent data using pictographs, bar graphs, tables, circle graphs, and line graphs;

5: 262A-262B, 262-265, 266A-266B, 266-269, 270A-270B, 270-275, 286A-286B, 286-287

d. interpret data displayed in pictographs, bar graphs, tables, circle graphs, and line graphs.

5: 262A-262B, 262-265, 266A-266B, 266-269, 270A-270B, 270-275, 286A-286B, 286-287

5.5.2 Select and use appropriate statistical methods to analyze data.

5: 282A-282B, 282-285

a. use measures of central tendency (i.e., mean, median, mode);

5: 282A-282B, 282-285

b. relate mean, median, and mode to a visual representation of a data set;

5: 282A-282B, 282-285

c. find the range of a data set.

5: 282A-282B, 282-285

5.5.3 Develop and evaluate inferences and predictions that are based on data.**5:** 296A-296B, 296-299**a. make predictions and justify conclusions based on data;****5:** 296A-296B, 296-299**b. design investigations to address a question;****5:** 260A-260B, 260-261**c. examine various representations of data to evaluate how accurately the data is depicted;****5:** 288A-288B, 288-291**d. explain the importance of sample size in investigations.****5:** 260-261**5.5.4 Understand and apply basic concepts of probability.****5:** 296A-296B, 296-299, 300A-300B, 300-301, 302A-032B, 302-305**a. describe the likelihood or chance of events as likely, unlikely, certain, equally likely, or impossible;****5:** 296A-296B, 296-299**b. use a sample space to predict the probability of an event;****5:** 300A-300B, 300-301**c. understand that the measure of the likelihood of an event can be represented as a number from 0-1.****5:** 302A-032B, 302-305

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Grade Six**

Number and Operations

Content Standard 1.0 The student will develop number and operation sense needed to represent numbers and number relationships verbally, symbolically, and graphically and to compute fluently and make reasonable estimates in problem solving.

6.1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

6: 4A-4B, 4-7, 76A-76B, 76-77, 160A-160B, 160-163, 408A-408B, 408-409

- a. recognize the place value of a given digit;**
6: 4A-4B, 4-7

- b. read, write, and represent whole numbers and decimals in expanded notation;**
6: 5-7

- c. develop understanding of equivalent number representations (i.e., fractions, decimals, percents);**
6: 172A-172B, 172-175, 358A-358B, 358-361

- d. compare fractions, decimals, percents, and integers using the appropriate symbol (i.e., $<$, $>$, $=$);**
6: 176A-176B, 176-179

- e. connect whole numbers, fractions, decimals, percents, and integers on the number line;**
6: 172A-172B, 172-175, 358A-358B, 358-361, 408A-408B, 408-409

- f. develop meaning for percents greater than 100 and less than one;**
6: 354A-354B, 354-357, 358A-358B, 358-361

- g. develop meaning for ratios using real-world models and/or situations;**
6: 300A-300B, 300-301, 302A-302B, 302-305

- h. use a variety of representations for ratios (e.g., 3 to 5; $3/5$; $3:5$);**
6: 300A-300B, 300-301, 302A-302B, 302-305

- i. develop and apply strategies to determine if two ratios form a proportion;**
6: 316A-316B, 316-317
- j. develop the concept of prime and composite numbers;**
6: 146A-146B, 146-149
- k. develop meaning for integers using real-world connections;**
6: 408A-408B, 408-409, 410A-410B, 410-411
- l. use concrete, pictorial, and symbolic representations for integers;**
6: 408A-408B, 408-409, 410A-410B, 410-411, 418A-418B, 418-421, 422A-422B, 422-425, 426A-426B, 426-429, 430A-430B, 430-433
- m. develop meaning for number theory concepts (i.e., divisibility, factors, multiples).**
6: 142A-142B, 142-145, 146A-146B, 146-149, 150A-150B, 150-151, 152A-152B, 152-155

6.1.2 Understand operations and how they relate to one another.

- 6: 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 204A-204B, 204-205, 206A-206B, 206-211, 252A-252B, 252-255, 266A-266B, 266-267, 418A-418B, 418-421, 422A-422B, 422-425, 426A-426B, 426-427, 428A-428B, 428-429
- a. understand the meaning and effects of arithmetic operations on fractions and decimals;**
6: 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 204-205, 206A-206B, 206-211, 218A-218B, 218-219, 220A-220B, 220-223, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-267, 270A-270B, 270-271
 - b. apply the associative and commutative properties of addition and multiplication to simplify computations with integers, fractions, and decimals;**
6: 86A-86B, 86-89, 204-205, 206A-206B, 206-211, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259
 - c. use the distributive property to simplify computations with integers, fractions, and decimals;**
6: 30A-30B, 30-31
 - d. apply order of operations when computing with whole numbers and decimals;**
6: 24A-24B, 24-27

- e. understand and use the inverse relationships of addition and subtraction and multiplication and division to simplify computations and solve problems.**

6: 48A-48B, 48-51, 112A-112B, 112-115, 276A-276B, 276-277

6.1.3 Solve problems, compute fluently and make reasonable estimates.

6: 20A-20B, 20-21, 36A-36B, 36-37, 52A-52B, 52-53, 54-55, 98A-98B, 98-99, 116A-116B, 116-119, 120-121, 156A-156B, 156-157, 180A-180B, 180-181, 182-183, 212A-212B, 212-213, 226A-226B, 226-227, 228-229, 230-231, 264A-264B, 264-265, 278A-278B, 278-279, 280-281, 312A-312B, 312-313, 324A-324B, 324-235, 334-335, 362A-362B, 362-363, 374A-374B, 374, 375, 388-389, 414A-414B, 414-415, 434A-434B, 434-436, 450-451, 490A-490B, 490-491, 512A-512B, 512-513, 520-521, 560A-560B, 560-561, 582A-582B, 582-583, 598-599, 648A-648B, 648-649, 674A-674B, 674-675, 676A-676B, 676-677, 706A-706B, 706-707, 710A-710B, 710-711, 724-725

- a. select and use appropriate methods and tools for computing with whole numbers, fractions, decimals, and percents in problem-solving situations (e.g., mental computation, estimation, calculators, computers, paper and pencil);**

6: 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 204-205, 206A-206B, 206-211, 218A-218B, 218-219, 220A-220B, 220-223, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-267, 270A-270B, 270-271, 418A-418B, 418-42,1 422A-422B, 422-425, 426A-426B, 426-429, 430A-430B, 430-433

- b. analyze procedures for computing with fractions, decimals, and integers;**

6: 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 204-205, 206A-206B, 206-211, 218A-218B, 218-219, 220A-220B, 220-223, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-267, 270A-270B, 270-271, 418A-418B, 418-42,1 422A-422B, 422-425, 426A-426B, 426-429, 430A-430B, 430-433

- c. solve one-step real-world problems involving whole numbers, fractions, and decimals;**

6: 86A-86B, 86-89, 90A-90B, 90-93, 94A-94B, 94-97, 100A-100B, 100-103, 204-205, 206A-206B, 206-211, 218A-218B, 218-219, 220A-220B, 220-223, 248A-248B, 248-251, 252A-252B, 252-255, 258A-258B, 258-259, 266A-266B, 266-267, 270A-270B, 270-271

- d. use strategies to estimate the results of computations involving whole numbers, fractions, and decimals in real-world situations;**
6: 16A-16B, 16-17, 18A-18B, 18-19, 216A-216B, 216-217, 256A-256B, 256-257, 368A-368B, 368-369
- e. judge the reasonableness of the results of rational number estimates and computations;**
6: 16A-16B, 16-17, 18A-18B, 18-19, 216A-216B, 216-217, 256A-256B, 256-257, 368A-368B, 368-369
- f. recognize when an estimate is more appropriate than an exact answer in a variety of problem situations.**
6: 226A-226B, 226-227

Algebra

Content Standard 2.0 The student will understand and generalize patterns as they represent and analyze quantitative relationships and change in a variety of contexts and problems using graphs, tables, and equations.

6.2.1 Understand patterns, relations, and functions.

6: 212A-212B, 212-213, 444A-444B, 444-447, 448A-448B, 448-449

- a. represent, analyze, and extend geometric and numerical patterns;**
6: 212A-212B, 212-213, 444A-444B, 444-447
- b. use tables and graphs to generalize patterns in data;**
6: 444A-444B, 444-447, 448A-448B, 448-449
- c. apply function rules to complete tables.**
6: 444A-444B, 444-447, 448A-448B, 448-449

6.2.2 Represent and analyze mathematical situations and structures using algebraic symbols.

6: 40A-40B, 40-43, 48A-48B, 48-51, 112A-112B, 112-115, 116A-116B, 116-119, 274A-274B, 274-275, 276A-276B, 276-277, 430A-430B, 430-433, 448A-448B, 448-449, 698A-698B, 698-699, 700A-700B, 700-703, 710A-710B, 710-711, 712A-712B, 712-715, 716A-716B, 716-717, 718A-718B, 718-721

- a. develop an initial conceptual understanding of different uses of variables;**
6: 40A-40B, 40-43, 48A-48B, 48-51, 112A-112B, 112-115, 116A-116B, 116-119, 274A-274B, 274-275, 276A-276B, 276-277

b. represent mathematical statements and real-world situations using symbols;

6: 116A-116B, 116-119, 710A-710B, 710-711

c. evaluate algebraic expressions for a given value of the variable;

6: 274A-274B, 274-275

d. find missing addends or factors represented as variables in simple equations;

6: 48A-48B, 48-51, 112A-112B, 112-115, 116A-116B, 116-119, 276A-276B, 276-277, 430A-430B, 430-433, 448A-448B, 448-449, 712A-712B, 712-715, 718A-718B, 718-721

e. model algebraic expressions using manipulatives, technology, and pencil and paper.

6: 40A-40B, 40-43, 274A-274B, 274-275

6.2.3 Use mathematical models to represent and understand quantitative relationships.

6: 448A-448B, 448-449, 698A-698B, 698-699, 718A-718B, 718-721

a. model simple real-world problems using graphs.

6: 448A-448B, 448-449, 698A-698B, 698-699, 718A-718B, 718-721

6.2.4 Analyze change in various contexts.

6: 444A-444B, 444-447, 448A-448B, 448-449, 718A-718B, 718-721

b. describe how changes in one quantity or variable result in changes in another.

6: 444A-444B, 444-447, 448A-448B, 448-449, 718A-718B, 718-721

Geometry**Content Standard 3.0**

The student will develop an understanding of geometric concepts and relationships as the basis for geometric modeling and reasoning to solve problems involving one-, two-, and three-dimensional figures.

6.3.1 Analyze characteristics and properties of two- and three-dimensional geometric figures.

6: 472A-472B, 472-475, 476A-476B, 476-479, 480A-480B, 480-483, 484A-484B, 484-489, 494A-494B, 494-495, 496A-496B, 496-499, 500A-500B, 500-501, 502A-502B, 502-503, 586A-586B, 586-589

a. describe, classify, and understand relationships among types of two-dimensional figures;

6: 472A-472B, 472-475, 476A-476B, 476-479, 480A-480B, 480-483, 484A-484B, 484-489, 494A-494B, 494-495, 496A-496B, 496-499, 500A-500B, 500-501, 502A-502B, 502-503

b. compare and classify angles as acute, obtuse, right, and straight;

6: 476A-476B, 476-479, 480A-480B, 480-483

c. use appropriate mathematical language to describe characteristics of lines (e.g., parallel, perpendicular, intersecting);

6: 472A-472B, 472-475

d. compare and classify quadrilaterals using their defining properties;

6: 500A-500B, 500-501

e. describe similarity and congruence.

6: 506A-506B, 506-509

6.3.2 Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

6: 440A-440B, 440-443, 510A-510B, 510-511

a. plot a given set of points in Quadrant I of a coordinate system.

6: 440A-440B, 440-443, 510A-510B, 510-511

6.3.3 Apply transformations and use symmetry to analyze mathematical situations.**6:** 510A-510B, 510-511, 514A-514B, 514-515

- a. investigate, predict, and describe the results of transformations of two-dimensional figures (e.g., slides, flips, turns);**

6: 510A-510B, 510-511

- b. describe line and rotational symmetry in two-dimensional figures;**

6: 514A-514B, 514-515

- c. describe a motion or a series of motions that will show that two shapes are congruent.**

6: 506A-506B, 506-509**6.3.4 Use visualization, spatial reasoning, and geometric modeling to solve problems.****6:** 472A-472B, 472-475, 476A-476B, 476-479, 480A-480B, 480-483, 484A-484B, 484-489, 494A-494B, 494-495, 496A-496B, 496-499, 500A-500B, 500-501, 502A-502B, 502-503

- a. draw two-and three-dimensional geometric figures with specified properties, (e.g., side lengths, angle measure);**

6: 472B, 484A-484B, 484-489, 494B, 496B, 500B, 502B

- b. build a three-dimensional object from a two-dimensional representation (net) of that object and vice versa;**

6: 587-589

- c. use visualization and spatial reasoning to solve real-world problems.**

6: 472-475, 476-479, 480-483, 484-489, 494-495, 496-499, 500-501, 502-503

Measurement**Content Standard 4.0**

The student will become familiar with the units and processes of measurement in order to use a variety of tools, techniques, and formulas to determine and to estimate measurements in mathematical and real-world problems.

6.4.1 Understand measurable attributes of objects and the units, systems, and processes of measurement.

6: 476A-476B, 476-479, 542A-542B, 542-545, 546A-546B, 546-549, 568A-568B, 568-569, 570A-570B, 570-571, 572A-572B, 572-575, 590A-590B, 590-593, 594A-594B, 594-597

a. understand both metric and customary systems of measurement;

6: 542A-542B, 542-545, 546A-546B, 546-549

b. understand relationships among units and convert from one unit to another within the same system;

6: 542A-542B, 542-545, 546A-546B, 546-549

c. understand, select, and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.

6: 476A-476B, 476-479, 568A-568B, 568-569, 570A-570B, 570-571, 572A-572B, 572-575, 590A-590B, 590-593, 594A-594B, 594-597

6.4.2 Apply appropriate techniques, tools, and formulas to determine measurements.

6: 476A-476B, 476-479, 568A-568B, 568-569, 570A-570B, 570-571, 572A-572B, 572-575, 590A-590B, 590-593, 594A-594B, 594-597

a. use a variety of strategies to estimate length, perimeter, circumference, area, and volume;

6: 550A-550B, 550-551

b. use a variety of manipulatives to develop formulas to determine the circumference of circles;

6: 576A-576B, 576-579

c. use formulas to determine the area of triangles and parallelograms;

6: 572A-572B, 572-575

d. use a variety of manipulatives to develop formulas to determine the area of trapezoids and circles;

6: 580A-580B, 580-581

- e. **explore surface area and volume of selected prisms and cylinders using models and manipulatives;**
6: 590A-590B, 590-593, 594A-594B, 594-597
- f. **solve problems involving measurement using ratio and proportion;**
6: 330A-330B, 330-333
- g. **use scales to read maps;**
6: 331-332
- h. **recognize the need for measurement precision.**
6: 550A-550B, 550-551

Data Analysis and Probability

Content Standard 5.0

The student will understand and apply basic statistical and probability concepts as they, organize, and analyze data, and to make predictions and conjectures.

6.5.1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer questions.

- 6: 620A-620B, 620-623, 624A-624B, 624-627, 628A-628B, 628-631, 632A-632B, 632-635, 636A-636B, 636-637, 638A-638B, 638-641, 642A-642B, 642-647, 650A-650B, 650-651
- a. **formulate questions, design studies, and collect real-world data;**
6: 620A-620B, 620-623, 624A-624B, 624-627, 628A-628B, 628-631, 632A-632B, 632-635
 - b. **understand how data-collection methods affect the nature of the data set;**
6: 620A-620B, 620-623
 - c. **examine various representations of data to evaluate how accurately the data is depicted;**
6: 650A-650B, 650-651
 - d. **construct, interpret, and use single-bar and single-line graphs to answer questions and solve real-world problems.**
6: 636A-636B, 636-637, 638A-638B, 638-641

6.5.2 Select and use appropriate statistical methods to analyze data.**6:** 624A-624B, 624-627

- a. find, use, and interpret measures of center and spread (e.g., mean, median, mode, interquartile range);**

6: 624A-624B, 624-627

- b. discuss and understand the relationship between data sets and their graphical representations.**

6: 636A-636B, 636-637, 638A-638B, 638-641, 642A-642B, 642-645**6.5.3 Develop and evaluate inferences and predictions that are based on data.****6:** 636-637, 638-641, 642-647

- a. make conjectures and predictions based on data;**

6: 636-637, 638-641, 642-647

- b. explain the importance of sample size in investigations;**

6: 620A-620B, 620-623

- c. conduct a survey using random sampling;**

6: 620A-620B, 620-623

- d. determine whether or not a sample is biased;**

6: 621-623

- e. make conjectures to formulate new questions for future studies.**

6: 620-623**6.5.4 Understand and apply basic concepts of probability.****6:** 654A-654B, 654-657, 658A-658B, 658-661, 662A-662B, 662-663, 664A-664B, 664-665, 668A-668B, 668-671, 672A-672B, 672-673

- a. model situations by devising and carrying out experiments and simulations;**

6: 662A-662B, 662-663, 664A-664B, 664-665

- b. make and test conjectures about the results of experiments and simulations;**

6: 662A-662B, 662-663, 664A-664B, 664-665

- c. determine all possible outcomes of a simple event.**

6: 654A-654B, 654-657, 658A-658B, 658-661