

**AFTERSCHOOL ACHIEVERS:
MATH CLUB
Grades K-8
correlated to
Arkansas
Mathematics Curriculum
Framework**



YOUR ARKANSAS GREAT SOURCE REPRESENTATIVES

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Afterschool Achievers: Math Club
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Arkansas Mathematics Curriculum Framework

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 correlated to

Arkansas Mathematics Curriculum Framework

Kindergarten

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Whole Numbers NO.1.K.1 Count with understanding, explaining that each object should be counted only once and that placement of objects does not change the total amount	Instructor's Guide: 2, 4, 7, 9, 12, 14, 17, 19, 22, 24, 27, 29, 34, 37, 39, 44, 49, 54, 55, 59, 64, 69, 74, 79, 84, 89, 94, 99, 104, 109, 114, 119, 124, 129, 134, 139, 144, 149, 154, 159, 164, 187
NO.1.K.2 Group physical objects to represent a <i>whole number</i> less than 10 in at least two ways using <i>composition</i> and <i>decomposition</i>	Instructor's Guide: 10, 38, 48, 58, 60, 62, 67, 68, 82, 85, 88, 98, 103, 104, 108, 109, 110, 112, 114, 118, 119, 124, 127, 129, 134, 135, 139, 144, 149, 154, 159, 162, 164, 169, 174, 179, 204
NO.1.K.3 Connect various physical models and representations to the quantities they represent using number names, numerals and number words up to 10 with and without appropriate <i>technology</i>	Instructor's Guide: 2, 4, 5, 7, 9, 10, 12, 14, 17, 19, 22, 24, 27, 29, 30, 32, 34, 35, 39, 44, 49, 54, 55, 59, 60, 68, 69, 72, 74, 77, 79, 80, 81, 84, 85, 89, 94, 99, 104, 105, 109, 110, 114, 119, 124, 129, 130, 134, 135, 139, 144, 149, 154, 155, 159, 164, 193, 195
NO.1.K.4 Represent numbers to 10 in various forms	Instructor's Guide: 2, 4, 5, 7, 9, 10, 12, 14, 17, 19, 22, 24, 27, 29, 30, 32, 34, 35, 39, 44, 49, 54, 55, 59, 60, 68, 69, 72, 74, 77, 79, 80, 81, 84, 85, 89, 94, 99, 104, 105, 109, 110, 114, 119, 124, 129, 130, 134, 135, 139, 144, 149, 154, 155, 159, 164, 193
NO.1.K.5 Recognize the number or quantity in sets up to 5 without counting, regardless of arrangement	Instructor's Guide: 2, 4, 5, 7, 9, 10, 12, 14, 17, 19, 22, 24, 29, 30, 34, 35, 39, 44, 49, 54, 55, 68, 69, 74, 77, 79, 81, 84, 104, 109, 114, 119, 124, 144, 149, 154, 159, 193
NO.1.K.6 <i>Estimate</i> quantities fewer than or equal to 10 and judge the reasonableness of the <i>estimate</i>	Instructor's Guide: 10, 60, 65, 67, 85, 110, 135, 142, 144, 149, 154, 159, 160, 164, 169, 174, 177, 179

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
NO.1.K.7 Orally determine relative position using <i>ordinal numbers</i> (first through tenth)	Instructor's Guide: 163
NO.1.K.8 Compare 2 numbers, with less than 6 in each set, using objects and pictures, with and without appropriate <i>technology</i>	Instructor's Guide: 10, 38, 48, 58, 62, 68, 82, 88, 104, 109, 112, 114, 119, 124, 149, 154
NO.1.K.9 Compare and order numbers less than twenty using terms more than, same amount as, less than	Instructor's Guide: 10, 38, 48, 58, 62, 72, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 119, 124, 129, 134, 139, 149, 154, 162, 173, 193, 203
Rational Numbers NO.1.K.10 Consecutively order sets of physical objects from 1 to 10	Instructor's Guide: 38, 48, 58, 62, 72, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 119, 124, 129, 134, 139, 149, 154, 162

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Number Theory NO.2.K.1 Count on (forward) and count back (backward) using physical models or a number line starting at any <i>whole number</i> between zero and twenty	Instructor's Guide: 2, 4, 7, 9, 12, 14, 17, 19, 22, 23, 27, 29, 30, 32, 37, 39, 44, 45, 49, 54, 59, 70, 74, 79, 80, 89, 94, 99, 104, 109, 114, 115, 117, 124, 129, 137, 139, 152
Whole Number Operations NO.2.K.2 Use physical and <i>pictorial models</i> to demonstrate various meanings of addition and subtraction	Instructor's Guide: 5, 29, 32, 34, 35, 54, 55, 59, 60, 62, 67, 85, 105, 110, 127, 134, 135, 142, 144, 149, 154, 155, 158, 159, 160, 162, 164, 169, 174, 177, 179, 193, 194, 204, 207
NO.2.K.3 Demonstrate the relationship between addition and subtraction with informal language and models in <i>contextual situations</i> involving <i>whole numbers</i>	Instructor's Guide: 177
NO.2.K.4 Partition or share a small set of objects into groups of equal size e.g., sharing 6 pencils equally among 3 children	Instructor's Guide: 7

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
<p>Computational Fluency-Addition and Subtraction NO.3.K.1 Develop <i>strategies</i> for basic addition facts</p> <ul style="list-style-type: none"> • counting all • counting on • one more, two more 	<p>Instructor's Guide: 10, 38, 48, 58, 60, 62, 67, 68, 82, 85, 88, 98, 103, 104, 108, 109, 110, 112, 114, 118, 119, 124, 127, 129, 134, 135, 139, 144, 149, 154, 159, 162, 164, 169, 174, 177, 179, 193, 196, 202</p>
<p>NO.3.K.2 Develop <i>strategies</i> for basic subtraction facts</p> <ul style="list-style-type: none"> • counting back • one less, two less 	<p>Instructor's Guide: 38, 48, 58, 62, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 119, 124, 129, 134, 139, 142, 160, 177, 193, 196, 202</p>
<p>Application of Computation NO.3.K.3 Solve problems by using a variety of methods and tools (e.g., objects, and/or illustrations, with and without appropriate <i>technology</i> and mental computations)</p>	<p>Instructor's Guide: 10, 38, 60, 65, 67, 85, 110, 135, 142, 144, 149, 154, 159, 160, 164, 169, 174, 177, 179</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
<p>Sort and Classify A.4.K.1 Identify how objects are alike or different</p>	<p>Instructor's Guide: 1, 3, 6, 8, 11, 13, 16, 18, 21, 25, 26, 28, 31, 33, 36, 40, 41, 46, 51, 52, 56, 61, 66, 71, 76, 81, 83, 86, 91, 92, 96, 101, 102, 106, 111, 116, 123, 138, 147, 153, 168, 197, 200, 201, 206, 208, 212</p>
<p>A.4.K.2 Sort objects into groups in one or more ways and identify which <i>attribute</i> was used to sort</p>	<p>Instructor's Guide: 1, 3, 6, 8, 11, 13, 16, 18, 21, 25, 26, 28, 31, 33, 36, 40, 41, 46, 51, 52, 56, 61, 66, 71, 76, 81, 83, 86, 91, 92, 96, 101, 102, 106, 111, 116, 123, 138, 147, 153, 168, 208</p>
<p>Recognize, describe and develop patterns A.4.K.3 Identify <i>patterns</i> in the environment</p>	<p>Instructor's Guide: 57, 97, 100, 121, 126, 131, 136, 141, 146, 151, 156, 157, 161, 166, 167, 171, 175, 176</p>

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
A.4.K.4 Use <i>patterns</i> to rote count up to 100 and count backward from 20 to 0	Instructor's Guide: 2, 4, 7, 9, 12, 14, 17, 19, 22, 24, 27, 29, 34, 37, 39, 44, 49, 54, 55, 59, 64, 69, 74, 79, 84, 89, 94, 99, 104, 109, 114, 119, 124, 129, 134, 139, 144, 149, 154, 159, 164
A.4.K.5 Identify, describe and extend <i>skip-counting patterns</i> by 5s and 10s	Instructor's Guide: 122, 152, 175
A.4.K.6 Duplicate, extend, create and describe repeating <i>patterns</i> using a wide variety of materials	Instructor's Guide: 50, 57, 72, 75, 97, 100, 121, 126, 131, 136, 141, 146, 151, 156, 157, 161, 166, 167, 171, 175, 176, 192, 195, 199, 210, 211

Standard 5: Algebraic Representations
Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Expressions, Equations and Inequalities A.5.K.1 Use drawings and labels to record solutions of addition and subtraction problems with answers less than or equal to 10	Instructor's Guide: 5, 29, 32, 34, 35, 44, 54, 55, 59, 60, 62, 67, 68, 85, 88, 98, 103, 105, 110, 127, 130, 134, 135, 142, 144, 149, 154, 155, 158, 159, 160, 162, 164, 169, 174, 177, 179, 211, 212
A.5.K.2 Identify, create, compare and describe sets of objects as more, less or equal	Instructor's Guide: 5, 7, 10, 12, 14, 17, 19, 22, 24, 27, 29, 30, 32, 34, 35, 38, 39, 44, 48, 49, 54, 55, 58, 59, 60, 62, 64, 68, 72, 74, 76, 77, 79, 80, 81, 82, 84, 85, 88, 89, 94, 98, 99, 103, 104, 105, 108, 109, 110, 112, 114, 117, 118, 119, 124, 129, 130, 134, 135, 139, 144, 149, 154, 162, 173

Standard 7: Analysis of Change
Students shall analyze change in various contexts.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Analyze Change A.7.K.1 Recognize <i>qualitative change</i>	Instructor's Guide: 1, 3, 6, 8, 11, 13, 16, 18, 21, 25, 26, 28, 31, 33, 36, 40, 41, 46, 51, 52, 56, 61, 66, 71, 76, 81, 83, 86, 91, 92, 96, 101, 102, 106, 111, 116, 123, 138, 147, 153, 168

G e o m e t r y

S t a n d a r d 8 : G e o m e t r i c P r o p e r t i e s

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
<p>Characteristics and Properties-Three Dimensional G.8.K.1 Sort and describe <i>three-dimensional</i> solids (<i>sphere, cube, cone, and cylinder</i>) by investigating their physical characteristics</p>	<p>Instructor's Guide: 63, 78, 87, 113, 120, 145, 148, 170, 178</p>
<p>G.8.K.2 Locate the presence of <i>two-dimensional</i> figures within <i>three-dimensional</i> objects in the environment</p>	<p>Instructor's Guide: 63, 78, 87, 113, 120, 178</p>
<p>Characteristics and Properties-Two Dimensional G.8.K.3 Sort, describe and make geometric figures (triangle, rectangle [including square] and circle) by investigating their physical characteristics independent of position or size</p>	<p>Instructor's Guide: 1, 6, 11, 16, 20, 21, 23, 37, 45, 53, 61, 66, 70, 71, 87, 107, 137, 172, 178</p>

S t a n d a r d 9 : T r a n s f o r m a t i o n o f S h a p e s

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
<p>Symmetry and Transformations G.9.K.2 Explore <i>slides, flips</i> and <i>turns</i></p>	<p>Instructor's Guide: 63, 78, 113, 120, 148</p>

S t a n d a r d 10 : C o o r d i n a t e G e o m e t r y

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
<p>Coordinate Geometry G.10.K.1 Demonstrate and describe the relative position of objects as follows: over, under, inside, outside, on, beside, between, above, below, on top of, upside-down, behind, in back of and in front of</p>	<p>Instructor's Guide: 42, 69, 95, 125</p>

M e a s u r e m e n t

S t a n d a r d 1 2 : P h y s i c a l A t t r i b u t e s

Students shall use attributes of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Time: Calendar M.12.K.1 Recognize that a calendar is used to measure time and use it to identify units of time (day, week, month, season, year) and compare them	Instructor's Guide: 28
M.12.K.2 Orally sequence and count the days of the week	Instructor's Guide: 28
Time: Clock M.12.K.3 Recognize that a clock is used to tell time	Instructor's Guide: 28
Money M.12.K.4 Recognize and identify <i>attributes</i> of penny, nickel, dime, and quarter	Instructor's Guide: 122
M.12.K.5 State the values of coins (penny, nickel, dime)	Instructor's Guide: 122, 203
Tools and Attributes M.12.K.7 Explore the <i>attributes</i> of length, weight, <i>capacity</i> , and <i>mass</i> using relative terms (longer, shorter, bigger, smaller, heavier, lighter, more and less)	Instructor's Guide: 15, 40, 47, 65, 90, 92, 180, 198

S t a n d a r d 1 3 : S y s t e m s o f M e a s u r e m e n t

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Calendar M.13.K.1 Use a calendar to determine elapsed time using the terms yesterday, today and tomorrow	Instructor's Guide: 28

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Clock M.13.K.2 Tell time to the nearest hour using <i>analog</i> and digital clock.	Instructor's Guide: 28
Elapsed Time M.13.K.3 Order events based on time.	Instructor's Guide: 28
Applications M.13.K.4 Name common tools for measurement (balance scale, ruler and thermometer)	Instructor's Guide: 92
M.13.K.5 <i>Estimate</i> and measure length, <i>capacity/volume</i> and <i>mass</i> of familiar objects using <i>non-standard units</i>	Instructor's Guide: 15, 47, 92, 115, 132, 140, 165, 180, 205

D a t a A n a l y s i s a n d P r o b a b i l i t y

S t a n d a r d 1 4 : D a t a R e p r e s e n t a t i o n

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Collect, Organize and Display Data DAP.14.K.1 Explore and discuss data collection by collecting, organizing and displaying physical objects	Instructor's Guide: 93

S t a n d a r d 1 5 : D a t a A n a l y s i s

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Kindergarten	Afterschool Achievers: Math Club, Kindergarten
Data Analysis DAP.15.K.1 Analyze and interpret concrete and <i>pictorial graphs</i> (i.e. <i>bar graphs, pictographs, Venn diagrams, T-chart</i>)	Instructor's Guide: 93

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Grade 1

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Whole Numbers NO.1.1.1 Use efficient <i>strategies</i> to count a given set of objects in groups of 10 up to 100	Instructor's Guide: 102, 125, 156, 161, 172, 176
NO.1.1.2 Represent a <i>whole number</i> less than 15 in all possible ways using <i>composition</i> and <i>decomposition</i>	Instructor's Guide: 9, 17, 22, 24, 30, 32, 37, 44, 50, 52, 54, 59, 62, 65, 69, 70, 72, 74, 79, 84, 89, 90, 91, 92, 94, 96, 99, 102, 104, 107, 110, 114, 119, 122, 129, 130, 134, 137, 142, 144, 150, 154, 159, 164, 167, 169, 170, 174, 177, 179, 184
NO.1.1.3 Connect various physical models and representations to the quantities they represent using number names, numerals and number words to 20 with and without appropriate <i>technology</i>	Instructor's Guide: 2, 4, 5, 9, 17, 22, 24, 28, 29, 32, 37, 65, 89, 113, 182, 184, 185
NO.1.1.4 Represent numbers to 20 in various forms	Instructor's Guide: 2, 4, 5, 9, 17, 22, 24, 28, 29, 32, 37, 65, 89, 113, 187, 188
NO.1.1.5 Use multiple models to develop understandings of <i>place value</i> including tens and ones	Instructor's Guide: 37, 112, 123, 126, 138, 157, 165, 168, 188, 201
NO.1.1.6 Recognize the number or quantity of sets up to 10 without counting, regardless of arrangement	Instructor's Guide: 2, 4, 5, 9, 17, 22, 28, 29, 32, 37, 113
NO.1.1.7 <i>Estimate</i> the results of <i>whole number</i> addition and subtraction problems and judge the reasonableness	Instructor's Guide: 30, 50, 65, 85, 110, 130, 150, 170

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
NO.1.1.8 Determine relative position using <i>ordinal numbers</i> (first through twelfth)	Instructor's Guide: 27, 45, 81, 98, 101, 131, 186
NO.1.1.9 Compare 2 numbers, with less than 12 in each set, using objects and pictures with and without appropriate <i>technology</i>	Instructor's Guide: 7, 9, 14, 19, 34, 39, 44, 49, 52, 82, 154, 157, 182
NO.1.1.10 Compare 2 numbers, less than 100 using mathematical language of greater than, equal to (same amount as), less than	Instructor's Guide: 7, 9, 14, 19, 34, 39, 44, 49, 52, 82, 97, 105, 154, 157, 172, 196, 198, 209
Rational Numbers NO.1.1.11 Communicate the relative position of any number less than 20 (18 is less than 20 and greater than 12)	Instructor's Guide: 7, 14, 19, 34, 39, 44, 49, 52, 82, 105, 154, 172, 196, 198, 209
NO.1.1.12 Represent commonly used fractions using words and physical models for halves, thirds and fourths	Instructor's Guide: 117, 118, 173, 202

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Number Theory NO.2.1.1 Count on (forward) and back (backward) using physical models or a number line starting at any <i>whole number</i> up to fifty	Instructor's Guide: 2, 25, 28, 67, 68, 82, 83, 99, 105, 119, 129, 144, 172
NO.2.1.2 Develop an understanding of the <i>commutative</i> (turn around facts) and <i>identity</i> (add 0) <i>properties of addition</i> using objects	Instructor's Guide: 86, 91, 166
NO.2.1.3 Apply <i>number theory</i> : <ul style="list-style-type: none"> • determine if a <i>one-digit</i> number is <i>odd</i> or <i>even</i> • use the terms <i>sum</i> and <i>difference</i> in appropriate context • use conventional symbols (+, -, =) to represent the operations of addition and subtraction 	Instructor's Guide: 10, 24, 30, 50, 54, 59, 62, 69, 72, 74, 79, 84, 86, 89, 91, 92, 94, 99, 104, 107, 109, 110, 113, 114, 119, 121, 122, 124, 129, 130, 134, 137, 142, 144, 149, 150, 154, 159, 162, 164, 167, 169, 170, 174, 177, 179, 209, 210, 212

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Whole Number Operations NO.2.1.4 Use physical, <i>pictorial</i> and symbolic models to demonstrate various meanings of addition and subtraction	Instructor's Guide: 10, 24, 30, 50, 54, 59, 62, 69, 70, 72, 74, 79, 84, 89, 90, 91, 92, 99, 104, 107, 110, 114, 119, 122, 129, 130, 134, 137, 142, 144, 150, 154, 159, 162, 164, 167, 169, 170, 174, 177, 179, 184
NO.2.1.5 Identify and use relationships between addition and subtraction to solve problems in <i>contextual situations</i> involving <i>whole numbers</i>	Instructor's Guide: 122, 137, 142, 154, 159, 164, 169, 177
NO.2.1.6 Model and represent division as sharing equally in <i>contextual situations</i>	Instructor's Guide: 118, 174

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Computational Fluency-Addition and Subtraction NO.3.1.1 Develop <i>strategies</i> for basic addition facts <ul style="list-style-type: none"> • counting all • counting on • one more, two more • doubles • doubles plus one or minus one • make ten • using ten frames • <i>Identity Property</i> (add zero) 	Instructor's Guide: 14, 22, 34, 37, 44, 52, 54, 62, 65, 85, 86, 91, 113, 137, 142, 154, 167, 169, 191
NO.3.1.2 Develop <i>strategies</i> for basic subtraction facts <ul style="list-style-type: none"> • relating to addition • one less, two less • all but one • using ten frames of the answers 	Instructor's Guide: 19, 34, 39, 44, 49, 52, 65, 85, 122, 137, 142, 154, 159, 164, 167, 169, 177, 191
Application of Computation NO.3.1.3 Solve problems by using a variety of methods and tools (e.g., objects, mental computation, paper and pencil, and with and without appropriate <i>technology</i>)	Instructor's Guide: 24, 25, 28, 34, 37, 39, 44, 49, 52, 54, 59, 62, 64, 65, 67, 68, 69, 74, 76, 77, 79, 84, 85, 86, 89, 90, 91, 92, 94, 96, 99, 102, 104, 109, 110, 114, 119, 122, 124, 128, 129, 130, 134, 137, 139, 142, 144, 149, 150, 151, 152, 154, 155, 159, 162, 164, 166, 167, 169, 170, 177

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Sort and Classify A.4.1.1 Sort and classify objects by one or two <i>attributes</i> in more than one way	Instructor's Guide: 1, 3, 6, 8, 21, 23, 48, 53, 58, 60, 61, 63, 66, 80, 100, 132, 153, 158, 160, 180
Recognize, describe, and develop patterns A.4.1.2 Identify and describe <i>patterns</i> in the environment	Instructor's Guide: 11, 16, 26, 36, 61, 81, 101, 131, 171
A.4.1.3 Use <i>patterns</i> to count forward and backward when given a number less than or equal to 50	Instructor's Guide: 2, 25, 28, 67, 68, 82, 83, 99, 105, 119, 129, 144, 172
A.4.1.4 Identify, describe and extend <i>skip-counting patterns</i> by 2s	Instructor's Guide: 106, 111, 116, 121, 161, 172
A.4.1.5 Identify a number that is one more or one less than any <i>whole number</i> less than 100	Instructor's Guide: 14, 17, 19, 39, 44, 52, 82, 97, 105, 197, 198
A.4.1.6 Recognize, extend, and create simple repeating and growing <i>patterns</i> using a wide variety of materials and describe them using words, pictures or symbols	Instructor's Guide: 11, 16, 26, 31, 36, 41, 46, 51, 56, 61, 66, 71, 81, 91, 101, 111, 131, 141, 171, 193, 211

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Expressions, Equations, and Inequalities A.5.1.1 Select and/or write number sentences to find the unknown in problem-solving contexts involving single- <i>digit</i> addition and subtraction using appropriate labels	Instructor's Guide: 62, 72, 107, 114, 122, 134, 137, 142

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
A.5.1.2 Recognize that “=” indicates a relationship in which the quantities on each side of an <i>equation</i> are equal	Instructor’s Guide: 9, 30, 50, 54, 59, 62, 64, 69, 72, 74, 79, 84, 86, 89, 91, 92, 94, 99, 104, 107, 109, 110, 114, 119, 122, 124, 129, 130, 134, 137, 139, 142, 144, 149, 150, 152, 154, 159, 162, 164, 167, 169, 170, 174, 177, 179
A.5.1.3 Recognize that symbols such as $_$, Δ and \diamond in an addition or subtraction equation, represent a missing value that will make the statement true	Instructor’s Guide: 30, 50, 62, 72, 92, 107, 110, 114, 122, 130, 134, 137, 142, 150, 162, 167, 170, 193, 194, 198, 200, 203, 206

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Algebraic Models and Relationships A.6.1.1 Explore the use of a chart or table to organize information and to understand relationships	Instructor’s Guide: 76, 96, 151, 162

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Analyze Change A.7.1.1 Interpret <i>qualitative change</i>	Instructor’s Guide: 1, 3, 6, 8, 21, 23, 48, 53, 58, 60, 61, 63, 66, 80, 100, 132, 153, 158, 160, 180

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Characteristics and Properties-Three Dimensional G.8.1.1 Compare <i>three-dimensional</i> solids (<i>sphere, cube, rectangular prism, cone, and cylinder</i>) by investigating their physical characteristics	Instructor’s Guide: 48, 53, 58, 63, 158, 160, 180, 197, 205

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
G.8.1.2 Investigate the presence of <i>three-dimensional</i> objects in the environment	Instructor's Guide: 48, 53, 58, 63, 158, 160, 180, 205
Characteristics and Properties-Two Dimensional G.8.1.3 Compare and make geometric figures (triangle, rectangle [including square] and circle) by investigating their physical characteristics independent of position or size	Instructor's Guide: 3, 8, 12, 13, 18, 21, 23, 60, 61, 66, 80, 100, 132, 153, 183, 205

Standard 9 : Transformation of Shapes

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Symmetry and Transformations G.9.1.2 Manipulate <i>two-dimensional</i> figures through <i>slides, flips</i> and <i>turns</i>	Instructor's Guide: 53, 58, 63, 158, 160, 180

Standard 10 : Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Coordinate Geometry G.10.1.1 Extend the use of location words to include distance (near, far, close to) and direction (left and right)	Instructor's Guide: 20, 40

Standard 11 : Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Spatial Visualization and Models G.11.1.1 Replicate a simple <i>two-dimensional</i> figure from a briefly displayed example or from a description	Instructor's Guide: 3, 8, 12, 13, 18, 23, 153
G.11.1.2 Recognize that new figures can be created by combining and subdividing models of existing figures	Instructor's Guide: 81, 101

Measurement

Standard 12: Physical Attributes

Students shall use attributes of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
<p>Time: Calendar M.12.1.1 Recognize the number of days in a week and the number of days in a month using a calendar</p>	<p>Instructor's Guide: 47, 93, 98, 190</p>
<p>M.12.1.2 Orally sequence the months of the year</p>	<p>Instructor's Guide: 47, 98</p>
<p>Time: Clock M.12.1.3 Recognize that an hour is longer than a minute and a minute is longer than a second</p>	<p>Instructor's Guide: 57, 135, 147, 148, 175</p>
<p>Money M.12.1.4 Recognize and identify <i>attributes</i> of penny, nickel, dime, quarter and dollar bill</p>	<p>Instructor's Guide: 29, 34, 39, 73, 75, 77, 78, 102, 152</p>
<p>M.12.1.5 State the values of a penny, nickel, dime, and quarter and dollar bill</p>	<p>Instructor's Guide: 29, 34, 39, 64, 73, 75, 76, 77, 78, 79, 94, 96, 102, 109, 124, 128, 139, 149, 151, 152, 155, 195, 199, 202</p>
<p>M.12.1.6 Compare the value of coins (pennies, nickels, dimes and quarters)</p>	<p>Instructor's Guide: 34, 39, 64, 73, 75, 76, 77, 78, 79, 94, 96, 102, 109, 124, 128, 139, 149, 151, 152, 155, 164</p>
<p>Temperature M.12.1.7 Distinguish between hot and cold temperatures on a thermometer</p>	<p>Instructor's Guide: 103, 127, 143, 204</p>
<p>Tools and Attributes M.12.1.8 Recognize <i>attributes</i> of measurement (length, weight, <i>capacity</i> and <i>mass</i>) and identify appropriate tools used to measure each attribute</p>	<p>Instructor's Guide: 15, 42, 43, 55, 88, 95, 103, 115, 127, 133, 143, 178, 189, 204</p>

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
<p>Calendar M.13.1.1 Use a calendar to determine <i>elapsed time</i> involving a time period of one week</p>	<p>Instructor's Guide: 47</p>
<p>Clock M.13.1.2 Tell time to the half-hour</p>	<p>Instructor's Guide: 147, 148, 175, 192, 207</p>
<p>Elapsed Time M.13.1.3 Determine <i>elapsed time</i> (to the hour) in <i>contextual situations</i></p>	<p>Instructor's Guide: 57, 135, 147, 148, 175</p>
<p>Money M.13.1.4 Determine the value of a small collection of coins (with a total value up to one dollar) using one or two different types of coins, including pennies, nickels, dimes and quarters</p>	<p>Instructor's Guide: 29, 34, 39, 64, 73, 75, 76, 77, 78, 90, 94, 96, 102, 109, 124, 128, 139, 149, 151, 152, 155, 164, 169, 195, 199, 202</p>
<p>M.13.1.5 Represent and write the value of money using the cent sign</p>	<p>Instructor's Guide: 64, 75, 76, 77, 94, 96, 102, 109, 124, 139, 149, 151, 152, 155, 169, 195, 199, 202</p>
<p>M.13.1.6 Show different combination of coins that have the same value</p>	<p>Instructor's Guide: 29, 34, 39, 64, 79, 94, 96, 102, 109, 124, 128, 139, 149, 164, 169</p>
<p>Applications M.13.1.7 Select the appropriate <i>non-standard</i> measurement tools for length, <i>capacity</i> and <i>mass</i></p>	<p>Instructor's Guide: 15, 33, 38, 42, 43, 95, 115, 133</p>
<p>M.13.1.8 <i>Estimate</i> and measure length, <i>capacity/volume</i> and <i>mass</i> with <i>non-standard units</i></p>	<p>Instructor's Guide: 15, 33, 38, 42, 43, 95, 115, 133, 189</p>

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Collect, Organize, and Display Data DAP.14.1.1 Identify the purpose for data collection and collect, organize and display physical objects for describing the results	Instructor's Guide: 163

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Data Analysis DAP.15.1.1 Analyze and interpret concrete and <i>pictorial graphs</i> (i.e. <i>bar graphs, pictographs, Venn diagrams, T-chart</i>)	Instructor's Guide: 163
DAP.15.1.2 Make a true statement about the data displayed on a graph or chart (i.e. 5 people ride the bus)	Instructor's Guide: 163

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 1	Afterschool Achievers: Math Club, Grade 1
Inferences and Predictions DAP.16.1.1 Explore making simple predictions for a given set of data	Instructor's Guide: 163

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Grade 2

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Whole Numbers NO.1.2.1 Use efficient <i>strategies</i> to count a given set of objects in groups of 2s and 5s to 100 and in groups of 3s to 30	Instructor’s Guide: 1, 18, 26, 56, 71, 76, 82, 86, 103, 111
NO.1.2.2 Represent a <i>whole number</i> in <i>multiple</i> ways using <i>composition</i> and <i>decomposition</i>	Instructor’s Guide: 2, 4, 9, 12, 14, 19, 24, 27, 33, 39, 42, 44, 79, 84, 89, 94, 99, 102, 104, 109, 114, 129, 149, 158, 169, 181, 198
NO.1.2.3 Connect various physical models and representations to the quantities they represent using number names, numerals and number words to 100 with and without appropriate <i>technology</i>	Instructor’s Guide: 2, 40, 60, 90, 122, 123, 181, 198
NO.1.2.4 Represent numbers to 100 in various forms	Instructor’s Guide: 2, 40, 60, 90, 122, 123, 198
NO.1.2.5 Use multiple models to represent understanding of <i>place value</i> including hundreds	Instructor’s Guide: 40, 60, 90, 122, 123
NO.1.2.6 Determine relative position using <i>ordinal numbers</i> (first through eighteenth)	Instructor’s Guide: 4, 9, 12, 14, 24, 36, 56, 73, 74, 79, 84, 89, 107, 109, 134, 138, 164, 169
NO.1.2.7 Compare 2 numbers, less than 100 using numerals and =, <, > with and without appropriate <i>technology</i>	Instructor’s Guide: 17, 31, 36, 46, 51, 76, 121, 123, 146, 156

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Rational Numbers NO.1.2.8 Communicate the relative position of any number less than 100 (27 is greater than 25 and less than 30)	Instructor's Guide: 31, 36, 46, 76, 121, 146, 156
NO.1.2.9 Represent fractions (halves, thirds, fourths, sixths and eighths) using words, numerals, and physical models	Instructor's Guide: 47, 48, 57, 58, 80, 97, 138, 142
NO.1.2.10 Utilize models to recognize that a fractional part can mean different amounts depending on the original quantity	Instructor's Guide: 57, 97

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Number Theory NO.2.2.1 Count on (forward) and back (backward) on a number line and a 100's chart starting at any <i>whole number</i> up to 100	Instructor's Guide: 31, 37, 65, 72, 102, 121, 127, 137, 146, 151, 156, 158, 166, 176
NO.2.2.2 <i>Model</i> and use the <i>commutative property for addition</i>	Instructor's Guide: 33
NO.2.2.3 Develop an understanding of the <i>associative property</i> of addition using objects	Instructor's Guide: 44, 49, 54
NO.2.2.4 Apply <i>number theory</i> <ul style="list-style-type: none"> • determine if a two-digit number is <i>odd</i> or <i>even</i> • use the terms <i>sum</i>, <i>addends</i>, and <i>difference</i> in an appropriate context ($2 + 3 = 5$, 2 and 3 are <i>addends</i>; 5 is a <i>sum</i>) 	Instructor's Guide: 4, 9, 10, 12, 14, 17, 18, 19, 26, 29, 39, 46, 49, 54, 61, 73, 79, 84, 89, 94, 96, 99, 104, 109, 114, 116, 120, 127, 129, 134, 137, 149, 154, 158, 166, 169, 176, 182, 183, 205
Whole Number Operations NO.2.2.5 Demonstrate various meanings of addition and subtraction	Instructor's Guide: 4, 9, 10, 12, 14, 19, 22, 24, 27, 29, 31, 33, 36, 39, 42, 44, 49, 51, 54, 61, 64, 67, 69, 71, 72, 73, 74, 76, 79, 84, 87, 89, 90, 94, 95, 96, 99, 100, 102, 103, 104, 106, 107, 109, 110, 112, 114, 116, 117, 119, 120, 121, 123, 124, 127, 128, 129, 131, 132, 134, 137, 139, 143, 144, 145, 146, 147, 149, 154, 156, 158, 164, 165, 166, 169, 174, 176, 179

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
NO.2.2.6 Demonstrate various addition and subtraction relationships (property) to solve problems in <i>contextual situations</i> involving <i>whole numbers</i>	Instructor's Guide: 10, 119, 120, 145
NO.2.2.7 Model, represent and explain division as sharing equally and repeated subtraction in <i>contextual situations</i>	Instructor's Guide: 135, 142, 162, 170, 178

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Computational Fluency-Addition and Subtraction NO.3.2.1 Develop <i>strategies</i> for basic addition facts <ul style="list-style-type: none"> • counting all • counting on • one more, two more • doubles • doubles plus one or minus one • make ten • using ten frames • <i>Identity Property</i> (add zero) 	Instructor's Guide: 22, 24, 29, 31, 39, 44, 54, 72
NO.3.2.2 Demonstrate multiple <i>strategies</i> for adding or subtracting <i>two-digit whole numbers</i> <ul style="list-style-type: none"> • <i>Compatible Numbers</i> • <i>compensatory numbers</i> • informal use of <i>commutative</i> and <i>associative properties of addition</i> 	Instructor's Guide: 33, 54, 67, 87, 102, 117, 127, 132, 137, 146, 164, 166, 176
NO.3.2.3 Demonstrate <i>computational fluency</i> (accuracy, efficiency and flexibility) in addition facts with addends through 9 and corresponding subtractions	Instructor's Guide: 4, 9, 10, 12, 14, 19, 22, 24, 27, 29, 31, 33, 36, 39, 42, 44, 51, 54, 61, 64, 71, 72, 79, 84, 89, 94, 96, 99, 102, 104, 106, 109, 116, 134, 143, 154, 158, 183, 184, 186, 197, 200, 211
Application of Computations NO.3.2.4 Solve problems using a variety of methods and tools (e.g., objects, mental computation, paper and pencil, and with and without appropriate <i>technology</i>)	Instructor's Guide: 4, 5, 9, 10, 12, 14, 19, 22, 24, 27, 29, 31, 33, 36, 39, 42, 44, 49, 51, 54, 61, 64, 67, 69, 71, 72, 73, 74, 76, 79, 84, 87, 89, 90, 94, 95, 96, 99, 100, 102, 103, 104, 106, 107, 109, 110, 112, 114, 116, 117, 119, 120, 121, 123, 124, 127, 128, 129, 131, 132, 134, 137, 139, 143, 144, 145, 146, 147, 149, 154, 156, 158, 164, 165, 166, 169, 174, 176, 179, 190

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Estimation NO.3.2.5 Use <i>estimation strategies</i> to solve addition and subtraction problems and judge the reasonableness of the answer</p>	<p>Instructor's Guide: 9, 14, 61, 79, 89, 95, 96, 104, 109, 114, 116, 120, 129, 134, 149, 154, 169</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Sort and Classify A.4.2.1 Sort, classify, and label objects by three or more <i>attributes</i> in more than one way</p>	<p>Instructor's Guide: 3, 7, 13, 23, 35, 38, 50, 63, 78, 88, 98, 163, 175</p>
<p>Recognize, describe and develop patterns A.4.2.2 Describe repeating and growing <i>patterns</i> in the environment</p>	<p>Instructor's Guide: 6, 11, 21, 41, 56, 66, 91, 126, 131, 171</p>
<p>A.4.2.3 Use <i>patterns</i> to count forward and backward when given a number less than or equal to 100</p>	<p>Instructor's Guide: 1, 18, 26, 31, 36, 37, 56, 71, 76, 81, 82, 86, 91, 102, 103, 111, 151</p>
<p>A.4.2.4 Identify, describe and extend <i>skip counting patterns</i> from any given number</p>	<p>Instructor's Guide: 1, 18, 26, 37, 56, 71, 76, 81, 82, 86, 91, 103, 111, 151</p>
<p>A.4.2.5 Identify a number that is more or less than any <i>whole number</i> less than 100 using <i>multiples</i> of ten</p>	<p>Instructor's Guide: 37, 65, 117</p>
<p>A.4.2.6 Recognize, describe, extend, and create repeating and growing <i>patterns</i> using a wide variety of materials to solve problems</p>	<p>Instructor's Guide: 1, 6, 11, 18, 21, 26, 37, 41, 56, 66, 71, 76, 81, 82, 86, 91, 103, 111, 126, 131, 151, 171</p>

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Expressions, Equations, and Inequalities A.5.2.1 Select and/or write number sentences to find the unknown in problem-solving contexts involving two-digit addition and subtraction using appropriate labels</p>	<p>Instructor's Guide: 16, 61, 96, 127, 137, 141, 191, 202, 204</p>
<p>A.5.2.2 Express mathematical relationships using <i>equalities</i> and <i>inequalities</i> ($>$, $<$, $=$, \neq)</p>	<p>Instructor's Guide: 4, 9, 12, 14, 16, 19, 22, 24, 27, 29, 33, 39, 44, 49, 51, 54, 61, 64, 69, 72, 74, 79, 84, 89, 94, 95, 96, 99, 102, 104, 109, 110, 112, 113, 114, 124, 127, 129, 134, 136, 137, 139, 141, 143, 149, 157, 158, 159, 164, 166, 169, 174, 179</p>
<p>A.5.2.3 Recognize that symbols such as \square, Δ and \diamond in an addition or subtraction equation, represent a missing value that will make the statement true</p>	<p>Instructor's Guide: 127, 137, 191, 202, 204, 209, 212</p>

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Algebraic Models and Relationships A.6.2.1 Use a chart or table to organize information and to understand relationships</p>	<p>Instructor's Guide: 70, 161</p>

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Analyze Change A.7.2.1 Interpret and compare <i>quantitative change</i></p>	<p>Instructor's Guide: 46, 76, 85, 103, 111, 151</p>

G e o m e t r y

S t a n d a r d 8 : G e o m e t r i c P r o p e r t i e s

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Characteristics and Properties-Three Dimensional G.8.2.1 Identify, name, sort and describe <i>three-dimensional</i> solids (<i>cube, sphere, rectangular prism, cone, and cylinder</i>) according to the shapes of <i>faces</i>	Instructor's Guide: 3, 13, 23, 35, 38, 50, 52, 63, 88, 98, 125, 133, 163, 173, 188, 209
G.8.2.2 Match <i>three-dimensional</i> objects to their <i>two-dimensional faces</i>	Instructor's Guide: 23, 38, 63, 88, 98, 133, 163, 173, 188
Characteristics and Properties-Two Dimensional G.8.2.3 Identify, classify and describe <i>two-dimensional</i> geometric figures (rectangle [including square], triangle and circle) using concrete objects drawings, and computer graphics	Instructor's Guide: 11, 15, , 209

S t a n d a r d 9 : T r a n s f o r m a t i o n o f S h a p e s

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Symmetry and Transformations G.9.2.1 Use <i>lines of symmetry</i> to demonstrate and describe <i>congruent</i> figures within a <i>two-dimensional</i> figure	Instructor's Guide: 153
G.9.2.2 Demonstrate the motion of a single <i>transformation</i>	Instructor's Guide: 13, 23, 35, 38, 50, 63, 98, 130

S t a n d a r d 10 : C o o r d i n a t e G e o m e t r y

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Coordinate Geometry G.10.2.1 Extend the use of directional words to include rows and columns	Instructor's Guide: 70

Standard 11: Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Spatial Visualization and Models G.11.2.1 Replicate a simple geometric design from a briefly displayed example or from a description	Instructor's Guide: 6, 11, 21, 41, 53, 101, 126
G.11.2.2 Create new figures by combining and subdividing models of existing figures	Instructor's Guide: 115

Measurement

Standard 12: Physical Attributes

Students shall use attributes of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Time: Calendar M.12.2.1 Recognize that there are 12 months in a year and that each month has a specific number of days	Instructor's Guide: 92, 147, 195, 206, 212
Time: Clock M.12.2.2 Recognize that there are 24 hours in a day	Instructor's Guide: 47, 58, 82, 108, 189
Money M.12.2.3 State the value of all coins and a dollar	Instructor's Guide: 16, 32, 34, 59, 77, 86, 100, 140, 144, 159, 161, 185, 206, 209, 210
M.12.2.4 Compare the value of all coins	Instructor's Guide: 16, 32, 34, 59, 77, 86, 100, 140, 144, 159, 161
Temperature M.12.2.5 Compare temperatures using the Fahrenheit scale on a thermometer	Instructor's Guide: 93
Tools and Attributes M.12.2.6 Make simple comparisons within units of like dimension (units of length, <i>mass/weight</i> and <i>capacity</i>)	Instructor's Guide: 7, 83, 85, 160, 182, 189, 195, 206, 207, 209

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
<p>Calendar M.13.2.1 Use a calendar to determine <i>elapsed time</i> involving a time period within a given month</p>	<p>Instructor's Guide: 91, 92, 131, 147, 171</p>
<p>Clock M.13.2.2 Tell time to the nearest five-minute interval</p>	<p>Instructor's Guide: 47, 58, 108, 187</p>
<p>Elapsed Time M.13.2.3 Determine <i>elapsed time</i> in <i>contextual situations</i> in hour increments regardless of starting time</p>	<p>Instructor's Guide: 82, 193, 210</p>
<p>Money M.13.2.4 Determine the value of a combination of coins up to the dollar</p>	<p>Instructor's Guide: 32, 34, 59, 77, 86, 100, 140, 144, 159, 161, 185, 192, 208, 210</p>
<p>M.13.2.5 Demonstrate a given value of money up to \$1.00 using a variety of coin combinations</p>	<p>Instructor's Guide: 32, 34, 159, 161, 185, 192</p>
<p>M.13.2.6 Demonstrate a given value of money up to \$1.00 using the fewest coins possible</p>	<p>Instructor's Guide: 32, 34, 161</p>
<p>M.13.2.7 Represent and write the value of money using the cent sign and in decimal form when using the dollar sign</p>	<p>Instructor's Guide: 16, 34, 59, 86, 144, 159, 161, 205</p>
<p>M.13.2.8 Calculate the amount of money, spent with and without <i>regrouping</i> in a <i>contextual situation</i></p>	<p>Instructor's Guide: 16, 140, 161</p>
<p>Temperature M.13.2.9 Read temperatures on a Fahrenheit scale in intervals of ten</p>	<p>Instructor's Guide: 93</p>

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Applications M.13.2.10 Select appropriate customary measurement tools (rulers, balance scale, cup and thermometer) for situations involving length, <i>capacity</i> , and <i>mass</i>	Instructor's Guide: 150, 168
M.13.2.11 <i>Estimate</i> and measure length, <i>capacity/volume</i> and <i>mass</i> with <i>non-standard units</i> to recognize the need for <i>standard units</i>	Instructor's Guide: 7, 20, 28, 30, 47, 58, 82, 83, 108, 150, 168
Perimeter M.13.2.12 Determine <i>perimeter</i> using physical materials (paper clips, craft sticks or grids) and by using measurement tools (rulers)	Instructor's Guide: 68, 105
Area M.13.2.13 Find the <i>area</i> of a region by counting squares on a grid	Instructor's Guide: 53, 113

D a t a A n a l y s i s a n d P r o b a b i l i t y

S t a n d a r d 1 4 : D a t a R e p r e s e n t a t i o n

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Collect, Organize and Display Data DAP.14.2.1 Identify the purpose for data collection and collect, organize, record and display the data using physical materials (<i>pictographs</i> , <i>Venn diagrams</i> and vertical and horizontal <i>bar graphs</i>)	Instructor's Guide: 25

S t a n d a r d 1 5 : D a t a A n a l y s i s

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Data Analysis DAP.15.2.1 Analyze and make predictions from data represented in charts and graphs	Instructor's Guide: 25, 70

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
DAP.15.2.2 Make true statements comparing data displayed on a graph or chart	Instructor's Guide: 25, 70

S t a n d a r d 1 6 : I n f e r e n c e s a n d P r e d i c t i o n s
 Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 2	Afterschool Achievers: Math Club, Grade 2
Inferences and Predictions DAP.16.2.1 Make simple predictions for a given set of data	Instructor's Guide: 25

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N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Whole Numbers NO.1.3.1 Recognize <i>equivalent</i> representations for the same <i>whole number</i> and generate them by <i>composing</i> and <i>decomposing</i> numbers	Instructor's Guide: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 14, 16, 19, 21, 24, 26, 29, 31, 33, 34, 36, 37, 39, 40, 41, 46, 48, 49, 51, 53, 56, 61, 66, 68, 85, 90, 94, 105, 127, 144, 154, 164
NO.1.3.2 Use the <i>place value</i> structure of the base ten number system and be able to represent and compare <i>whole numbers</i> including thousands (using models, illustrations, symbols, <i>expanded notation</i> and problem solving)	Instructor's Guide: 5, 7, 35, 48, 60, 71, 102, 103, 127, 140, 153, 180
NO.1.3.3 Use mathematical language and symbols to compare and order <i>four-digit</i> numbers with and without appropriate <i>technology</i> (<, >, =)	Instructor's Guide: 10, 12, 18, 22, 71, 153, 184, 202, 208
Rational Numbers NO.1.3.4 Represent fractions (halves, thirds, fourths, sixths and eighths) using words, numerals and physical models	Instructor's Guide: 82, 83, 137, 145, 150, 194, 211
NO.1.3.5 Utilize models to recognize that the size of the whole determines the size of the fraction depending on the original quantity	Instructor's Guide: 82, 83, 137, 145, 150

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
NO.1.3.6 Use the <i>place value</i> structure of the base ten number system and be able to represent and compare decimals to hundredths in money (using models, illustrations, symbols, <i>expanded notation</i> and problem solving)	Instructor's Guide: 32, 44, 73, 78, 95, 99, 117, 168
NO.1.3.7 Write a fraction that is <i>equivalent</i> to a given fraction with the use of models	Instructor's Guide: 82, 83

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Number Theory NO.2.3.1 Develop an understanding of the <i>commutative</i> and <i>identity properties</i> of <i>multiplication</i> using objects	Instructor's Guide: 59, 84
NO.2.3.2 Apply <i>number theory</i> : <ul style="list-style-type: none"> • determine if a three-digit number is <i>even</i> or <i>odd</i> • use the terms <i>multiple</i>, <i>factor</i>, <i>product</i> and <i>quotient</i> in an appropriate context (Since $3 \times 4 = 12$, 3 and 4 are <i>factors</i>; 12 is the <i>product</i>, 3, 6, 9, 12 are <i>multiples</i> of 3; 4, 8, 12, 16 are <i>multiples</i> of 4; $12 \div 4 = 3$, the <i>quotient</i>) 	Instructor's Guide: 7, 18, 29, 37, 64, 69, 76, 79, 81, 86, 89, 91, 96, 98, 101, 102, 104, 109, 115, 118, 131, 134, 139, 149, 153, 174, 179, 184, 187, 210
Whole Number Operations NO.2.3.3 Use conventional mathematical symbols to write <i>equations</i> for <i>contextual problems</i> involving multiplication	Instructor's Guide: 23, 47, 59, 62, 64, 69, 77, 79, 89, 92, 97, 109, 149, 171, 179
NO.2.3.4 Model, represent and explain division as measurement and partitive division including equal groups, related <i>rates</i> , price, <i>rectangular arrays</i> (<i>area model</i>), combinations and multiplicative comparison	Instructor's Guide: 55, 92, 112, 120, 124, 139, 146, 151, 175

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
<p>Computational Fluency-Addition and Subtraction NO.3.3.1</p> <p>Develop, with and without appropriate <i>technology</i>, <i>computational fluency</i>, in multi-digit addition and subtraction through 999 using contextual problems</p> <ul style="list-style-type: none"> • <i>strategies</i> for adding and subtracting numbers • <i>estimation</i> of sums and <i>differences</i> in appropriate situations • relationships between operations 	<p>Instructor's Guide: 1, 2, 4, 6, 8, 9, 10, 11, 12, 14, 16, 19, 24, 26, 31, 33, 34, 36, 37, 39, 40, 41, 46, 49, 51, 53, 56, 61, 66, 68, 70, 71, 75, 85, 94, 105, 144, 154, 164</p>
<p>Computational Fluency-Multiplication and Division NO.3.3.2</p> <p>Develop, with and without appropriate <i>technology</i>, fluency with basic number combinations for multiplication and division facts (10 x 10)</p>	<p>Instructor's Guide: 23, 55, 62, 64, 69, 77, 79, 84, 86, 89, 91, 97, 102, 124, 126, 129, 131, 136, 138, 147, 149, 153, 154, 159, 164, 169, 171, 173, 174, 179</p>
<p>NO.3.3.3</p> <p>Develop, with and without appropriate <i>technology</i>, <i>computational fluency</i> in multiplication and division up to two-digit by one-digit numbers using two-digit by one-digit number <i>contextual problems</i> using</p> <ul style="list-style-type: none"> • <i>strategies</i> for multiplying and dividing numbers • performance of operations in more than one way • <i>estimation</i> of <i>products</i> and <i>quotients</i> in appropriate situations • relationships between operations 	<p>Instructor's Guide: 102, 112, 124, 129, 159, 170, 171, 175</p>
<p>Application of Computation NO.3.3.4</p> <p>Solve simple problems using one operation involving addition and subtraction using a variety of methods and tools (e.g., objects, mental computation, paper and pencil and with and without appropriate <i>technology</i>)</p>	<p>Instructor's Guide: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 14, 16, 19, 24, 26, 31, 33, 34, 36, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 105, 144, 154, 164, 184</p>
<p>Estimation NO.3.3.5</p> <p>Use <i>estimation strategies</i> to solve problems and judge the reasonableness of the answer</p>	<p>Instructor's Guide: 40, 70, 75, 105</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
<p>Recognize, Describe, and Develop Patterns A.4.3.1 Count forward and backward when given a number less than or equal to 1000</p>	<p>Instructor's Guide: 21, 71, 76, 81, 86, 95, 96, 101, 106</p>
<p>A.4.3.2 Relate <i>skip-counting patterns</i> to multiplication</p>	<p>Instructor's Guide: 47, 64, 69, 76, 77, 79, 81, 86, 89, 91, 96, 98, 101, 104, 106, 109, 114, 118, 126, 131, 136, 138, 153, 169, 174</p>
<p>A.4.3.3 Identify a number that is more or less than any <i>whole number</i> up to 1000 using <i>multiples</i> of ten and/or 100</p>	<p>Instructor's Guide: 26, 36, 37, 41, 46, 49, 51, 58, 66, 68, 94, 101, 126, 202, 203</p>
<p>A.4.3.4 Use repeating and growing numeric or geometric <i>patterns</i> to solve problems</p>	<p>Instructor's Guide: 6, 18, 21, 47, 58, 61, 64, 67, 69, 74, 76, 77, 79, 81, 86, 89, 91, 96, 98, 99, 101, 104, 106, 109, 111, 114, 115, 116, 118, 121, 126, 131, 136, 138, 141, 146, 151, 153, 156, 161, 169, 174, 176, 188, 192, 207, 210</p>
<p>Patterns, Relations, and Functions A.4.3.5 Determine the relationship between sets of numbers by selecting the rule (1 step rule in words)</p>	<p>Instructor's Guide: 67, 76, 96, 101, 106, 109, 115, 116, 121, 126, 131, 136, 156, 161</p>

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
<p>Expressions, Equations, and Inequalities A.5.3.1 Select and/or write number sentences (<i>equations</i>) to find the unknown in problem-solving contexts involving two-<i>digit</i> times one-<i>digit</i> multiplication using appropriate labels</p>	<p>Instructor's Guide: 23, 47, 59, 62, 64, 69, 77, 79, 89, 92, 97, 109, 149, 171, 179, 188, 191, 194, 195, 203, 207, 210, 212</p>
<p>A.5.3.2 Express mathematical relationships using <i>equalities</i> and <i>inequalities</i> ($>$, $<$, $=$, \neq)</p>	<p>Instructor's Guide: 2, 4, 6, 8, 9, 11, 14, 16, 19, 22, 23, 31, 33, 34, 39, 41, 47, 49, 53, 56, 59, 62, 64, 69, 77, 79, 85, 89, 92, 97, 105, 109, 112, 119, 124, 129, 134, 139, 141, 144, 146, 149, 150, 151, 154, 159, 164, 171, 175, 179</p>

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Algebraic Models and Relationships A.6.3.1 Complete a chart or table to organize given information and to understand relationships and explain the results	Instructor's Guide: 21, 58, 67, 74, 76, 81, 86, 96, 99, 101, 104, 106, 109, 114, 116, 118, 121, 126, 131, 136, 138, 153, 156, 169, 171

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Analyze Change A.7.3.1 Identify the change over time	Instructor's Guide: 156

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Characteristic Properties-Three Dimensional G.8.3.1 Compare, contrast and build <i>three-dimensional</i> solids by investigating the number of <i>faces</i> , <i>edges</i> , and <i>vertices</i> on models	Instructor's Guide: 3, 65, 107, 123, 142, 143, 178, 198, 203, 205, 207, 208, 212
Characteristic Properties-Two Dimensional G.8.3.2 Identify regular <i>polygons</i> with at least 4 sides (square, pentagon, hexagon and octagon)	Instructor's Guide: 15, 45, 57, 93, 108, 111, 135, 142, 176, 178, 190, 198, 205, 207, 209
Characteristic Properties-One Dimensional G.8.3.3 Identify and draw <i>line</i> , <i>line segment</i> and <i>ray</i> using appropriate labels	Instructor's Guide: 45, 135, 190, 211
Geometric Relationships G.8.3.4 Identify and draw <i>intersecting</i> and <i>parallel lines</i>	Instructor's Guide: 45, 135

Standard 9: Transformation of Shapes

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Symmetry and Transformations G.9.3.1 Draw one or more <i>lines of symmetry</i> in a <i>polygon</i>	Instructor's Guide: 28, 57, 108, 190
G.9.3.2 Describe the motion (<i>transformation</i>) of a <i>two-dimensional</i> figure as a <i>flip (reflection)</i> , <i>slide (translation)</i> or <i>turn (rotation)</i>	Instructor's Guide: 3, 111, 143, 156, 161, 176, 178, 190

Standard 10: Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Coordinate Geometry G.10.3.1 Locate and identify points on a <i>coordinate grid</i> and name the <i>ordered pair (quadrant one only)</i> using common language and geometric vocabulary (horizontal and vertical)	Instructor's Guide: 165

Standard 11: Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Spatial Visualization and Models G.11.3.2 Determine which new figure will be formed by combining and subdividing models of existing figures	Instructor's Guide: 156, 161, 176

M e a s u r e m e n t

S t a n d a r d 1 2 : P h y s i c a l A t t r i b u t e s

Students shall use attributes of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
<p>Time: Calendar M.12.3.1 Determine the number of days in a month, days in a year and identify the number of weeks in a year</p>	<p>Instructor's Guide: 183, 193, 194, 196, 203, 208</p>
<p>Time: Clock M.12.3.2 Recognize that 60 minutes equals 1 hour and that a day is divided into A.M. and P.M.</p>	<p>Instructor's Guide: 17, 38, 72, 88, 125, 183, 187, 211</p>
<p>Temperature M.12.3.3 Distinguish the temperature in contextual problems using the Fahrenheit scale on a thermometer</p>	<p>Instructor's Guide: 128</p>
<p>Tools and Attributes M.12.3.4 Demonstrate the relationship among different <i>standard units</i></p>	<p>Instructor's Guide: 13, 17, 50, 63, 80, 113, 148, 155, 160, 166, 183, 189, 193, 196, 199, 207, 210, 211</p>
<p>M.12.3.5 Create and complete a conversion table (from larger unit to smaller unit) to show relationships between units of measurement in the same system</p>	<p>Instructor's Guide: 13, 17, 30, 50, 63, 80, 113, 148, 155, 160, 166</p>

S t a n d a r d 1 3 : S y s t e m s o f M e a s u r e m e n t

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
<p>Calendar M.13.3.1 Use a calendar to determine <i>elapsed time</i> from month to month</p>	<p>Instructor's Guide: 183</p>
<p>Clock M.13.3.2 Tell time to the nearest one-minute intervals</p>	<p>Instructor's Guide: 38, 72, 88, 125</p>

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
M.13.3.3 Express time to the half hour and quarter hour using the terms half-past, quarter after, quarter -until	Instructor's Guide: 88, 193, 194, 211, 212
Elapsed Time M.13.3.4 Determine <i>elapsed time</i> in <i>contextual situations</i> to five-minute intervals	Instructor's Guide: 38, 72, 125, 193, 194, 207
Money M.13.3.5 Determine the value of money up to \$10	Instructor's Guide: 32, 73, 78, 95, 99, 117, 168, 169, 186, 187, 193, 194, 196, 200, 206, 207, 208, 209, 210, 211, 212
M.13.3.6 Apply money concepts in <i>contextual situations</i> up to \$10.00	Instructor's Guide: 95, 168, 208
Temperature M.13.3.7 Read temperatures on Fahrenheit and Celsius scales in intervals of two and five	Instructor's Guide: 128
Applications M.13.3.8 Use appropriate customary measurement tools for length, <i>capacity</i> and <i>mass</i>	Instructor's Guide: 13, 50, 80, 110, 113, 160, 189
M.13.3.9 <i>Estimate</i> and measure length, <i>capacity/volume</i> and <i>mass</i> using appropriate customary units	Instructor's Guide: 13, 50, 52, 80, 110, 113, 160, 189, 210
Perimeter M.13.3.10 Find the <i>perimeter</i> of a figure by measuring the length of the sides	Instructor's Guide: 27, 100, 133, 156, 185, 187, 207, 209
Area M.13.3.11 Find the <i>area</i> of any region counting squares and half-squares	Instructor's Guide: 27, 133, 161, 185

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Collect, Organize and Display Data DAP.14.3.1 Design a survey question after being given a topic and collect, organize, display and describe simple data using <i>frequency tables</i> or <i>line plots</i> , <i>pictographs</i> , and <i>bar graphs</i>	Instructor's Guide: 25

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Data Analysis DAP.15.3.1 Read and interpret <i>pictographs</i> and <i>bar graphs</i> in which symbols or intervals are greater than one	Instructor's Guide: 25
DAP.15.3.2 Match a set of data with a graphical representation of the data	Instructor's Guide: 25

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 3	Afterschool Achievers: Math Club, Grade 3
Inferences and Predictions DAP.16.3.1 Make predictions for a given set of data	Instructor's Guide: 25

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Grade 4

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Whole Numbers NO.1.4.1 Recognize <i>equivalent</i> representations for the same <i>whole number</i> and generate them by <i>composing</i> and <i>decomposing</i> numbers	Instructor's Guide: 95, 103
NO.1.4.2 Use the <i>place value</i> structure of the base ten number system and be able to represent and compare <i>whole numbers</i> to millions (using models, illustrations, symbols, <i>expanded notation</i> and problem solving)	Instructor's Guide: 27, 95, 103, 147, 181, 206
NO.1.4.3 Use mathematical language and symbols to compare and order any <i>whole numbers</i> with and without appropriate <i>technology</i> (<, >, =)	Instructor's Guide: 12, 182
Rational Numbers NO.1.4.4 Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of <i>whole numbers</i> , using models up to 12/12	Instructor's Guide: 120, 133, 144, 145, 150
NO.1.4.5 Utilize models, benchmarks, and <i>equivalent</i> forms to recognize that the size of the whole determines the size of the fraction	Instructor's Guide: 120, 133, 144, 145, 150

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
NO.1.4.6 Use the <i>place value</i> structure of the base ten number system and be able to represent and compare decimals to hundredths (using models, illustrations, symbols, <i>expanded notation</i> and problem solving)	Instructor's Guide: 112, 133, 143, 147, 175, 185, 199, 206
NO.1.4.7 Write an <i>equivalent</i> decimal for a given fraction relating to money	Instructor's Guide: 178
NO.1.4.8 Write a fraction that is <i>equivalent</i> to a given fraction with the use of models	Instructor's Guide: 113, 144, 145, 150

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Number Theory NO.2.4.1 Develop an understanding of the <i>associative</i> and zero properties of multiplication using objects	Instructor's Guide: 57, 67
NO.2.4.2 Apply <i>number theory</i> <ul style="list-style-type: none"> • determine if any number is <i>even</i> or <i>odd</i> • use the terms <i>multiple</i>, <i>factor</i>, and divisible by in an appropriate context • generate and use <i>divisibility</i> rules for 2, 5, and 10 • demonstrate various multiplication & division relationships 	Instructor's Guide: 1, 6, 11, 13, 20, 37, 39, 45, 48, 49, 54, 66, 68, 71, 76, 78, 86, 90, 92, 101, 106, 108, 111, 116, 118, 119, 121, 126, 131, 138, 148, 162, 182, 183, 185, 187, 189
Whole Number Operations NO.2.4.3 Use conventional mathematical symbols to write <i>equations</i> for <i>contextual problems</i> involving multiplication	Instructor's Guide: 50, 152, 167
NO.2.4.4 Represent and explain division as measurement and partitive division including equal groups, related <i>rates</i> , price, <i>rectangular arrays</i> (<i>area model</i>), combinations and multiplicative comparison	Instructor's Guide: 141, 146, 151, 156, 161, 166, 171, 177

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
<p>Computational Fluency-Addition and Subtraction NO.3.4.1 Demonstrate, with and without appropriate <i>technology</i>, <i>computational fluency</i> in multi-digit addition and subtraction in <i>contextual problems</i></p>	<p>Instructor's Guide: 11, 14, 15, 43, 97, 164, 190, 193, 197, 200</p>
<p>Computational Fluency-Multiplication and Division NO.3.4.2 Demonstrate fluency with combinations for multiplication and division facts (12 x 12) and use these combinations to mentally compute related problems</p>	<p>Instructor's Guide: 34, 49, 54, 90, 159, 161, 162, 190</p>
<p>NO.3.4.3 Attain, with and without appropriate <i>technology</i>, <i>computational fluency</i> in multiplication and division using <i>contextual problems</i> using:</p> <ul style="list-style-type: none"> • two-digit by two-digit multiplication (larger numbers with <i>technology</i>) • up to three-digit by two-digit division (larger numbers with <i>technology</i>) • <i>strategies</i> for multiplication and dividing numbers • performance of operations in more than one way • <i>estimation</i> of <i>products</i> and <i>quotients</i> in appropriate situations • relationships between operations 	<p>Instructor's Guide: 34, 49, 54, 90, 124, 139, 141, 142, 146, 151, 156, 159, 161, 162, 166, 171, 176, 190, 191, 196, 200, 201</p>
<p>Application of Computation NO.3.4.4 Solve simple problems using operations involving addition, subtraction, and multiplication using a variety of methods and tools</p>	<p>Instructor's Guide: 4, 6, 9, 14, 19, 23, 24, 29, 34, 39, 41, 43, 46, 48, 49, 54, 61, 65, 66, 71, 76, 77, 78, 81, 84, 86, 93, 96, 97, 101, 118, 119, 124, 129, 134, 138, 159, 164</p>
<p>Estimation NO.3.4.5 Use <i>estimation strategies</i> to solve problems and judge the reasonableness of the answer</p>	<p>Instructor's Guide: 25, 100, 122, 124, 129, 134, 177, 201, 212</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
<p>Recognize, Describe and Develop Patterns A.4.4.1 Identify a number that is more or less than any <i>whole number</i> using <i>multiples</i> of 10, 100 and/or 1000</p>	<p>Instructor's Guide: 65, 97</p>
<p>A.4.4.2 Use repeating and growing numeric and geometric <i>patterns</i> to make predictions and solve problems</p>	<p>Instructor's Guide: 7, 21, 31, 51, 182</p>
<p>Patterns, Relations and Functions A.4.4.3 Determine the relationship between sets of numbers by selecting the rule</p>	<p>Instructor's Guide: 140</p>

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
<p>Expressions, Equations and Inequalities A.5.4.1 Select and/or write number sentences (<i>equations</i>) to find the unknown in problem-solving contexts involving <i>two-digit</i> by <i>one-digit</i> division using appropriate labels</p>	<p>Instructor's Guide: 40, 59, 64, 69, 74, 75, 79, 207, 210, 211</p>
<p>A.5.4.2 Express mathematical relationships using simple <i>equations</i> and <i>inequalities</i> ($>$, $<$, $=$, \neq)</p>	<p>Instructor's Guide: 50, 152, 167</p>
<p>A.5.4.3 Use a <i>variable</i> to represent an unknown quantity in a number sentence involving <i>contextual situations</i> and find the value</p>	<p>Instructor's Guide: 40, 96, 140, 152, 167, 172, 207, 210, 211</p>

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Algebraic Models and Relationships A.6.4.1 Create a chart or table to organize given information and to understand relationships and explain the results	Instructor's Guide: 31, 71, 81, 91, 128, 131

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Analyze Change A.7.4.1 Identify, describe and generalize relationships in which quantities change proportionally	Instructor's Guide: 91, 140

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Characteristics and Properties-Three Dimensional G.8.4.1 Identify, describe and classify <i>three-dimensional</i> solids by properties including the number of <i>vertices</i> , <i>edges</i> , and shapes of <i>faces</i> using models	Instructor's Guide: 28, 60
Characteristics and Properties-Two Dimensional G.8.4.2 Identify regular and <i>irregular polygons</i> including octagon	Instructor's Guide: 3, 110, 137, 158, 188
Characteristics and Properties-One Dimensional G.8.4.3 Identify, draw, and describe a <i>line</i> , <i>line segment</i> , a <i>ray</i> , an angle, <i>intersecting</i> , <i>perpendicular</i> , and <i>parallel lines</i>	Instructor's Guide: 42, 85, 153, 188

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Geometric Relationships G.8.4.4 Identify and describe <i>intersecting, perpendicular</i> and <i>parallel lines</i> in problem solving context	Instructor's Guide: 42, 188
G.8.4.5 Classify angles relative to 90° as more than, less than or equal to	Instructor's Guide: 153

Standard 9: Transformation of Shapes

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Symmetry and Transformations G.9.4.1 Determine the result of a <i>transformation</i> of a <i>two-dimensional</i> figure as a <i>slide (translation), flip (reflection)</i> or <i>turn (rotation)</i> and justify the answer	Instructor's Guide: 163

Standard 10: Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Coordinate Geometry G.10.4.1 Locate and identify points on a <i>coordinate grid</i> and name the <i>ordered pair (quadrant one only)</i> using common language and geometric vocabulary (horizontal and vertical)	Instructor's Guide: 135

Measurement

Standard 12: Physical Attributes

Students shall use attributes of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Time: Clock M.12.4.1 Recognize that 60 seconds equals 1 minute	Instructor's Guide: 105, 123, 130

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Tools and Attributes M.12.4.3 Use the relationship among units of measurement	Instructor's Guide: 5, 8, 30, 33, 55, 73, 82, 132, 203
M.12.4.4 Create and complete a conversion table to show relationships between units of measurement in the same system	Instructor's Guide: 5, 8, 30, 33, 55, 73, 82, 132

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 4	Afterschool Achievers: Math Club, Grade 4
Clock M.13.4.2 Solve problems involving conversions between minutes and hours	Instructor's Guide: 105, 123, 130, 203
M.13.4.3 Restate the time in multiple ways given an <i>analog</i> clock to the nearest one-minute	Instructor's Guide: 105, 123, 130
Elapsed Time M.13.4.4 Determine <i>elapsed time</i> in <i>contextual situations</i> to five-minute intervals with beginning time unknown	Instructor's Guide: 105, 123, 130
Money M.13.4.5 Apply money concepts in <i>contextual situations</i>	Instructor's Guide: 80, 87, 114, 127, 149, 192, 202, 203
Applications M.13.4.7 Use appropriate customary and metric measurement tools for length, <i>capacity</i> and <i>mass</i>	Instructor's Guide: 5, 8, 30, 33, 55, 73
M.13.4.8 <i>Estimate</i> and measure length, <i>capacity/volume</i> and <i>mass</i> using appropriate customary and metric units	Instructor's Guide: 5, 8, 30, 33, 55, 73
Perimeter M.13.4.9 Use <i>strategies</i> for finding the <i>perimeter</i> of a rectangle	Instructor's Guide: 10, 53, 137, 205
Area M.13.4.10 Use <i>strategies</i> for finding the <i>area</i> of a rectangle	Instructor's Guide: 35, 88, 137, 205

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Grade 5

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
<p>Rational Numbers NO.1.5.1 Use models and visual representations to develop the concepts of the following: <u>Fractions:</u></p> <ul style="list-style-type: none"> • parts of unit wholes • parts of a collection • locations on number lines • locations on ruler (<i>benchmark fractions</i>) • divisions of whole numbers <p><u>Ratios:</u></p> <ul style="list-style-type: none"> • part-to-part (2 boys to 3 girls) • part-to-whole (2 boys to 5 people) <p><u>Percents:</u></p> <ul style="list-style-type: none"> • part-to-100 	<p>Instructor’s Guide: 27, 28, 44, 49, 58, 61, 65, 86, 96, 101, 106, 111, 121, 143, 145, 150, 155, 171</p>
<p>NO.1.5.2 Develop understanding of decimal <i>place value</i> using models</p>	<p>Instructor’s Guide: 1, 16, 20, 52, 72, 77, 95, 152, 190, 194, 207</p>
<p>NO.1.5.3 Identify decimal and <i>percent equivalents</i> for <i>benchmark fractions</i></p>	<p>Instructor’s Guide: 27, 28, 49, 58, 65, 87, 88, 91, 145, 150, 178, 186</p>
<p>NO.1.5.4 Round and compare decimals to a given <i>place value</i> (<i>whole number, tenths, hundredths</i>)</p>	<p>Instructor’s Guide: 20, 27, 72, 77, 148, 157, 193, 208</p>

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
NO.1.5.5 Use <i>models of benchmark fractions</i> and their <i>equivalent forms</i> : <ul style="list-style-type: none"> • to analyze the size of fractions • to determine that simplification does not change the value of the fraction • to convert between mixed numbers and improper fractions 	Instructor's Guide: 27, 28, 44, 47, 49, 65, 150, 169, 173, 178, 183
NO.1.5.6 Use models to differentiate between <i>perfect squares</i> up to 100 and other numbers	Instructor's Guide: 162, 210

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Number Theory NO.2.5.1 Use <i>divisibility rules</i> to determine if a number is a <i>factor</i> of another number (2, 3, 5, 10)	Instructor's Guide: 6, 15, 21, 192
NO.2.5.2 Identify <i>commutative</i> and <i>associative properties</i>	Instructor's Guide: 7, 90
NO.2.5.4 Apply rules (conventions) for <i>order of operations</i> to <i>whole numbers</i> where the left to right computations are modified only by the use of parentheses	Instructor's Guide: 7, 90, 162, 209
Understand Operations NO.2.5.5 Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	Instructor's Guide: 47, 89, 125, 133, 144, 155, 160, 169, 190, 202, 210, 211, 212

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
<p>Computational Fluency NO.3.5.1 Develop and use a variety of <i>algorithms</i> with <i>computational fluency</i> to perform <i>whole number</i> operations using addition and subtraction (up to five-<i>digit</i> numbers), multiplication (up to three-<i>digit</i> x two-<i>digit</i>), division (up to two-<i>digit</i> divisor) interpreting remainders, including real world problems</p>	<p>Instructor's Guide: 4, 6, 13, 14, 19, 24, 25, 29, 33, 34, 36, 39, 42, 46, 50, 52, 59, 62, 64, 69, 74, 75, 79, 82, 97, 114, 119, 124, 165, 182, 183, 191, 195, 197, 201, 206, 212</p>
<p>NO.3.5.2 Develop and use <i>algorithms</i>:</p> <ul style="list-style-type: none"> • to add and subtract numbers containing decimals (up to thousandths place) • to multiply decimals (hundredths x tenths) • to divide decimals by <i>whole number</i> divisors • to add and subtract fractions with like denominators 	<p>Instructor's Guide: 47, 54, 89, 104, 129, 133, 144, 164, 169, 174, 190, 211</p>
<p>NO.3.5.3 Solve, with and without appropriate <i>technology</i>, two-step problems using a variety of methods and tools (i.e. objects, mental computation, paper and pencil)</p>	<p>Instructor's Guide: 4, 6, 9, 13, 14, 15, 19, 24, 25, 29, 34, 39, 42, 50, 53, 59, 62, 64, 68, 69, 74, 75, 78, 79, 82, 93, 97, 100, 117, 118, 119, 122, 124, 147, 163, 165, 177, 187, 189, 200, 201, 204, 210, 211</p>
<p>Estimation NO.3.5.4 Develop and use <i>strategies</i> to <i>estimate</i> the results of <i>whole number</i> computations and to judge the reasonableness of such results</p>	<p>Instructor's Guide: 13, 25, 33, 53, 68, 74, 78, 79, 93, 100, 118, 147, 148, 163</p>
<p>Application of Computations NO.3.5.5 Use <i>factors</i> of numbers:</p> <ul style="list-style-type: none"> • to introduce exponents • to find common <i>factors</i> of two numbers • to simplify fractions to the lowest terms 	<p>Instructor's Guide: 27, 28, 44, 47, 49, 52, 58, 65, 81, 87, 91, 99, 150, 155, 159, 160, 178, 192, 196</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Patterns, Relations and Functions A.4.5.1 Solve problems by finding the next term or missing term in a <i>pattern</i> or <i>function</i> table using real world situations	Instructor's Guide: 11, 16, 18, 21, 48, 51, 56, 61, 76
A.4.5.2 Interpret and write a rule for a one operation <i>function</i> table	Instructor's Guide: 51, 56, 76, 151

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Expressions, Equations, and Inequalities A.5.5.1 Model and solve simple <i>equations</i> by informal methods using manipulatives and appropriate <i>technology</i>	Instructor's Guide: 17, 40, 51, 57, 83, 103, 184, 191
A.5.5.2 Write <i>expressions</i> containing one <i>variable</i> (a letter representing an unknown quantity) using rules for addition and subtraction	Instructor's Guide: 7, 40, 56, 61, 66, 76, 151
A.5.5.3 Select, write and evaluate <i>algebraic expressions</i> with one <i>variable</i> by substitution	Instructor's Guide: 51, 56, 66, 76

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Algebraic Models and Relationships A.6.5.1 Draw conclusions and make predictions, with and without appropriate <i>technology</i> , from models, tables and <i>line graphs</i>	Instructor's Guide: 51, 56, 61, 76, 86, 111, 151, 156, 176

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Analyze Change A.7.5.1 Model and describe quantities that change using real world situations	Instructor's Guide: 51, 56, 61, 76, 86, 111, 151, 156, 176

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Characteristics of Geometric Shapes G.8.5.1 Identify and model regular and <i>irregular polygons</i> including decagon	Instructor's Guide: 22, 35, 63, 102, 110, 115, 128, 138, 140, 153, 185, 198
G.8.5.2 Identify and draw <i>congruent, adjacent, obtuse, acute, right</i> and <i>straight</i> angles (Label parts of an angle: <i>vertex, rays, interior</i> and <i>exterior</i>)	Instructor's Guide: 102, 110, 123, 128, 140, 185, 198
G.8.5.4 Model and identify the properties of <i>congruent</i> figures	Instructor's Guide: 138, 153

Standard 10: Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Coordinate Geometry G.10.5.1 Use geometric vocabulary (horizontal/x-axis, vertical/y-axis, <i>ordered pairs</i>) to describe the location and plot points in <i>Quadrant I</i>	Instructor's Guide: 135, 151, 156, 176

M e a s u r e m e n t

S t a n d a r d 1 2 : P h y s i c a l A t t r i b u t e s

Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Attributes and Tools M.12.5.1 Identify and select appropriate units and tools to measure	Instructor's Guide: 2, 5, 30, 158, 181
M.12.5.2 Make conversions within the customary measurement system in real world problems	Instructor's Guide: 8, 32, 38, 73, 81, 96, 101, 107, 137, 189, 196, 199, 205
M.12.5.3 Establish through experience benchmark prefixes of milli-, centi-, and kilo-	Instructor's Guide: 30, 88, 91, 116, 170
M.12.5.4 Understand when to use linear units to describe <i>perimeter</i> , square units to describe <i>area</i> or <i>surface area</i> , and cubic units to describe <i>volume</i> , in real world situations	Instructor's Guide: 3, 23, 43, 63, 83, 103, 127, 141, 175, 203

S t a n d a r d 1 3 : S y s t e m s o f M e a s u r e m e n t

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Attributes and Tools M.13.5.1 Solve real world problems involving one <i>elapsed time</i> , counting forward (calendar and clock)	Instructor's Guide: 98, 105, 108, 130, 131
M.13.5.2 Determine which unit of measure or measurement tool matches the context for a problem situation	Instructor's Guide: 2, 5, 30, 158
M.13.5.3 Draw and measure distance to the nearest cm and 1/4 inch accurately	Instructor's Guide: 8, 88, 121, 143
M.13.5.4 Develop and use <i>strategies</i> to solve real world problems involving <i>perimeter</i> and <i>area</i> of rectangles	Instructor's Guide: 3, 23, 43, 63, 83, 103, 127, 141, 175

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
M.13.5.6 Use benchmark angles to estimate the measure of angles	Instructor's Guide: 123, 128

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Collect, organize and display data DAP.14.5.1 Develop appropriate questions for surveys	Instructor's Guide: 161, 166
DAP.14.5.2 Collect <i>numerical</i> and <i>categorical data</i> using surveys, observations and experiments that would result in <i>bar graphs, line graphs, line plots</i> and <i>stem-and-leaf plots</i>	Instructor's Guide: 151, 156, 161, 166, 176
DAP.14.5.3 Construct and interpret frequency tables, charts, line plots, stem-and-leaf plots and bar graphs	Instructor's Guide: 1, 6, 11, 16, 21, 51, 56, 61, 66, 71, 76, 86, 111, 151, 156, 161, 166, 176

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Data Analysis DAP.15.5.1 Interpret graphs such as <i>line graphs, double bar graphs,</i> and <i>circle graphs</i>	Instructor's Guide: 151, 156, 161, 166, 176

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Inferences and Predictions DAP.16.5.1 Make predictions and justify conclusions based on data	Instructor's Guide: 151, 156

Standard 17: Probability

Students shall understand and apply basic concepts of probability.

Student Learning Expectations, Grade 5	Afterschool Achievers: Math Club, Grade 5
Probability DAP.17.5.1 Identify and predict the <i>probability</i> of events within a simple experiment	Instructor's Guide: 183

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N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Rational Numbers NO.1.6.1 Demonstrate conceptual understanding to find a specific <i>percent</i> of a number, using models, real life examples, or explanations	Instructor's Guide: 104, 105, 106, 120, 125, 131, 145, 160, 198, 203
NO.1.6.2 Find decimal and <i>percent equivalents</i> for proper fractions and explain why they represent the same value	Instructor's Guide: 26, 44, 59, 61, 62, 76, 100, 104, 105, 151, 175, 191, 193, 207
NO.1.6.3 Round and compare decimals to a given <i>place value</i> including thousandths	Instructor's Guide: 156, 192
NO.1.6.4 Convert, compare and order fractions (mixed numbers and improper fractions) decimals and <i>percents</i> and find their approximate locations on a number line	Instructor's Guide: 25, 26, 44, 46, 59, 61, 62, 76, 116, 119, 156, 166, 186
NO.1.6.5 Recognize and identify <i>perfect squares</i> and their <i>square roots</i>	Instructor's Guide: 153, 181

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
<p>Number Theory NO.2.6.1 Use <i>divisibility rules</i> to determine if a number is a <i>factor</i> of another number (4, 6, 9)</p>	<p>Instructor's Guide: 35, 66, 70, 86, 136, 154</p>
<p>NO.2.6.2 Apply the <i>distributive property</i> of multiplication over addition to simplify computations with <i>whole numbers</i></p>	<p>Instructor's Guide: 37, 55, 95</p>
<p>NO.2.6.3 Apply the addition, subtraction, multiplication and division properties of equality to one-step <i>equations</i> with <i>whole numbers</i></p>	<p>Instructor's Guide: 16, 56, 88</p>
<p>NO.2.6.4 Apply rules (conventions) for <i>order of operations</i> to <i>whole numbers</i> with and without parentheses</p>	<p>Instructor's Guide: 41, 50, 141, 161, 166, 169, 181, 209</p>
<p>Understand Operations NO.2.6.5 Model multiplication and division of fractions (including mixed numbers) and decimals using pictures and physical objects</p>	<p>Instructor's Guide: 121</p>

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
<p>Computational Fluency NO.3.6.1 Apply, with and without appropriate <i>technology</i>, <i>algorithms</i> with <i>computational fluency</i> to perform <i>whole number</i> operations (+, -, x, /)</p>	<p>Instructor's Guide: 2, 7, 8, 20, 22, 32, 37, 38, 47, 48, 57, 58, 80, 88, 89, 91, 92, 93, 121, 165, 172, 173</p>
<p>NO.3.6.2 Develop and analyze <i>algorithms</i> for computing with fractions (including mixed numbers) and decimals and demonstrate, with and without <i>technology</i>, <i>computational fluency</i> in their use and justify the solution</p>	<p>Instructor's Guide: 10, 20, 29, 40, 46, 54, 60, 65, 69, 91, 102, 103, 109, 116, 121, 125, 129, 131, 189, 196, 200, 201, 210</p>

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
NO.3.6.3 Solve, with and without appropriate <i>technology</i> , multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil)	Instructor's Guide: 31, 97, 98, 99, 102, 103, 107, 108, 110, 111, 120, 124, 130, 187, 199
Estimation NO.3.6.4 <i>Estimate</i> reasonable solutions to problem situations involving fractions and decimals	Instructor's Guide: 5, 65, 96, 145, 165
Application of Computation NO.3.6.5 Find and use <i>factorization (tree diagram)</i> including <i>prime factorization</i> of composite numbers (expanded and exponential notation) to determine the greatest common factor (<i>GCF</i>) and least common multiple (<i>LCM</i>)	Instructor's Guide: 35, 36, 73, 183, 188, 192, 210
NO.3.6.6 Use proportional reasoning and <i>ratios</i> to represent problem situations and determine the reasonableness of solutions with and without appropriate <i>technology</i>	Instructor's Guide: 100, 110
NO.3.6.7 Determine the <i>percent</i> of a number and solve related problems in real world situations	Instructor's Guide: 120, 125, 131, 145

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Patterns, Relations and Functions A.4.6.1 Solve problems by finding the next term or missing term in a <i>pattern</i> or <i>function</i> table using real world situations	Instructor's Guide: 18, 28, 98, 149, 171, 211
A.4.6.2 Interpret and write an <i>algebraic</i> rule for a one operation <i>function table</i>	Instructor's Guide: 18, 28, 98

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Expressions, Equations, and Inequalities A.5.6.1 Model, write and solve one-step <i>equations</i> by informal methods using manipulatives and appropriate <i>technology</i>	Instructor's Guide: 16, 56, 88, 184, 190, 206
A.5.6.2 Write simple <i>algebraic expressions</i> using appropriate operations (+, -, x, /) with one <i>variable</i>	Instructor's Guide: 16, 37, 38, 88, 150
A.5.6.3 Evaluate <i>algebraic expressions</i> with one <i>variable</i> using appropriate properties and operations (+, -, x, /)	Instructor's Guide: 41, 55, 64, 146, 188

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Algebraic Models and Relationships A.6.6.1 Complete, with and without appropriate <i>technology</i> , and interpret tables and <i>line graphs</i> that represent the relationship between two <i>variables</i> in <i>quadrant I</i>	Instructor's Guide: 114

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Analyze Change A.7.6.1 Identify and compare situations with constant or varying <i>rates</i> of change	Instructor's Guide: 18, 67

G e o m e t r y

S t a n d a r d 8 : G e o m e t r i c P r o p e r t i e s

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
<p>Characteristics of Geometric Shapes G.8.6.1 Identify <i>three-dimensional</i> geometric figures using models (<i>rectangular prisms, cylinders, cones, pyramids and spheres</i>)</p>	<p>Instructor’s Guide: 90, 101, 170, 180, 197</p>
<p>G.8.6.2 Investigate with manipulatives or grid paper what happens to the <i>perimeter</i> and <i>area</i> of a <i>two-dimensional</i> shape when the dimensions are changed</p>	<p>Instructor’s Guide: 87, 97, 98, 107, 108, 126, 176</p>
<p>G.8.6.3 Identify, describe, draw, and classify triangles as <i>equilateral, isosceles, scalene, right, acute, obtuse, and equiangular</i></p>	<p>Instructor’s Guide: 94, 185, 197</p>
<p>G.8.6.4 Draw, label and determine relationships among the <i>radius, diameter, center</i> and <i>circumference</i> (e.g. <i>radius</i> is half the <i>diameter</i>) of a circle</p>	<p>Instructor’s Guide: 142, 143, 155, 176, 185, 212</p>

S t a n d a r d 9 : T r a n s f o r m a t i o n o f S h a p e s

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
<p>Symmetry and Transformations G.9.6.1 Identify and describe <i>line</i> and <i>rotational symmetry</i> in <i>two-dimensional</i> shapes, <i>patterns</i> and designs</p>	<p>Instructor’s Guide: 94</p>
<p>G.9.6.2 Describe positions and orientations of shapes under <i>transformation</i> (<i>translation, reflection</i> and <i>rotation</i>) recognizing the size and shape do not change</p>	<p>Instructor’s Guide: 52, 53, 58</p>

Standard 10: Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Coordinate Geometry G.10.6.1 Use <i>ordered pairs</i> to plot points in <i>Quadrant I</i>	Instructor's Guide: 114

Standard 11: Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Spatial Visualization and Models G.11.6.1 Identify <i>two-dimensional patterns (nets)</i> for <i>three-dimensional solids</i> , such as <i>prisms, pyramids, cylinders, and cones</i>	Instructor's Guide: 90

Measurement

Standard 12: Physical Attributes

Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Attributes and Tools M.12.6.1 Identify and select appropriate units and tools from both systems to measure	Instructor's Guide: 24, 124, 134, 142, 174, 183
M.12.6.2 Make conversions within the same measurement system in real world problems	Instructor's Guide: 11, 183, 195
M.12.6.3 Compare and contrast the differences among linear units, square units, and cubic units	Instructor's Guide: 85, 107, 180

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Attributes and Tools M.13.6.1 Solve real world problems involving one <i>elapsed time</i> , counting forward and backward (calendar and clock)	Instructor's Guide: 31
M.13.6.2 Determine which unit of measure or measurement tool matches the context for a problem situation	Instructor's Guide: 85, 107, 142, 147
M.13.6.3 Draw and measure distance to the nearest mm and 1/8 inch accurately	Instructor's Guide: 142
M.13.6.4 Establish and apply formulas to find <i>area</i> and <i>perimeter</i> of triangles, rectangles, and parallelograms	Instructor's Guide: 4, 19, 97, 98, 176, 202, 212

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Collect, organize and display data DAP.14.6.1 Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population	Instructor's Guide: 17, 18, 27, 28, 122, 133
DAP.14.6.2 Collect data and select appropriate graphical representations to display the data including <i>Venn diagrams</i>	Instructor's Guide: 36, 122, 133, 135, 140, 175
DAP.14.6.3 Construct and interpret graphs, using correct scale, including <i>line graphs</i> and <i>double-bar graphs</i>	Instructor's Guide: 122, 133, 135, 140, 175

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Data Analysis DAP.15.6.1 Interpret graphs such as <i>double line graphs</i> and <i>circle graphs</i>	Instructor's Guide: 135, 140
DAP.15.6.2 Compare and interpret information provided by measures of <i>central tendencies</i> (<i>mean, median</i> and <i>mode</i>) and <i>measures of spread</i> (<i>range</i>)	Instructor's Guide: 91, 132, 133, 135, 143, 196, 210

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Inferences and Predictions DAP.16.6.1 Use observations about differences in data to make justifiable inferences	Instructor's Guide: 91, 132, 133, 135, 143

Standard 17: Probability

Students shall understand and apply basic concepts of probability.

Student Learning Expectations, Grade 6	Afterschool Achievers: Math Club, Grade 6
Probability DAP.17.6.1 Distinguish between <i>theoretical</i> and <i>experimental probability</i>	Instructor's Guide: 122, 123, 182

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Grade 7

N u m b e r a n d O p e r a t i o n s

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Rational Numbers NO.1.7.1 Relate, with and without models and pictures, concepts of <i>ratio</i> , <i>proportion</i> , and <i>percent</i> , including <i>percents</i> less than 1 and greater than 100	Instructor's Guide: 10, 44, 46, 54, 61, 77, 78, 82, 99, 100, 106, 104, 110, 129, 131, 151, 157, 162, 170, 177
NO.1.7.2 Demonstrate, with and without appropriate <i>technology</i> , an understanding of <i>place value</i> using powers of 10 and write numbers greater than one in <i>scientific notation</i>	Instructor's Guide: 33, 175
NO.1.7.3 Convert between <i>scientific notation</i> and standard <i>notation</i> using numbers greater than one	Instructor's Guide: 33, 175
NO.1.7.4 Find decimal and <i>percent equivalents</i> for mixed numbers and explain why they represent the same value	Instructor's Guide: 27, 61, 151, 191, 194
NO.1.7.5 Compare and represent <i>integers</i> , fractions, decimals and mixed numbers and find their approximate location on a number line	Instructor's Guide: 25, 26, 27, 28, 31, 34, 35, 54, 59, 61, 76, 96, 99, 116, 119, 156, 159, 161, 186, 208
NO.1.7.6 Recognize subsets of the <i>real number</i> system (<i>natural</i> , <i>whole</i> , <i>integers</i> , <i>rational</i> , and <i>irrational numbers</i>)	Instructor's Guide: 14, 26, 27, 28, 31, 54, 59, 61, 76, 182, 192

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
<p>Number Theory NO.2.7.1 Apply the <i>distributive property</i> of multiplication over addition or subtraction to simplify computations with <i>integers</i>, fractions and decimals</p>	<p>Instructor's Guide: 71, 182, 193</p>
<p>NO.2.7.2 Apply the addition, subtraction, multiplication and division properties of equality to one-step <i>equations</i> with <i>integers</i>, fractions, and decimals</p>	<p>Instructor's Guide: 4, 10, 16, 24, 44, 56, 63, 110, 144</p>
<p>NO.2.7.3 Apply rules (conventions) for <i>order of operations</i> to <i>integers</i> and positive <i>rational numbers</i> including parentheses, brackets or exponents</p>	<p>Instructor's Guide: 41, 64, 69, 124, 141, 146, 149, 155, 161, 181, 206, 209</p>
<p>Understand Operations NO.2.7.4 Model and develop addition, subtraction, multiplication and division of <i>integers</i></p>	<p>Instructor's Guide: 31, 34, 56, 65, 67, 72, 81, 141, 150, 187, 195, 206</p>

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
<p>Computational Fluency NO.3.7.1 Compute, with and without appropriate <i>technology</i>, with <i>integers</i> and positive <i>rational numbers</i> using real world situations to solve problems</p>	<p>Instructor's Guide: 1, 4, 5, 9, 10, 13, 14, 16, 17, 18, 20, 22, 24, 25, 27, 28, 29, 31, 32, 33, 34, 35, 38, 39, 40, 41, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 69, 70, 71, 72, 74, 75, 76, 78, 80, 81, 86, 88, 90, 91, 92, 93, 95, 96, 97, 98, 99, 100, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 118, 120, 121, 123, 124, 126, 127, 128, 129, 130, 131, 133, 134, 135, 136, 139, 141, 143, 144, 145, 146, 148, 149, 150, 151, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 166, 170, 171, 172, 173, 175, 176, 177, 180, 187, 189, 195, 198, 200, 201, 202, 205</p>

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
<p>NO.3.7.2 Solve with and without appropriate <i>technology</i>, multi-step problems using a variety of methods and tools (i.e., objects, mental computation, paper and pencil)</p>	<p>Instructor's Guide: 1, 4, 5, 9, 10, 13, 14, 16, 17, 18, 20, 22, 24, 25, 27, 28, 29, 31, 32, 33, 34, 35, 38, 39, 40, 41, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 69, 70, 71, 72, 74, 75, 76, 78, 80, 81, 86, 88, 90, 91, 92, 93, 95, 96, 97, 98, 99, 100, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 118, 120, 121, 123, 124, 126, 127, 128, 129, 130, 131, 133, 134, 135, 136, 139, 141, 143, 144, 145, 146, 148, 149, 150, 151, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 166, 170, 171, 172, 173, 175, 176, 177, 180, 189, 195, 198, 200, 201, 202, 205</p>
<p>Estimation NO.3.7.3 Determine when an <i>estimate</i> is sufficient and use <i>estimation</i> to decide whether answers are reasonable in problems including fractions and decimals</p>	<p>Instructor's Guide: 25, 35, 40, 97, 98, 105, 111, 135, 160, 174</p>
<p>Application of Computation NO.3.7.4 Apply <i>factorization</i>, <i>LCM</i>, and <i>GCF</i> to solve problems using more than two numbers and explain the solution</p>	<p>Instructor's Guide: 1, 18, 48, 187, 192</p>
<p>NO.3.7.5 Represent and solve problem situations that can be modeled by and solved using concepts of <i>absolute value</i>, exponents and <i>square roots</i> (for <i>perfect squares</i>) with and without appropriate <i>technology</i></p>	<p>Instructor's Guide: 1, 3, 14, 32, 39, 49, 51, 52, 53, 60, 65, 66, 97, 98, 112, 113, 118, 127, 128, 136, 181, 190</p>
<p>NO.3.7.6 Solve, with and without <i>technology</i>, real world <i>percent</i> problems</p>	<p>Instructor's Guide: 10, 99, 100, 110, 120, 151, 159, 200, 204, 207</p>

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
<p>Patterns, Relations and Functions A.4.7.1 Create and complete a <i>function</i> table (<i>input/output</i>) using a given rule with two operations</p>	<p>Instructor's Guide: 12, 62, 132, 147, 157, 162, 167, 172</p>

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
A.4.7.2 Identify and extend <i>patterns</i> in real world situations	Instructor's Guide: 7, 8, 12, 13, 18, 22, 28, 32, 33, 48, 52, 53, 57, 58, 63, 68, 73, 78, 92, 93, 108, 127, 128, 133, 143, 147, 148, 157, 158, 163, 166, 167, 168, 173, 177, 178, 210
A.4.7.3 Interpret and write a rule for a two operation <i>function table</i>	Instructor's Guide: 13, 63, 133, 148, 158, 163, 168, 173

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Expressions, Equations, and Inequalities A.5.7.1 Solve and graph one-step <i>linear equations</i> and <i>inequalities</i> using a variety of methods (i.e., hands-on, <i>inverse operations</i> , symbolic) with real world application with and without <i>technology</i>	Instructor's Guide: 4, 10, 16, 24, 29, 44, 56, 63, 67, 68, 72, 73, 110, 114, 144, 184, 190
A.5.7.2 Solve simple <i>linear equations</i> using <i>integers</i> and graph on a <i>coordinate plane</i>	Instructor's Guide: 4, 10, 16, 24, 29, 44, 56, 63, 67, 68, 72, 73, 110, 114, 144, 184, 190
A.5.7.3 Translate phrases and sentences into <i>algebraic expressions</i> and <i>equations</i> including parentheses and positive and <i>rational numbers</i> and simplify <i>algebraic expressions</i> by combining like terms	Instructor's Guide: 5, 12, 13, 18, 38, 49, 52, 53, 63, 127, 132, 133, 147, 148, 150, 157, 158, 162, 163, 167, 168, 172, 173, 193
A.5.7.4 Write and evaluate <i>algebraic expressions</i> using positive <i>rational numbers</i>	Instructor's Guide: 5, 13, 17, 18, 38, 41, 49, 63, 64, 67, 72, 74, 88, 112, 133, 146, 147, 148, 155, 158, 163, 168, 173, 188, 206

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Algebraic Models and Relationships A.6.7.1 Use tables and graphs to represent <i>linear equations</i> by plotting, with and without appropriate <i>technology</i> , points in a <i>coordinate plane</i>	Instructor's Guide: 29, 67, 68, 72, 73, 114

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
A.6.7.2 Represent, with and without appropriate <i>technology</i> , linear <i>equations</i> by plotting and graphing points in the <i>coordinate plane</i> using all four <i>quadrants</i> given data in a table from a real world situation	Instructor's Guide: 29, 67, 68, 72, 73, 114
A.6.7.3 Create and complete a <i>function table (input/output)</i> using a given rule with two operations in real world situations	Instructor's Guide: 12, 62, 132, 147, 157, 162, 167, 172

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Analyze Change A.7.7.1 Use, with and without appropriate <i>technology</i> , tables and graphs to compare and identify situations with constant or varying <i>rates</i> of change	Instructor's Guide: 12, 29, 62, 67, 72, 73, 114, 132, 147, 157, 162, 167, 172

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Characteristics of Geometric Shapes G.8.7.1 Identify, draw, classify and compare geometric figures using models and real world examples	Instructor's Guide: 37, 38, 89, 152, 153, 157, 158, 169, 185, 199
G.8.7.2 Investigate geometric properties and their relationships in one-, two-, and three-dimensional models, including convex and concave <i>polygons</i>	Instructor's Guide: 37, 38, 89, 152, 153, 157, 158, 169, 185, 199
G.8.7.4 Use paper or physical models to determine the sum of the measures of <i>interior angles</i> of triangles and <i>quadrilaterals</i>	Instructor's Guide: 153

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
G.8.7.5 Model and develop the concept that π is the <i>ratio</i> of the <i>circumference</i> to the <i>diameter</i> of any circle	Instructor's Guide: 45, 74
G.8.7.6 Develop the properties of <i>similar figures</i> (<i>ratio</i> of sides and <i>congruent</i> angles)	Instructor's Guide: 77, 170

Standard 9: Transformation of Shapes
Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Symmetry and Transformations G.9.7.1 Examine the congruence, similarity, and <i>line</i> or <i>rotational symmetry</i> of objects using <i>transformations</i>	Instructor's Guide: 77, 94, 101, 169, 170, 179, 199
G.9.7.2 Perform <i>translations</i> and <i>reflections</i> of <i>two-dimensional</i> figures using a variety of methods (paper folding, tracing, graph paper)	Instructor's Guide: 7, 15, 42, 43, 164

Standard 10: Coordinate Geometry
Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Coordinate Geometry G.10.7.1 Plot points in the <i>coordinate plane</i>	Instructor's Guide: 29, 67, 68, 72, 73, 114
G.10.7.2 Plot points that form the <i>vertices</i> of a geometric figure and draw, identify and classify the figure.	Instructor's Guide: 114

Standard 11: Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Spatial Visualization and Models G.11.7.1 Build <i>three-dimensional</i> solids from <i>two-dimensional patterns (nets)</i>	Instructor's Guide: 42, 43
G.11.7.2 Construct a building out of <i>cubes</i> from a set of views (front, top, side)	Instructor's Guide: 42, 43

Measurement

Standard 12: Physical Attributes

Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Attributes and Tools M.12.7.1 Understand, select and use the appropriate units and tools (metric and customary) to measure length, weight, <i>mass</i> and <i>volume</i> to the required degree of accuracy for real world problems	Instructor's Guide: 77, 82, 152, 153, 157, 158, 162, 163
M.12.7.2 Understand relationships among units within the same system	Instructor's Guide: 11, 19, 86, 134, 162, 163, 183, 196
M.12.7.3 Find different <i>areas</i> for a given <i>perimeter</i> and find a different <i>perimeter</i> for a given <i>area</i>	Instructor's Guide: 12, 126, 203, 211

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
<p>Attributes and Tools M.13.7.1 Solve real world problems involving two or more <i>elapsed times</i>, counting forward and backward (calendar and clock)</p>	<p>Instructor's Guide: 183, 196</p>
<p>M.13.7.2 Draw and measure distance to the nearest mm and 1/16 inch accurately</p>	<p>Instructor's Guide: 77, 82, 157, 162, 163</p>
<p>M.13.7.3 Develop and use <i>strategies</i> to solve problems involving <i>area</i> of a <i>trapezoid</i> and <i>circumference</i> and <i>area</i> of a circle</p>	<p>Instructor's Guide: 45, 74, 87, 92, 126, 171, 180, 203, 211</p>
<p>Applications M.13.7.4 Derive and use formulas for <i>surface area</i> and <i>volume</i> of <i>prisms</i> and <i>cylinders</i> and justify them using geometric models and common materials</p>	<p>Instructor's Guide: 24, 130, 145, 147, 176, 212</p>
<p>M.13.7.5 Apply properties (<i>scale factors</i>, <i>ratio</i>, and <i>proportion</i>) of <i>congruent</i> or <i>similar</i> triangles to solve problems involving missing lengths and angle measures</p>	<p>Instructor's Guide: 77, 170, 177, 178</p>
<p>M.13.7.6 Find the distance between two points on a number line and locate the midpoint</p>	<p>Instructor's Guide: 112, 118</p>
<p>M.13.7.7 Estimate and compute the <i>area</i> of more complex or irregular <i>two-dimensional</i> shapes by dividing them into more basic shapes</p>	<p>Instructor's Guide: 12</p>

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Collect, organize and display data DAP.14.7.1 Identify different ways of selecting samples and compose appropriate questions	Instructor's Guide: 122, 135, 137, 165
DAP.14.7.2 Explain which types of display are appropriate for various data sets (<i>line graph</i> for change over time, <i>circle graph</i> for part-to-whole comparison, <i>scatter plot</i> for trends)	Instructor's Guide: 75, 82, 90, 102, 103, 135, 140
DAP.14.7.3 Construct and interpret <i>circle graphs</i> , <i>box-and-whisker plots</i> , <i>histograms</i> , <i>scatter plots</i> and <i>double line graphs</i> with and without appropriate <i>technology</i>	Instructor's Guide: 75, 82, 83, 87, 88, 90, 102, 103, 135, 140, 165

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Data Analysis DAP.15.7.1 Analyze data displays, including ways that they can be misleading	Instructor's Guide: 102, 103, 165
DAP.15.7.2 Analyze, with and without appropriate <i>technology</i> , a set of data by using and comparing measures of <i>central tendencies</i> (<i>mean</i> , <i>median</i> , <i>mode</i>) and <i>measures of spread</i> (<i>range</i> , <i>quartile</i> , <i>interquartile range</i>)	Instructor's Guide: 75, 91, 107, 108, 123, 135, 197

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Inferences and Predictions DAP.16.7.1 Make, with and without appropriate <i>technology</i> , <i>conjectures</i> of possible relationships in a <i>scatter plot</i> and approximate the <i>line of best fit (trend line)</i>	Instructor's Guide: 82, 83

Standard 17: Probability

Students shall understand and apply basic concepts of probability.

Student Learning Expectations, Grade 7	Afterschool Achievers: Math Club, Grade 7
Probability DAP.17.7.1 Understand that <i>probability</i> can take any value between 0 and 1 (events that are not going to occur have <i>probability</i> 0, events certain to occur have <i>probability</i> 1)	Instructor's Guide: 22, 23, 92, 93, 122, 125, 137, 138, 142, 143
DAP.17.7.2 Design, with and without appropriate <i>technology</i> , an experiment to test a <i>theoretical probability</i> and explain how the results may vary	Instructor's Guide: 22, 23, 92, 93, 122, 123, 137, 138, 142, 143

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 correlated to
Arkansas Mathematics Curriculum Framework
Grade 8

N u m b e r S e n s e

S t a n d a r d 1 : N u m b e r S e n s e

Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Rational Numbers NO.1.8.1 Read, write, compare and solve problems, with and without appropriate <i>technology</i>, including numbers less than 1 in <i>scientific notation</i></p>	<p>Instructor’s Guide: 1, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 39, 41, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 54, 55, 56, 59, 60, 61, 62, 63, 64, 65, 66, 69, 70, 71, 74, 75, 76, 77, 79, 81, 85, 86, 90, 92, 95, 96, 97, 99, 100, 102, 103, 104, 105, 106, 107, 109, 111, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 126, 127, 129, 130, 131, 132, 133, 136, 139, 140, 141, 142, 144, 149, 150, 151, 152, 153, 156, 156, 158, 159, 160, 161, 165, 166, 174, 177, 178, 180, 181, 182, 187, 189, 190, 192, 195, 198, 200, 201, 202</p>
<p>NO.1.8.2 Convert between <i>scientific notation</i> and standard <i>notation</i>, including numbers from zero to one</p>	<p>Instructor’s Guide: 12, 66</p>
<p>NO.1.8.3 Compare and order <i>real numbers</i> including <i>irrational numbers</i> and find their approximate location on a number line (Use <i>technology</i> when appropriate)</p>	<p>Instructor’s Guide: 9, 26, 65, 99, 186</p>
<p>NO.1.8.4 Understand and justify classifications of numbers in the <i>real number</i> system</p>	<p>Instructor’s Guide: 30, 65, 117, 118</p>

Standard 2: Properties of Number Operations

Students shall understand meanings of operations and how they relate to one another.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Number Theory NO.2.8.1 Apply the addition, subtraction, multiplication and division properties of equality to two-step <i>equations</i>	Instructor's Guide: 16, 18, 56, 86, 90, 144, 154, 184, 190
NO.2.8.2 Understand and apply the <i>inverse</i> and <i>identity</i> properties	Instructor's Guide: 16, 56, 86, 90, 117, 184, 190
NO.2.8.3 Use <i>inverse</i> relationships (addition and subtraction, multiplication and division, squaring and <i>square roots</i>) in problem solving situations	Instructor's Guide: 14, 16, 49, 50, 56, 86, 90, 92, 93, 95, 117, 136, 152
NO.2.8.4 Apply rules (conventions) for <i>order of operations</i> to <i>rational numbers</i>	Instructor's Guide: 41, 64, 66, 69, 95, 115, 121, 124, 141, 161, 181, 192, 206, 209
Understand Operations NO.2.8.5 Model and develop addition, subtraction, multiplication and division of <i>rational numbers</i>	Instructor's Guide: 1, 3, 6, 7, 8, 13, 25, 31, 34, 35, 40, 41, 45, 46, 51, 59, 64, 71, 81, 95, 96, 109, 111, 115, 116, 117, 118, 121, 129, 139, 140, 181, 182, 187, 189, 195, 198, 200, 201,

Standard 3: Numerical Operations and Estimation

Students shall compute fluently and make reasonable estimates.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Computational Fluency NO.3.8.1 Compute, with and without appropriate <i>technology</i> , with <i>rational numbers</i> in multi-step problems	Instructor's Guide: 1, 3, 6, 7, 8, 13, 25, 31, 34, 35, 40, 41, 45, 46, 51, 59, 64, 71, 81, 95, 96, 109, 111, 115, 116, 117, 118, 121, 129, 139, 140, 181, 182, 187, 189, 190, 192, 195, 198, 200, 201, 202
NO.3.8.2 Solve, with and without appropriate <i>technology</i> , multi-step problems using a variety of methods and tools (i.e. objects, mental computation, paper and pencil)	Instructor's Guide: 2, 10, 34, 35, 37, 44, 45, 69, 70, 95, 100, 104, 109, 111, 115, 117, 118, 124, 135, 140, 141, 147, 159, 160, 161, 162, 163, 168, 170, 173, 174, 181, 182, 187, 189, 190, 192, 195, 198, 200, 210, 202

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Estimation NO.3.8.3 Use <i>estimation</i> to solve problems involving <i>rational numbers</i> ; including <i>ratio, proportion, percent</i> (increase or decrease) then judge the reasonableness of solutions	Instructor's Guide: 2, 3, 35, 45, 100, 109, 115, 135, 160
Application of Computation NO.3.8.4 Apply factorization to find <i>LCM</i> and <i>GCF</i> of <i>algebraic expressions</i>	Instructor's Guide: 36, 46, 187
NO.3.8.5 Calculate and find approximations of <i>square roots</i> with appropriate <i>technology</i>	Instructor's Guide: 14, 49, 50, 136, 152, 205
NO.3.8.6 Solve, with and without <i>technology</i> , real world <i>percent</i> problems including <i>percent</i> of increase or decrease	Instructor's Guide: 99, 119, 151, 156, 200, 207, 208

Algebra

Standard 4: Patterns, Relations and Functions

Students shall recognize, describe and develop patterns, relations and functions.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Patterns, Relations and Functions A.4.8.1 Find the n^{th} term in a <i>pattern</i> or a <i>function</i> table	Instructor's Guide: 17, 18, 37, 49, 127, 150, 210
A.4.8.2 Using real world situations, describe <i>patterns</i> in words, tables, pictures, and symbolic representations	Instructor's Guide: 7, 8, 12, 13, 18, 22, 28, 32, 33, 37, 38, 48, 52, 53, 57, 58, 63, 68, 73, 78, 92, 93, 108, 127, 128, 133, 143, 147, 148, 150, 157, 158, 163, 166, 167, 168, 173, 177, 178, 210
A.4.8.3 Interpret and represent a two operation <i>function</i> as an <i>algebraic equation</i>	Instructor's Guide: 17, 22, 23, 29, 37, 38, 49, 97, 98, 127, 133, 146, 150, 153, 164
A.4.8.4 Use tables, graphs, and <i>equations</i> to identify <i>independent/dependent variables</i> (<i>input/output</i>)	Instructor's Guide: 17, 18, 22, 23, 37, 38, 97, 98, 127, 133, 146, 150, 153, 164

Standard 5: Algebraic Representations

Students shall represent and analyze mathematical situations and structures using algebraic symbols.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Expressions, Equations and Inequalities A.5.8.1 Solve and graph two-step <i>equations</i> and <i>inequalities</i> with one <i>variable</i> and verify the reasonableness of the result with real world application with and without <i>technology</i></p>	<p>Instructor's Guide: 16, 18, 56, 86, 90, 112, 133, 140, 144, 153, 154, 164, 184, 190, 196</p>
<p>A.5.8.2 Solve and graph <i>linear equations</i> (in the form $y = mx + b$)</p>	<p>Instructor's Guide: 22, 23, 29, 97, 146</p>
<p>A.5.8.3 Translate sentences into <i>algebraic equations</i> and <i>inequalities</i> and combine like terms within <i>polynomials</i></p>	<p>Instructor's Guide: 5, 20, 41, 43, 64, 102, 103, 133, 193</p>
<p>A.5.8.4 Write and evaluate <i>algebraic expressions</i> using <i>rational numbers</i></p>	<p>Instructor's Guide: 5, 20, 29, 30, 41, 43, 64, 102, 103, 146, 188, 206</p>

Standard 6: Algebraic Models

Students shall develop and apply mathematical models to represent and understand quantitative relationships.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Algebraic Models and Relationships A.6.8.1 Describe, with and without appropriate <i>technology</i>, the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change (rise/run) and <i>y-intercept</i> in real world problems</p>	<p>Instructor's Guide: 22, 23, 97</p>
<p>A.6.8.2 Represent, with and without appropriate <i>technology</i>, <i>linear</i> relationships concretely, using tables, graphs and <i>equations</i></p>	<p>Instructor's Guide: 22, 23, 29, 97, 146, 204</p>
<p>A.6.8.3 Differentiate between <i>independent/dependent variables</i> given a <i>linear relationship</i> in context</p>	<p>Instructor's Guide: 22, 23, 29, 97, 146</p>

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
A.6.8.4 Represent, with and without appropriate <i>technology</i> , simple exponential and/or quadratic <i>functions</i> using verbal descriptions, tables, graphs and formulas and translate among these representations	Instructor's Guide: 17, 18, 37, 38, 127, 133, 150, 153

Standard 7: Analysis of Change

Students shall analyze change in various contexts.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Analyze Change A.7.8.1 Use, with and without <i>technology</i> , graphs of real life situations to describe the relationships and analyze change including graphs of change (cost per minute) and graphs of accumulation (total cost)	Instructor's Guide: 22, 23, 29, 97, 146

Geometry

Standard 8: Geometric Properties

Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Characteristics of Geometric Shapes G.8.8.1 Form generalizations and validate conclusions about properties of geometric shapes	Instructor's Guide: 4, 15, 23, 24, 32, 33, 50, 79, 82, 89, 91, 92, 93, 94, 101, 102, 103, 107, 108, 134, 147, 148, 169, 170, 179, 199
G.8.8.2 Make, with and without appropriate <i>technology</i> , and test <i>conjectures</i> about characteristics and properties between <i>two-dimensional</i> figures and <i>three-dimensional</i> objects	Instructor's Guide: 4, 15, 23, 24, 32, 33, 50, 79, 82, 89, 91, 92, 93, 94, 101, 102, 103, 107, 108, 134, 147, 148, 169, 170, 179, 199
G.8.8.3 Determine appropriate application of geometric ideas and relationships, such as <i>congruence</i> , similarity, and the <i>Pythagorean theorem</i> , with and without appropriate <i>technology</i>	Instructor's Guide: 4, 10, 21, 32, 33, 47, 48, 50, 52, 53, 57, 58, 79, 82, 83, 84, 87, 88, 89, 91, 92, 93, 94, 101, 102, 103, 104, 105, 107, 108, 112, 113, 134, 137, 138, 147, 148, 152, 153, 157, 158, 162, 167, 168, 170, 172, 173, 179, 185, 194

Standard 9: Transformation of Shapes

Students shall apply transformations and the use of symmetry to analyze mathematical situations.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Symmetry and Transformations G.9.8.1 Determine a <i>transformation's line of symmetry</i> and compare the properties of the figure and its <i>transformation</i>	Instructor's Guide: 101, 179
G.9.8.2 Draw the results of <i>translations</i> and <i>reflections</i> about the x- and y-axis and <i>rotations</i> of objects about the origin	Instructor's Guide: 22, 23, 82, 83, 87, 88, 137, 138

Standard 10: Coordinate Geometry

Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Coordinate Geometry G.10.8.1 Use coordinate geometry to explore the links between geometric and algebraic representations of problems (lengths of segments/distance between points, <i>slope/perpendicular-parallel lines</i>)	Instructor's Guide: 22, 23, 82, 83, 87, 88, 137, 138

Standard 11: Visualization and Geometric Models

Students shall use visualization, spatial reasoning and geometric modeling.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
Spatial Visualization and Models G.11.8.1 Using isometric dot paper interpret and draw different views of buildings	Instructor's Guide: 57, 58

Measurement

Standard 12: Physical Attributes

Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Attributes and Tools M.12.8.1 Understand, select and use, with and without appropriate <i>technology</i>, the appropriate units and tools to measure angles, <i>perimeter</i>, <i>area</i>, <i>surface area</i> and <i>volume</i> to solve real world problems</p>	<p>Instructor's Guide: 2, 4, 10, 19, 24, 32, 33, 48, 50, 52, 53, 55, 74, 76, 91, 92, 93, 108, 126, 130, 145, 155, 168, 170, 171, 172, 176, 180, 194, 203, 211, 212</p>
<p>M.12.8.2 Describe and apply equivalent measures using a variety of units within the same system of measurement</p>	<p>Instructor's Guide: 11, 55, 159, 165, 183, 194, 203</p>

Standard 13: Systems of Measurement

Students shall identify and use units, systems and processes of measurement.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Attributes and Tools M.13.8.1 Draw and apply measurement skills with <i>fluency</i> to appropriate levels of precision</p>	<p>Instructor's Guide: 2, 4, 10, 19, 24, 32, 33, 48, 50, 52, 53, 55, 74, 76, 91, 92, 93, 108, 126, 130, 145, 155, 168, 170, 171, 172, 176, 180, 194, 203, 211, 212</p>
<p>Applications M.13.8.2 Solve problems involving <i>volume</i> and <i>surface area</i> of <i>pyramids</i>, <i>cones</i> and composite figures, with and without appropriate <i>technology</i></p>	<p>Instructor's Guide: 19, 92, 130, 145, 176</p>
<p>M.13.8.3 Apply proportional reasoning to solve problems involving indirect measurements, scale drawings or rates</p>	<p>Instructor's Guide: 10, 17, 47, 48, 157, 158</p>
<p>M.13.8.4 Find the distance between two points on a <i>coordinate plane</i> using the <i>Pythagorean theorem</i></p>	<p>Instructor's Guide: 112, 113</p>
<p>M.13.8.5 Estimate and compute the <i>area</i> of irregular <i>two-dimensional</i> shapes</p>	<p>Instructor's Guide: 52, 53, 113, 180</p>

Data Analysis and Probability

Standard 14: Data Representation

Students shall formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Collect, organize and display data DAP.14.8.1 Design and conduct investigations which include</p> <ul style="list-style-type: none"> • adequate number of trials • unbiased sampling • accurate measurement • record-keeping 	<p>Instructor's Guide: 2, 12, 127, 142</p>
<p>DAP.14.8.2 Explain which types of display are appropriate for various data sets (<i>scatter plot</i> for relationship between two variants and <i>line of best fit</i>)</p>	<p>Instructor's Guide: 70, 75, 110, 135</p>
<p>DAP.14.8.3 Interpret or solve real world problems using data from charts, <i>line plots</i>, <i>stem-and leaf plots</i>, <i>double-bar graphs</i>, <i>line graphs</i>, <i>box-and whisker plots</i>, <i>scatter plots</i>, <i>frequency tables</i> or <i>double line graphs</i></p>	<p>Instructor's Guide: 70, 75, 80, 110, 135, 172, 173</p>

Standard 15: Data Analysis

Students shall select and use appropriate statistical methods to analyze data.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Data Analysis DAP.15.8.2 Analyze, with and without appropriate <i>technology</i>, graphs by comparing measures of <i>central tendencies</i> and <i>measures of spread</i></p>	<p>Instructor's Guide: 39, 70, 75</p>

Standard 16: Inferences and Predictions

Students shall develop and evaluate inferences and predictions that are based on data.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Inferences and Predictions DAP.16.8.1 Use observations about differences between sets of data to make <i>conjectures</i> about the populations from which the data was taken</p>	<p>Instructor's Guide: 80, 127</p>

Standard 17: Probability

Students shall understand and apply basic concepts of probability.

Student Learning Expectations, Grade 8	Afterschool Achievers: Math Club, Grade 8
<p>Probability DAP.17.8.1 Compute, with and without appropriate <i>technology</i>, probabilities of compound events, using organized lists, <i>tree diagrams</i> and <i>logic grid</i></p>	<p>Instructor's Guide: 142, 143</p>
<p>DAP.17.8.2 Make predictions based on <i>theoretical probabilities</i>, design and conduct an experiment to test the predictions, compare actual results to predict results, and explain differences</p>	<p>Instructor's Guide: 125, 127, 128, 142, 143</p>



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