A Correlation of

to the

Arizona

Mathematics Standards

Articulated by Grade Level (2008)

Grades K-6

M/M-155

Introduction

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

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

- **Reaching All Learners**

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

- **Test Prep**

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

- **Priority on problem solving:**

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

- **Instructional Support**

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

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

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Kindergarten

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Express whole numbers 0 to 20 using and connecting multiple representations.	This topic is covered throughout the grade level. See the following examples: **TE:** 53A, 53B, 53–54, 55A, 55B, 55–56, 57A, 57B, 57, 58, 59A, 59B, 59–60, 61A, 61B, 61–62, 63A, 63B, 63–64, 65A, 65B, 65–66, 67A, 67B, 67–68, 77A, 77B, 77–78, 79A, 79B, 79–80, 81A, 81B, 81–82, 83A, 83B, 83–84, 85A, 85B, 85–86, 87A, 87B, 87–88, 89A, 89B, 89–90, 91A, 91B, 91–92, 97, 103A, 103B, 103–104, 105A, 105B, 105–106, 107A, 107B, 107–108, 109A, 109B, 109–110, 111A, 111B, 111–112, 113A, 113B, 113–114, 115A, 115B, 115–116,117A, 117B, 117–118, 121A, 121B, 121–122, 123A, 123B, 123–124, 289A, 289B, 288–289, 291A, 291B, 291–292
PO 2. Count forward to 20 and backward from 10 with or without objects using different starting points.	This topic is covered throughout the grade level. See the following examples: **TE:** 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, 71–72, 77A, 77B, 77–78, 79A, 79B, 79–80, 81A, 81B, 81–82, 83A, 83B, 83–84, 85A, 85B, 85–86, 87A, 87B, 87–88, 97, 103A, 103B, 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, 289A, 289B, 289–290
PO 3. Identify numbers which are one more or less than a given number to 20.	**TE:** 235A, 235B, 235–236, 237A, 237B, 237–238, 239A, 239B, 240
PO 4. Compare and order whole numbers through 20.	**TE:** 27A, 27B, 27–28, 63A, 63B, 63–64, 65A, 65B, 65–66, 71–72, 67A, 67B, 67–68, 87A, 87B, 87–88, 89A, 89B, 89–90, 91A, 91B, 91–92, 121A, 121B, 121–122, 189A, 189B, 189–190, 269A, 269B, 269–270
PO 5. Recognize and compare the ordinal position of at least five objects.	**TE:** 69A, 69B, 69–70, 93A, 93B, 93–94, 98

Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Solve contextual problems by developing, applying, and recording strategies with sums and minuends to 10 using objects, pictures, and symbols.	**TE:** 245A, 245B, 245–246, 247A, 247B, 247–248, 249A, 249B, 249–250, 251A, 251B, 251–252, 253A, 253B, 253–254, 255A, 255B, 255–256, 257A, 257B, 257–258, 259–260, 265A, 265B, 265–266, 267A, 267B, 267–268, 271A, 271B, 271–272, 273A, 273B, 273–274, 275A, 275B, 275–276, 277A, 277B, 277–278, 279A, 279B, 279–280, 281–282
PO 2. Develop and use multiple strategies to determine • sums to 10 and	**TE:** 245A, 245B, 245–246, 247A, 247B, 247–248, 249A, 249B, 249–250, 251A, 251B, 251–252, 253A, 253B, 253–254, 255A, 255B, 255–256, 257A, 257B, 257–258
• differences with minuends to 10.	**TE:** 265A, 265B, 265–266, 267A, 267B, 267–268, 271A, 271B, 271–272, 273A, 273B, 273–274, 275A, 275B, 275–276, 277A, 277B, 277–278
PO 3. Create word problems based on sums to 10 and differences with minuends to 10.	**TE:** 246, 247B, 249B, 250, 257B, 259B, 265B, 269B, 273B, 277B, 279B
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify quantities to 20 as more or less than 5 or as more or less than 10.	**TE:** 63A, 63B, 63–64, 87A, 87B, 87–88, 89A, 89B, 89–90, 121A, 121B, 121–122
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Construct simple displays of data using objects or pictures.	**TE:** 29A, 29B, 2930, 31A, 31B, 31–32
PO 2. Ask and answer questions by counting, comparing quantities, and interpreting simple displays of data.	**TE:** 29A, 29B, 29–30, 31A, 31B, 31–32, 33A, 33B, 33–34, 47, 54, 67A, 67B, 67–68
Concept 2: Probability	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 3.	
Concept 3: Systematic Listing and Counting	
In Grade K, students sort objects and describe how they sorted them.	
PO 1. Sort, classify, count, and represent up to 20 objects and justify the sorting rule.	**TE:** 11A, 11B, 11–12, 13A, 13B, 13–14, 15A, 15B, 15–16, 17A, 17B, 17–18, 19A, 19B, 19–20, 22, 127, 197A, 197B, 197–198, 199A, 199B, 199–200, 203A, 203B, 203–204, 205A, 205B, 205–206, 259–260

Concept 4: Vertex-Edge Graphs	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, extend, create, and record simple repeating patterns.	**TE:** 35A, 35B, 35–36, 37A, 37B, 37–38, 39A, 39B, 39–40, 41A, 41B, 41–42, 43A, 43B, 43–44, 45A, 45B, 45–46, 47–48, 95A, 95B, 95–96, 293A, 293B, 293–294, 295A, 295B, 295–296, 297A, 297B, 297–298
PO 2. Recognize, describe, extend, and record simple growing patterns.	**TE:** 35A, 35B, 35–36, 37A, 37B, 37–38, 39A, 39B, 39–40, 41A, 41B, 41–42, 43A, 43B, 43–44, 45A, 45B, 45–46, 47–48, 95A, 95B, 95–96, 293A, 293B, 293–294, 295A, 295B, 295–296, 297A, 297B, 297–298
Concept 2: Functions and Relationships	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Record equivalent forms of whole numbers to 10 by constructing models and using numbers.	**TE:** 57A, 57B, 57–58, 233A, 233B, 233–234
PO 2. Compare expressions using spoken words and the symbol =.	**TE:** 251A, 251B, 251–252, 253A, 253B, 253–254, 255A, 255B, 255–256, 257A, 257B, 257–258, 259–260, 271A, 271B, 271–272, 273A, 273B, 273–274, 275A, 275B, 275–276
Concept 4: Analysis of Change	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify, analyze, and describe circles, triangles, and rectangles (including squares) in different orientations and environments.	**TE:** 3A, 3B, 3–4, 15A, 15B, 15–16, 17A, 17B, 17–18, 19A, 19B, 19–20, 21, 22, 133A, 133B, 133–134, 135A, 135B, 135–136, 137A, 137B, 137–138, 197A, 197B, 197–198, 199A, 199B, 199–200, 219
PO 2. Build, draw, compare, describe, and sort 2-dimensional figures (including irregular figures) using attributes.	**TE:** 15A, 15B, 15–16, 17A, 17B, 17–18, 19A, 19B, 19–20, 201A, 201B, 201–202, 203A, 203B, 203–204, 205A, 205B, 205–206, 209A, 209B, 209–210

Concept 2: Transformation of Shapes	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 1.	
Concept 3: Coordinate Geometry	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Compare and order objects according to observable and measureable attributes.	**TE:** 133A, 133B, 133–134, 135A, 135B, 135–136, 137A, 137B, 137–138, 145A, 145B, 145–146, 149A, 149B, 149–150
PO 2. Use the attribute of length to describe and compare objects using non-standard units.	**TE:** 11A, 11B, 11–12, 133A, 133B, 133–134, 135A, 135B, 135–136, 137A, 137B, 137–138, 139A, 139B, 139–140, 141A, 141B, 141–142, 143A, 143B, 143–144, 145A, 145B, 145–146, 147A, 147B, 147–148, 149A, 149B, 149–150, 151A, 151B, 151–152, 155–156
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
In Grade K, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify the question(s) asked and any other questions that need to be answered in order to find a solution.	**TE:** 279A, 279B, 279–280
PO 2. Identify the given information that can be used to find a solution.	**TE:** 279A, 279B, 279–280
PO 3. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.	**TE:** 67A, 67B, 67–68, 125A, 125B, 125–126, 143A, 143B, 143–144, 185A, 185B, 185–186, 217A, 217B, 217–218, 233A, 233B, 233–234, 249A, 249B, 249–250, 279A, 279B, 279–280
PO 4. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	This topic is covered throughout the grade level. See the following examples: **TE:** 67A, 67B, 67–68, 125A, 125B, 125–126, 143A, 143B, 143–144, 185A, 185B, 185–186, 217A, 217B, 217–218, 233A, 233B, 233–234, 245A, 245B, 245–246, 249A, 249B, 249–250, 257A, 257B, 257–258, 277A, 277B, 277–278, 279A, 279B, 279–280

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 5. Explain and clarify mathematical thinking.	This topic is covered throughout the grade level by the Ongoing Assessment: Talk About It and Journal Idea TE features. See the following examples: **TE:** 7–8, 17–18, 32–32, 35–36, 37–38, 39–40, 43–44, 69–70, 79–80, 89–90, 113–114, 119–120, 121–122, 141–142, 149–150, 169–170, 177–178, 189–190, 199–200, 207–208, 215–216, 237–238, 255–256, 279–280, 295–296
PO 6. Determine whether a solution is reasonable.	**TE:** 119A, 119B, 119–120, 141A, 141B, 141–142

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Grade 1

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.	**TE:** 11A, 11B, 11–12, 13A, 13B, 13–14, 15A, 15B, 15–16, 17A, 17B, 17–18, 21A, 21B, 21–22, 25A, 25B, 25–26, 27A, 27B, 27–28, 31A, 31B, 31–32, 45A, 45B, 45–46, 47A, 47B, 47–48, 49A, 49B, 49–50, 51A, 51B, 51–52, 61A, 61B, 61–62, 63A, 63B, 63–64, 65A, 65B, 65–66, 67A, 67B, 67–68, 69A, 69B, 69–70, 77A, 77B, 77–78, 127A, 127B, 127–128, 241A, 241B, 241–242, 243A, 243B, 243–244, 245A, 245B, 245–246, 247A, 247B, 247–248, 263A, 263B, 263–264, 265A, 265B, 265–266, 281A, 281B, 281–282, 283A, 283B, 283–284, 285A, 285B, 285–286, 287A, 287B, 287–288**,** 291A, 291B, 291–292, 295A, 295B, 295–296, 303A, 303B, 303–304
PO 2. Count forward to 100 and backward from 100 by 1s and 10s using different starting points, and count forward to 100 by 2s and 5s.	**TE:** 125A, 125B, 125–126, 243A, 243B, 243–244, 245A, 245B, 245–246, 255A, 255B, 255–256, 257A, 257B, 257–258, 261A, 261B, 262, 263A, 263B, 263–264
PO 3. Identify numbers which are 10 more or less than a given number to 90.	**TE:** 459A, 459B, 459–460, 461A, 461B, 461–462, 471A, 471B, 471–472, 473A, 473B, 473–474
PO 4. Compare and order whole numbers through 100 by applying the concepts of place value.	**TE:** 263A, 263B, 263–264, 297A, 297B, 297–298, 299B, 301A, 301B, 301
PO 5. Recognize and compare ordinal numbers, first through tenth.	**TE:** 240, 267A, 267B, 267–268, 269
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Solve contextual problems using multiple representations for addition and subtraction facts.	**TE:** 45A, 45B, 45–46, 52, 57A, 57B, 57–58, 61A, 61B, 61–62, 65B, 67A, 67B, 7A, 71B, 71–72, 77B, 70–80, 91, 97A, 97B, 98A, 98B, 98–99, 127B, 133A, 13B, 133–134, 143A, 143B, 143–144, 145A, 145B, 145–146
PO 2. Demonstrate addition and subtraction of numbers that total less than 100 by using various representations that connect to place value concepts.	**TE:** 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, 483–484

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 3. Develop and use multiple strategies for addition facts to 10 + 10 and their related subtraction facts.	**TE:** 137A, 137B, 137–138, 139A, 139B, 139–140, 141A, 141B, 141–142, 417A, 417B, 417–418, 419A, 419B, 419–420, 421A, 421B, 421–422, 425A, 425B, 425–426, 435A, 435B, 435–436, 437A, 437B, 437–438, 439A, 439B, 439–440, 443A, 443B, 443–444
PO 4. Create word problems based on addition and subtraction facts.	**TE:** 34, 80, 114, 146, 340, 426, 448
PO 5. Apply properties to solve addition/subtraction problems • identity property of addition/subtraction and	**TE:** 51A, 51B, 51–52, 139A, 139B, 139–140
• commutative property of addition.	**TE:** 93A, 93B, 93–94
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use estimation to determine if sums are more or less than 5, more or less than 10, or more or less than 20.	**TE:** 107 (Think About It), 467B, 467
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Collect, record, organize, and display data using tally charts or pictographs.	**TE:** 309A, 309B, 309–310, 313A, 313B, 313–314, 320, 406
PO 2. Ask and answer questions by interpreting simple displays of data, including tally charts or pictographs.	**TE:** 175–176, 191A, 191B, 191–192, 223A, 223B, 223–224, 251A, 251B, 251–252, 309A, 309B, 309–310, 311A, 311B, 311–312, 313A, 313B, 313–314, 339A, 339B, 339–340, 429–430, 431A, 431B, 431–432, 479–480, 481A, 481B, 481–482
Concept 2: Probability	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use Venn diagrams to sort, classify, and count objects and justify the sorting rule.	**TE:** 307B (Advanced Learners)
Concept 4: Vertex-Edge Graphs	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	

Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, extend, create, and record repeating patterns.	**TE:** 3A, 3B, 3–4, 5A, 5B, 5–6, 7A, 7B, 7–8, 33A, 33B, 33–34, 37, 54, 166, 194, 210, 226, 255A, 255B, 255–256, 258, 261A, 261B, 261–262, 274, 302
PO 2. Recognize, describe, extend, create, and record growing patterns.	**TE:** 6 (Problem Solving), 37
Concept 2: Functions and Relationships	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Record equivalent forms of whole numbers to 100 by constructing models and using numbers.	**TE:** 11A, 11B, 11–12, 13A, 13B, 13–14, 15A, 15B, 15–16, 17A, 17B, 17–18, 107A, 107B, 107–108, 241A, 241B, 241–242, 281A, 281B, 281–282, 283A, 283B, 283–284, 285A, 285B, 285–286, 287A, 287B, 287–288
PO 2. Compare expressions using spoken words and the symbols = and ≠.	**TE:** 49, 65, 84, 118, 297–298
PO 3. Represent a word problem requiring addition or subtraction facts using an equation.	**TE:** 57A, 57B, 57–58, 71A, 71B, 71–72, 79A, 79B, 79–80, 99B, 99–100, 133A, 133B, 133–134, 143A, 143B, 143–144
Concept 4: Analysis of Change	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify and draw 2-dimensional geometric figures based on given attributes regardless of size or orientation.	**TE:** 161A, 161B, 161–162, 165A, 165B, 165–166, 167A, 167B, 167–168, 169A, 169B, 169–170
PO 2. Compare and sort basic 2-dimensional figures (including irregular figures) using attributes and explain the reasoning for the sorting.	**TE:** 167A, 167B, 167–168, 169A, 169B, 169–170, 307A, 307B, 307–308
PO 3. Describe the results of composing and decomposing 2-dimensional figures.	**TE:** 177A, 177B, 177–178, 181A, 181B, 181–182, 183A, 183B, 183–184, 185A, 185B, 185–186

Concept 2: Transformation of Shapes	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Concept 3: Coordinate Geometry	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Compare and order objects according to length, capacity, and weight.	**TE:** 366, 384, 385A, 385B, 385–386, 387A, 387B, 387–388, 389A, 389B, 389–390, 391A, 391B, 391–392, 396, 412 (Discovering Math in Your World)
PO 2. Measure and compare the length of objects using the benchmark of one inch.	**TE:** 371A, 371B, 371–372, 377A, 377B, 377–378, 409 (Enrichment)
PO 3. Sequence the days of the week and the months of the year.	**TE:** 225A, 225B, 225–226, 227A, 227B, 227–228
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
In Grade 1, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify the question(s) asked and any other questions that need to be answered in order to find a solution.	**TE:** 57A, 57B, 57–58, 71A, 71B, 71–72, 99A, 99B, 99–100, 133A, 13B, 133–134, 144A, 144B, 144–145, 445A, 445B, 445–446
PO 2. Identify the given information that can be used to find a solution.	**TE:** 57A, 57B, 57–58, 65A, 65B, 65–66, 79A, 79B, 79–80, 99A, 99B, 99–100, 130, 131–132, 133A, 133B, 133–134, 137A, 137B, 137–138, 143A, 143B, 143–144, 145A, 145B, 145–146, 317A, 317B, 317–318, 349–350, 351A, 351B, 351–352, 418, 436
PO 3. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.	**TE:** 21A, 21B, 21–22, 57A, 57B, 57–58, 111A, 111B, 111–112, 133A, 133B, 133–134, 177A, 177B, 177–178, 215A, 215B, 215–216, 261A, 261B, 261–262, 291A, 291B, 291–292351A, 351B, 351–352, 369A, 369B, 369–370, 431A, 431B, 431–432, 481A, 481B, 481–482

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 4. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	This topic is covered throughout the grade level. See the following examples: **TE:** 7A, 7B, 7–8, 21A, 21B, 21–22, 47A, 47B, 47–48, 57A, 57B, 57–58, 63A, 63B, 63–64, 71A, 71B, 71–72, 111A, 111B, 111–112, 125A, 125B, 125–126, 133A, 133B, 133–134, 143A, 143B, 143–144
PO 5. Explain and clarify mathematical thinking.	This topic is covered throughout the grade level by the Ongoing Assessment: Talk About It and Journal Idea TE features. See the following examples: **TE:** 5–6, 17–18, 51–52, 63–64, 77–78, 97–98, 107–108, 129–130, 141–142, 171–172, 189–190, 211–212, 223–224, 247–248, 263–264, 285–286, 299–300, 311–312, 339–340, 347–348, 377–378, 397–398, 403–404, 425–426, 439–440, 467–468, 477–478
PO 6. Determine whether a solution is reasonable.	**TE:** 84, 175–176, 213–214, 281–282, 291, 359, 427–428, 431, 437, 445–446

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Grade 2

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Express whole numbers 0 to 1000, in groups of hundreds, tens and ones using and connecting multiple representations.	**TE:** 81A, 81B, 81–82, 83A, 83B, 83–84, 85A, 85B, 85–86, 89A, 89B, 89–90, 97A, 97B, 97–98, 105A, 105B, 105–106, 135A, 135B, 135–136, 391A, 391B, 391–392, 393A, 393B, 393–394, 395A, 395B, 395–396**,** 407A, 407B, 407–408, 409A, 409B, 409–410**,** 431A, 431B, 431–432
PO 2. Count forward to 1000 and backward from 1000 by 1s, 10s, and 100s using different starting points.	**TE:** 43A, 43B, 43–44, 61A, 61B, 61–62, 81A, 81B, 81–82, 99A, 99B, 100, 402, 413A, 413B, 413–414
PO 3. Identify numbers which are 100 more or less than a given number to 900.	**TE:** 391, 392, 397B, 397–398
PO 4. Compare and order whole numbers through 1000 by applying the concept of place value.	**TE:** 91A, 91B, 91–92, 97A, 97B, 97–98, 105A, 105B, 105–106, 391A, 391B, 391–392, 399A, 399B, 399–400, 409A, 409B, 409–410, 416
PO 5. Count money to $1.00.	**TE:** 109A, 109B, 109–110, 111A, 111B, 111–112, 113A, 113B, 113–114, 115A, 115B, 115–116, 117A, 117B, 117–118, 121A, 121B, 121–122
PO 6. Sort whole numbers through 1000 into odd and even, and justify the sort.	**TE:** 101A, 101B, 101–102
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Solve contextual problems using multiple representations involving • addition and subtraction with one- and/or two-digit numbers,	**TE:** 5A, 5B, 5–6, 19A, 19B, 19–20, 31A, 31B, 31–32, I57A, 57B, 57–58, 141A, 141B, 141–142, 149A, 149B, 149–150, 163A, 163B, 163–164, 185A, 185B, 185–186, 191A, 191B, 191–192, 199A, 199B, 199–200
• multiplication for 1s, 2s, 5s, and 10s, and	**TE:** 469A, 469B, 469–470, 471A, 471B, 471–472, 473A, 473B, 473–474, 475A, 475B, 475–476, 479A, 479B, 479–480, 487A, 487B, 487–488
• adding and subtracting money to $1.00.	**TE:** 185A, 185B, 185–186, 225A, 225B, 225–226

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 2. Demonstrate the ability to add and subtract whole numbers (to at least two digits) and decimals (in the context of money) • with up to three addends and	**TE:** 187A, 187B, 187–188
• to $1.00.	**TE:** 185A, 185B, 185–186, 225A, 225B, 225–226
PO 3. Demonstrate fluency of addition and subtraction facts.	**TE:** 23A, 23B, 23–24, 25A, 25B, 25–26, 27A, 27B, 27–28, 45A, 45B, 45–46, 47A, 47B, 471A, 51B, 51–52, 53A, 53B, 53–54, 63A, 63B, 63–64, 65A, 65B, 65–66
PO 4. Apply and interpret the concept of addition and subtraction as inverse operations to solve problems.	**TE:** 65A, 65B, 65–66, 161A, 161B, 161–162, 227A, 227B, 227–228
PO 5. Create and solve word problems based on addition and subtraction of two-digit numbers.	**TE:** 189A, 189B, 189–190, 221A, 221B, 221–222, 233A, 233B, 233–234, 377A, 377B, 377–378
PO 6. Demonstrate the concept of multiplication for 1s, 2s, 5s, and 10s.	**TE:** 469A, 469B, 469–470, 471A, 471B, 471–472, 473B, 473–474, 475A, 475B, 475–476, 479B, 479–480
PO 7. Describe the effect of operations (addition and subtraction) on the size of whole numbers.	**TE:** 19A, 19B, 19–20, 57A, 57B, 57–58, 65A, 65B, 65–66, 161A, 161B, 161–162, 233A, 233B, 233–234
PO 8. Apply properties to solve addition/subtraction problems • identity property of addition/subtraction,	**TE:** 10, 26, 30, 36, 54
• commutative property of addition, and	**TE:** 23A, 23B, 23–24
• associative property of addition.	**TE:** 49A, 49B, 49–50, 187A, 187B, 187–188
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use estimation to determine if sums of two 2-digit numbers are more or less than 20, more or less than 50, or more or less than 100.	Related topics are covered by the following: **TE:** 191A, 191B, 191–192
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Collect, record, organize, and display data using pictographs, frequency tables, or single bar graphs.	**TE:** 311A, 311B, 311–312, 313A, 313B, 313–314, 319A, 319B, 319–320, 321A, 321B, 321–322
PO 2. Formulate and answer questions by interpreting displays of data, including pictographs, frequency tables, or single bar graphs.	**TE:** 105A, 105B, 105–106, 311A, 311B, 311–312, 313A, 313B, 313–314, 315A, 315B, 315–316, 319A, 319B, 319–320, 321A, 321B, 321–322, 323A, 323B, 323–324, 327A, 327B, 327–328, 405A, 405B, 405–406, 439A, 439B, 439–440

Concept 2: Probability	
In Grade 2, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. List all possibilities in counting situations.	**TE:** 89A, 89B, 89–90, 484
PO 2. Solve a variety of problems based on the addition principle of counting.	Related topics are covered by the following: **TE:** 89A, 89B, 89–90, 484
Concept 4: Vertex-Edge Graphs	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Color simple pictures or maps using the least number of colors and justify the coloring.	Related topics are covered by the following: **TE:** 255A, 255B, 255–256
PO 2. Build vertex-edge graphs using concrete materials and explore simple properties of vertex-edge graphs • number of vertices and edges,	Related topics are covered by the following: **TE:** 247A, 247B, 247–248, 255A, 255B, 255–256
• neighboring vertices, and	Related topics are covered by the following: **TE:** 247A, 247B, 247–248, 255A, 255B, 255–256
• paths in a graph.	Related topics are covered by the following: **TE:** 255A, 255B, 255–256
PO 3. Construct simple vertex-edge graphs from simple pictures or maps.	Related topics are covered by the following: **TE:** 255A, 255B, 255–256
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, extend, create, and find missing terms in a numerical or symbolic pattern.	**TE:** 99A, 99B, 99–100, 157A, 157B, 157–158, 408, 413A, 413B, 413–414, 420, 467A, 467B, 467–468
PO 2. Explain the rule for a given numerical or symbolic pattern and verify that the rule works.	**TE:** 99A, 99B, 99–100, 157A, 157B, 157–158, 413A, 413B, 413–414, 420, 467A, 467B, 467–468

Concept 2: Functions and Relationships	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe a rule that represents a given relationship between two quantities using words or pictures.	**TE:** 99A, 99B, 99–100, 157A, 157B, 157–158, 413A, 413B, 413–414, 420, 467A, 467B, 467–468
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Record equivalent forms of whole numbers to 1000 by constructing models and using numbers.	**TE:** 391A, 391B, 391–392, 393A, 393B, 393–394, 395A, 395B, 395–396, 397A, 397B, 397–398, 401A, 401B, 401–402
PO 2. Compare expressions using spoken words and the symbols =, ≠, <, and >.	The symbol ≠ is introduced at Grade 4. The symbols =, <, and > are covered by the following: **TE:** 9A, 9B, 9–10, 19A, 19B, 19–20, 57A, 57B, 57–58, 91A, 91B, 91–92, 199A, 199B, 199–200, 203 (Enrichment), 221A, 221B, 221–222, 227A, 227B, 227–228, 399A, 399B, 399–400, 469A, 469B, 469–470
PO 3. Represent a word problem requiring addition or subtraction through 100 using an equation.	**TE:** 9A, 9B, 9–10, 17A, 17B, 17–18, 19A, 19B, 19–20, 57A, 57B, 57–58, 221A, 221B, 221–222, 487A, 487B, 487–488
PO 4. Identify the value of an unknown number in an equation involving an addition or subtraction fact.	**TE:** 9A, 9B, 9–10, 29A, 29B, 29–30, 67A, 67B, 67–68, 401A, 401B, 401–402
Concept 4: Analysis of Change	
In Grade 2, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	**TE:** 249A, 249B, 249–250, 251A, 251B, 251–252
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe and compare the attributes of polygons up to six sides using the terms side, vertex, point, and length.	**TE:** 249A, 249B, 249–250, 251A, 251B, 251–252
Concept 2: Transformation of Shapes	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify, with justification, whether a 2-dimensional figure has lines of symmetry.	**TE:** 261A, 261B, 261–262
Concept 3: Coordinate Geometry	
In Grade 2, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	

Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Tell time to the nearest minute using analog and digital clocks.	Readiness for this topic is covered by the following: **TE:** 291A, 291B, 291–292, 293A, 293B, 293–294, 295A, 295B, 295–296
PO 2. Apply measurement skills to measure the attributes of an object (length, capacity, weight).	**TE:** 341A, 341B, 341–342, 343A, 343B, 343–344, 345A, 345B, 345–346, 353A, 353B, 353–354, 355A, 355B, 355–356, 363A, 363B, 363–364, 365A, 365B, 365–366, 367A, 367B, 367–368
PO 3. Read temperatures on a thermometer using Fahrenheit and Celsius.	**TE:** 369A, 369B, 369–370
PO 4. Demonstrate unit conversions • 1 foot = 12 inches,	**TE:** 343A, 343B, 343–344
• 1 quart = 4 cups,	**TE:** 355A, 355B, 355–356
• 1 pound = 16 ounces,	**TE:** 365A, 365B, 365–366
• 1 hour = 60 minutes,	**TE:** 305A, 305B, 305–306
• 1 day = 24 hours,	**TE:** 305A, 305B, 305–306
• 1 week = 7 days, and	**TE:** 305A, 305B, 305–306
• 1 year = 12 months.	**TE:** 305A, 305B, 305–306
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
In Grade 2, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify the question(s) asked and any other questions that need to be answered in order to find a solution.	**TE:** 9A, 9B, 9–10, 17A, 17B, 17–18, 19A, 19B, 19–20, 57A, 57B, 57–58, 161A, 161B, 161–162, 221A, 221B, 221–222, 233A, 233B, 233–234, 377A, 377B, 377–378, 453A, 453B, 453–454, 487A, 487B, 487–488
PO 2. Identify the given information that can be used to find a solution.	**TE:** 233A, 233B, 233–234
PO 3. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.	**TE:** 9A, 9B, 9–10, 57A, 57B, 57–58, 89A, 89B, 89–90, 155A, 155B, 155–156, 197A, 197B, 197–198, 221A, 221B, 221–222, 265A, 265B, 265–266, 311A, 311B, 311–312, 351A, 351B, 351–352, 413A, 413B, 413–414, 439A, 439B, 439–440, 479A, 479B, 479–480

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 4. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	**TE:** 5A, 5B, 5–6, 9A, 9B, 9–10, 17A, 17B, 17–18, 19A, 19B, 19–20, 57A, 57B, 57–58, 89A, 89B, 89–90, 155A, 155B, 155–156, 221A, 221B, 221–222, 311A, 311B, 311–312, 479A, 479B, 479–480, 487A, 487B, 487–488
PO 5. Explain and clarify mathematical thinking.	This topic is covered throughout the grade level, especially in the Think About It, Talk About It, and Journal Idea features. See the following examples: **TE:** 5–6, 27–28, 49–50, 65–66, 101–102, 117–118, 141–142, 157–158, 187–188, 189–190, 227–228, 233–234, 265–266, 275–276, 315–316, 325–326, 373–374, 377–378, 397–398, 413–414, 439–440, 453–454, 469–470, 487–488
PO 6. Determine whether a solution is reasonable.	**TE:** 18, 96, 104, 150, 180, 214, 324, 328, 344, 346, 406

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To the
Arizona Mathematics Standard Articulated by Grade Level (2008)

Grade 3

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Express whole numbers through six digits using and connecting multiple representations.	This topic is covered throughout the grade level. See the following examples: **TE:** 4A, 4B, 4–5, 6A, 6B, 6–7, 8A, 8B, 8–9, 10A, 10B, 10–11, 12A, 12B, 12–13
PO 2. Compare and order whole numbers through six digits by applying the concept of place value.	**TE:** 18A, 18B, 18–21, 22A, 22B, 22–23
PO 3. Count and represent money using coins and bills to $100.00.	**TE:** 36A, 36B, 36–39, 40A, 40B, 40–41, 49
PO 4. Sort whole numbers into sets and justify the sort.	**TE:** 24, 258, 276, 340B, 340, 402B, 402,
PO 5. Express benchmark fractions as fair sharing, parts of a whole, or parts of a set.	**TE:** 502A, 502B, 502–503, 506A, 506B, 506–509, 510A, 510B, 510–511, 512A, 512B, 512–513, 516A, 516B, 516–517, 518A, 518B, 518–519
PO 6. Compare and order benchmark fractions.	**TE:** 506A, 506B, 506–509, 512A, 512B, 512–513
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Add and subtract whole numbers to four digits.	**TE:** 96B, 128A, 128B, 128–131, 132A, 132B, 132–133, 136A, 136B, 136–137, 150A, 150B, 150–151, 152A, 152B, 152–155, 156A, 156B, 156–157
PO 2. Create and solve word problems based on addition, subtraction, multiplication, and division.	This topic is covered throughout this grade level. See the following examples: **TE:** 76A, 76B, 76–77, 140A, 140B, 140–141, 170Å, 170B, 170–171, 266A, 266B, 266–267, 294A, 294B, 294–295, 346A, 346B, 346–347, 406A, 406B, 406–407, 656A, 656B, 656–657, 658A, 658B, 658–659
PO 3. Demonstrate the concept of multiplication and division using multiple models.	**TE:** 260A, 260B, 261–262, 262A, 262B, 262–265, 266A, 266B, 266–267, 276A, 276B, 276–277, 316A, 316B, 316–317, 318A, 318B, 318–319, 320A, 320B, 320–322, 324A, 324B, 324–325, 370A, 370B, 370–371, 372A, 372B, 372–373, 374A, 374B, 374–376

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 4. Demonstrate fluency of multiplication and division facts through 10.	**TE:** 276A, 276B, 276–277, 280A, 280B, 280–281, 282A, 282B, 282–283, 286A, 286B, 286–287, 288A, 288B, 288–289, 316A, 316B, 316–317, 318A, 318B, 318–319, 320A, 320B, 320–322, 324A, 324B, 324–325, 328A, 328B, 328–329, 340A, 340B, 340–341, 342A, 342B, 342–343, 354–355, 384B, 384–385, 386B, 386A, 386B, 386–387, 388A, 388B, 388–389, 390A, 390B, 390–391, 392A, 392B, 392–393, 396A, 396B, 396–397
PO 5. Apply and interpret the concept of multiplication and division as inverse operations to solve problems.	**TE:** 384A, 384B, 384–385, 386A, 386B, 386–387, 388A, 388B, 388–389, 390A, 390B, 390–391, 392A, 392B, 392–393, 396A, 396B, 396–397
PO 6. Describe the effect of operations (multiplication and division) on the size of whole numbers.	260A, 260B, 260–261, 262A, 262B, 262–263, 266A, 266B, 266–267, 286A, 286B, 286–287, 338A, 338B, 338–339, 346A, 346B, 346–347, 370A, 370B, 370–371, 372A, 372B, 372–373, 374A, 374B, 374–375, 384A, 384B, 384–385, 404A, 404B, 404–405, 626A, 626B, 626–627, 630A, 630B, 630–631, 648A, 648B, 648–649, 650A, 650B, 650–651, 656A, 656B, 656–657
PO 7. Apply commutative, identity, and zero properties to multiplication and apply the identity property to division.	**TE:** 263–264, 286–287
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Make estimates appropriate to a given situation or computation with whole numbers.	**TE:** 86, 88–89, 90A, 90B, 90–91, 98A, 98B, 98–101, 532A, 533, 586, 681–682, 681–682, 685, 690–691, 694–695
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Collect, record, organize, and display data using frequency tables, single bar graphs, or single line graphs.	**TE:** 204A, 204B, 204–207, 212A
PO 2. Formulate and answer questions by interpreting and analyzing displays of data, including frequency tables, single bar graphs, or single line graphs.	**TE:** 204A, 204B, 204–207, 212A, 212B, 212–215, 222A, 222B, 222–223
Concept 2: Probability	
In Grade 3, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	

Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Represent all possibilities for a variety of counting problems using arrays, charts, and systematic lists; draw conclusions from these representations.	The Fundamental Counting Principle is introduced at Grade 6. Related content is found on the following pages: **TE:** 704A, 704B, 704–707
PO 2. Solve a variety of problems based on the multiplication principle of counting.	The Fundamental Counting Principle is introduced at Grade 6. Related content is found on the following pages: **TE:** 704A, 704B, 704–707
Concept 4: Vertex-Edge Graphs	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Color complex maps using the least number of colors and justify the coloring.	Related content is found on the following pages: **TE:** 449, 454B (Math and Art)
PO 2. Investigate properties of vertex-edge graphs • circuits in a graph,	Related content is found on the following pages: **TE:** 218A, 218B, 218–219
• weights on edges, and	Related content is found on the following pages: **TE:** 218A, 218B, 218–219
• shortest path between two vertices.	Related content is found on the following pages: **TE:** 218A, 218B, 218–219
PO 3. Solve problems using vertex-edge graphs.	Related content is found on the following pages: **TE:** 218A, 218B, 218–219, 449, 454B (Math and Art)
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, extend, create, and find missing terms in a numerical sequence.	**TE:** 24A, 24B, 24–26, 76–77, 218B, 218–220, 270A, 270B, 270–273, 332A, 332B, 332–334, 340A, 340B, 340–341, 344A, 344B, 344–345
PO 2. Explain the rule for a given numerical sequence and verify that the rule works.	**TE:** 24A, 24B, 24–26, 76–77, 270A, 270B, 270–273, 332A, 332B, 332–334, 340A, 340B, 340–341, 344A, 344B, 344–345
Concept 2: Functions and Relationships	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize and describe a relationship between two quantities, given by a chart, table or graph, in which the quantities change proportionally, using words, pictures, or expressions.	**TE:** 72A, 72B, 72–73, 270A, 270B, 270–273, 344A, 344B, 344–345

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 2. Translate between the different representations of whole number relationships, including symbolic, numerical, verbal, or pictorial.	**TE:** 404A, 404B, 404–405, 498A, 498B, 498–501, 502A, 502B, 502–503, 504A, 504B, 504–505, 510A, 510B, 510–511, 516A, 516B, 516–517
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Record equivalent forms of whole numbers to six digits by constructing models and using numbers.	**TE:** 6A, 6B, 6–7, 8A, 8B, 8–9, 10A, 10B, 10–11, 12–13,
PO 2. Use a symbol to represent an unknown quantity in a given context.	**TE:** 70–71, 79, 89, 96–97, 281, 287, 293, 343, 384–385, 614, 629, 655, 682, 325
PO 3. Create and solve simple one-step equations that can be solved using addition and multiplication facts.	**TE:** 70–71, 79, 96–97, 168–169, 281, 293, 343, 384–385, 614, 629
Concept 4: Analysis of Change	
In Grade 3, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe sequences of 2-dimensional figures created by increasing the number of sides, changing size, or changing orientation.	**TE:** 456A, 456B, 456–459
PO 2. Recognize similar figures.	**TE:** 459
PO 3. Identify and describe 3-dimensional figures including their relationship to real world objects: sphere, cube, cone, cylinder, pyramids, and rectangular prisms.	**TE:** 428A, 428B, 428–431
PO 4. Describe and compare attributes of two- and three-dimensional figures.	**TE:** 432A, 432B, 432–433
Concept 2: Transformation of Shapes	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify a translation, reflection, or rotation and model its effect on a 2-dimensional figure.	**TE:** 456A, 456B, 456–459
PO 2. Identify, with justification, all lines of symmetry in a 2-dimensional figure.	**TE:** 460A, 460B, 460–461

Concept 3: Coordinate Geometry	
In Grade 3, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Determine elapsed time • across months using a calendar	**TE:** 200–201
• by hours and half hours using a clock.	**TE:** 198A, 198B, 198–199
PO 2. Apply measurement skills to measure length, weight, and capacity using US customary units.	**TE:** 532A, 532B, 532–533, 534A, 534B, 534–535, 536A, 536B, 536–537, 538A, 538B, 538–539, 680A, 680B, 680–681, 690A, 690B, 690–691
PO 3. Convert units of length, weight, and capacity • inches or feet to yards,	**TE:** 536A, 536B, 536–537, 538A, 538B, 538–539
• ounces to pounds, and	**TE:** 690A, 690B, 690–691
• cups to pints, pints to quarts, quarts to gallons.	**TE:** 680A, 680B, 680–681
PO 4. Determine the area of a rectangular figure using an array model.	**TE:** 468A, 468B, 468–469
PO 5. Measure and calculate perimeter of 2-dimensional figures.	**TE:** 464A, 464B, 464–465
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
In Grade 3, there are no performance objectives in this concept. Performance objectives begin in Grade 4.	
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze a problem situation to determine the question(s) to be answered.	**TE:** 76A, 76B, 76–77, 284A, 284B, 284–285, 346A, 346B, 346–347
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	**TE:** 14A, 14B, 14–15, 32A, 32B, 32–33, 42A, 42B, 42–43, 540A, 540B, 540–541
PO 3. Select and use one or more strategies to efficiently solve the problem and justify the selection.	**TE:** 76A, 76B, 76–77, 102A, 102B, 102–103, 140A, 140B, 140–141, 236A, 236B, 236–237, 270A, 270B, 270–271, 332A, 332B, 332–333, 380A, 380B, 380–381, 436A, 436B, 436–437, 528A, 528B, 528–529, 578A, 578B, 578–579, 644A, 644B, 644–645, 688A, 688B, 688–689

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 4. Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem	**TE:** 102A, 102B, 102–103, 140A, 140B, 140–141, 236A, 236B, 236–237, 270A, 270B, 270–271, 332A, 332B, 332–333, 346A, 346B, 346–347, 380A, 380B, 380–381, 436A, 436B, 436–437, 528A, 528B, 528–529, 578A, 578B, 578–579, 644A, 644B, 644–645, 688A, 688B, 688–689
PO 5. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	**TE:** 76A, 76B, 76–77, 140A, 140B, 140–141, 270A, 270B, 270–271, 284A, 284B, 284–285, 346A, 346B, 346–347, 404A, 404B, 404–405
PO 6. Summarize mathematical information, explain reasoning, and draw conclusions.	**TE:** 644A, 644B, 644–645
PO 7. Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	**TE:** 14, 25, 30, 81, 84, 87, 99, 197, 209, 380A, 380B, 380–381 633
PO 8. Make and test conjectures based on data (or information) collected from explorations and experiments.	**TE:** 332A, 332B, 332–333, 344A, 344B, 344–345, 380A, 380B, 380–381, 528A, 528B, 528–529

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To the
Arizona Mathematics Standard Articulated by Grade Level (2008)

Grade 4

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Express whole numbers, fractions, decimals, and percents using and connecting multiple representations.	Percent is introduced at Grade 5. See the following pages for whole numbers, fractions, and decimals. **TE:** 4A, 4B, 4–7, 8A, 8B, 8–9, 10A, 10B, 10–11, 28A, 28B, 28–29, 500A, 500B, 500–501, 502A, 502B, 502–503, 504A, 504B, 504–507, 624A, 624B, 624–627
PO 2. Compose and decompose whole numbers using factors and multiples.	**TE:** 124A, 124B, 124–126, 128A, 128B, 128–131, 132A, 132B, 132–134, 136A, 136B, 136–137, 146A, 146B, 146–147, 148A, 148B, 148–149, 150A, 150B, 150–151, 152A, 152B, 152–153, 145A, 154B, 154–155
PO 3. Express fractions as fair sharing, parts of a whole, parts of a set, and locations on a real number line.	**TE:** 530A, 530B, 530–531, 532, 534A, 534B, 534–535
PO 4. Compare and order decimals to hundredths.	**TE:** 630A, 630B, 630–631
PO 5. Use simple ratios to describe problems in context.	Ratio is introduced at Grade 5. Readiness for this topic is covered by the following: **TE:** 500A, 500B, 500–501, 502A, 502B, 502–503
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Add and subtract decimals through hundredths including money to $1000.00 and fractions with like denominators.	**TE:** 76A, 76B, 76–79, 80A, 80B, 80–81, 82A, 82B, 82–83, 636A, 636B, 636–637, 638A, 638B, 638–641, 642A, 642B, 642–645
PO 2. Use multiple strategies to multiply whole numbers • two-digit by two-digit and	**TE:** 314, 314B, 314–315, 316A, 316B, 316–318, 320A, 320B, 320–323, 332A, 332B, 332–335
• multi-digit by one-digit.	**TE:** 274A, 274B, 274–277, 282A, 282B, 282–283
PO 3. Demonstrate fluency of multiplication and division facts through 12.	**TE:** 124A, 124B, 124–126, 128A, 128B, 128–131, 132A, 132B, 132–134, 136A, 136B, 136–137, 146A, 146B, 146–147, 148A, 148B, 148–149, 150A, 150B, 150–151, 152A, 152B, 152–153, 145A, 154B, 154–155

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 4. Use multiple strategies to divide whole numbers.	**TE:** 146A, 146B, 146–147, 148A, 148B, 148–149, 150A, 150B, 150–151, 152A, 152B, 152–153, 154A, 154B, 154–155, 366A, 366B, 366–367, 372A, 372B, 372–373, 374A, 374B, 374–375, 380A, 380B, 380–383, 384A, 384B, 384–385, 386A, 386B, 386–389, 390A, 390B, 390–391, 392A, 392B, 392–393, 402A, 402B, 402–403, 406A, 406B, 406–407, 408A, 408B, 408–409
PO 5. Apply associative and distributive properties to solve multiplication and division problems.	**TE:** 132, 288A, 288B, 288–289
PO 6. Apply order of operations with whole numbers.	Readiness for this topic is covered by the following: **TE:** 161
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use benchmarks as meaningful points of comparison for whole numbers, decimals, and fractions.	**TE:** 16, 508, 630
PO 2. Make estimates appropriate to a given situation or computation with whole numbers and fractions.	**TE:** 68A, 68B, 68–69, 316A, 316B, 316–319, 562A, 562B, 562–563, 588–589, 592–593, 600A, 600B, 600–601
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Collect, record, organize, and display data using double bar graphs, single line graphs, or circle graphs.	Readiness for double bar graphs is covered by the following: **TE:** 208A, 208B, 209–209 Single line graphs and circle graphs are covered by the following: **TE:** 216B, 218–219, 222A, 222B, 222–223, 536A, 536B, 536–537
PO 2. Formulate and answer questions by interpreting and analyzing displays of data, including double bar graphs, single line graphs, or circle graphs.	Readiness for double bar graphs is covered by the following: **TE:** 208A, 208B, 209–209 Single line graphs and circle graphs are covered by the following: **TE:** 216B, 218–219, 222A, 222B, 222–223, 536A, 536B, 536–537
PO 3. Use median, mode, and range to describe the distribution of a given data set.	**TE:** 226A, 226B, 226–229, 404A, 404B, 404–405
PO 4. Compare two sets of related data.	**TE:** 226A, 226B, 226–229, 230A, 230B, 230–231, 232A, 232B, 232–233

Concept 2: Probability	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe elements of theoretical probability by listing or drawing all possible outcomes of a given event and predicting the outcome using word and number benchmarks.	**TE:** 704A, 704B, 704–705, 706A, 706B, 706–709, 710A, 710B, 710–711
Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Construct tree diagrams to solve problems in context by • representing all possibilities for a variety of counting problems,	**TE:** 704A, 704B, 704–705
• explaining how its properties relate to the problem,	**TE:** 704A, 704B, 704–705
• representing the same counting problem in multiple ways, and	**TE:** 704A, 704B, 704–705
• drawing conclusions.	**TE:** 704A, 704B, 704–705
PO 2. Justify that all possibilities have been enumerated without duplication. Connections: M04-S2C3-01	**TE:** 704A, 704B, 704–705
Concept 4: Vertex-Edge Graphs	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Demonstrate the connection between map coloring and vertex coloring.	Related topics are covered by the following: **TE:** 435, 444 (English Language Learners)
PO 2. Construct vertex-edge graphs to represent concrete situations and identify paths and circuits.	Related topics are covered by the following: **TE:** 435, 444 (English Language Learners)
PO 3. Solve conflict problems by constructing and coloring vertex-edge graphs.	Related topics are covered by the following: **TE:** 435, 444 (English Language Learners)
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, create, extend, and find missing terms in a numerical sequence involving whole numbers using all four basic operations.	**TE:** 90A, 90B, 90–91
PO 2. Explain the rule for a given numerical sequence, verify that the rule works, and use the rule to make predictions.	**TE:** 90A, 90B, 90–91

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
Concept 2: Functions and Relationships	
In Grade 4, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use a symbol to represent an unknown quantity in a simple algebraic expression involving all operations.	**TE:** 98–99, 100A, 100B, 100–101, 160A, 160B, 160–163
PO 2. Create and solve one-step equations that can be solved using addition, subtraction, multiplication, and division of whole numbers.	**TE:** 100A, 100B, 100–101, 166A, 166B, 166–167, 690A, 690B, 690–691
Concept 4: Analysis of Change	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify the change in a quantity over time and make simple predictions.	**TE:** 160A, 161, 216A, 216B, 216–217
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Draw and describe the relationships between points, lines, line segments, rays, and angles including parallelism and perpendicularity.	**TE:** 440A, 440B, 440–443
PO 2. Justify which objects in a collection match a given geometric description.	**TE:** 434B, 436–437
PO 3. Describe and classify triangles by angles and sides.	**TE:** 444A, 444–446
PO 4. Recognize which attributes (such as shape or area) change and which do not change when 2-dimensional figures are cut up or rearranged.	**TE:** 447, 471 (Enrichment), 474A, 474B, 474–475
PO 5. Recognize and draw congruent figures, and match them in a given collection.	**TE:** 452A, 452–454
PO 6. Draw right, acute, obtuse, and straight angles and identify these angles in other geometric figures.	**TE:** 440A, 440–442, 445–447,
PO 7. Recognize the relationship between a 3-dimensional figure and its corresponding net(s).	**TE:** 435

Concept 2: Transformation of Shapes	
In Grade 4, there are no performance objectives in this concept. Performance objectives begin in Grade 2.	
Concept 3: Coordinate Geometry	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Name, locate, and graph points in the first quadrant of the coordinate plane using ordered pairs.	**TE:** 212A, 212B, 212–215
PO 2. Plot line segments in the first quadrant of the coordinate plane using a set of ordered pairs in a table.	Readiness for this topic is covered by the following: **TE:** 212A, 212B, 212–215
PO 3. Construct geometric figures with vertices at points on the coordinate plane.	Readiness for this topic is covered by the following: **TE:** 212A, 212B, 212–215
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Compute elapsed time to the minute.	**TE:** 196A, 196B, 196–197
PO 2. Apply measurement skills to measure length, mass, and capacity using metric units.	**TE:** 652A, 652B, 652–653, 654A, 654B, 654–655, 656A, 656B, 656–657
PO 3. Solve problems involving conversions within the same measurement system.	**TE:** 588B, 588, 592A, 592B, 592, 594A, 594B, 594–595, 596A, 596B, 596–597, 652A, 652–653, 654, 656A, 656B, 656–657, 658A, 658B, 658–661
PO 4. Solve problems involving perimeter of 2-dimensional figures and area of rectangles.	**TE:** 464A, 464B, 464–467, 468A, 468B, 468–471
PO 5. Describe the change in perimeter or area when one attribute (length or width) of a rectangle changes.	**TE:** 470–471
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze common algorithms for computing (adding, subtracting, multiplying, and dividing) with whole numbers using the associative, commutative, and distributive properties.	**TE:** 62A, 62B, 62–63, 76A, 76B, 76–79, 80A, 80B, 80–81, 132A, 132B, 132–133, 262A, 262B, 262–263, 270A, 270B, 270–273, 274A, 274B, 274–275, 332A, 332B, 332–335, 336A, 336B, 336–337, 374A, 374B, 374–375
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze a problem situation to determine the question(s) to be answered.	**TE:** 12A, 12B, 12–13, 24A, 24B, 24–25, 38A, 38B, 38–39, 156Å, 156B, 156–157, 290A, 290B, 290–291, 396A, 396B, 396–397

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	**TE:** 696A, 696B, 696–697
PO 3. Select and use one or more strategies to efficiently solve the problem and justify the selection.	**TE:** 90A, 90B, 90–91, 140A, 140B, 140–141, 222A, 222B, 222–223
PO 4. Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.	**TE:** 648A, 648B, 648–649
PO 5. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	**TE:** 30A, 30B, 30, 32A, 32B, 32–33, 156A, 156B, 156–157, 222A, 222B, 222–223, 264A, 264B, 264–265, 290A, 290B, 290–291, 320A, 320B, 320–321, 396A, 396B, 396–397, 474A, 474B, 474–475, 512A, 512B, 512–513
PO 6. Summarize mathematical information, explain reasoning, and draw conclusions.	**TE:** 6, 21, 31, 32, 63, 84, 91, 95, 134, 137, 151, 155, 191, 218, 227, 228, 229, 230, 233, 256, 259, 289, 381, 391, 405, 435, 436, 439, 442, 446, 448, 449, 453, 457, 458, 459, 466, 470, 474, 477, 506, 523, 535, 575, 576, 577, 580, 589, 595, 625, 629, 633, 636, 653, 656, 657, 659, 664, 665, 690, 693, 705, 706, 707, 711
PO 7. Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	**TE:** 101, 286, 333
PO 8. Make and test conjectures based on data (or information) collected from explorations and experiments.	**TE:** 700A, 700B, 700–703, 710A, 710B, 710–713

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To the
Arizona Mathematics Standard Articulated by Grade Level (2008)

Grade 5

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Determine equivalence by converting between benchmark fractions, decimals, and percents.	**TE:** 426A, 426B, 426–427, 668–669
PO 2. Differentiate between prime and composite numbers; differentiate between factors and multiples for whole numbers.	**TE:** 164A, 164B, 164–167
PO 3. Locate integers on a number line.	**TE:** 712A, 712B, 712–715, 716B, 716, 718A, 718B, 718
PO 4. Compare and order positive fractions, decimals, and percents.	**TE:** 418A, 418B, 418–419, 420A, 420B, 420–423, 430A, 430B, 430–431
PO 5. Use ratios and unit rates to model, describe and extend problems in context.	**TE:** 646A, 646B, 646–647, 648A, 648B, 648–649, 652A, 652B, 652–653, 654A, 654B, 654–655
PO 6. Express or interpret positive and negative numbers in context.	**TE:** 712A, 712B, 712–715, 716A, 716B, 716–717, 718A, 718B, 718–719
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Add and subtract decimals through thousandths and fractions expressing solutions in simplest form.	**TE:** 38A, 38B, 38–39, 40A, 40B, 40–41, 460A, 460B, 460–461
PO 2. Multiply multi-digit whole numbers.	**TE:** 66A, 66B, 66–67, 72A, 72B, 72–75
PO 3. Divide multi-digit whole numbers by whole number divisors with and without remainders.	**TE:** 132A, 132A, 132B, 132–134, 136A, 136B, 136–137, 138A, 138B, 138–140, 148A, 148B, 148–151, 152A, 152B, 152–155, 156A, 156B, 156–157, 158A, 158B, 158–159, 202A, 202B, 202–203, 204A, 204B, 204–206, 214A, 214B, 214–217, 218A, 218B, 218–221, 222A, 222B, 222–223, 224A, 224B, 224–225
PO 4. Apply the associative, commutative, and distributive properties to solve numerical problems.	**TE:** 22A, 22B, 22–25, 66A, 66B, 66–67, 70A, 70B, 70–71
PO 5. Simplify numerical expressions (including fractions and decimals) using the order of operations with or without grouping symbols.	**TE:** 172A, 172B, 172–173

Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Make estimates appropriate to a given situation or computation with whole numbers, fractions, and decimals.	**TE:** 18, 28A, 28B, 28–29, 38–39, 40–41, 68A, 68B, 68–69, 86A, 86B, 86–87, 138A, 138B, 138–141, 204A, 204B, 204–207, 236, 402A, 402B, 403–403, 468, 474A, 474B, 474–475, 494A, 494B, 494–495, 672A, 672B, 672–675
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Collect, record, organize, and display data using multi-bar graphs or double line graphs.	Readiness for double line graphs is covered by the following: **TE:** 266A, 266B, 266–269 Multi-bar graphs are covered by the following: **TE:** 262A, 262B, 262–265, 277–278
PO 2. Formulate and answer questions by interpreting and analyzing displays of data, including multi-bar graphs or double line graphs.	Readiness for double line graphs is covered by the following: **TE:** 266A, 266B, 266–269 Multi-bar graphs and other data displays are covered by the following: **TE:** 260A, 260B, 260–261, 262A, 262B, 262–265, 270A, 270B, 270–273, 277–278, 286A, 286B, 286–287, 288A, 288B, 288–289
PO 3. Use mean, median, mode, and range to analyze and describe the distribution of a given data set.	**TE:** 282A, 282B, 282–283
Concept 2: Probability	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe the theoretical probability of events and represent the probability as a fraction, decimal, or percent.	Readiness for describing theoretical probability as a decimal and percent is covered by the following: **TE:** 84A, 84B, 84–85, 668A, 668B, 668–669 Describing theoretical probability as a fraction is covered by the following: **TE:** 302A, 302B, 302–303
PO 2. Explore probability when performing experiments by • predicting the outcome,	**TE:** 296A, 296B, 296–299
• recording the data,	**TE:** 296A, 296B, 297
• comparing outcomes of the experiment to predictions, and	**TE:** 296A, 296B, 296–299
• comparing the results of multiple repetitions of the experiment.	**TE:** 302B

Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze relationships among representations and make connections to the multiplication principle of counting.	**TE:** 279, 300A, 300B, 300–301
PO 2. Solve a variety of counting problems and explain the multiplication principle of counting.	**TE:** 279, 300A, 300B, 300–301
Concept 4: Vertex-Edge Graphs	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Investigate properties of vertex-edge graphs • Euler paths,	Related topics are covered by the following: **TE:** 353, 355
• Euler circuits, and	Related topics are covered by the following: **TE:** 353, 355
• degree of a vertex.	Related topics are covered by the following: **TE:** 353, 355
PO 2. Solve problems related to Euler paths and circuits.	Related topics are covered by the following: **TE:** 353, 355
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using addition and subtraction.	**TE:** 84A, 84B, 84–85, 492
Concept 2: Functions and Relationships	
In Grade 5, there are no performance objectives in this concept.	
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Create and solve two-step equations that can be solved using inverse operations with whole numbers.	Readiness for this topic is covered by the following: **TE:** 108A, 108B, 108–109, 700A, 700B, 700–701, 702A, 702B, 702–703, 706A, 706B, 706–709
Concept 4: Analysis of Change	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Describe patterns of change including constant rate and increasing or decreasing rate.	**TE:** 266A, 266B, 266–269, 288A, 288B, 288–292

Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Draw and label 2-dimensional figures given specific attributes including angle measure and side length.	**TE:** 340B, 340, 349, 360A, 360B, 360–361
PO 2. Solve problems by understanding and applying the property that the sum of the interior angles of a triangle is 180˚.	**TE:** 343, 345
PO 3. Classify quadrilaterals by their properties.	**TE:** 340A, 340B, 340–341, 342A, 342B, 342–345, 346A, 346B, 346–349
PO 4. Compare attributes of 2-dimensional figures with 3-dimensional figures by drawing and constructing nets and models.	**TE:** 598A, 598B, 598–601
Concept 2: Transformation of Shapes	
In Grade 5, there are no performance objectives in this concept.	
Concept 3: Coordinate Geometry	
In Grade 5, there are no performance objectives in this concept.	
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Solve problems using elapsed time.	**TE:** 564A, 564B, 564–567
PO 2. State an appropriate measure and degree of accuracy in a given context.	**TE:** 531, 535
PO 3. Measure angles between 0 and 360 degrees.	**TE:** 332A, 332B, 332–335
PO 4. Solve problems involving the area of 2-dimensional figures by using the properties of parallelograms and triangles.	**TE:** 548A, 548B, 548–549, 550A, 550B, 550–551, 552A, 552B, 552–553, 554A, 554B, 554–555, 558A, 558B, 558–559
PO 5. Solve problems involving area and perimeter of regular and irregular polygons using reallotment of square units.	**TE:** 540A, 540B, 540-541, 548A, 548B, 548–549, 550A, 550B, 550–551, 552A, 552B, 552–553, 554A, 554B, 554–555, 558A, 558B, 558–559
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze common algorithms for adding and subtracting fractions and decimals using the associative, commutative, and distributive properties.	Related topics are covered by the following: **TE:** 38A, 38B, 38–39, 40A, 40B, 40–41, 460A, 460B, 460–461, 462A, 462B, 462–463, 466A, 466B, 466–467, 472A, 472B, 472–473, 476A, 476B, 476–477, 478A, 478B, 478–479

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 2. Develop an algorithm or formula to calculate areas and perimeters of simple polygons.	**TE:** 540A, 540B, 540-541, 550A, 550B, 550–551, 552A, 552B, 552–553, 554A, 554B, 554–555
Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze a problem situation to determine the question(s) to be answered.	**TE:** 18A, 18B, 18–19, 32A, 32B, 32–33, 42A, 42B, 42–43, 168A, 168B, 168–169, 226A, 226B, 226–227, 352A, 352B, 352–353, 406A, 406B, 406–407, 504A, 504B, 504–505, 624A, 624B, 624–625, 706A, 706B, 706–707
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	**TE:** 406A, 406B, 406–407
PO 3. Select and use one or more strategies to efficiently solve the problem and justify the selection.	**TE:** 80A, 80B, 80–81, 144A, 144B, 144–145, 210A, 210B, 210–211, 276A, 276B, 276–277, 352A, 352B, 352–353, 434A, 434B, 434–435, 484A, 484B, 484–485, 558A, 558B, 558–559, 606A, 606B, 606–607, 660A, 660B, 660–661, 706A, 706B, 706–707
PO 4. Determine whether a problem to be solved is similar to previously solved problems, and identify possible strategies for solving the problem.	**TE:** 352A, 352B, 352–355
PO 5. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.	**TE:** 44A, 44B, 44–45, 80A, 80B, 80–81, 104A, 104B, 104–105, 110A, 110B, 110–111, 168A, 168B, 168–169, 180A, 180B, 180–181, 226A, 226B, 226–227, 238A, 238B, 238–239, 276A, 276B, 276–277, 288A, 288B, 288–289, 352A, 352B, 352–353, 484A, 484B, 484–485, 504A, 504B, 504–505, 558A, 558B, 558–559, 606A, 606B, 606–607, 660A, 660B, 660–661, 706A, 706B, 706–707, 728A, 728B, 728–729
PO 6. Summarize mathematical information, explain reasoning, and draw conclusions.	**TE:** 27, 69, 74, 95, 104, 109, 134, 139, 140, 163, 168, 175, 177, 178, 205, 206, 222, 235, 261, 269, 272, 277, 283, 284, 289, 290, 291, 296, 297, 298, 300, 301, 302, 303, 304, 329, 330, 331, 334, 337, 341, 344, 347, 348, 361, 362, 365, 366, 369, 399, 427, 432–433, 461, 463, 476, 480, 492, 495, 501, 503, 530, 533, 535, 543, 548, 553, 555, 562, 563, 564, 565, 567, 568, 569, 594, 595, 596, 599, 600, 602, 603, 607, 613, 614, 615, 620, 623, 624, 625, 647, 671, 697, 698, 701, 703, 707, 714, 719, 724, 729
PO 7. Analyze and evaluate whether a solution is reasonable, is mathematically correct, and answers the question.	**TE:** 18, 169, 236
PO 8. Make and test conjectures based on data or information collected from explorations and experiments.	**TE:** 136A, 136B, 136–137, 210A, 210B, 210–211, 296A, 296B, 296–297, 352A, 352B, 352–353, 434A, 434B, 434–435, 706A, 706B, 706–707

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 9. Identify simple valid arguments using if…then statements based on graphic organizers.	Related topics are covered by the following: **TE:** 78–79, 103, 274–275, 434A, 434B, 434–437, 556–557, 658–659
PO 10. Construct if… then statements to generalize rules for computation, geometric properties and algebraic functions.	Related topics are covered by the following: **TE:** 22A, 22B, 22–23, 26A, 26B, 26–27, 28A, 28B, 28–29, 36A, 36B, 36–37, 38A, 38B, 38–39, 40A, 40B, 40–41, 328A, 328B, 328–329, 332A, 332B, 332–335, 336A, 336B, 336–337, 340A, 340B, 340–341, 342A, 342B, 342–343, 346A, 346B, 346–347, 696A, 696B, 696–699, 700A, 700B, 700–701

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To the
Arizona Mathematics Standard Articulated by Grade Level (2008)

Grade 6

Strand 1: Number and Operations	
Concept 1: Number Sense	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Convert between expressions for positive rational numbers, including fractions, decimals, percents, and ratios.	**TE:** 172A, 172B, 172–175, 302A, 302B, 302–303, 358A, 358B, 358–361
PO 2. Use prime factorization to • express a whole number as a product of its prime factors and	**TE:** 146B, 147–149
• determine the greatest common factor and least common multiple of two whole numbers.	**TE:** 150A, 150B, 150–151, 152A, 152B, 152–153
PO 3. Demonstrate an understanding of fractions as rates, division of whole numbers, parts of a whole, parts of a set, and locations on a real number line.	**TE:** 160A, 160B, 160–161, 168Å, 168B, 168–169, 170A, 170B, 170–171, 306A, 306B, 306–307,
PO 4. Compare and order integers; and positive fractions, decimals, and percents.	**TE:** 78A, 78B, 78–79, 176A, 176B, 176–179, 410A, 410B, 410–411
PO 5. Express that a number's distance from zero on the number line is its absolute value.	**TE:** 408–409
PO 6. Express the inverse relationships between exponents and roots for perfect squares and cubes.	**TE:** 8A, 8B, 8–10
Concept 2: Numerical Operations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Apply and interpret the concepts of addition and subtraction with integers using models.	**TE:** 418A, 418B, 418–421, 422A, 422B, 422–425
PO 2. Multiply multi-digit decimals through thousandths.	**TE:** 90A, 90B, 90–91, 106A, 106B, 106–107
PO 3. Divide multi-digit whole numbers and decimals by decimal divisors with and without remainders.	**TE:** 100A, 100B, 100–101
PO 4. Multiply and divide fractions.	**TE:** 252A, 252B, 258–259, 252A, 252B, 258–259, 270A, 270B, 270–271
PO 5. Provide a mathematical argument to explain operations with two or more fractions or decimals.	**TE:** 112A, 112B, 112–113, 266A, 266B, 266–269, 276A, 276B, 276–277, 700A, 702

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
PO 6. Apply the commutative, associative, distributive, and identity properties to evaluate numerical expressions involving whole numbers.	**TE:** 24A, 24B, 24–25, 28–29, 30–31, 38–39, 700–701
PO 7. Simplify numerical expressions (involving fractions, decimals, and exponents) using the order of operations with or without grouping symbols.	Simplifying numerical expressions involving fractions is covered by the following: **TE:** 274A, 274B, 274–275 Readiness for simplifying numerical expressions involving decimals and exponents is covered by the following: **TE:** 8A, 8B, 8–9, 24A, 24B, 24–25, 110A, 110B, 110–111
Concept 3: Estimation	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use benchmarks as meaningful points of comparison for rational numbers.	**TE:** 16A, 16B, 16–17, 18A, 18B, 18–19, 170A, 170B, 170–171, 176, 216A, 216B, 216–217, 256A, 256B, 256–257, 368A, 368B, 368–369
PO 2. Make estimates appropriate to a given situation and verify the reasonableness of the results.	**TE:** 14A, 14B, 14–15, 16A, 16B, 16–17, 18A, 18B, 18–19, 80A, 80B, 80–81, 82A, 82B, 82–83, 86A, 91 170A, 170B, 170–171, 205, 216A, 216B, 216–217, 219, 249, 256A, 256B, 256–257, 281A, 368A, 368B, 368–369, 564A, 564B, 564–567, 568A, 568B, 568–569, 570A, 570B, 570–571
Strand 2: Data Analysis, Probability, and Discrete Mathematics	
Concept 1: Data Analysis (Statistics)	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Solve problems by selecting, constructing, and interpreting displays of data, including histograms and stem-and-leaf plots.	**TE:** 628A, 628B, 628–629, 632A, 632B, 632–633, 636A, 636B, 636–637, 638A, 638B, 638–640, 648B
PO 2. Formulate and answer questions by interpreting, analyzing, and drawing inferences from displays of data, including histograms and stem-and-leaf plots.	**TE:** 628A, 628B, 628–631, 632A, 632B, 632–633, 636A, 636B, 636–637, 638A, 638B, 638–640, 642A, 642B, 642–643, 648A, 648B, 648–649, 650A, 650B, 650–651
PO 3. Use extreme values, mean, median, mode, and range to analyze and describe the distribution of a given data set.	**TE:** 624A, 624B, 624–627
PO 4. Compare two or more sets of data by identifying trends.	**TE:** 638A, 638B, 638–639
Concept 2: Probability	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use data collected from multiple trials of a single event to form a conjecture about the theoretical probability.	**TE:** 664A, 664B, 664–665
PO 2. Use theoretical probability to • predict experimental outcomes,	**TE:** 654A, 654B, 654–655

Performance Objectives	SFAW Mathematics © 2005
Students are expected to:	
• compare the outcome of the experiment to the prediction, and	**TE:** 664A, 664B, 664–665
• replicate the experiment and compare results.	**TE:** 665–666
PO 3. Determine all possible outcomes (sample space) of a given situation using a systematic approach.	**TE:** 654A, 654B, 654–655
Concept 3: Systematic Listing and Counting	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Build and explore tree diagrams where items repeat.	**TE:** 654A, 654B, 654–657, 658A, 658B, 658–659
PO 2. Explore counting problems with Venn diagrams using three attributes.	Related topics are covered by the following: **TE:** 89, 151, 413, 654A, 654B, 654–655, 658A, 658B, 658–661
Concept 4: Vertex-Edge Graphs	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Investigate properties of vertex-edge graphs • Hamilton paths,	Related content is covered by the following: **TE:** 475
• Hamilton circuits, and	Related content is covered by the following: **TE:** 475
• shortest route.	Related content is covered by the following: **TE:** 475
PO 2. Solve problems related to Hamilton paths and circuits.	Related content is covered by the following: **TE:** 475
Strand 3: Patterns, Algebra, and Functions	
Concept 1: Patterns	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using all four basic operations.	**TE:** 444A, 444B, 444–447

Concept 2: Functions and Relationships	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Recognize and describe a relationship between two quantities, given by a chart, table, or graph, using words and expressions.	**TE:** 156A, 156B, 156–157, 264A, 264B, 264–265, 444A, 444B, 444–447, 448A, 448B, 448–449, 648A, 648B, 648–649, 650A, 650B, 650–651
Concept 3: Algebraic Representations	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Use an algebraic expression to represent a quantity in a given context.	**TE:** 710A, 710B, 710–711
PO 2. Create and solve two-step equations that can be solved using inverse properties with fractions and decimals.	**TE:** 712A, 712B, 712–715
PO 3. Translate both ways between a verbal description and an algebraic expression or equation.	**TE:** 40A, 40B, 40–41, 116A, 116B, 116–117, 180A, 180B, 180–181, 274A, 274B, 274–275, 710A, 710B, 710–711
PO 4. Evaluate an expression involving the four basic operations by substituting given fractions and decimals for the variable.	**TE:** 710A, 710B, 710–711
Concept 4: Analysis of Change	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Determine a pattern to predict missing values on a line graph or scatterplot.	**TE:** 638A, 638B, 638–641
Strand 4: Geometry and Measurement	
Concept 1: Geometric Properties	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Define (pi) as the ratio between the circumference and diameter of a circle and explain the relationship among the diameter, radius, and circumference.	**TE:** 576A, 576B, 576–579
PO 2. Solve problems using properties of supplementary, complementary, and vertical angles.	**TE:** 480A, 480B, 480–483
Concept 2: Transformation of Shapes	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Identify a simple translation or reflection and model its effect on a 2-dimensional figure on a coordinate plane using all four quadrants.	Readiness for this topic is covered by the following: **TE:** 440A, 440B, 440–441, 510A, 510B, 510–511
PO 2. Draw a reflection of a polygon in the coordinate plane using a horizontal or vertical line of reflection.	Readiness for this topic is covered by the following: **TE:** 440A, 440B, 440–441, 510A, 510B, 510–511

Concept 3: Coordinate Geometry	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Graph ordered pairs in any quadrant of the coordinate plane.	**TE:** 440A, 440B, 440–441
PO 2. State the missing coordinate of a given figure on the coordinate plane using geometric properties to justify the solution.	**TE:** 440A, 440B, 440–442
Concept 4: Measurement	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Determine the appropriate unit of measure for a given context and the appropriate tool to measure to the needed precision (including length, capacity, angles, time, and mass).	Determining the appropriate unit of measure and the appropriate tool to measure to the needed precision for length, capacity, and mass is covered by the following: **TE:** 542B, 546, 550A, 550B, 550–551 Related topics for determining the appropriate unit of measure and the appropriate tool to measure to the needed precision for time and angles is covered by the following: **TE:** 354A, 354B, 354–355, 476A, 476B, 476–479, 484A, 484B, 484–487
PO 2. Solve problems involving conversion within the U.S. Customary and within the metric system.	**TE:** 542–544, 547–548
PO 3. Estimate the measure of objects using a scale drawing or map.	**TE:** 330A, 330B, 330–333
PO 4. Solve problems involving the area of simple polygons using formulas for rectangles and triangles.	**TE:** 568A, 568B, 568–569, 572A, 572B, 572–573
PO 5. Solve problems involving area and perimeter of regular and irregular polygons.	**TE:** 564A, 564B, 564–567, 571 (Enrichment), 575
PO 6. Describe the relationship between the volume of a figure and the area of its base.	**TE:** 594A, 594B, 594–597
Strand 5: Structure and Logic	
Concept 1: Algorithms and Algorithmic Thinking	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze algorithms for multiplying and dividing fractions and decimals using the associative, commutative, and distributive properties.	Related topics are covered by the following: **TE:** 90A, 90B, 90–93, 100A, 100B, 100–103, 106A, 106B, 106–109, 252A, 252B, 252–255, 258A, 258B, 258–259, 266A, 266B, 266–269, 270A, 270B, 270–271
PO 2. Create and justify an algorithm to determine the area of a given compound figure using parallelograms and triangles.	**TE:** 564A, 564B, 564–567, 571 (Enrichment), 575

Concept 2: Logic, Reasoning, Problem Solving and Proof	
Performance Objectives	**SFAW Mathematics © 2005**
Students are expected to:	
PO 1. Analyze a problem situation to determine the question(s) to be answered.	**TE:** 20A, 20B, 20–21, 36A, 36B, 36–37, 52A, 52B, 52–53, 98A, 98B, 98–99, 116A, 116B, 116–117, 180A, 180B, 180–181, 226A, 226B, 226–227, 374A, 374B, 374–375, 414A, 414B, 414–415, 582A, 582B, 582–583
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	**TE:** 582A, 582B, 582–583
PO 3. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	**TE:** 116A, 116B, 116–117, 156A, 156B, 156–157, 212A, 21B, 212–213, 264A, 264B, 264–265, 312A, 312B, 312–313, 374A, 374B, 374–375, 434A, 434B, 434–435, 490A, 490B, 490–491, 560A, 560B, 560–561, 648A, 648B, 548–649, 706A, 706B, 706–707
PO 4. Apply a previously used problem-solving strategy in a new context.	**TE:** 119, 157, 265, 313, 377, 437, 491, 561, 649, 707
PO 5. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	**TE:** 52A, 52B, 52–53, 116A, 16B, 116–117, 180A, 180B, 180–181, 264A, 264B, 264–265, 312A, 312B, 312–313, 414A, 414B, 414–415, 648A, 648B, 648–649, 722A, 722B, 722–723
PO 6. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	This topic is covered throughout the grade level. See the following examples: **TE:** 116A, 116B, 116–117, 156A, 156B, 156–157, 212A, 21B, 212–213, 264A, 264B, 264–265, 312A, 312B, 312–313, 374A, 374B, 374–375, 434A, 434B, 434–435, 490A, 490B, 490–491, 560A, 560B, 560–561, 648A, 648B, 548–649, 706A, 706B, 706–707
PO 7. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	**TE:** 6, 9, 17, 26, 34, 36, 81, 83, 91, 92, 102, 106, 108, 143, 144, 147, 152, 165, 169, 171, 207, 208, 219, 249, 250, 268, 270, 271, 317, 332, 333, 385, 411, 413, 420, 429, 431, 441, 442, 443, 445, 447, 449, 481, 482, 486, 473, 474, 477, 478, 491, 497, 498, 495, 501, 503, 508, 511, 515, 517, 566, 581, 588, 592, 593, 621, 622, 629, 630, 633, 639, 643, 644, 651, 659, 660, 663, 666, 669, 670, 673, 699, 713, 723
PO 8. Make and test conjectures based on information collected from explorations and experiments.	**TE:** 620A, 620B, 620–621, 664A, 664B, 664–667
PO 9. Solve simple logic problems, including conditional statements, and justify solution methods and reasoning.	**TE:** 560A, 560B, 560–561