

AFTERSCHOOL ACHIEVERS: MATH CLUB © 2002

Grades K-8

correlated to

Georgia's Mathematics Performance Standards



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Afterschool Achievers: Math Club ~ 2002

correlated to

Georgia's Mathematics Performance Standards

Kindergarten

MKN. Numbers and Operations

Students will correctly represent the number and order of objects using numbers and understand them.

MKN1

Students will connect numerals to the quantities they represent.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Count a number of objects up to 30.	Instructor's Guide: 2, 4, 5, 7, 9, 12, 14, 17, 22, 24, 27, 29, 30, 32, 34, 35, 39, 49, 54, 55, 58, 59, 67, 68, 80, 85, 88, 98, 105, 108, 110, 117, 118, 130, 135, 155, 169
b. Produce models for number words through ten.	Instructor's Guide: 2, 4, 5, 7, 9, 12, 14, 17, 19, 22, 24, 27, 29, 34, 37, 39, 44, 49, 54, 55, 59, 74, 80, 105, 155
c. Write numerals through 20 to label sets.	Instructor's Guide: 4, 9, 14, 17, 19, 22, 24, 27, 29, 32, 38, 39, 44, 48, 49, 54, 55, 58, 59, 68, 80, 85, 88, 108, 110, 118, 135, 155
d. Sequence and identify using ordinal numbers (1st-10th).	Instructor's Guide: 163
e. Compare two or more sets of objects (1-10) and identify which set is equal to, more than, or less than the other.	Instructor's Guide: 38, 48, 58, 68, 88, 98, 118
f. Estimate quantities using five and ten as a benchmark. (e.g. 9 is one five and four more. It is closer to two fives or one 10 than it is to one five.).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
g. Use informal strategies to share objects equally (divide) between two to three people or sets.	Instructor's Guide: 7
h. Identify coins by name and value (penny, nickel, dime, and quarter).	Instructor's Guide: 122

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
i. Count out pennies to buy items that together cost less than 30 cents.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
j. Make fair trades involving combinations of pennies and nickels or pennies and dimes.	Instructor's Guide: 122

M K N 2

Students will use representations to model addition and subtraction.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Use counting strategies to find out how many items are in two sets when they are combined.	Instructor's Guide: 10, 60, 65, 67, 85, 110, 135, 144, 149, 154, 159, 164, 169, 174, 179
b. Build number combinations up to 10 (e.g., 4 and 1, 2 and 3, 3 and 2, 4 and 1 for five) and for doubles to 10 (3 and 3 for six).	Instructor's Guide: 10, 60, 65, 67, 85, 110, 135, 144, 149, 154, 159, 164, 169, 174, 179
c. Use objects, pictures, numbers, or words to create, solve and explain story problems for two numbers that are each less than 10.	Instructor's Guide: 10, 60, 65, 67, 85, 110, 135, 144, 149, 154, 159, 164, 169, 174, 179

M K M . M e a s u r e m e n t

Students will explore quantitative situations involving distance, length, capacity, weight, time, and temperature.

M K M 1

Students will group objects according to common properties such as color, shape, texture, or number.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Compare and order objects on the basis of length.	Instructor's Guide: 15, 40, 47, 92, 180
b. Compare and order objects on the basis of capacity.	Instructor's Guide: 47, 92, 180
c. Compare and order objects on the basis of height.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
d. Compare and order objects on the basis of weight.	Instructor's Guide: 47, 92, 180

M K M 2

Students will understand the measurement of calendar time.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Know the names of the days of the week.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
b. Know the months of the year.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
c. Know the four seasons.	No specific lesson addresses this standard.

M K M 3

Students will tell time as it relates to a daily schedule.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Order daily events.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
b. Tell the time when daily events occur, such as lunch, to the nearest hour.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)
c. Know the name of the day of the week when weekly events occur in class.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 1.</i>)

M K G. Geometry

Students will recognize and name basic geometric shapes and spatial relationships.

M K G 1

Students will correctly name simple two- and three-dimensional figures, and recognize them in the environment.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Recognize and name the following basic two-dimensional shapes: triangles, rectangles, squares, and circles.	Instructor's Guide: 1, 6, 11, 16, 20, 21, 23, 26, 45, 53, 61, 66, 70, 71, 73, 87, 107, 137, 172, 178
b. Recognize and name the following three-dimensional shapes: spheres (balls), and cubes.	Instructor's Guide: 63, 113, 145, 148, 170

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
c. Observe concrete objects in the environment and represent the objects using basic shapes, such as drawing a representation of a house using a square together with a triangle for the roof.	Instructor's Guide: 1, 6, 11, 23, 53, 87, 137, 178
d. Combine basic shapes into basic and more complicated shapes, and will decompose basic shapes into combinations of basic shapes.	Instructor's Guide: 53, 178
e. Compare geometric shapes and identify similarities and differences of the following two and three-dimensional shapes: triangles, rectangles, squares, circles, spheres, and cubes.	Instructor's Guide: 20, 23, 53, 61, 63, 66, 71, 73, 113, 137, 145, 170, 178

M K G 2

Students will understand basic positional relationships.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Identify when an object is beside another object, above another object, or below another object.	Instructor's Guide: 42, 69
b. Identify when an object is in front of another object, behind another object, inside another object or outside it.	Instructor's Guide: 42, 95, 104, 109, 113, 114, 125, 139, 163

M K G 3

Students will identify, create, extend, and transfer patterns from one representation to another using actions, objects, and geometric shapes.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Identify a missing shape within a given pattern of geometric shapes.	Instructor's Guide: 75, 121, 126, 131, 136, 171
b. Extend a given pattern, and recognize similarities in different patterns.	Instructor's Guide: 50, 57, 75, 97, 100, 121, 126, 131, 136, 141, 150, 151, 156, 157, 166, 167, 171, 175, 176

MKD. Data Analysis and Probability

Students will pose questions and gather data about themselves and their surroundings.

MKD 1

Students will pose information questions, collect data, organize, and record results using objects, pictures, and picture graphs.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
Students will pose information questions, collect data, organize, and record results using objects, pictures, and picture graphs.	Instructor's Guide: 14, 93

MKP. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. The students will use the process standards as a way of acquiring and using content knowledge.

MKP 1

Students will solve problems that arise in mathematics and in other contexts.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
a. Solve non-routine word problems using the strategy act out the problem or use objects.	Instructor's Guide: 1-180
b. With the use of manipulatives, solve routine word problems related to all appropriate kindergarten math standards.	Instructor's Guide: 1-180

MKP 2

Students will investigate, develop, and evaluate mathematical arguments.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
Students will investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

MKP 3

Students will use the language of mathematics to express ideas precisely.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
Students will use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M K P 4

Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M K P 5

Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.

Kindergarten Mathematics Performance Standards	Afterschool Achievers: Math Club, Kindergarten
Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

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Georgia's Mathematics Performance Standards

Grade 1

M1N. Numbers and Operations

Students will understand how to represent numbers, and be able to add and subtract small numbers.

M1N1

Students will estimate, model, compare, order, and represent whole numbers up to 100.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Represent numbers less than 100 using a variety of models, diagrams, and number sentences. Represent numbers larger than 10 in terms of tens and ones using counters and pictures.	Instructor's Guide: 2, 4, 5, 9, 14, 17, 19, 22, 24, 28, 32, 37, 59, 65, 74, 85, 89, 104, 113, 119, 123, 138
b. Correctly count and represent the number of objects in a set using numerals.	Instructor's Guide: 2, 4, 5, 14, 19, 22, 28, 32, 37, 65, 85, 113, 123, 138
c. Compare small sets using the terms greater than, less than, and equal to (<, >, =).	Instructor's Guide: 7, 9, 22, 52
d. Understand the magnitude and order of numbers up to 100 by making ordered sequences and representing them on a number line.	Instructor's Guide: 28, 55, 67, 68, 82, 97, 105, 111, 116, 121, 126, 136, 141, 146, 161, 176
e. Exchange equivalent quantities of coins by making fair trades involving combinations of pennies, nickels, dimes, and quarters and count out a combination needed to purchase items less than a dollar.	Instructor's Guide: 75, 102, 151, 152, 155
f. Identify bills (\$1, \$5, \$10, \$20) by name and value and exchange equivalent quantities by making fair trades involving combinations of bills and count out a combination of bills needed to purchase items less than twenty dollars.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 3.</i>)

M1N2

Understand place value notation for the numbers between 1 and 100. (Discussions may allude to 3-digit numbers to assist in understanding place value.)

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Determine which multiple of ten a given number is nearest (rounding) using tools such as a sequential number line or hundreds chart to assist in estimating.	Instructor's Guide: 125, 156, 161
b. Represent collections of less than 30 objects with 2-digit numbers and understand the meaning of place value. (Make sure that students, when given a number like 27 initially describe it as 2 tens and 7 ones, and only later use standard language, twenty-seven, when talking about the number.)	Instructor's Guide: 108, 112, 123, 126

M1N3

Students will add and subtract numbers less than 100 as well as understand and use the inverse relationship between addition and subtraction.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Identify one more than, one less than, 10 more than, and 10 less than a given number.	Instructor's Guide: 14, 19, 39, 44, 52, 67, 102, 125, 154, 156, 161, 176
b. Skip-count by 2's, 5's, and 10's forward and backwards to and from numbers up to 100.	Instructor's Guide: 106, 111, 113, 116, 121, 125, 136, 141, 145, 146, 156, 161, 172, 174, 176, 179
c. Compose/decompose numbers up to 10 (break numbers apart, e.g., 8 is represented as $4 + 4$, $3 + 5$, $5 + 2 + 1$, and $10 - 2$). Decompose numbers between 11 and 19 as one ten and the appropriate number of ones.	Instructor's Guide: 17, 22, 37, 59, 64, 69, 72, 74, 79, 84, 86, 89, 91, 92, 94, 99, 104, 107, 109, 112, 114, 119, 123, 124, 129, 130, 150, 170
d. Understand a variety of situations to which subtraction may apply: taking away from a set, comparing two sets, and determining how many more or how many less.	Instructor's Guide: 52, 90
e. Understand addition and subtraction number combinations using strategies such as counting on, counting back, doubles and making tens.	Instructor's Guide: 14, 17, 19, 22, 24, 28, 30, 32, 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, 138, 139, 142, 166, 167, 169, 170, 174, 176, 177, 179

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
f. Know the single-digit addition facts to 18 and corresponding subtraction facts with understanding and fluency. (Use strategies such as relating to facts already known, applying the commutative property, and grouping facts into families.)	Instructor's Guide: 24, 30, 50, 54, 59, 62, 69, 72, 74, 84, 89, 91, 92, 99, 104, 107, 110, 114, 119, 122, 129, 130, 134, 137, 142, 144, 150, 159, 164, 167, 169, 170, 177
g. Apply addition and subtraction to 2 digit numbers without regrouping (e.g. $15 + 4$, $80 - 60$, $56 + 10$, $100 - 30$, $58 + 5$).	Instructor's Guide: 125, 161, 162
h. Solve and create word problems involving addition and subtraction to 100 without regrouping. Use words, pictures and concrete models to interpret story problems and reflect the combining of sets as addition and taking away or comparing elements of sets as subtraction.	Instructor's Guide: 10, 70, 90

M 1 N 4

Students will count collections of up to 100 objects by dividing them into equal parts and represent the results using words, pictures, or diagrams.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Use informal strategies to share objects equally between two to five people.	Instructor's Guide: 113, 174, 179
b. Build number patterns, including concepts of even and odd, using various concrete representations. (Examples of concrete representations include a hundreds chart, ten grid frame, place value chart, number line, counters, or other objects.).	Instructor's Guide: 106, 113, 116, 121, 174, 179
c. Identify, label and relate fractions (halves, fourths) as equal parts of a whole using pictures and models.	Instructor's Guide: 117, 118, 173

M 1 M . Measurement

Students will measure basic quantitative attributes of concrete objects.

M 1 M 1

Students will compare and/or order the length, weight, or capacity of two or more objects by using direct comparison or a nonstandard unit.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Directly compare length, weight, and capacity of concrete objects.	Instructor's Guide: 15, 33, 35, 42, 43, 55, 95, 115, 133
b. Estimate and measure using a non-standard unit that is smaller than the object to be measured.	Instructor's Guide: 133
c. Measure with a tool by creating a "ruled" stick, tape, or container by marking off ten segments of the repeated single unit.	Instructor's Guide: 55

M 1 M 2

Students will develop an understanding of the measurement of time.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Tell time to the nearest hour and half hour and understand the movement of the minute hand and how it relates to the hour hand.	Instructor's Guide: 57, 135, 147, 148, 175
b. Begin to understand the relationship of calendar time by knowing the number of days in a week and months in a year.	Instructor's Guide: 47, 93, 98
c. Compare and/or order the sequence or duration of events (e.g., shorter/longer and before/after).	Instructor's Guide: 47, 93, 98

M1G. Geometry

Students will understand the concepts of basic geometric shapes and spatial relationships of concrete objects.

M1G1

Students will study and create various two- and three-dimensional figures and identify basic figures (squares, circles, triangles, and rectangles) within them.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Build, draw, name, and describe triangles, rectangles, pentagons, and hexagons.	Instructor's Guide: 3, 8, 12, 13, 18, 21, 23, 60, 80, 100, 132, 153
b. Build, represent, name, and describe cylinders, cones, and rectangular prisms (objects that have the shape of a box).	Instructor's Guide: 132
c. Create pictures and designs using shapes, including overlapping shapes.	Instructor's Guide: 81, 101

M1G2

Students will compare, contrast, and/or classify geometric shapes by the common attributes of position, shape, size, number of sides, and number of corners.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students will compare, contrast, and/or classify geometric shapes by the common attributes of position, shape, size, number of sides, and number of corners.	Instructor's Guide: 3, 8, 12, 13, 18, 23, 60, 80, 100, 132, 153

M1G3

Students will arrange and describe objects in space by proximity, position, and direction (near, far, below, above, up, down, behind, in front of, next to, and left or right of).

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students will arrange and describe objects in space by proximity, position, and direction (near, far, below, above, up, down, behind, in front of, next to, and left or right of).	Instructor's Guide: 20, 40

M1D. Data Analysis and Probability

Students will pose questions, collect, organize and interpret data about themselves and their surroundings.

M1D1

Students will create simple tables and graphs and interpret them.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Interpret tally marks, picture graphs and bar graphs.	Instructor's Guide: 163
b. Organize and record data using objects, pictures, tally marks, and picture graphs.	Instructor's Guide: 163

M1P. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. The student will use the process standards as a way of acquiring and using content knowledge.

M1P1

Students will solve problems that arise in mathematics and in other contexts.

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
a. Solve non-routine word problems using the strategy make a picture or diagram and continue to develop the strategy act out or use objects learned in kindergarten.	Instructor's Guide: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 45, 46, 48, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 69, 70, 71, 73, 74, 75, 76, 77, 79, 80, 81, 85, 87, 89, 90, 94, 95, 96, 101, 102, 104, 109, 111, 112, 113, 117, 119, 123, 124, 128, 129, 136, 138, 139, 149, 151, 152, 156, 158, 163, 164, 169, 170, 172
b. Solve single step routine word problems related to all appropriate first grade math standards.	Instructor's Guide: 1-180
c. Determine the operation(s) needed to solve a problem.	Instructor's Guide: 10, 70, 90
d. Determine the most efficient way to solve a problem (mentally, paper/pencil, or calculator).	Instructor's Guide: 1-180

M 1 P 2**Students will investigate, develop, and evaluate mathematical arguments.**

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students will investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

M 1 P 3**Students will use the language of mathematics to express ideas precisely.**

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students will use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M 1 P 4**Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.**

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M 1 P 5**Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.**

Grade 1 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 1
Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

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Georgia's Mathematics Performance Standards

Grade 2

M2N. Numbers and Operations

Students will further develop their understanding of numbers - including fractions - and how to represent them. The students will understand and apply addition, subtraction and multiplication through concrete manipulation and perform basic calculations.

M2N1

Students will understand the place value representation of whole numbers through four digits.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Represent numbers using a variety of models, diagrams, and number sentences (e.g., 4703 represented as $4,000 + 700 + 3$, and units, 47 hundreds + 3, or $4,500 + 203$).	Instructor's Guide: 36, 40, 60, 81, 90, 111, 122, 123
b. Understand the relative magnitudes of numbers using 10 as a unit, 100 as a unit, or 1000 as a unit. Represent 2-digit numbers with drawings of tens and ones and 3-digit numbers with drawings of hundreds, tens, and ones.	Instructor's Guide: 36, 40, 60, 81, 90, 111, 122, 123
c. Use money as a medium of exchange. Count back change and use decimal notation and the dollar and cent symbols to represent a collection of coins and currency.	Instructor's Guide: 34, 59, 77, 140

M2N2

Students will build fluency with multi-digit addition and subtraction.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Correctly add and subtract two whole numbers up to three digits each with regrouping.	Instructor's Guide: 19, 31, 36, 39, 44, 127, 144, 164, 176
b. Understand and use the inverse relation between addition and subtraction to solve problems and check solutions.	Instructor's Guide: 33, 64, 102, 127, 158

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
c. Use mental math strategies such as benchmark numbers to solve problems.	Instructor's Guide: 39, 44, 54, 96, 127, 137, 176
d. Use basic properties of addition (commutative, associative, and identity) to simplify problems (e.g., $98 + 17$ by taking two from 17 and adding it to the 98 to make 100 and replacing the original problem by the sum $100 + 15$).	Instructor's Guide: 54, 127, 137
e. Estimate to determine if solutions are reasonable for addition and subtraction.	Instructor's Guide: 5, 9, 14, 61, 79, 89, 95, 96, 104, 109, 114, 116, 120, 129, 134, 149, 154, 169

M 2 N 3

Students will understand multiplication, multiply numbers, and verify results.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Understand multiplication as repeated addition.	Instructor's Guide: 73, 112, 113, 124, 128, 136, 139, 165, 174, 179
b. Use repeated addition, arrays, and counting by multiples (skip counting) to correctly multiply 1-digit numbers and construct the multiplication table.	Instructor's Guide: 112, 113, 124, 128, 136, 139, 141, 165, 174, 179
c. Use the multiplication table (grid) to determine a product of two numbers.	Instructor's Guide: 141
d. Use repeated subtraction, equal sharing, and forming equal groups to divide large collections of objects and determine factors for multiplication.	Instructor's Guide: 57, 135, 170, 178

M 2 N 4

Students will understand and compare common fractions with small denominators.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Model, identify, label, and compare fractions (thirds, sixths, eighths, tenths) as a representation of equal parts of a whole or of a set.	Instructor's Guide: 47, 48, 57, 58, 80, 97, 138, 142
b. Know that when all fractional parts are included, such as three thirds, the result is equal to the whole.	Instructor's Guide: 48, 57, 97, 138, 142

M 2 N 5

Students will represent and interpret quantities and relationships using mathematical expressions including equality and inequality signs (=, <, >).

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Include the use of boxes or ___ to represent a missing value.	Instructor's Guide: 51, 127, 137
b. Represent problem solving situations where addition, subtraction or multiplication may be applied using mathematical expressions.	Instructor's Guide: 51, 127, 137

M 2 M . Measurement

Students will understand length, time, and temperature and choose an appropriate tool to measure them.

M 2 M 1

Students will know the standard units of inch, foot, yard, and metric units of centimeter and meter and measure length to the nearest inch or centimeter.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Compare the relationship of one unit to another by measuring objects twice using different units each time.	Instructor's Guide: 7, 8
b. Estimate lengths, and then measure to determine if estimations were reasonable.	Instructor's Guide: 7, 30, 70
c. Determine an appropriate tool and unit for measuring.	Instructor's Guide: 7, 20, 30, 45, 62, 83, 85, 93, 148, 150, 160, 168

M 2 M 2

Students will tell time to the nearest five minutes and know relationships of time such as the number of minutes in an hour and hours in a day.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will tell time to the nearest five minutes and know relationships of time such as the number of minutes in an hour and hours in a day.	Instructor's Guide: 82, 108

M 2 M 3

Students will estimate, then measure, temperature (Fahrenheit) and determine if estimations were reasonable.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will estimate, then measure, temperature (Fahrenheit) and determine if estimations were reasonable.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 3.</i>)

M 2 G . Geometry

Students will understand basic and compound geometric shapes together with the elements from which they are composed.

M 2 G 1

Students will describe and classify plane figures (triangles, square, rectangle, trapezoid, quadrilateral, pentagon, hexagon, and irregular polygonal shapes) according to the number of edges and vertices and the sizes of angles (right angle, obtuse, acute).

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will describe and classify plane figures (triangles, square, rectangle, trapezoid, quadrilateral, pentagon, hexagon, and irregular polygonal shapes) according to the number of edges and vertices and the sizes of angles (right angle, obtuse, acute).	Instructor's Guide: 11, 15, 23, 38, 52, 66, 78, 115, 133, 173, 175

M 2 G 2

Students will describe and classify solid geometric figures (prisms, cylinders, cones, and spheres) according to such things as the number of edges and vertices and the number and shape of faces and angles.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Recognize the (plane) shapes of the faces of a geometric solid and count the number of faces of each type.	Instructor's Guide: 3, 23, 38, 63, 88, 98, 125, 133, 163, 173, 175
b. Recognize the shape of an angle as a right angle, an obtuse or acute angle.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 4.</i>)

M 2 G 3

Students will describe the change in attributes as two- and three-dimensional shapes are cut and rearranged.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will describe the change in attributes as two- and three-dimensional shapes are cut and rearranged.	Instructor's Guide: 115

M 2 D. Data Analysis and Probability

Students will pose questions, collect, organize and interpret data about themselves and their surroundings.

M 2 D 1

Students will create simple tables and graphs and interpret their meaning.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Organize and display data using picture graphs, Venn diagrams, bar graphs, and simple charts/tables to record results.	Instructor's Guide: 25, 70, 85, 155
b. Know how to interpret picture graphs, Venn diagrams, and bar graphs.	Instructor's Guide: 25

M 2 P. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. The students will use the process standards as a way of acquiring and using content knowledge.

M 2 P 1

Students will solve problems that arise in mathematics and in other contexts.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
a. Solve non-routine word problems using the strategies of use or look for a pattern or guess and check as well as all strategies learned in previous grades.	Instructor's Guide: 1-180
b. The student will solve single step routine word problems related to all appropriate second grade math standards.	Instructor's Guide: 1-180
c. Determine the operation(s) needed to solve a problem.	Instructor's Guide: 10, 55, 110

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
d. Determine the most efficient way to solve a problem (mentally, paper/pencil, or calculator).	Instructor's Guide: 1-180

M 2 P 2

Students will be able to investigate, develop, and evaluate mathematical arguments.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will be able to investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

M 2 P 3

Students will be able to use the language of mathematics to express ideas precisely.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will be able to use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M 2 P 4

Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M 2 P 5

Students will be able to create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.

Grade 2 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 2
Students will be able to create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

Afterschool Achievers: Math Club ~ 2002

correlated to

Georgia's Mathematics Performance Standards

Grade 3

M3N. Numbers and Operations

Students will use decimal fractions and common fractions to represent parts of a whole. They will also understand the four arithmetic operations for whole numbers and use them in basic calculations, and apply them in problem solving situations.

M3N1

Students will further develop their understanding of whole numbers and ways of representing them.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Identify place values from tenths through ten thousands.	Instructor's Guide: 5, 35, 60, 71, 103, 127
b. Understand the relative sizes of digits in place value notation (10 times, 100 times, 1/10 of a single digit whole number) and ways to represent them.	Instructor's Guide: 5, 35, 60, 71, 103, 105, 127

M3N2

Students will further develop their skills of addition and subtraction and apply them in problem solving.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Use the properties of addition and subtraction to compute and verify the results of computation.	Instructor's Guide: 4, 33, 85, 105
b. Use mental math and estimation strategies to add and subtract.	Instructor's Guide: 1, 2, 4, 8, 9, 11, 14, 19, 24, 33, 34, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 144, 154, 164
c. Solve problems requiring addition and subtraction.	Instructor's Guide: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 14, 19, 24, 31, 33, 34, 36, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 144, 154, 164

M 3 N 3

Students will further develop their understanding of multiplication of whole numbers and develop the ability to apply it in problem solving.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Describe the relationship between addition and multiplication, i.e., multiplication is defined as repeated addition.	Instructor's Guide: 23, 171
b. Know the multiplication facts with understanding and fluency to 10×10 .	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, 165, 169, 171, 173, 174, 179
c. Use arrays and area models to develop understanding of the distributive property and to determine partial products for multiplication of 2- or 3-digit numbers by a 1-digit number.	Instructor's Guide: 170
d. Understand the effect on the product when multiplying by multiples of 10.	Instructor's Guide: 102, 171
e. Apply the identity, commutative and associative properties of multiplication and verify the results.	Instructor's Guide: 53, 84
f. Use mental math and estimation strategies to multiply.	Instructor's Guide: 171
g. Solve problems requiring multiplication.	Instructor's Guide: 23, 55, 62, 91, 170

M 3 N 4

Students will understand the meaning of division and develop the ability to apply it in problem solving.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Understand the relationship between division and multiplication and between division and subtraction.	Instructor's Guide: 112
b. Recognize that division may be two situations: the first is determining how many equal parts of a given size or amount may be taken away from the whole as in repeated subtraction, and the second is determining the size of the parts when the whole is separated into a given number of equal parts as in a sharing model.	Instructor's Guide: 55, 112, 120, 124, 129, 130, 134, 141, 146, 151, 163, 175

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
c. Recognize problem-solving situations in which division may be applied and write corresponding mathematical expressions.	Instructor's Guide: 55, 112, 120, 124, 129, 130, 134, 141, 146, 151, 163, 175
d. Explain the meaning of a remainder in division in different circumstances.	Instructor's Guide: 130, 134, 139, 141, 146, 151, 163
e. Divide a 2- and 3-digit number by a 1-digit divisor.	Instructor's Guide: 17, 151, 163, 175
f. Solve problems requiring division.	Instructor's Guide: 55, 112, 120, 124, 129, 130, 134, 141, 146, 151, 163, 175

M 3 N 5

Students will understand the meaning of decimal fractions and common fractions in simple cases and apply them in problem-solving situations.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Understand a decimal fraction (i.e., 0.1) and a common fraction (i.e., 1/10) represent parts of a whole.	Instructor's Guide: 82, 83, 145
b. Understand the fraction a/b represents a equal sized parts of a whole that is divided into b equal sized parts.	Instructor's Guide: 82, 83, 145
c. Understand a one place decimal fraction represents tenths, i.e., $0.3 = 3/10$.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 4.</i>)
d. Know and use decimal fractions and common fractions to represent the size of parts created by equal divisions of a whole.	Instructor's Guide: 137, 150
e. Understand the concept of addition and subtraction of decimal fractions and common fractions with like denominators.	Instructor's Guide: 137, 150
f. Model addition and subtraction of decimal fractions and common fractions.	Instructor's Guide: 137, 150
g. Solve problems involving fractions.	Instructor's Guide: 137, 150

M 3 M . Measurement

Students will understand and measure time and length. They will also model and calculate perimeter and area of simple geometric figures.

M 3 M 1

Students will further develop their understanding of the concept of time by determining elapsed time of a full, half and quarter-hour.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
Students will further develop their understanding of the concept of time by determining elapsed time of a full, half and quarter-hour.	Instructor's Guide: 38, 72, 88, 125

M 3 M 2

Students will measure length choosing appropriate units and tools.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Use the units kilometer (km) and mile (mi.) to discuss the measure of long distances.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 4.</i>)
b. Measure to the nearest $\frac{1}{2}$ inch, $\frac{1}{4}$ inch and millimeter (mm) in addition to the previously learned inch, foot, yard, centimeter, and meter.	Instructor's Guide: 63, 80
c. Estimate length and represent it using appropriate units.	Instructor's Guide: 50, 63
d. Compare one unit to another within a single system of measurement.	Instructor's Guide: 17, 63, 80, 155, 160

M 3 M 3

Students will understand and measure the perimeter of simple geometric figures (squares and rectangles).

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Understand the meaning of the linear unit and measurement in perimeter.	Instructor's Guide: 27, 100, 133, 156
b. Understand the concept of perimeter as being the boundary of a simple geometric figure.	Instructor's Guide: 27, 100, 133, 156
c. Determine the perimeter of a simple geometric figure by measuring and summing the lengths of the sides.	Instructor's Guide: 27, 100, 133, 156

M 3 M 4

Students will understand and measure the area of simple geometric figures (squares and rectangles).

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Understand the meaning of the square unit and measurement in area.	Instructor's Guide: 27, 133, 161
b. Model (by tiling) the area of a simple geometric figure using square units (square inch, square foot, etc.).	Instructor's Guide: 27, 133, 161
c. Determine the area of squares and rectangles by counting, addition, and multiplication with models.	Instructor's Guide: 27, 133, 161

M 3 G . Geometry

Students will further develop their understanding of characteristics of previously studied geometric figures.

M 3 G 1

Students will further develop their understanding of geometric figures by drawing them. They will also state and explain their properties.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Draw and classify previously learned fundamental geometric figures and scalene, isosceles and equilateral triangles.	Instructor's Guide: 15, 45, 57, 93, 108, 111, 135, 142, 176, 178
b. Identify and explain the properties of fundamental geometric figures.	Instructor's Guide: 15, 45, 57, 93, 108, 111, 135, 142, 176, 178
c. Examine and compare angles of fundamental geometric figures.	Instructor's Guide: 15, 93, 111
d. Identify the center, diameter, and radius of a circle.	Instructor's Guide: 82, 108, 121

M3A. Algebra

Students will understand how to express relationships as mathematical expressions.

M3A1

Students will use mathematical expressions to represent relationships between quantities and interpret given expressions.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Describe and extend numeric and geometric patterns.	Instructor's Guide: 6, 18, 21, 58, 61, 67, 76, 115, 121, 126, 136, 141, 146, 151, 153, 156
b. Describe and explain a quantitative relationship represented by a formula (such as the perimeter of a geometric figure).	Instructor's Guide: 27, 100, 133, 156
c. Use a symbol, such as \square and \square , to represent an unknown and find the value of the unknown in a number sentence.	Instructor's Guide: 90

M3D. Data Analysis

Students will gather, organize, and display data and interpret graphs.

M3D1

Students will create and interpret simple tables and graphs.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Solve problems by organizing and displaying data in bar graphs and tables.	Instructor's Guide: 25
b. Construct and interpret bar graphs using scale increments of 1, 2, 5, and 10.	Instructor's Guide: 25

M3P. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. The students will use the process standards as a way of acquiring and using content knowledge.

M3P1

Students will solve problems that arise in mathematics and in other contexts.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
a. Solve non-routine word problems using the strategy of logical reasoning as well as all strategies learned in previous grades.	Instructor's Guide: 1-180

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
b. Solve single and multi-step routine word problems related to all appropriate third grade math standards.	Instructor's Guide: 1-180
c. Determine the operation(s) needed to solve a problem.	Instructor's Guide: 75, 90
d. Determine the most efficient way to solve a problem (mentally, paper/pencil, or calculator).	Instructor's Guide: 1-180

M 3 P 2

Students will investigate, develop, and evaluate mathematical arguments.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
Students will investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

M 3 P 3

Students will use the language of mathematics to express ideas precisely.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
Students will use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M 3 P 4

Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M 3 P 5

Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.

Grade 3 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 3
Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

Afterschool Achievers: Math Club ~ 2002

correlated to

Georgia's Mathematics Performance Standards

Grade 4

M4N. Numbers and Operations

Students will further develop their understanding of whole numbers and master the four basic operations with whole numbers by solving problems. They will also understand rounding and when to appropriately use it. Students will add and subtract decimal fractions and common fractions with common denominators.

M4N1

Students will further develop their understanding of how whole numbers are represented in the base-ten numeration system.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Identify place value names and places from hundredths through one million.	Instructor's Guide: 27, 95, 97, 103, 147, 174, 179
b. Equate a number's word name, its standard form, and its expanded form.	Instructor's Guide: 95

M4N2

Students will understand and apply the concept of rounding numbers.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Round numbers to the nearest ten, hundred, or thousand.	Instructor's Guide: 22, 25, 62, 100, 169, 173, 174, 179
b. Describe situations in which rounding numbers would be appropriate and determine whether to round to the nearest ten, hundred, or thousand.	Instructor's Guide: 25, 100, 173
c. Understand the meaning of rounding a decimal fraction to the nearest whole number.	Instructor's Guide: 178
d. Represent the results of computation as a rounded number when appropriate and estimate a sum or difference by rounding numbers.	Instructor's Guide: 25, 100, 173

M 4 N 3

Students will solve problems involving multiplication of 2-3 digit numbers by 1-2 digit numbers.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
Students will solve problems involving multiplication of 2-3 digit numbers by 1-2 digit numbers.	Instructor's Guide: 108, 119, 124, 129

M 4 N 4

Students will further develop their understanding of division of whole numbers and divide in problem solving situations without calculators.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Know the division facts with understanding and fluency.	Instructor's Guide: 40, 59, 69, 74, 75, 79, 84, 125, 170
b. Solve problems involving division by a 2-digit number (including those that generate a remainder).	Instructor's Guide: 79, 171, 176
c. Understand the relationship between dividend, divisor, quotient, and remainder.	Instructor's Guide: 84, 125, 141, 142, 146, 151, 156, 161, 166, 171, 176
d. Understand and explain the effect on the quotient of multiplying or dividing both the divisor and dividend by the same number. ($2050 \div 50$ yields the same answer as $205 \div 5$).	Instructor's Guide: 141, 146, 151, 156, 161, 166, 171, 176

M 4 N 5

Students will further develop their understanding of the meaning of decimal fractions and use them in computations.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Understand decimal fractions are a part of the base-ten system.	Instructor's Guide: 112, 133, 143, 145, 147
b. Understand the relative size of numbers and order two digit decimal fractions.	Instructor's Guide: 175
c. Add and subtract both one and two digit decimal fractions.	Instructor's Guide: 165
d. Model multiplication and division of decimal fractions by whole numbers.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5</i> .)

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
e. Multiply and divide both one and two digit decimal fractions by whole numbers.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5.</i>)

M 4 N 6

Students will further develop their understanding of the meaning of common fractions and use them in computations.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Understand representations of simple equivalent fractions.	Instructor's Guide: 113, 144, 150, 154
b. Add and subtract fractions and mixed numbers with common denominators. (Denominators should not exceed twelve.)	Instructor's Guide: 155, 160
c. Convert and use mixed numbers and improper fractions interchangeably.	Instructor's Guide: 107, 145, 154

M 4 N 7

Students will explain and use properties of the four arithmetic operations to solve and check problems.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Describe situations in which the four operations may be used and the relationships among them.	Instructor's Guide: 157
b. Compute using the order of operations, including parentheses.	Instructor's Guide: 15, 157
c. Compute using the commutative, associative, and distributive properties.	Instructor's Guide: 67, 90, 115
d. Use mental math and estimation strategies to compute.	Instructor's Guide: 25, 97, 100, 102, 117, 122, 124, 129, 134, 177

M 4 M . Measurement

Students will measure weight in appropriate metric and standard units. They will also measure angles.

M 4 M 1

Students will understand the concept of weight and how to measure it.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Use standard and metric units to measure the weight of objects.	Instructor's Guide: 30, 55
b. Know units used to measure weight (gram, kilogram, ounces, pounds and tons).	Instructor's Guide: 30, 55, 73
c. Compare one unit to another within a single system of measurement.	Instructor's Guide: 8, 33

M 4 M 2

Students will understand the concept of angles and how to measure it.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Use tools, such as a protractor or angle ruler, and other methods such as paper folding, drawing a diagonal in a square, to measure angles.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
b. Understand the meaning and measure of a half rotation (180°) and a full rotation (360°).	Instructor's Guide: 163

M 4 G . Geometry

Students will understand and construct plane and solid geometric figures. They will also graph points on the coordinate plane.

M 4 G 1

Students will define and identify the characteristics of geometric figures through examination and construction.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Examine and compare angles in order to classify and identify triangles by their angles.	Instructor's Guide: 3, 110
b. Describe parallel and perpendicular lines in plane geometric figures.	Instructor's Guide: 42

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
c. Examine and classify quadrilaterals (including parallelograms, squares, rectangles, trapezoids, and rhombi).	Instructor's Guide: 158
d. Compare and contrast the relationships among quadrilaterals.	Instructor's Guide: 158

M 4 G 2

Students will understand fundamental solid figures.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Compare and contrast a cube and a rectangular prism in terms of the number and shape of their faces, edges, and vertices.	Instructor's Guide: 60
b. Describe parallel and perpendicular lines and planes in connection with the rectangular prism.	No specific lesson addresses this standard. (See <i>Math at Hand</i> .)
c. Construct/collect models for solid geometric figures (cube, prisms, cylinder, etc.).	Instructor's Guide: 28, 60

M 4 G 3

Students will use the coordinate system.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Understand and apply ordered pairs in the first quadrant of the coordinate system.	Instructor's Guide: 135
b. Locate a point in the first quadrant in the coordinate plane and name the ordered pair.	Instructor's Guide: 135
c. Graph ordered pairs in the first quadrant.	Instructor's Guide: 135

M4A. Algebra

Students will investigate and represent mathematical relationships between quantities using mathematical expressions in problem-solving situations.

M4A1

Students will represent and interpret mathematical relationships in quantitative expressions.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Understand and apply patterns and rules to describe relationships and solve problems.	Instructor's Guide: 7, 21, 31, 36, 41, 46, 51, 61, 91, 96, 118, 136, 138, 140
b. Represent unknowns using symbols, such as $^{\circ}$ and $-$.	Instructor's Guide: 40, 96, 140, 152, 167, 172
c. Write and evaluate mathematical expressions using symbols and different values.	Instructor's Guide: 40, 96, 152, 167, 170, 172

M4D. Data Analysis

Students will gather, organize, and display data. They will also compare features of graphs.

M4D1

Students will gather, organize, and display data according to the situation and compare related features.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Represent data in bar, line and pictographs.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5.</i>)
b. Investigate the features and tendencies of graphs.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5.</i>)
c. Compare different graphical representations for a given set of data.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5.</i>)
d. Identify missing information and duplications in data.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 5.</i>)

M4P. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. Students will use the process standards as a way of acquiring and using content knowledge.

M 4 P 1

Using the appropriate technology, students will solve problems that arise in mathematics and in other contexts.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
a. Solve non-routine word problems using the strategies of work backwards, use or make a table, and make an organized list as well as all strategies learned in previous grades.	Instructor's Guide: 1-180
b. Solve single and multi-step routine word problems related to all appropriate fourth grade math standards.	Instructor's Guide: 1-180
c. Determine the operation(s) needed to solve a problem.	Instructor's Guide: 35, 47, 52, 73, 75, 80, 114, 127
d. Determine the most efficient way to solve a problem (mentally, paper/pencil, or calculator).	Instructor's Guide: 1-180

M 4 P 2

Students will investigate, develop, and evaluate mathematical arguments.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
Students will investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

M 4 P 3

Students will use the language of mathematics to express ideas precisely.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
Students will use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M 4 P 4

Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M 4 P 5

Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.

Grade 4 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 4
Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

Afterschool Achievers: Math Club ~ 2002

correlated to

Georgia's Mathematics Performance Standards

Grade 5

M5N. Numbers and Operations

Students will further develop their understanding of the concept of whole numbers. They will also understand the meanings of multiplication and division of decimal fractions and use decimal fractions and common fractions in computation, as well as in problem solving situations.

M5N1

Students will further develop their understanding of whole numbers.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Classify the set of counting numbers into subsets with distinguishing characteristics (odd/even, prime/composite).	Instructor's Guide: 7, 41, 67, 70, 120, 168, 180
b. Find multiples and factors.	Instructor's Guide: 1, 6, 11, 18, 21, 26, 31, 36, 37, 41, 45, 48, 96, 99, 101, 106
c. Analyze and use divisibility rules.	Instructor's Guide: 6, 15, 21

M5N2

Students will further develop their understanding of decimal fractions as part of the base-ten number system.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Understand place value.	Instructor's Guide: 1, 16, 52, 77, 95, 97, 152
b. Analyze the effect on the product when a number is multiplied by 10, 100, 1000, 0.1, and 0.01.	Instructor's Guide: 46, 97, 165

M 5 N 3

Students will further develop their understanding of the meaning of multiplication and division with decimal fractions and use them.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Model multiplication and division of decimal fractions by another decimal fraction.	Instructor's Guide: 139
b. Explain the process of multiplication and division, including situations in which the multiplier and divisor are both whole numbers and decimal fractions.	Instructor's Guide: 7, 19, 24, 29, 34, 39, 42, 46, 50, 53, 59, 62, 64, 68, 69, 74, 75, 79, 82, 93, 100, 114, 117, 124, 163
c. Multiply and divide with decimal fractions including decimal fractions less than one and greater than one.	Instructor's Guide: 97, 139
d. Understand the relationships and rules for multiplication and division of whole numbers also apply to decimal fractions.	Instructor's Guide: 97

M 5 N 4

Students will continue to develop their understanding of the meaning of common fractions and compute with them.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Understand division of whole numbers can be represented as a fraction ($a/b = a \div b$).	Instructor's Guide: 44, 173
b. Understand the value of a fraction is not changed when both its numerator and denominator are multiplied or divided by the same number because it is the same as multiplying or dividing by one.	Instructor's Guide: 27, 28, 44, 49, 58, 65, 87, 91, 121, 150, 169, 173, 178
c. Find equivalent fractions and simplify fractions.	Instructor's Guide: 27, 28, 47, 49, 58, 65, 81, 87, 91, 150, 159, 178
d. Model the multiplication and division of common fractions.	Instructor's Guide: 97, 122, 159
e. Explore finding common denominators using concrete, pictorial, and computational models.	Instructor's Guide: 47, 144, 155, 160
f. Use $<$, $>$, or $=$ to compare fractions and justify the comparison.	Instructor's Guide: 27, 125, 157

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
g. Add and subtract common fractions and mixed numbers with unlike denominators.	Instructor's Guide: 47, 144, 155, 160
h. Use fractions (proper and improper) and decimal fractions interchangeably.	Instructor's Guide: 27, 28, 44, 58, 87, 88, 91, 178
i. Estimate products and quotients.	Instructor's Guide: 53, 68, 93, 100, 147, 163

M 5 N 5

Students will understand the meaning of percentage.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Model percent on 10 by 10 grids.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
b. Apply percentage to circle graphs.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)

M 5 M . Measurement

Students will compute the area of geometric plane figures. They will also understand the concept of volume and compute the volume of simple geometric solids and measure capacity. Students will convert from one unit to another within one system of measurement.

M 5 M 1

Students will extend their understanding of area of fundamental geometric plane figures.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Estimate the area of fundamental geometric plane figures.	Instructor's Guide: 103
b. Derive the formula for the area of a parallelogram (e.g., cut the parallelogram apart and rearrange it into a rectangle of the same area).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
c. Derive the formula for the area of a triangle (e.g., demonstrate and explain its relationship to the area of a rectangle with the same base and height).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
d. Find the areas of triangles and parallelograms using formulae.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
e. Estimate the area of a circle through partitioning and tiling and then with formula (let $\pi = 3.14$) (Discuss square units as they apply to circles.)	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
f. Find the area of a polygon (regular and irregular) by dividing it into squares, rectangles, and/or triangles and find the sum of the areas of those shapes.	Instructor's Guide: 175

M 5 M 3

Students will measure capacity with appropriately chosen units and tools.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Use milliliters, liters, fluid ounces, cups, pints, quarts, and gallons to measure capacity.	Instructor's Guide: 30, 73, 96, 101, 116
b. Compare one unit to another within a single system of measurement (e.g., 1 quart = 2 pints).	Instructor's Guide: 2, 32, 38, 73, 80, 81, 96, 101, 106, 107, 116, 137

M 5 M 4

Students will understand and compute the volume of a simple geometric solid.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Understand a cubic unit (u^3) is represented by a cube in which each edge has the length of 1 unit.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
b. Identify the units used in computing volume as cubic centimeters (cm^3), cubic meters (m^3), cubic inches (in^3), cubic feet (ft^3), and cubic yards (yd^3).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
c. Derive the formula for finding the volume of a cube and a rectangular prism using manipulatives.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
d. Compute the volume of a cube and a rectangular prism using formulae.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
e. Estimate the volume of a simple geometric solid.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)
f. Understand the similarities and differences between volume and capacity.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)

M5G. Geometry

Students will further develop their understanding of geometric figures.

M5G1

Students will understand congruence of geometric figures and the correspondence of their vertices, sides, and angles.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will understand congruence of geometric figures and the correspondence of their vertices, sides, and angles.	Instructor's Guide: 175

M5G2

Students will understand the relationship of the circumference of a circle to its diameter is pi ($\pi \approx 3.14$).

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will understand the relationship of the circumference of a circle to its diameter is pi ($\pi \approx 3.14$).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 6.</i>)

M5A. Algebra

Students will represent and investigate mathematical expressions algebraically by using variables.

M5A1

Students will represent and interpret the relationships between quantities algebraically.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Use variables, such as n or x , for unknown quantities in algebraic expressions.	Instructor's Guide: 17, 40, 51, 56, 57, 66, 71, 76, 83, 103, 151
b. Investigate simple algebraic expressions by substituting numbers for the unknown.	Instructor's Guide: 17, 40, 57, 76, 83, 103
c. Determine that a formula will be reliable regardless of the type of number (whole numbers or decimal fractions) substituted for the variable.	Instructor's Guide: 83, 103, 127, 141, 175

M5D. Data Analysis

Students will gather, organize, and display data and interpret graphs.

M5D1

Students will analyze graphs.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Analyze data presented in a graph.	Instructor's Guide: 151, 156, 161, 166, 176
b. Compare and contrast multiple graphic representations (circle graphs, line graphs, bar graphs, etc.) for a single set of data and discuss the advantages/disadvantages of each.	Instructor's Guide: 151, 156, 161, 166, 176

M5D2

Students will collect, organize, and display data using the most appropriate graph.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will collect, organize, and display data using the most appropriate graph.	Instructor's Guide: 151, 156, 161, 166, 176

M5P. Process Skills

Students will apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely follow a sequence of procedures. Students will use the process standards as a way of acquiring and using content knowledge.

M5P1

Using the appropriate technology, students will solve problems that arise in mathematics and in other contexts.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
a. Solve non-routine word problems using the strategy of make it simpler as well as all strategies learned in previous grades.	Instructor's Guide: 1-180
b. Solve single and multi-step routine word problems related to all appropriate fifth grade math standards.	Instructor's Guide: 1-180
c. Determine the operation(s) needed to solve a problem.	Instructor's Guide: 12, 17, 32, 42, 56, 76, 80, 88, 91, 96, 101, 108, 112, 117, 142, 167

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
d. Determine the most efficient way to solve a problem (mentally, paper/pencil, or calculator).	Instructor's Guide: 1-180

M 5 P 2

Students will investigate, develop, and evaluate mathematical arguments.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will investigate, develop, and evaluate mathematical arguments.	Instructor's Guide: 1-180

M 5 P 3

Students will use the language of mathematics to express ideas precisely.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will use the language of mathematics to express ideas precisely.	Instructor's Guide: 1-180

M 5 P 4

Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students understand how mathematical ideas interconnect and build on one another and apply mathematics in other content areas.	Instructor's Guide: 1-180

M 5 P 5

Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.

Grade 5 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 5
Students will create and use pictures, manipulatives, models, and symbols to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180

Afterschool Achievers: Math Club ~ 2003

correlated to

Georgia's Mathematics Performance Standards

Grade 6

M6N. Numbers and Operations

Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and will apply these concepts and associated skills in real world situations.

M6N1

Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and will use these concepts to solve problems.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Apply factors and multiples.	Instructor's Guide: 1, 5, 7, 8, 14, 32, 33, 35, 36, 38, 48, 49, 62, 63, 66, 70, 73, 74, 77, 78, 82, 83, 86, 88, 89, 96, 107, 108, 115, 117, 118, 136, 137, 138, 149, 152, 153, 154, 157, 158, 165, 172, 173, 177, 178
b. Decompose numbers into their prime factorization (Fundamental Theorem of Arithmetic).	Instructor's Guide: 1, 36, 62, 63
c. Determine the greatest common factor (GCF) and the least common multiple (LCM) for a set of numbers.	Instructor's Guide: 35, 36, 73
d. Add and subtract fractions and mixed numbers with unlike denominators.	Instructor's Guide: 10, 20, 31, 46, 54, 103, 116
e. Multiply and divide fractions and mixed numbers.	Instructor's Guide: 20, 31, 91, 96, 99, 103, 106, 121, 125, 129, 160, 174
f. Use fractions, decimals, and percents interchangeably.	Instructor's Guide: 26, 44, 59, 62, 76, 104, 105, 106, 131, 145, 151, 156
g. Solve problems involving fractions, decimals, and percents.	Instructor's Guide: 10, 20, 26, 29, 31, 40, 44, 45, 46, 51, 54, 59, 60, 62, 65, 69, 70, 76, 91, 96, 99, 103, 104, 105, 106, 109, 116, 121, 125, 129, 131, 145, 151, 156, 160, 174

M 6 M . Measurement

Students will understand how to determine the volume and surface area of solid figures. They will understand and use the customary and metric systems of measurement to measure quantities efficiently and to represent volume and surface area appropriately.

M 6 M 1

Students will convert from one unit to another within one system of measurement (customary or metric) by using proportional relationships.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
Students will convert from one unit to another within one system of measurement (customary or metric) by using proportional relationships.	Instructor's Guide: 11, 24, 31, 86, 134, 136, 174

M 6 M 2

Students will use appropriate units of measure for finding length, perimeter, area and volume and will express each quantity using the appropriate unit.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Measure length to the nearest half, fourth, eighth and sixteenth of an inch.	Instructor's Guide: 11, 17, 27, 52, 72, 97, 138
b. Select and use units of appropriate size and type to measure length, perimeter, area and volume.	Instructor's Guide: 4, 19, 85, 87, 88, 90, 97, 98, 107, 108, 115, 126, 142, 143, 144, 155, 176, 180
c. Compare and contrast units of measure for perimeter, area, and volume.	Instructor's Guide: 4, 19, 85, 87, 88, 90, 97, 98, 107, 108, 115, 126, 142, 143, 144, 155, 176, 180

M 6 M 3

Students will determine the volume of fundamental solid figures (right rectangular prisms, cylinders, pyramids and cones).

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Determine the formula for finding the volume of fundamental solid figures.	Instructor's Guide: 180
b. Compute the volumes of fundamental solid figures, using appropriate units of measure.	Instructor's Guide: 180
c. Estimate the volumes of simple geometric solids.	Instructor's Guide: 180
d. Solve application problems involving the volume of fundamental solid figures.	Instructor's Guide: 180

M 6 M 4

Students will determine the surface area of solid figures (right rectangular prisms and cylinders).

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Find the surface area of right rectangular prisms and cylinders using manipulatives and constructing nets.	Instructor's Guide: 90
b. Compute the surface area of right rectangular prisms and cylinders using formulae.	Instructor's Guide: 90
c. Estimate the surface areas of simple geometric solids.	Instructor's Guide: 90
d. Solve application problems involving surface area of right rectangular prisms and cylinders.	Instructor's Guide: 90

M 6 G . Geometry

Students will further develop their understanding of plane and solid geometric figures, incorporating the use of appropriate technology and using this knowledge to solve authentic problems.

M 6 G 1

Students will further develop their understanding of plane figures.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Determine and use lines of symmetry.	Instructor's Guide: 94
b. Investigate rotational symmetry, including degree of rotation.	Instructor's Guide: 52
c. Use the concepts of ratio, proportion and scale factor to demonstrate the relationships between similar plane figures.	Instructor's Guide: 170
d. Interpret and sketch simple scale drawings.	Instructor's Guide: 180
e. Solve problems involving scale drawings.	Instructor's Guide: 180

M 6 G 2

Students will further develop their understanding of solid figures.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Compare and contrast right prisms and pyramids.	Instructor's Guide: 101, 170
b. Compare and contrast cylinders and cones.	Instructor's Guide: 101, 170
c. Interpret and sketch front, back, top, bottom and side views of solid figures.	Instructor's Guide: 90, 101
d. Construct nets for prisms, cylinders, pyramids, and cones.	Instructor's Guide: 90

M 6 A . Algebra

Students will investigate relationships between two quantities. They will write and solve proportions and simple one-step equations that result from problem situations.

M 6 A 1

Students will understand the concept of ratio and use it to represent quantitative relationships.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
Students will understand the concept of ratio and use it to represent quantitative relationships.	Instructor's Guide: 100, 110, 170, 180

M 6 A 2

Students will consider relationships between varying quantities.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Analyze and describe patterns arising from mathematical rules, tables, and graphs.	Instructor's Guide: 3, 7, 12, 13, 14, 17, 18, 22, 23, 27, 28, 32, 33, 52, 53, 63, 68, 72, 73, 74, 77, 78, 82, 83, 87, 88, 92, 93, 97, 98, 102, 103, 108, 114, 122, 123, 137, 138, 143, 148, 149, 153, 158, 163, 171, 172, 173, 177, 178
b. Use manipulatives or draw pictures to solve problems involving proportional relationships.	Instructor's Guide: 100, 110
c. Use proportions ($a/b = c/d$) to describe relationships and solve problems, including percent problems.	Instructor's Guide: 100, 110

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
d. Describe proportional relationships mathematically using $y = kx$, where k is the constant of proportionality.	Instructor's Guide: 110
e. Graph proportional relationships in the form $y = kx$ and describe characteristics of the graphs.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)
f. In a proportional relationship expressed as $y = kx$, solve for one quantity given values of the other two. Given quantities may be whole numbers, decimals, or fractions. Solve problems using the relationship $y = kx$.	Instructor's Guide: 110
g. Use proportional reasoning ($a/b = c/d$ and $y = kx$) to solve problems.	Instructor's Guide: 100, 110

M 6 A 3

Students will evaluate algebraic expressions, including those with exponents, and solve simple one-step equations using each of the four basic operations.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
Students will evaluate algebraic expressions, including those with exponents, and solve simple one-step equations using each of the four basic operations.	Instructor's Guide: 16, 18, 27, 28, 37, 38, 41, 55, 56, 64, 88, 98, 146

M 6 D . Data Analysis

Students will demonstrate understanding of data analysis by posing questions to be answered by collecting data. They will represent, investigate, and use data to answer those questions. Students will understand experimental and theoretical probability.

M 6 D 1

Students will pose questions, collect data, represent and analyze the data, and interpret results.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Formulate questions that can be answered by data. Students should collect data by using samples from a larger population (surveys), or by conducting experiments.	Instructor's Guide: 17, 18, 27, 28, 67, 87, 88, 102, 122, 130, 132, 135, 140, 175
b. Using data, construct frequency distributions, frequency tables, and graphs.	Instructor's Guide: 17, 18, 27, 28, 67, 87, 88, 122, 132, 133, 135, 140, 175

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
c. Choose appropriate graphs to be consistent with the nature of the data (categorical or numerical). Graphs should include pictographs, histograms, bar graphs, line graphs, circle graphs, and line plots.	Instructor's Guide: 122, 132, 133, 135, 140, 175
d. Use tables and graphs to examine variation that occurs within a group and variation that occurs between groups.	Instructor's Guide: 17, 18, 27, 28, 67, 87, 88, 102, 122, 130, 132, 135, 140, 143, 175
e. Relate the data analysis to the context of the questions posed.	Instructor's Guide: 17, 18, 27, 28, 67, 87, 88, 102, 122, 130, 132, 135, 140, 143, 175

M 6 D 2

Students will use experimental and simple theoretical probability and understand the nature of sampling. They will also make predictions from investigations.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Predict the probability of a given event through trials/simulations (experimental probability), and represent the probability as a ratio.	Instructor's Guide: 122, 123, 127, 128, 132, 133
b. Determine, and use a ratio to represent, the theoretical probability of a given event.	Instructor's Guide: 122, 123, 127, 128, 132, 133
c. Discover that experimental probability approaches theoretical probability when the number of trials is large.	Instructor's Guide: 122, 123, 127, 128, 132, 133

M6P. Process Standards

Each topic studied in this course should be developed with careful thought toward helping every student achieve the following process standards.

M 6 P 1

Students will solve problems (using appropriate technology).

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Build new mathematical knowledge through problem solving.	Instructor's Guide: 1-180
b. Solve problems that arise in mathematics and in other contexts.	Instructor's Guide: 1-180

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
c. Apply and adapt a variety of appropriate strategies to solve problems.	Instructor’s Guide: 2, 3, 5, 7, 8, 12, 13, 15, 17, 18, 20, 22, 23, 27, 28, 31, 32, 33, 37, 38, 42, 43, 47, 48, 52, 53, 57, 58, 63, 65, 67, 68, 72, 73, 77, 78, 82, 83, 87, 88, 92, 93, 97, 98, 102, 103, 108, 112, 113, 122, 123, 126, 137, 138, 143, 148, 149, 150, 153, 158, 163, 165, 167, 168, 172, 173, 177, 178
d. Monitor and reflect on the process of mathematical problem solving.	Instructor’s Guide: 1-180

M 6 P 2

Students will reason and evaluate mathematical arguments.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Recognize reasoning and proof as fundamental aspects of mathematics.	Instructor’s Guide: 1-180
b. Make and investigate mathematical conjectures.	Instructor’s Guide: 1-180
c. Develop and evaluate mathematical arguments and proofs.	Instructor’s Guide: 1-180
d. Select and use various types of reasoning and methods of proof.	Instructor’s Guide: 1-180

M 6 P 3

Students will communicate mathematically.

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Organize and consolidate their mathematical thinking through communication.	Instructor’s Guide: 1-180
b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Instructor’s Guide: 1-180
c. Analyze and evaluate the mathematical thinking and strategies of others.	Instructor’s Guide: 1-180
d. Use the language of mathematics to express mathematical ideas precisely.	Instructor’s Guide: 1-180

M 6 P 4**Students will make connections among mathematical ideas and to other disciplines.**

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Recognize and use connections among mathematical ideas.	Instructor's Guide: 1-180
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Instructor's Guide: 1-180
c. Recognize and apply mathematics in contexts outside of mathematics.	Instructor's Guide: 31, 34, 42, 43, 67, 68, 72, 111, 120, 122, 130, 131, 140

M 6 P 5**Students will represent mathematics in multiple ways.**

Grade 6 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 6
a. Create and use representations to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180
b. Select, apply, and translate among mathematical representations to solve problems.	Instructor's Guide: 1-180
c. Use representations to model and interpret physical, social, and mathematical phenomena.	Instructor's Guide: 1-180

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Grade 7

M7N. Numbers and Operations

Students will further develop their understanding of the concept of rational numbers and apply them to real world situations.

M7N1

Students will understand the meaning of positive and negative rational numbers and use them in computation.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Find the absolute value of a number and understand it as the distance from zero on a number line.	Instructor's Guide: 3, 51, 65
b. Compare and order rational numbers, including repeating decimals.	Instructor's Guide: 26, 119, 156, 161
c. Add, subtract, multiply, and divide positive and negative rational numbers.	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
d. Solve problems using rational numbers.	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

M7G. Geometry

Students will further develop and apply their understanding of plane and solid geometric figures through the use of constructions and transformations. Students will explore the properties of similarity and further develop their understanding of 3-dimensional figures.

M7G1

Students will construct plane figures that meet given conditions.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Perform basic constructions using both compass and straight edge, and appropriate technology. Constructions should include copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)
b. Recognize that many constructions are based on the creation of congruent triangles.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)

M7G2

Students will demonstrate understanding of transformations.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Demonstrate understanding of translations, dilations, rotations, reflections, and relate symmetry to appropriate transformations.	Instructor's Guide: 7, 15, 42, 43, 117, 118, 164
b. Given a figure in the coordinate plane, determine the coordinates resulting from a translation, dilation, rotation, or reflection.	Instructor's Guide: 67, 114

M7G3

Students will use the properties of similarity and apply these concepts to geometric figures.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Understand the meaning of similarity, visually compare geometric figures for similarity, and describe similarities by listing corresponding parts.	Instructor's Guide: 77, 78, 170

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
b. Understand the relationships among scale factors, length ratios, and area ratios between similar figures. Use scale factors, length ratios, and area ratios to determine side lengths and areas of similar geometric figures.	Instructor's Guide: 77, 78, 170
c. Understand congruence of geometric figures as a special case of similarity: The figures have the same size and shape.	Instructor's Guide: 79, 101, 176

M 7 G 4

Students will further develop their understanding of three-dimensional figures.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Describe three-dimensional figures formed by translations and rotations of plane figures through space.	Instructor's Guide: 79, 84, 101, 147, 176
b. Sketch, model, and describe cross-sections of cones, cylinders, pyramids, and prisms.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)

M 7 A . Algebra

Students will demonstrate an understanding of linear relations and fundamental algebraic concepts.

M 7 A 1

Students will represent and evaluate quantities using algebraic expressions.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Translate verbal phrases to algebraic expressions.	Instructor's Guide: 5, 13, 16, 18, 36, 38, 53, 63, 110, 120, 133, 148
b. Simplify and evaluate algebraic expressions, using commutative, associative, and distributive properties as appropriate.	Instructor's Guide: 5, 16, 17, 41, 49, 56, 63, 64, 67, 72, 73, 74, 81, 83, 88, 110, 112, 114, 146, 150, 155, 158, 163
c. Add and subtract linear expressions.	Instructor's Guide: 5, 16, 17, 41, 49, 56, 63, 64, 67, 72, 73, 74, 81, 83, 88, 110, 112, 114, 146, 150, 155, 158, 163

M 7 A 2

Students will understand and apply linear equations in one variable.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Given a problem, define a variable, write an equation, solve the equation, and interpret the solution.	Instructor's Guide: 5, 13, 16, 18, 24, 38, 63, 110, 120, 133, 148
b. Use the addition and multiplication properties of equality to solve one- and two-step linear equations.	Instructor's Guide: 4, 16, 24, 29, 38, 56, 64, 83, 110, 120, 133, 144, 180

M 7 A 3

Students will understand relationships between two variables.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Plot points on a coordinate plane	Instructor's Guide: 29, 67, 72, 83, 114
b. Represent, describe, and analyze relations from tables, graphs, and formulas.	Instructor's Guide: 13, 18, 29, 63, 67, 68, 72, 73, 83, 148, 155, 158, 163, 168, 172, 173
c. Describe how change in one variable affects the other variable.	Instructor's Guide: 13, 18, 29, 63, 67, 68, 72, 73, 83, 148, 155, 158, 163, 168, 172, 173
d. Describe patterns in the graphs of proportional relationships, both direct ($y = kx$) and inverse ($y = k/x$).	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)

M 7 D. Data Analysis

Students will demonstrate understanding of data analysis by posing questions, collecting data, analyzing the data using measures of central tendency and variation, and using the data to answer the questions posed. Students will understand the role of probability in sampling.

M 7 D 1

Students will pose questions, collect data, represent and analyze the data, and interpret results.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Formulate questions and collect data from a census of at least 30 objects and from samples of varying sizes.	Instructor's Guide: 90, 122, 135, 137, 165
b. Construct frequency distributions.	Instructor's Guide: 122, 135, 137, 165

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
c. Analyze data using measures of central tendency (mean, median, and mode), including recognition of outliers.	Instructor's Guide: 75, 83, 90, 91, 107, 108, 123
d. Analyze data with respect to measures of variation (range, quartiles, interquartile range).	Instructor's Guide: 75, 83, 90, 91, 107, 108, 123
e. Compare measures of central tendency and variation from samples to those from a census. Observe that sample statistics are more likely to approximate the population parameters as sample size increases.	Instructor's Guide: 75, 83, 90, 91, 107, 108, 123
f. Analyze data using appropriate graphs, including pictographs, histograms, bar graphs, line graphs, circle graphs, and line plots introduced earlier, and using box-and-whisker plots and scatter plots.	Instructor's Guide: 75, 82, 83, 88, 90, 102, 103, 122, 135, 137, 140, 165
g. Analyze and draw conclusions about data, including describing the relationship between two variables.	Instructor's Guide: 75, 82, 83, 88, 90, 102, 103, 122, 135, 137, 140, 165

M7P. Process Standards

The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need.

M7P1

Students will solve problems (using appropriate technology).

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Build new mathematical knowledge through problem solving.	Instructor's Guide: 1-180
b. Solve problems that arise in mathematics and in other contexts.	Instructor's Guide: 1-180
c. Apply and adapt a variety of appropriate strategies to solve problems.	Instructor's Guide: 2, 5, 7, 8, 12, 13, 18, 20, 22, 27, 28, 30, 32, 33, 35, 38, 42, 43, 48, 50, 52, 53, 57, 58, 62, 63, 65, 68, 73, 78, 83, 88, 92, 93, 97, 98, 108, 110, 113, 115, 117, 118, 120, 127, 128, 133, 143, 145, 147, 148, 157, 158, 163, 167, 168, 170, 173, 177, 178
d. Monitor and reflect on the process of mathematical problem solving.	Instructor's Guide: 1-180

M 7 P 2**Students will reason and evaluate mathematical arguments.**

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Recognize reasoning and proof as fundamental aspects of mathematics.	Instructor's Guide: 1-180
b. Make and investigate mathematical conjectures.	Instructor's Guide: 1-180
c. Develop and evaluate mathematical arguments and proofs	Instructor's Guide: 1-180
d. Select and use various types of reasoning and methods of proof.	Instructor's Guide: 1-180

M 7 P 3**Students will communicate mathematically.**

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Organize and consolidate their mathematical thinking through communication.	Instructor's Guide: 1-180
b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Instructor's Guide: 1-180
c. Analyze and evaluate the mathematical thinking and strategies of others.	Instructor's Guide: 1-180
d. Use the language of mathematics to express mathematical ideas precisely.	Instructor's Guide: 1-180

M 7 P 4**Students will make connections among mathematical ideas and to other disciplines.**

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Recognize and use connections among mathematical ideas.	Instructor's Guide: 1-180
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Instructor's Guide: 1-180

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
c. Recognize and apply mathematics in contexts outside of mathematics.	Instructor's Guide: 5, 10, 62, 82, 85, 90, 99, 102, 110, 120, 122, 159, 165

M 7 P 5

Students will represent mathematics in multiple ways.

Grade 7 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 7
a. Create and use representations to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180
b. Select, apply, and translate among mathematical representations to solve problems.	Instructor's Guide: 1-180
c. Use representations to model and interpret physical, social, and mathematical phenomena.	Instructor's Guide: 1-180

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Georgia's Mathematics Performance Standards

Grade 8

M8N. Numbers and Operations

Students will understand the numeric and geometric meaning of square root, apply properties of integer exponents and use scientific notation.

M8N1

Students will understand different representations of numbers including square roots, exponents, and scientific notation.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Find square roots of perfect squares.	Instructor's Guide: 14, 21, 49, 50, 136, 161
b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
c. Recognize square roots as points and as lengths on a number line.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.	Instructor's Guide: 136
e. Recognize and use the radical symbol to denote the positive square root of a positive number.	Instructor's Guide: 14, 21, 49, 50, 112, 113, 118, 136, 152, 153, 161
f. Estimate square roots of positive numbers.	Instructor's Guide: 50, 113, 152, 153
g. Simplify, add, subtract, multiply, and divide expressions containing square roots.	Instructor's Guide: 118, 152, 161
h. Distinguish between rational and irrational numbers.	Instructor's Guide: 26, 30, 50, 65, 74, 76, 118, 130, 145, 152, 153, 155, 171, 176
i. Simplify expressions containing integer exponents.	Instructor's Guide: 66
j. Express and use numbers in scientific notation.	Instructor's Guide: 12, 66

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.	Instructor's Guide: 13, 66, 153

M8G. Geometry

Students will use and apply geometric properties of plane figures, including congruence and the Pythagorean theorem.

M8G1

Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.	Instructor's Guide: 87, 88, 98, 101, 105, 134, 148
b. Apply properties of angle pairs formed by parallel lines cut by a transversal.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)
c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)
d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.	Instructor's Guide: 82, 83, 134, 152

M8G2

Students will understand and use the Pythagorean theorem.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Apply properties of right triangles, including the Pythagorean theorem.	Instructor's Guide: 21, 50, 112, 113, 152, 153
b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.	No specific lesson addresses this standard. (See <i>Geometry to Go</i> .)

M 8 A . Algebra

Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change.

M 8 A 1

Students will use algebra to represent, analyze, and solve problems.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Represent a given situation using algebraic expressions or equations in one variable.	Instructor's Guide: 5, 20, 41, 43, 64, 77, 78, 102, 103, 133, 153
b. Simplify and evaluate algebraic expressions.	Instructor's Guide: 29, 30, 41, 64, 97, 103, 131, 133, 146, 149, 164
c. Solve algebraic equations in one variable, including equations involving absolute values.	Instructor's Guide: 16, 18, 56, 86, 112, 133, 140, 144, 153, 164
d. Interpret solutions in problem contexts.	Instructor's Guide: 5, 16, 18, 20, 41, 43, 56, 64, 77, 78, 86, 102, 103, 112, 133, 140, 144, 153, 164

M 8 A 2

Students will understand and graph inequalities in one variable.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Represent a given situation using an inequality in one variable.	Instructor's Guide: 86, 90, 154
b. Use the properties of inequality to solve inequalities.	Instructor's Guide: 86, 90, 154
c. Graph the solution of an inequality on a number line.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
d. Interpret solutions in problem contexts.	Instructor's Guide: 86, 90, 154

M 8 A 3

Students will understand relations and linear functions.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Recognize a relation as a correspondence between varying quantities.	Instructor's Guide: 37, 77

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.	Instructor's Guide: 17, 22, 23, 29, 37, 77, 97, 98, 127, 133, 146, 150, 153
c. Distinguish between relations that are functions and those that are not functions.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
d. Recognize functions in a variety of representations and a variety of contexts.	Instructor's Guide: 17, 22, 23, 29, 37, 77, 97, 98, 127, 133, 146, 150, 153
e. Use tables to describe sequences recursively and with a formula in closed form.	Instructor's Guide: 62
f. Understand and recognize arithmetic sequences as linear functions with whole-number input values.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.	Instructor's Guide: 97
h. Identify relations and functions as linear or nonlinear.	Instructor's Guide: 17, 22, 23, 29, 37, 97, 98, 127, 133, 146
i. Translate among verbal, tabular, graphic, and algebraic representations of functions.	Instructor's Guide: 17, 22, 23, 29, 37, 77, 97, 98, 127, 133, 146, 150, 153

M 8 A 4

Students will graph and analyze graphs of linear equations.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Interpret slope as a rate of change.	Instructor's Guide: 23, 97, 105
b. Determine the meaning of the slope and y-intercept in a given situation.	Instructor's Guide: 23, 97, 105, 164
c. Graph equations of the form $y = mx + b$.	Instructor's Guide: 22, 23, 29, 97, 105, 164
d. Graph equations of the form $ax + by = c$.	No specific lesson addresses this standard. (See <i>Algebra to Go</i> .)
e. Determine the equation of a line given a graph, numerical information that defines the line, or a context involving a linear relationship.	Instructor's Guide: 22, 23, 29, 97, 105, 164

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
f. Solve problems involving linear relationships.	Instructor's Guide: 22, 23, 29, 97, 105, 164

M 8 A 5

Students will understand systems of linear equations and use them to solve problems.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Given a problem context, write an appropriate system of linear equations.	Instructor's Guide: 22, 23
b. Solve systems of equations graphically and algebraically, using technology as appropriate.	Instructor's Guide: 22, 23
c. Interpret solutions in problem contexts.	Instructor's Guide: 22, 23

M 8 D . Data Analysis

Students will use and understand set theory and simple counting techniques; determine the theoretical probability of simple events; and make inferences from data, particularly data that can be modeled by linear functions.

M 8 D 1

Students will apply basic concepts of set theory.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Demonstrate relationships among sets through use of Venn diagrams.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)
b. Determine subsets, complements, intersection, and union of sets.	No specific lesson addresses this standard.
c. Use set notation to denote elements of a set.	Instructor's Guide: 31

M 8 D 2

Students will determine the number of outcomes related to a given event.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Use tree diagrams to find the number of outcomes.	Instructor's Guide: 175
b. Apply the addition and multiplication principles of counting.	Instructor's Guide: 27, 125

M 8 D 3

Students will use the basic laws of probability.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Find the probability of simple independent events.	Instructor's Guide: 125, 128, 142, 143
b. Find the probability of compound independent events.	Instructor's Guide: 128, 142, 143

M 8 D 4

Students will organize, interpret, and make inferences from statistical data.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Gather data that can be modeled with a linear function.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)
b. Estimate and determine a line of best fit from a scatter plot.	No specific lesson addresses this standard. (See <i>Afterschool Achievers: Math Club, Grade 7.</i>)

M 8 P. Process Standards

The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need.

M 8 P 1

Students will solve problems (using appropriate technology).

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Build new mathematical knowledge through problem solving.	Instructor's Guide: 1-180
b. Solve problems that arise in mathematics and in other contexts.	Instructor's Guide: 1-180
c. Apply and adapt a variety of appropriate strategies to solve problems.	Instructor's Guide: 7, 8, 12, 13, 18, 23, 28, 32, 33, 35, 40, 42, 43, 48, 50, 57, 58, 62, 63, 67, 68, 72, 73, 77, 78, 88, 92, 93, 102, 103, 112, 113, 122, 123, 128, 132, 133, 138, 143, 145, 148, 152, 153, 155, 157, 158, 162, 163, 168, 170, 173
d. Monitor and reflect on the process of mathematical problem solving.	Instructor's Guide: 1-180

M 8 P 2**Students will reason and evaluate mathematical arguments.**

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Recognize reasoning and proof as fundamental aspects of mathematics.	Instructor's Guide: 1-180
b. Make and investigate mathematical conjectures.	Instructor's Guide: 1-180
c. Develop and evaluate mathematical arguments and proofs.	Instructor's Guide: 1-180
d. Select and use various types of reasoning and methods of proof.	Instructor's Guide: 1-180

M 8 P 3**Students will communicate mathematically.**

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Organize and consolidate their mathematical thinking through communication.	Instructor's Guide: 1-180
b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Instructor's Guide: 1-180
c. Analyze and evaluate the mathematical thinking and strategies of others.	Instructor's Guide: 1-180
d. Use the language of mathematics to express mathematical ideas precisely.	Instructor's Guide: 1-180

M 8 P 4**Students will make connections among mathematical ideas and to other disciplines.**

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Recognize and use connections among mathematical ideas.	Instructor's Guide: 1-180
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Instructor's Guide: 1-180

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
c. Recognize and apply mathematics in contexts outside of mathematics.	Instructor's Guide: 3, 11, 12, 75, 77, 99, 127, 135, 156, 157, 159, 172, 173

M 8 P 5

Students will represent mathematics in multiple ways.

Grade 8 Mathematics Performance Standards	Afterschool Achievers: Math Club, Grade 8
a. Create and use representations to organize, record, and communicate mathematical ideas.	Instructor's Guide: 1-180
b. Select, apply, and translate among mathematical representations to solve problems.	Instructor's Guide: 1-180
c. Use representations to model and interpret physical, social, and mathematical phenomena.	Instructor's Guide: 1-180



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