

**AFTERSCHOOL ACHIEVERS:
MATH CLUB
Grades K-8**

correlated to

**Colorado's Standards
CSAP Mathematics
Assessment Framework**



YOUR COLORADO GREAT SOURCE REPRESENTATIVE

JILL FULKERSON
800-289-4490, option 4
Jill_Fulkerson@hmco.com

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Afterschool Achievers: Math Club © 2002, Kindergarten correlated to Colorado's Standards CSAP Mathematics Assessment Framework Grade 3

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.755), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Identify whether a given number is odd or even.	Instructor's Guide: 128, 143, 158, 173
c Using concrete materials or pictures identify different combinations of coins up to \$0.99.	Instructor's Guide: 122

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Read, write, and order numerals 0-9,999.	Instructor's Guide: 5, 12, 17, 22, 27, 32, 35, 38, 48, 55, 58, 68, 80, 88, 98, 103, 105, 108, 118, 155
d Generate equivalent representations for the same number up to a 4-digit number (for example; $25 = 20 + 5$ or $10 + 15$ or 2 tens and 5 ones).	Instructor's Guide: 60, 85, 110, 122, 135, 144, 149, 152, 154, 159, 179
e Compare whole numbers as greater than, less than, or equal to one another using words or symbols.	Instructor's Guide: 38, 48, 58, 62, 68, 82, 84, 88, 98, 103, 104, 108, 109, 112, 114, 118, 119, 124, 129, 134, 139

Benchmark 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Locate, label, or count forward from any even number by 2's and from any number by 10's and 100's up to 999.	Instructor's Guide: 175

Benchmark 5

Use number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Use estimation strategies to determine the reasonableness of solutions to problems.	Instructor's Guide: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Reproduce, extend, create, and describe patterns and sequences using a variety of materials (for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Reproduce, extend, and create patterns, using pictures of geometric shapes.	Instructor's Guide: 75, 121, 126, 131, 136, 141, 146, 151, 171
b Use a pattern to find missing elements (for example, multiples of 2, 3, 5, 10).	Instructor's Guide: 72

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Construct, read, and interpret displays of data including tables, charts, pictographs, and bar graphs.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Organize and display data using tallies, bar graphs, pictographs, or tables.	Instructor's Guide: 93

Benchmark 2

Interpret data using the concepts of largest, smallest, most often, and middle.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Determine the mode from a given a set of numbers, the mode is the number that occurs most often.	Instructor's Guide: 93
b Using various displays of data, interpret and draw conclusions.	Instructor's Guide: 93

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Identify, describe, draw, compare, classify, and build physical models of geometric figures.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Identify the characteristics of two-dimensional figures (for example, number of sides or vertices, contains a right angle, contains parallel sides).	Instructor's Guide: 1, 3, 6, 8, 11, 13, 16, 18, 20, 21, 23, 25, 26, 28, 31, 33, 36, 41, 45, 46, 51, 52, 53, 56, 61, 63, 66, 70, 71, 73, 76, 78, 81, 83, 86, 87, 91, 96, 101, 102, 106, 111, 113, 116, 120, 123, 133, 137, 138, 145, 147, 148, 153, 168, 170, 172, 178
c Identify three-dimensional figures (for example, cubes, spheres, cylinders, cones and pyramids).	Instructor's Guide: 63, 87, 120, 145, 170

Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Benchmark 1

Know, use, describe, and estimate measure of length, perimeter, capacity, weight, time, and temperature.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Use an analog and digital clock, tell time to the nearest 5 minutes.	Instructor's Guide: 28
c Choose the appropriate tool to measure familiar objects/situations containing length, weight, temperature or time.	Instructor's Guide: 43

Benchmark 2

Compare and order objects according to measurable attributes (for example, longest to shortest, lightest to heaviest).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Compare objects according to the measurable attributes of length, capacity, weight, or temperature.	Instructor's Guide: 15, 40, 43, 47, 65, 90, 92, 115, 132, 140, 165, 180

Benchmark 4

Use the approximate measures of familiar objects (for example, the width of your finger, the temperature of a room, the weight of a gallon of milk) to develop a sense of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Approximate the measurement of familiar objects using standard units (for example, a paper clip is about one inch).	Instructor's Guide: 132

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 3

Demonstrate understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
b Demonstrate proficiency with basic addition and subtraction facts.	Instructor's Guide: 38, 48, 58, 62, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 124, 127, 129, 134, 139, 142, 160, 162, 177

Benchmark 4

Construct, use, and explain procedures to compute and estimate with whole numbers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
b Demonstrate three basic operations of whole numbers (for example, addition and subtraction of three digits, and multiplication of multiples of ten by 1, 2, 3, 5).	Instructor's Guide: 38, 48, 58, 62, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 124, 127, 129, 134, 139, 142, 160, 162, 177

Benchmark 5

Select and use appropriate methods for computing with whole numbers in problem-solving situations from mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Kindergarten
a Given a real world problem-solving situation, use addition, subtraction, or multiplication to solve the problem.	Instructor's Guide: 38, 48, 58, 62, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 124, 127, 129, 134, 139, 142, 160, 162, 177

Afterschool Achievers: Math Club © 2002, Grade 1
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CSAP Mathematics Assessment Framework
Grade 3

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Identify whether a given number is odd or even.	Instructor's Guide: 113, 121, 174, 179
b Identify the fractional part of a drawing or a set (restricted to halves, thirds, fourths).	Instructor's Guide: 117, 118, 173
c Using concrete materials or pictures identify different combinations of coins up to \$0.09.	Instructor's Guide: 34, 79, 94, 124, 149, 151, 169

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Read, write, and order numerals 0-9,999.	Instructor's Guide: 105, 165, 168
b Read the number words for selected numbers from zero to nine thousand, nine hundred ninety-nine.	Instructor's Guide: 165
c Identify place value through ten-thousands (for example, in 86,243, '6' is in the thousands place).	Instructor's Guide: 112, 123, 138, 157, 165, 168

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
d Generate equivalent representations for the same number up to a 4-digit number (for example; $25 = 20 + 5$ or $10 + 15$ or 2 tens and 5 ones).	Instructor's Guide: 17, 22, 59, 69, 72, 74, 79, 89, 92, 99, 104, 107, 109, 119, 124, 129, 139, 149, 169
e Compare whole numbers as greater than, less than, or equal to one another using words or symbols.	Instructor's Guide: 14, 19, 44, 49, 157

B e n c h m a r k 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Locate, label, or count forward from any even number by 2's and from any number by 10's and 100's up to 999.	Instructor's Guide: 111

B e n c h m a r k 4

Develop, test, and explain conjectures about properties of whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
b Solve addition and subtraction problems using commutative and associative properties (for example, $2 + 3 + 6 = 6 + 3 + 2$; the words commutative and associative will not be used in test items).	Instructor's Guide: 166

B e n c h m a r k 5

Use number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Use estimation strategies to determine the reasonableness of solutions to problems.	Instructor's Guide: 5, 10, 15, 20, 25, 30, 35, 40, 41, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Reproduce, extend, create, and describe patterns and sequences using a variety of materials (for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Reproduce, extend, and create patterns, using pictures of geometric shapes.	Instructor's Guide: 11, 16, 26, 31, 36, 41, 46, 51, 56, 61, 66, 81, 101
b Use a pattern to find missing elements (for example, multiples of 2, 3, 5, 10).	Instructor's Guide: 111, 116, 121, 125, 136, 141, 145, 146, 156, 161, 172, 176

Benchmark 3

Recognize when a pattern exists and use that information to solve a problem.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Identify a rule using addition or subtraction patterns and solve a new problem using the rule.	Instructor's Guide: 11, 16, 26, 31, 36, 41, 46, 51, 56, 61, 66, 71, 81, 91, 101, 111, 131, 141, 171
b Given numbers in a table, extend the table.	Instructor's Guide: 122, 126

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Construct, read, and interpret displays of data including tables, charts, pictographs, and bar graphs.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Organize and display data using tallies, bar graphs, pictographs, or tables.	Instructor's Guide: 76, 96, 151, 163

Benchmark 2

Interpret data using the concepts of largest, smallest, most often, and middle.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
b Using various displays of data, interpret and draw conclusions.	Instructor's Guide: 163

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Identify, describe, draw, compare, classify, and build physical models of geometric figures.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Identify the characteristics of two-dimensional figures (for example, number of sides or vertices, contains a right angle, contains parallel sides).	Instructor's Guide: 3, 8, 12, 13, 18, 21, 23, 60, 61, 66, 80, 100, 132, 153
c Identify three-dimensional figures (for example, cubes, spheres, cylinders, cones and pyramids).	Instructor's Guide: 48, 53, 58, 63, 158, 160, 180

Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Benchmark 1

Know, use, describe, and estimate measure of length, perimeter, capacity, weight, time, and temperature.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Use an analog and digital clock, tell time to the nearest 5 minutes.	Instructor's Guide: 57, 135, 147, 148, 175
c Choose the appropriate tool to measure familiar objects/situations containing length, weight, temperature or time.	Instructor's Guide: 88, 103, 127, 143, 178

Benchmark 2

Compare and order objects according to measurable attributes (for example, longest to shortest, lightest to heaviest).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Compare objects according to the measurable attributes of length, capacity, weight, or temperature.	Instructor's Guide: 15, 33, 38, 42, 55, 95, 115, 133

Benchmark 3

Demonstrate the process of measuring and explaining the concepts related to units of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Measure the length of objects including the sides of rectangles and squares to the nearest inch and centimeter.	Instructor's Guide: 38, 42, 115, 133

Benchmark 4

Use the approximate measures of familiar objects (for example, the width of your finger, the temperature of a room, the weight of a gallon of milk) to develop a sense of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Approximate the measurement of familiar objects using standard units (for example, a paper clip is about one inch).	Instructor's Guide: 38, 133

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Using pictures, diagrams, numbers or words, demonstrate addition and subtraction of whole numbers with 2-digit numbers.	Instructor's Guide: 162

Benchmark 3

Demonstrate understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
b Demonstrate proficiency with basic addition and subtraction facts.	Instructor's Guide: 24, 39, 44, 52, 62, 65, 67, 68, 82, 83, 85, 91, 92, 97, 113, 142, 167, 169

Benchmark 4

Construct, use, and explain procedures to compute and estimate with whole numbers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
b Demonstrate three basic operations of whole numbers (for example, addition and subtraction of three digits, and multiplication of multiples of ten by 1, 2, 3, 5).	Instructor's Guide: 24, 39, 44, 52, 62, 65, 67, 68, 82, 83, 85, 91, 92, 97, 113, 142, 167, 169

Benchmark 5

Select and use appropriate methods for computing with whole numbers in problem-solving situations from mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 1
a Given a real world problem-solving situation, use addition, subtraction, or multiplication to solve the problem.	Instructor's Guide: 24, 39, 44, 52, 62, 65, 67, 68, 82, 83, 85, 91, 92, 97, 113, 142, 167, 169

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CSAP Mathematics Assessment Framework
Grade 3

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Identify whether a given number is odd or even.	Instructor's Guide: 17, 18, 26, 46, 61, 96, 116, 154
b Identify the fractional part of a drawing or a set (restricted to halves, thirds, fourths).	Instructor's Guide: 48, 57, 80, 97, 138
c Using concrete materials or pictures identify different combinations of coins up to \$0.99.	Instructor's Guide: 77, 119, 159

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Read, write, and order numerals 0-9,999.	Instructor's Guide: 40, 60, 90, 122, 123
c Identify place value through ten-thousands (for example, in 86,243, '6' is in the thousands place).	Instructor's Guide: 40, 60, 90, 122, 123
d Generate equivalent representations for the same number up to a 4-digit number (for example; $25 = 20 + 5$ or $10 + 15$ or 2 tens and 5 ones).	Instructor's Guide: 107

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
e Compare whole numbers as greater than, less than, or equal to one another using words or symbols.	Instructor's Guide: 51

B e n c h m a r k 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Locate, label, or count forward from any even number by 2's and from any number by 10's and 100's up to 999.	Instructor's Guide: 1, 73, 81, 86

B e n c h m a r k 4

Develop, test, and explain conjectures about properties of whole numbers, and commonly-used fractions and decimals (for example, 1/3, 3/4, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
b Solve addition and subtraction problems using commutative and associative properties (for example, $2 + 3 + 6 = 6 + 3 + 2$; the words commutative and associative will not be used in test items).	Instructor's Guide: 33

B e n c h m a r k 5

Use number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (for example, 1/3, 3/4, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Use estimation strategies to determine the reasonableness of solutions to problems.	Instructor's Guide: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Reproduce, extend, create, and describe patterns and sequences using a variety of materials (for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Reproduce, extend, and create patterns, using pictures of geometric shapes.	Instructor's Guide: 6, 11, 21, 41, 66, 126
b Use a pattern to find missing elements (for example, multiples of 2, 3, 5, 10).	Instructor's Guide: 56, 91, 131, 171

Benchmark 3

Recognize when a pattern exists and use that information to solve a problem.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Identify a rule using addition or subtraction patterns and solve a new problem using the rule.	Instructor's Guide: 56, 91, 131, 171
b Given numbers in a table, extend the table.	Instructor's Guide: 81

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Construct, read, and interpret displays of data including tables, charts, pictographs, and bar graphs.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Organize and display data using tallies, bar graphs, pictographs, or tables.	Instructor's Guide: 25, 70, 85, 155, 161

Benchmark 2

Interpret data using the concepts of largest, smallest, most often, and middle.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
b Using various displays of data, interpret and draw conclusions.	Instructor's Guide: 25, 70, 155, 161

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Recognize shapes and their relationships (for example, symmetry, congruence) using a variety of materials (for example, pasta, boxes, pattern blocks).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Identify figures which are congruent.	Instructor's Guide: 75
b Identify a line of symmetry for regular polygons and other familiar objects.	Instructor's Guide: 153
c Create a figure with at least one line of symmetry.	Instructor's Guide: 153

Benchmark 2

Identify, describe, draw, compare, classify, and build physical models of geometric figures.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Identify the characteristics of two-dimensional figures (for example, number of sides or vertices, contains a right angle, contains parallel sides).	Instructor's Guide: 15, 52
c Identify three-dimensional figures (for example, cubes, spheres, cylinders, cones and pyramids).	Instructor's Guide: 3, 13, 23, 35, 38, 50, 63, 88, 98, 125, 133, 163, 173
e Create and identify the results of combining or subdividing given geometric shapes (for example, pattern blocks, tangrams).	Instructor's Guide: 115

B e n c h m a r k 3

Relate geometric figures to measurement and number sense.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Find the perimeter of a polygon.	Instructor's Guide: 68, 105

S t a n d a r d 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Know, use, describe, and estimate measure of length, perimeter, capacity, weight, time, and temperature.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Use an analog and digital clock, tell time to the nearest 5 minutes.	Instructor's Guide: 47, 58, 82, 108
b Read and interpret pictorial representations of measurements of length, weight, temperature, and capacity.	Instructor's Guide: 20, 58, 82, 148, 150, 168
c Choose the appropriate tool to measure familiar objects/situations containing length, weight, temperature or time.	Instructor's Guide: 150, 168

B e n c h m a r k 2

Compare and order objects according to measurable attributes (for example, longest to shortest, lightest to heaviest).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Compare objects according to the measurable attributes of length, capacity, weight, or temperature.	Instructor's Guide: 148, 160

Benchmark 3

Demonstrate the process of measuring and explaining the concepts related to units of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Measure the length of objects including the sides of rectangles and squares to the nearest inch and centimeter.	Instructor's Guide: 7

Benchmark 4

Use the approximate measures of familiar objects (for example, the width of your finger, the temperature of a room, the weight of a gallon of milk) to develop a sense of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Approximate the measurement of familiar objects using standard units (for example, a paper clip is about one inch).	Instructor's Guide: 7

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Using pictures, diagrams, numbers or words, demonstrate addition and subtraction of whole numbers with 2-digit numbers.	Instructor's Guide: 67, 116, 117, 127, 137, 146, 154, 166, 176

Benchmark 3

Demonstrate understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Demonstrate understanding of basic multiplication facts of 1's, 2's, 3's, 5's, 10's.	Instructor's Guide: 112, 113, 124, 139, 141, 174, 179
b Demonstrate proficiency with basic addition and subtraction facts.	Instructor's Guide: 4, 9, 14, 19, 33, 42, 54, 79, 84, 89, 94, 99, 102, 104, 109, 114, 129, 134, 139, 149, 169

B e n c h m a r k 4

Construct, use, and explain procedures to compute and estimate with whole numbers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
b Demonstrate three basic operations of whole numbers (for example, addition and subtraction of three digits, and multiplication of multiples of ten by 1, 2, 3, 5).	Instructor's Guide: 4, 9, 14, 19, 33, 42, 54, 79, 84, 89, 94, 99, 102, 104, 109, 112, 113, 114, 124, 129, 134, 139, 141, 149, 169, 174, 179

B e n c h m a r k 5

Select and use appropriate methods for computing with whole numbers in problem-solving situations from mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 2
a Given a real world problem-solving situation, use addition, subtraction, or multiplication to solve the problem.	Instructor's Guide: 4, 9, 14, 19, 33, 42, 54, 79, 84, 89, 92, 94, 99, 102, 104, 109, 112, 113, 114, 124, 129, 134, 139, 141, 147, 149, 169, 174, 179

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Grade 3

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Identify whether a given number is odd or even.	Instructor's Guide: 18, 29, 115
b Identify the fractional part of a drawing or a set (restricted to halves, thirds, fourths).	Instructor's Guide: 82, 83, 137, 145
c Using concrete materials or pictures identify different combinations of coins up to \$0.99.	Instructor's Guide: 44, 78

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Read, write, and order numerals 0-9,999.	Instructor's Guide: 140
b Read the number words for selected numbers from zero to nine thousand, nine hundred ninety-nine.	Instructor's Guide: 140
c Identify place value through ten-thousands (for example, in 86,243, '6' is in the thousands place).	Instructor's Guide: 5, 35, 60, 103, 127, 180

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
d Generate equivalent representations for the same number up to a 4-digit number (for example; $25 = 20 + 5$ or $10 + 15$ or 2 tens and 5 ones).	Instructor's Guide: 48

B e n c h m a r k 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Locate, label, or count forward from any even number by 2's and from any number by 10's and 100's up to 999.	Instructor's Guide: 21, 47, 58, 64, 81, 86, 91, 138, 169

B e n c h m a r k 4

Develop, test, and explain conjectures about properties of whole numbers, and commonly-used fractions and decimals (for example, $1/3$, $3/4$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Use the multiplication properties of zero and one with whole numbers.	Instructor's Guide: 54
b Solve addition and subtraction problems using commutative and associative properties (for example, $2 + 3 + 6 = 6 + 3 + 2$; the words commutative and associative will not be used in test items).	Instructor's Guide: 53, 84

B e n c h m a r k 5

Use number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (for example, $1/3$, $3/4$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Use estimation strategies to determine the reasonableness of solutions to problems.	Instructor's Guide: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Reproduce, extend, create, and describe patterns and sequences using a variety of materials (for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Reproduce, extend, and create patterns, using pictures of geometric shapes.	Instructor's Guide: 67, 116, 121, 176
b Use a pattern to find missing elements (for example, multiples of 2, 3, 5, 10).	Instructor's Guide: 67

Benchmark 3

Recognize when a pattern exists and use that information to solve a problem.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Identify a rule using addition or subtraction patterns and solve a new problem using the rule.	Instructor's Guide: 58
b Given numbers in a table, extend the table.	Instructor's Guide: 141, 146, 151, 156

Benchmark 4

Observe and explain how a change in one quantity can produce a change in another (for example, the relationship between the number of bicycles and the numbers of wheels).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Using whole numbers, determine how the change in one quantity affects the change in the other by addition or subtraction (for example, one bicycle has 2 wheels, 2 bicycles have 4 wheels, and 3 bicycles have 6 wheels. How many wheels do 4 bicycles have? The solution could be presented in chart or picture form).	Instructor's Guide: 156, 161

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Construct, read, and interpret displays of data including tables, charts, pictographs, and bar graphs.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Organize and display data using tallies, bar graphs, pictographs, or tables.	Instructor's Guide: 25

Benchmark 2

Interpret data using the concepts of largest, smallest, most often, and middle.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
b Using various displays of data, interpret and draw conclusions.	Instructor's Guide: 25, 156, 161

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Recognize shapes and their relationships (for example, symmetry, congruence) using a variety of materials (for example, pasta, boxes, pattern blocks).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
b Identify a line of symmetry for regular polygons and other familiar objects.	Instructor's Guide: 28, 57, 108
c Create a figure with at least one line of symmetry.	Instructor's Guide: 28, 57, 108

B e n c h m a r k 2

Identify, describe, draw, compare, classify, and build physical models of geometric figures.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Identify the characteristics of two-dimensional figures (for example, number of sides or vertices, contains a right angle, contains parallel sides).	Instructor's Guide: 45, 93, 111, 135, 142, 178
c Identify three-dimensional figures (for example, cubes, spheres, cylinders, cones and pyramids).	Instructor's Guide: 3, 65, 107, 123, 142, 143, 178

B e n c h m a r k 3

Relate geometric figures to measurement and number sense.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Find the perimeter of a polygon.	Instructor's Guide: 100, 133

S t a n d a r d 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Know, use, describe, and estimate measure of length, perimeter, capacity, weight, time, and temperature.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Use an analog and digital clock, tell time to the nearest 5 minutes.	Instructor's Guide: 38, 72, 88, 125
c Choose the appropriate tool to measure familiar objects/situations containing length, weight, temperature or time.	Instructor's Guide: 20

Benchmark 3

Demonstrate the process of measuring and explaining the concepts related to units of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Measure the length of objects including the sides of rectangles and squares to the nearest inch and centimeter.	Instructor's Guide: 13, 17, 30, 50, 63, 80, 110, 148, 155

Benchmark 4

Use the approximate measures of familiar objects (for example, the width of your finger, the temperature of a room, the weight of a gallon of milk) to develop a sense of measurement.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Approximate the measurement of familiar objects using standard units (for example, a paper clip is about one inch).	Instructor's Guide: 13, 50, 80, 128

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Using pictures, diagrams, numbers or words, demonstrate addition and subtraction of whole numbers with 2-digit numbers.	Instructor's Guide: 10, 12, 16, 26, 31, 36, 37, 41

Benchmark 2

Add and subtract commonly-used fractions and decimals using physical models (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Using pictures, demonstrate addition and subtraction of proper fractions with common denominators of four or less.	Instructor's Guide: 137, 150
b Using money notation, add and subtract commonly used decimals in which sums and differences should not exceed \$10.00.	Instructor's Guide: 73, 95, 117, 168

Benchmark 3

Demonstrate understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Demonstrate understanding of basic multiplication facts of 1's, 2's, 3's, 5's, 10's.	Instructor's Guide: 64, 69, 77, 79, 84, 86, 89, 91, 97, 102, 126, 131, 136, 138, 147, 149, 153, 154, 164, 169, 171, 174, 174, 179
b Demonstrate proficiency with basic addition and subtraction facts.	Instructor's Guide: 1, 2, 33, 34, 85

Benchmark 4

Construct, use, and explain procedures to compute and estimate with whole numbers.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Use estimation strategies with whole numbers prior to performing the operation the operations of addition and subtraction (for example, front-end estimation, estimation by rounding, friendly numbers, flexible rounding, clustering).	Instructor's Guide: 43, 75, 105, 122, 158
b Demonstrate three basic operations of whole numbers (for example, addition and subtraction of three digits, and multiplication of multiples of ten by 1, 2, 3, 5).	Instructor's Guide: 102

Benchmark 5

Select and use appropriate methods for computing with whole numbers in problem-solving situations from mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.

Assessment Objectives, Grade 3	Afterschool Achievers: Math Club, Grade 3
a Given a real world problem-solving situation, use addition, subtraction, or multiplication to solve the problem.	Instructor's Guide: 112, 168

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Colorado's Standards
CSAP Mathematics Assessment Framework
Grade 4

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Using concrete materials and visual representations, compare, order, and represent decimal fractions of tenths, hundredths, and commonly used fractions with like and unlike denominators such as: halves, fourths, and tenths (for example, may use base-ten blocks, pictures, fraction strips, fraction circles).	Instructor's Guide: 107, 144, 145,150
b Recognize different combinations of currency and coins for a set amount up to \$10.00.	Instructor's Guide: 31, 72, 83, 91, 99, 128

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Read, write, and order numerals and number words from 0-99,999.	Instructor's Guide: 12
b Identify place value through 99,999.	Instructor's Guide: 27, 103, 112, 133, 143, 147, 175
c Generate equivalent representations for whole numbers up to 99,999 (for example: $87459 = 80,000 + 7,000 + 400 + 50 + 9$ or $36 = 30 + 6$ or 2 tens + 16 ones).	Instructor's Guide: 95, 103

B e n c h m a r k 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Using a number line, a hundreds chart or other number chart, locate, label, or count from any number by 2s, 3s, 5s, 10s, or 100s.	Instructor's Guide: 31, 66, 78, 91

B e n c h m a r k 4

Develop, test, and explain conjectures about properties of whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
b Use number properties with any of the four basic operations (commutative, associative, properties of zero and one).	Instructor's Guide: 15, 57, 67, 90, 115, 122, 157

B e n c h m a r k 5

Use number sense to estimate and justify the reasonableness of solutions to problems involving whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Use estimation strategies to determine the reasonableness of solutions involving the four basic operations.	Instructor's Guide: 10, 25, 100, 117, 122, 124, 129, 134, 177

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Reproduce, extend, create, and describe patterns and sequences using a variety of materials (for example, beans, toothpicks, pattern blocks, calculators, unifix cubes, colored tiles).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Reproduce, extend, create, or describe patterns, using pictures, geometric shapes, or numbers.	Instructor's Guide: 7, 31, 51
b Determine missing element in a pattern using pictures, geometric shapes, or numbers.	Instructor's Guide: 36, 39, 41, 46, 61, 96, 136

Benchmark 2

Describe patterns and other relationships using tables, graphs, and open sentences.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Display numbers in tables or graphs, to show patterns.	Instructor's Guide: 31, 71, 81, 91, 128, 131
b Describe patterns given in tables or graphs.	Instructor's Guide: 31, 36, 41, 46, 48, 61, 66, 91, 96, 136

Benchmark 3

Recognize when a pattern exists and use that information to solve a problem.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Identify a rule using addition, subtraction, or multiplication and solve a problem using the rule (for example, function boxes, input/output boxes, T charts).	Instructor's Guide: 140

B e n c h m a r k 4

Observe and explain how a change in one quantity can produce a change in another (for example, the relationship between the number of bicycles and the numbers of wheels).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Using whole numbers, determine how a change in one quantity affects a change in another by addition, subtraction, or multiplication (for example, Maria is making ladybugs. For 1 ladybug, she needs 6 black dots, for 2 ladybugs, she needs 12 dots. How many black dots will she need for 4 lady bugs?).	Instructor's Guide: 140

S t a n d a r d 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Construct, read, and interpret displays of data including tables, charts, pictographs, and bar graphs.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Organize, construct, read and interpret a table, line plot, bar graph and/or pictograph from given data.	Instructor's Guide: 31, 83, 91, 140

B e n c h m a r k 2

Interpret data using the concepts of largest, smallest, most often, and middle.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Draw conclusions from a given data display.	Instructor's Guide: 31, 91, 140

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Recognize shapes and their relationships (for example, symmetry, congruence) using a variety of materials (for example, pasta, boxes, pattern blocks).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Identify and give examples of congruency.	Instructor's Guide: 158
b Identify one line of symmetry for a given shape.	Instructor's Guide: 63

Benchmark 2

Identify, describe, draw, compare, classify, and build physical models of geometric figures.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Identify, classify, and compare 2-dimensional shapes and use vocabulary to describe the attributes (for example, number of sides, vertices, angles, parallel sides).	Instructor's Guide: 3, 110, 137, 158
b Identify parallel, and intersecting lines and right angles.	Instructor's Guide: 42, 85, 110, 153, 158
c Identify 2- and 3-dimensional figures; such as, trapezoids, parallelograms, rhombuses and other polygons.	Instructor's Guide: 3, 28, 60, 63, 110, 137, 158
d Recognize common attributes of squares and rectangles.	Instructor's Guide: 137, 158

Benchmark 3

Relate geometric figures to measurement and number sense.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Solve for perimeter and area of rectangles and squares using a drawing on a grid.	Instructor's Guide: 88, 137

B e n c h m a r k 4

Solve problems using geometric relationships and spatial reasoning (for example, using rectangular coordinates to locate objects, constructing models of three-dimensional objects).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Locate objects on a coordinate grid (1st quadrant only) and label ordered pairs.	Instructor's Guide: 135

S t a n d a r d 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Know, use, describe, and estimate measure of length, perimeter, capacity, weight, time, and temperature.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Tell time in hours and minutes, including a.m. and p.m., using both analog and digital displays.	Instructor's Guide: 32, 105, 123, 130
b Choose the appropriate tool to measure familiar objects in situations that contain length, weight, capacity, time and temperature.	Instructor's Guide: 5, 30, 32, 55, 73, 105, 123, 130

B e n c h m a r k 3

Demonstrate the process of measuring and explaining the concepts related to units of measurement.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
b Determine the areas of squares and rectangles on a grid.	Instructor's Guide: 88, 35

B e n c h m a r k 4

Use the approximate measures of familiar objects (for example, the width of your finger, the temperature of a room, the weight of a gallon of milk) to develop a sense of measurement.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Relate units of measurement of length, area, volume, capacity, weight, and/or temperature in US customary and/or metric units to every day objects or situations (for example, yard to a stride, liter to a quart).	Instructor's Guide: 5, 30, 55, 73

B e n c h m a r k 5

Selecting and using appropriate standard and non-standard units of measurement in problem-solving situations.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Choose appropriate units of measure for length, area, volume, capacity, weight, temperature, and/or time to solve problems.	Instructor's Guide: 5, 30, 55, 73

S t a n d a r d 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Demonstrate conceptual meanings for the four basic arithmetic operations of addition, subtraction, multiplication, and division.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Demonstrate the conceptual meaning (using pictures, words, diagrams or numbers) of addition, subtraction, multiplication, and division of whole numbers.	Instructor's Guide: 4, 6, 9, 14, 19, 23, 24, 29, 34, 39, 41, 43, 46, 48, 49, 54, 59, 61, 64, 65, 66, 69, 71, 74, 76, 77, 78, 79, 81, 84, 86, 93, 96, 97, 101, 118, 119, 124, 129, 134, 138, 139, 141, 142, 146, 151, 156, 159, 161, 164, 166, 170, 171, 176

Benchmark 2

Add and subtract commonly-used fractions and decimals using physical models (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75).

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Using pictures, demonstrate addition and subtraction of commonly used fractions with the same denominators where sums/differences are equal or less than a whole ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{10}$).	Instructor's Guide: 160
b Using money notation, add and subtract decimals in which sums and differences should not exceed a \$100.00.	Instructor's Guide: 80, 87, 114, 127, 149

Benchmark 3

Demonstrate understanding of and proficiency with basic addition, subtraction, multiplication, and division facts without the use of a calculator.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Demonstrate understanding of basic multiplication and division facts.	Instructor's Guide: 34, 49, 54, 90, 162
b Continue to demonstrate proficiency of basic addition and subtraction facts.	Instructor's Guide: 4

Benchmark 4

Construct, use, and explain procedures to compute and estimate with whole numbers.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Use reasonable estimation techniques before performing basic math operations (for example, front-end estimation, estimation by rounding, friendly numbers, compatible numbers, flexible rounding, clustering).	Instructor's Guide: 25, 100, 122, 124, 129, 134, 177
b Using paper and pencil, demonstrate the four basic operations of whole numbers including: addition; subtraction; multiplication of 2- or 3-digit numbers by a 1-digit number; division of a 2-digit number by a 1-digit divisor.	Instructor's Guide: 4, 6, 9, 14, 19, 23, 24, 29, 34, 39, 41, 43, 46, 48, 49, 54, 59, 61, 64, 65, 66, 69, 71, 74, 76, 77, 78, 79, 81, 84, 86, 93, 96, 97, 101, 118, 119, 124, 129, 134, 138, 139, 141, 142, 146, 151, 156, 159, 161, 164, 166, 170, 171, 176

B e n c h m a r k 5

Select and use appropriate methods for computing with whole numbers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods.

Assessment Objectives, Grade 4	Afterschool Achievers: Math Club, Grade 4
a Given a real-world problem solving situation, use an appropriate operation (any four basic math operation) and an appropriate method (paper-pencil, mental math, estimation, calculator, computer) to solve the problem.	Instructor's Guide: 4, 6, 9, 10, 14, 19, 23, 24, 29, 34, 39, 41, 43, 46, 48, 49, 54, 59, 61, 64, 65, 66, 69, 71, 74, 76, 77, 78, 79, 81, 84, 86, 93, 96, 97, 101, 118, 119, 124, 129, 134, 138, 139, 141, 142, 146, 151, 156, 159, 161, 164, 166, 170, 171, 176
b Determine from a real-world problem whether an estimated or exact sum, difference, product, or quotient is acceptable.	Instructor's Guide: 25, 100, 122, 124, 129, 134, 177

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Colorado's Standards
CSAP Mathematics Assessment Framework
Grade 5

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for whole numbers, and commonly-used fractions and decimals (for example, $\frac{1}{3}$, $\frac{3}{4}$, 0.5, 0.75), and representing equivalent forms of the same number through the use of physical models, drawings, calculators, and computers.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Locate commonly used positive rational numbers including terminating decimals through hundredths, fractions (halves, thirds, fourths, eighths, and tenths), mixed numbers, and percents on a number line.	Instructor's Guide: 121, 143
b Using concrete materials, demonstrate the equivalence of commonly-used fractions, terminating decimals, and percents (for example, $\frac{7}{10} = 0.7 = 70\%$).	Instructor's Guide: 27, 28, 49, 58, 65, 81, 87, 91, 150, 178

Benchmark 2

Read and write whole numbers and know place-value concepts and numeration through their relationships to counting, ordering, and grouping.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Read, write, and order positive rational numbers, including commonly-used fractions and terminating decimals through hundredths.	Instructor's Guide: 20, 31
b Compare commonly-used proper fractions and terminating decimals.	Instructor's Guide: 91, 157

Benchmark 3

Use numbers to count, to measure, to label, and to indicate location.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Identify factors, multiples, and prime/composite numbers.	Instructor's Guide: 6, 7, 18, 21, 26, 36, 37, 41, 67, 70, 99, 120, 168, 180
b Recognize equivalent representations for the same number and generate them by decomposing and composing numbers (for example, 36 can be represented as $30 + 6$, $20 + 16$, 9×4 , $40 - 4$, three dozen and/or the square of 6).	Instructor's Guide: 27, 28, 49, 58, 65, 81, 87, 89, 91, 144, 150, 178, 196, 214
c Describe numbers by their characteristics (for example, even, odd, prime, square).	Instructor's Guide: 7, 41, 67, 70, 120, 180

Benchmark 4

Use the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion, in problem-solving situations.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Demonstrate the equivalent relationships among commonly used fractions, decimals, and percents using pictorial or concrete materials.	Instructor's Guide: 28, 58

Benchmark 5

Develop, test, and explain conjectures about properties of integers and rational numbers.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Develop, test, and explain conjectures about properties of whole numbers and commonly-used fractions and decimals.	Instructor's Guide: 7, 90, 162
b Use number properties (commutative, associative, identity) to evaluate numeric expressions and solve equations.	Instructor's Guide: 7, 90

Benchmark 6

Use number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Use number sense to estimate sums and differences of fractions and decimals using benchmarks (for example, $5/6 + 7/8$ must be equal to an amount less than 2, since each fraction is less than 1).	Instructor's Guide: 148
b Use appropriate techniques to estimate, determine, and then justify the reasonableness of solutions to problems involving whole numbers.	Instructor's Guide: 13, 25, 33, 53, 68, 74, 78, 79, 93, 100, 118, 147, 148, 163

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Represent, describe, and analyze patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Represent, describe, and analyze geometric and numeric patterns (whole numbers).	Instructor's Guide: 1, 6, 11, 16, 18, 21, 45, 46, 48, 114, 126, 131, 149, 165
b Recognize that a variable is used to represent an unknown quantity.	Instructor's Guide: 17, 40, 57
c Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers.	Instructor's Guide: 7, 90

Benchmark 2

Describe patterns using variables, expressions, equations, and inequalities in problem-solving situations.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Solve problems by representing and analyzing patterns using words, tables, and graphs.	Instructor's Guide: 1, 6, 11, 16, 18, 21, 45, 46, 48, 114, 126, 131, 149, 165

Benchmark 3

Analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how the area of a circle changes as the radius increases, or how a person's height changes over time).

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Describe how a change in one quantity results in a change in another quantity.	Instructor's Guide: 111, 151, 156, 176

Benchmark 5

Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphical) and a variety of tools (physical materials, calculators, and computers).

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Use tables, charts, concrete objects, or pictures to solve problems involving linear relationships and whole numbers.	Instructor's Guide: 111, 151, 156, 176

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Read and construct displays of data using appropriate techniques (for example, line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
b Organize, construct, and interpret displays of data including tables, charts, pictographs, line plots, bar graphs, and line graphs.	Instructor's Guide: 151, 156, 161, 166, 176
c Read, interpret, and draw conclusions from various displays of data.	Instructor's Guide: 151, 156, 161, 166, 176

Benchmark 3

Evaluate arguments that are based on statistical claims.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Analyze data and draw conclusions based on data displays such as tables, charts, line graphs, bar graphs, pictographs, and line plots.	Instructor's Guide: 151, 156

Benchmark 7

Use counting strategies to determine all of the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Solve problems using strategies for finding all possible combinations and/or arrangements.	Instructor's Guide: 136

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Describe, analyze, and reason informally about the properties (for example, parallelism, perpendicularity, congruence) of two- and three-dimensional figures.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Identify, compare, and analyze the attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes (for example, acute, obtuse, right angle, parallel lines, perpendicular lines, intersecting lines, and line segments).	Instructor's Guide: 60, 102, 110, 115, 138, 140, 153, 175
b Make and test conjectures about geometric relationships and develop logical arguments to justify conclusions.	Instructor's Guide: 60, 110, 115, 153

Benchmark 4

Solve problems using coordinate geometry.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Given a coordinate graph, read coordinate pairs in quadrant one.	Instructor's Guide: 135, 156, 161, 166, 176
b Choose the coordinate graph, which represents a given data set.	Instructor's Guide: 135, 156, 161, 166, 176
c Use maps and grids to locate points, create paths and measure distances within a coordinate system.	Instructor's Guide: 135, 156, 161, 166, 176

Benchmark 5

Solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Solve problems involving the perimeter of polygons.	Instructor's Guide: 3, 23, 43, 63, 83, 127, 141, 175
b Solve problems involving the area of rectangles and squares.	Instructor's Guide: 103, 127, 175

Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Benchmark 1

Estimate, use and describe measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Determine the appropriate unit of measure (metric and US customary) when estimating distance, capacity, and weight.	Instructor's Guide: 5, 30
e Describe angles as acute, obtuse and right.	Instructor's Guide: 110, 123, 128

Benchmark 3

Read and interpret various scales including those based on number lines, graphs, and maps.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Read and interpret scales on number lines, graphs, and maps.	Instructor's Guide: 151, 156, 161, 166
b Select the appropriate scale for a given problem (for example, using the appropriate scale when setting up a graph).	Instructor's Guide: 151, 156

Benchmark 4

Develop and use formulas and procedures to solve problems involving measurement.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Find the perimeter and area of rectangles and squares, using appropriate units.	Instructor's Guide: 127, 141, 175

Benchmark 5

Describe how a change in an object's linear dimensions affects its perimeter, area, and volume.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Demonstrate how changing one of the dimensions of a rectangle affects its perimeter (using concrete materials or graph paper).	Instructor's Guide: 3, 23, 43, 63, 83, 103, 127, 141, 175
b Demonstrate how changing one of the dimensions of a rectangle affects its area (using concrete materials or graph paper).	Instructor's Guide: 127, 175

Benchmark 6

Select and use appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Select and use the appropriate unit and tool to measure to the degree of accuracy required in a particular problem.	Instructor's Guide: 2, 5, 8, 30, 73, 80, 81, 88, 107, 108, 110, 137, 158, 170

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Construct, use, and explain procedures to compute and estimate with whole numbers, fractions, decimals, and integers.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
a Demonstrate the conceptual meaning of the four basic arithmetic operations (addition, subtraction, multiplication, and division).	Instructor's Guide: 36
b Use and explain strategies to add, subtract, multiply and divide whole numbers in problem-solving situations.	Instructor's Guide: 32, 55, 80, 112, 130, 177
c Demonstrate proficiency of addition, subtraction, multiplication, and division of whole numbers in problem-solving situations.	Instructor's Guide: 2, 3, 4, 6, 7, 8, 9, 13, 14, 15, 17, 18, 19, 21, 24, 26, 27, 29, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 47, 48, 50, 53, 54, 57, 59, 63, 64, 69, 73, 74, 75, 78, 79, 82, 83, 89, 93, 100, 104, 107, 112, 114, 117, 119, 122, 124, 125, 129, 133, 139, 144, 155, 160, 164, 169, 174
d Use and explain strategies to add and subtract commonly-used fractions with like denominators in problem-solving situations.	Instructor's Guide: 47, 89, 125, 133, 169
e Use and explain strategies to add and subtract commonly-used decimals in problem-solving situations.	Instructor's Guide: 54, 104, 129, 174

Benchmark 3

Develop, apply and explain a variety of different estimation strategies in problem-solving situations, and explain why an estimate may be acceptable in place of an exact answer.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
b Use and explain a variety of estimation techniques to solve problems.	Instructor's Guide: 13, 25, 33, 53, 68, 78, 93, 118, 147, 148, 163

B e n c h m a r k 4

Select and use appropriate methods of computing with commonly-used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable.

Assessment Objectives, Grade 5	Afterschool Achievers: Math Club, Grade 5
b Given a real-world problem, use an appropriate method (mental arithmetic, estimation, paper-and-pencil, calculator) to correctly solve the problem.	Instructor's Guide: 2, 3, 4, 6, 7, 8, 9, 13, 14, 15, 17, 18, 19, 21, 24, 25, 26, 27, 29, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 47, 48, 50, 53, 54, 57, 59, 63, 64, 68, 69, 73, 74, 75, 78, 79, 82, 83, 89, 93, 100, 104, 107, 112, 114, 117, 118, 119, 122, 124, 125, 129, 133, 139, 144, 147, 148, 155, 160, 163, 164, 169, 174
d In a problem-solving situation, determine whether the results are reasonable and justify those results with correct computations.	Instructor's Guide: 5, 10, 13, 15, 20, 25, 30, 33, 35, 40, 45, 50, 53, 55, 60, 65, 68, 70, 75, 78, 80, 85, 90, 93, 95, 100, 105, 110, 115, 118, 120, 125, 130, 135, 140, 145, 147, 148, 150, 155, 160, 163, 165, 170, 175, 180

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correlated to
Colorado's Standards
CSAP Mathematics Assessment Framework
Grade 6

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for integers, rational numbers, percents, exponents, square roots and pi (π) using physical materials and technology in problem-solving situations.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Locate commonly used positive rational numbers including terminating decimals through hundredths, fractions (halves, thirds, fourths, fifths, eighths, and tenths), mixed numbers, and percents on a number line.	Instructor's Guide: 119
b Use physical materials or pictures to demonstrate the meaning and equivalence of fractions, decimals and/or percents (example, write the fraction, decimal, and percent value for the shaded portion of a partially shaded circle).	Instructor's Guide: 26, 59, 76, 104, 105, 151

Benchmark 2

Read, write and order integers, rational numbers and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Read, write, order and compare common fractions, decimals, and percents in a variety of forms.	Instructor's Guide: 25, 46, 116, 119, 142, 156, 166

Benchmark 3

Apply number theory concepts (for example, primes, factors, multiples) to represent numbers in various ways.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Identify and use the concepts of factor, multiple, prime, composite, and square numbers.	Instructor's Guide: 1, 39, 47, 48, 49, 66, 117, 118, 153
b Describe numbers by characteristics (divisibility, even, odd, prime, composite, square).	Instructor's Guide: 39, 48, 66

Benchmark 4

Use the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion, in problem-solving situations.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Demonstrate equivalence relationships among fractions, decimals, and percents in problem-solving situations (for example, two students out of eight is the same as 25%).	Instructor's Guide: 59, 61, 76, 151

Benchmark 5

Develop, test, and explain conjectures about properties of integers and rational numbers.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Develop, test, and explain conjectures about properties of numbers (associative, commutative, identity, distributive multiplicative property of zero on whole and rational numbers).	Instructor's Guide: 55, 75, 95

Benchmark 6

Use number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Use number sense to estimate, determine, and justify the reasonableness of solutions involving whole numbers, decimals, and common fractions (only sums and differences for fractions and decimals). For example: Is $1/2 + 1/3$ closer to 0, $1/2$, or 1?	Instructor's Guide: 5, 65, 96, 135, 145, 165

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Represent, describe, and analyze patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Represent, describe, and analyze geometric and numeric patterns using tables, words, symbols, concrete objects, or pictures.	Instructor's Guide: 14, 18, 51, 74, 83, 87, 88, 92, 93, 149, 171
b Use a variable to represent an unknown (letter, box, symbol).	Instructor's Guide: 13, 16, 18, 28, 37, 38, 41, 55, 56, 64, 68, 88, 98, 146, 150

Benchmark 2

Describe patterns using variables, expressions, equations, and inequalities in problem-solving situations.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Solve problems by representing and analyzing patterns using tables, words, concrete objects, symbols, or pictures.	Instructor's Guide: 2, 3, 7, 8, 17, 18, 67, 68, 114, 149, 171

Benchmark 3

Analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how the area of a circle changes as the radius increases, or how a person's height changes over time).

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Predict and describe how a change in one quantity results in a change in another quantity in a linear relationship (for example, A creature gains 3 oz. a day, how much will it have gained over 10 days?).	Instructor's Guide: 114

Benchmark 4

Distinguish between linear and nonlinear functions through informal investigations.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Explain whether data presented in a chart or graph is changing at a constant rate.	Instructor's Guide: 18, 67

Benchmark 5

Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphical) and a variety of tools (physical materials, calculators, and computers).

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Solve problems using tables, concrete objects, or pictures involving linear relationships with whole numbers.	Instructor's Guide: 16, 56, 88

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Read and construct displays of data using appropriate techniques (for example, line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Organize and construct a line graph, bar graph, and frequency table from a given set of data.	Instructor's Guide: 135
b Read, interpret and draw conclusions from a line graph, bar graph, circle graph and frequency table.	Instructor's Guide: 135

Benchmark 2

Display and use measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Find and use measures of central tendency including mean, median, and mode.	Instructor's Guide: 91, 132, 133, 135, 143
b Find and use the range from a given set of data (for example, find the range from 2 to 12. Note: the range is 10).	Instructor's Guide: 135

Benchmark 4

Formulate hypotheses, drawing conclusions, and making convincing arguments based on data analysis.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Analyze data and draw conclusions to predict outcomes based on data displays such as line graphs, bar graphs, or frequency tables.	Instructor's Guide: 135

Benchmark 6

Make predictions and compare results using both experimental and theoretical probability drawn from real-world problems.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Using a chance device, such as a number cube or spinner, design a fair game and an unfair game, and explain why they are fair and unfair respectively.	Instructor's Guide: 127, 128
c Describe an event as likely or unlikely and explain the degree of likelihood using words such as certain, very likely, not likely, or impossible.	Instructor's Guide: 122

Benchmark 7

Use counting strategies to determine all of the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Determine the number of possible outcomes for simple events using a variety of methods such as: organized lists or tree diagrams.	Instructor's Guide: 127, 128

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Describe, analyze, and reason informally about the properties (for example, parallelism, perpendicularity, congruence) of two- and three-dimensional figures.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Identify, compare, and analyze the attributes of two and three-dimensional shapes and develop vocabulary to describe these attributes (for example, acute, obtuse, right angle, parallel lines, perpendicular lines, intersecting lines, and line segments).	Instructor's Guide: 12, 27, 79, 84, 90, 94, 170, 179, 180
b Make and test conjectures about geometric relationships and develop logical arguments to justify conclusions.	Instructor's Guide: 12, 27, 72, 79, 84, 90, 94, 101, 147, 148, 170, 180

Benchmark 4

Solve problems using coordinate geometry.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Plot points on a coordinate graph in quadrant	Instructor's Guide: 114
b Draw a graph (in quadrant 1) from a given scenario or table.	Instructor's Guide: 114

B e n c h m a r k 5

Solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Solve problems involving the perimeter of polygons.	Instructor's Guide: 4, 107, 108
b Solve problems involving areas of polygons (square, rectangle, parallelogram, rhombus, triangle).	Instructor's Guide: 85, 97, 98, 107, 108, 115

B e n c h m a r k 6

Transform geometric figures using reflections, translations, and rotations to explore congruence.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
b Show lines of symmetry on a two-dimensional figure.	Instructor's Guide: 94

S t a n d a r d 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Estimate, use and describe measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
b Estimate and use standard and/or metric units for length, weight and temperature.	Instructor's Guide: 24, 86, 115, 124, 134, 174
c Estimate the area of a polygon.	Instructor's Guide: 85, 87, 88, 97, 98, 107, 108, 115, 126, 144, 170, 176

B e n c h m a r k 3

Read and interpret various scales including those based on number lines, graphs, and maps.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Read and interpret scales on number lines, graphs, and maps.	Instructor's Guide: 36, 122, 133, 135, 140, 175

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
b Select an appropriate scale for a given problem (for example, using the appropriate scale when setting up a graph or determining the order of numbers on a number line).	Instructor's Guide: 36, 81, 119, 122, 133, 135, 139, 140, 175

B e n c h m a r k 4

Develop and use formulas and procedures to solve problems involving measurement.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Use formulas and/or procedures to solve problems involving the perimeter of a polygon.	Instructor's Guide: 4, 19, 176
b Use formulas and/or procedures to solve problems involving the area of squares, rectangles, parallelograms, rhombus, and triangles.	Instructor's Guide: 97, 98, 176

B e n c h m a r k 5

Describe how a change in an object's linear dimensions affects its perimeter, area, and volume.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Demonstrate how changing one of the dimensions of a rectangle or triangle affect its perimeter and area using concrete materials or graph paper.	Instructor's Guide: 4, 97, 98, 107, 108, 115, 126, 144, 176

S t a n d a r d 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Use models to explain how ratios, proportions, and percents can be used to solve real-world problems.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Use concrete materials or pictures, to determine commonly used percentages (for example, 25%, 50%) in problem solving situations.	Instructor's Guide: 104, 105

B e n c h m a r k 2

Construct, use, and explain procedures to compute and estimate with whole numbers, fractions, decimals, and integers.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Demonstrate conceptual meaning of addition and subtraction of fractions and decimals, in problem solving situations.	Instructor's Guide: 20, 29, 40, 54, 102, 103, 121, 136, 160
b Use and explain strategies to add/subtract decimals and fractions in problem-solving situations (common fractions with like and unlike denominators, mixed numbers, and decimals to thousandth).	Instructor's Guide: 20, 29, 40, 54, 102, 103, 121, 136, 160
c Find equivalent representations by decomposing and composing whole numbers (for example, $48 \times 12 = (48 \times 10) + (48 \times 2)$).	Instructor's Guide: 75, 80
d Demonstrate proficiency with the four basic operations using whole numbers.	Instructor's Guide: 20, 47, 48, 57, 58, 80, 88, 92, 93, 165, 172, 173

B e n c h m a r k 3

Develop, apply and explain a variety of different estimation strategies in problem-solving situations, and explain why an estimate may be acceptable in place of an exact answer.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Develop, apply and explain a variety of different estimation strategies in problem-solving situations and explain why an estimate may be acceptable in place of an exact answer.	Instructor's Guide: 5, 45, 65, 71, 96, 130, 145, 159, 165

B e n c h m a r k 4

Select and use appropriate methods of computing with commonly-used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable.

Assessment Objectives, Grade 6	Afterschool Achievers: Math Club, Grade 6
a Apply appropriate computation methods to solve problems involving whole numbers, common fractions, and decimals (use only addition and subtraction of fractions and decimals.)	Instructor's Guide: 31, 38, 69, 88, 97, 98, 100, 107, 110, 111, 120, 125, 145
b In a problem-solving situation, determine whether the results are reasonable and justify those results with accurate computation.	Instructor's Guide: 96, 165

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Colorado Mathematics Assessment Framework
Grade 7

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for integers, rational numbers, percents, exponents, square roots and pi (π) using physical materials and technology in problem-solving situations.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Recognize and use equivalent representations of positive rational numbers	Instructor's Guide: 26, 54
b Use models to represent integers	Instructor's Guide: 31, 67, 72, 119
c Use exponents to indicate how many times a base is used as a factor for positive integers	Instructor's Guide: 1, 14, 32, 33, 39, 48, 49, 60, 112-113, 115, 124, 127, 128, 136, 157, 161

Benchmark 2

Read, write and order integers, rational numbers and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Read, write, order and compare positive rational numbers and integers.	Instructor's Guide: 61, 119
b Locate positive rational numbers and integers on a number line	Instructor's Guide: 31, 119

Benchmark 3

Apply number theory concepts (for example, primes, factors, multiples) to represent numbers in various ways.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Describe numbers by their characteristics (for example, even, odd, prime, composite, divisibility, square)	Instructor's Guide: 14, 32, 39, 47, 48, 52, 53, 58, 66, 70, 74, 174

Benchmark 4

Use the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion, in problem-solving situations.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Use the relationships among fractions, decimals, and percents including the concepts of ratio and proportion in problem solving situations.	Instructor's Guide: 10, 110, 120, 129, 131

Benchmark 6

Use number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Estimate, solve and justify the reasonableness of solutions to problems involving positive rational numbers or integers.	Instructor's Guide: 25, 35, 40, 55, 80, 95, 97, 98, 105, 111, 131, 135, 160, 174

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Represent, describe, and analyze patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Represent, describe, and analyze numeric or geometric patterns involving common positive rational numbers or integers using tables, graphs, rules, or symbols.	Instructor's Guide: 7, 8, 12, 13, 18, 22, 28, 32, 33, 38, 48, 52, 53, 57, 58, 63, 68, 73, 74, 78, 83, 88, 92, 93, 108, 127, 128, 133, 143, 147, 148, 157, 158, 163, 167, 168, 173, 177, 178

Benchmark 2

Describe patterns using variables, expressions, equations, and inequalities in problem-solving situations.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Solve problems by representing and analyzing patterns involving positive rational numbers or integers using tables, graphs, or rules.	Instructor's Guide: 7, 8, 12, 13, 18, 22, 28, 32, 33, 38, 48, 52, 53, 57, 58, 63, 68, 73, 74, 78, 83, 88, 92, 93, 108, 127, 128, 133, 143, 147, 148, 157, 158, 163, 167, 168, 173, 177, 178

Benchmark 3

Analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how the area of a circle changes as the radius increases, or how a person's height changes over time).

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Predict and describe how a change in one quantity results in a change in another quantity in a linear relationship.	Instructor's Guide: 67, 68, 72, 73, 83

Benchmark 5

Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphical) and a variety of tools (physical materials, calculators, and computers).

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, or graphic).	Instructor's Guide: 16, 56, 63, 72, 83, 110, 120, 180
b Translate written words into algebraic expressions/equations and conversely, algebraic expressions/equations to words.	Instructor's Guide: 16

Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Read and construct displays of data using appropriate techniques (for example, line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Construct a histogram or stem and leaf from a set of given data.	Instructor's Guide: 75, 165
b Read, interpret and draw conclusions from histograms, circle graphs, stem and leaf plots, and scatter plots.	Instructor's Guide: 75, 82, 88, 135, 140, 165

Benchmark 2

Display and use measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Given a display of data (for example, line plot, stem and leaf plot, list of data), determine the mean, mode, median and range.	Instructor's Guide: 75, 83

Benchmark 6

Make predictions and compare results using both experimental and theoretical probability drawn from real-world problems.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Report the probability of an event in fraction, decimal and percent form.	Instructor's Guide: 137
b Determine the probability of simple independent events (for example, tossing a coin and rolling a die).	Instructor's Guide: 93

Benchmark 7

Use counting strategies to determine all of the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Determine the number of possible outcomes for a given event using a variety of strategies, such as: tree diagrams, or organized lists.	Instructor's Guide: 85

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Describe, analyze, and reason informally about the properties (for example, parallelism, perpendicularity, congruence) of two- and three-dimensional figures.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Describe, analyze and reason informally about the attributes of two- and three-dimensional shapes. (for example, angles, sides, edges, faces, vertices)	Instructor's Guide: 37, 38, 79, 101

Benchmark 3

Apply the concept of ratio, proportion and similarity in problem-solving situations.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Identify and compare similar shapes using ratio, proportion, or scale factor.	Instructor's Guide: 77, 78, 170

Benchmark 4

Solve problems using coordinate geometry.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Construct a coordinate graph and plot ordered integer pairs in all four quadrants.	Instructor's Guide: 67

Benchmark 5

Solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Solve problems involving the circumference of a circle (formulas not provided)	Instructor's Guide: 45
b Solve problems involving the areas of circles, triangles, and parallelograms (formulas not provided)	Instructor's Guide: 45, 92, 93
c Solve problems involving the surface area of rectangular prisms (formulas not provided)	Instructor's Guide: 130, 176

Benchmark 6

Transform geometric figures using reflections, translations, and rotations to explore congruence.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Use reflections, translations, and/or rotations, to determine congruence between figures	Instructor's Guide: 7, 15, 42, 43, 164

Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Benchmark 3

Read and interpret various scales including those based on number lines, graphs, and maps.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Read and interpret scales on number lines, graphs, and maps (for example, given a map and a scale, determine the distance between two points on the map).	Instructor's Guide: 102, 103, 140, 165
b Select the appropriate scale for a given problem (for example, using the appropriate scale when setting up a graph or intervals on a histogram).	Instructor's Guide: 102, 103, 140, 165

Benchmark 4

Develop and use formulas and procedures to solve problems involving measurement.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Develop and use procedures or formulas to solve problems involving area of polygons (for example, trapezoids, regular hexagons, regular octagons)	Instructor's Guide: 126

Benchmark 5

Describe how a change in an object's linear dimensions affects its perimeter, area, and volume.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Describe how a change in an object's linear dimensions affects its perimeter and area (for example, how a change in the radius or diameter will affect the circumference and area of a circle).	Instructor's Guide: 126, 171

Benchmark 6

Select and use appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Select and use appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation (for example, reconstruct a replica of a given figure).	Instructor's Guide: 7, 17, 30, 42, 52, 77, 82, 152, 153, 162, 163, 177

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Use models to explain how ratios, proportions, and percents can be used to solve real-world problems.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Use concrete materials or pictures to explain how ratios, proportion, and percents can be used to solve real world problems.	Instructor's Guide: 77, 78, 99, 100, 131, 159, 170

Benchmark 2

Construct, use, and explain procedures to compute and estimate with whole numbers, fractions, decimals, and integers.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Apply order of operations (including exponents) with positive rational numbers	Instructor's Guide: 41, 69, 124, 141, 161
b Add, subtract, multiply, and divide positive rational numbers or integers.	Instructor's Guide: 16, 35, 40, 55, 80, 95, 99, 105, 109, 111, 150, 159, 160, 177
c Explain strategies to add, subtract and multiply positive rational numbers.	Instructor's Guide: 16, 55, 160

Benchmark 3

Develop, apply and explain a variety of different estimation strategies in problem-solving situations, and explain why an estimate may be acceptable in place of an exact answer.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
b Solve problems using estimation and justify choice of techniques.	Instructor's Guide: 25, 35, 40, 45, 55, 65, 95, 97, 98, 105, 111, 135, 160, 174, 175

Benchmark 4

Select and use appropriate methods of computing with commonly-used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable.

Model Content Standards, Grade 7	Afterschool Achievers: Math Club, Grade 7
a Determine what information is necessary or missing in a problem solving situation.	Instructor's Guide: 50
b Solve problems involving positive rational numbers and/or integers	Instructor's Guide: 20, 27, 28, 64, 67, 126, 139
d Justify the reasonableness of a solution in a problem solving situation.	Instructor's Guide: 25, 35, 40, 45, 55, 65, 80, 95, 105, 111, 135, 160, 175

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correlated to

Colorado Mathematics Assessment Framework

Grade 8

Standard 1

Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Demonstrate meanings for integers, rational numbers, percents, exponents, square roots and pi (π) using physical materials and technology in problem-solving situations.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Recognize and use equivalent representations of rational numbers and common irrational numbers (for example, locate rational numbers on a number line and demonstrate the meaning of square roots and perfect squares).	Instructor's Guide: 26, 30, 54, 59, 61, 65

Benchmark 2

Read, write and order integers, rational numbers and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Compare and order sets of integers and rational numbers that are expressed in a variety of ways.	Instructor's Guide: 9, 26, 65, 99

Benchmark 3

Apply number theory concepts (for example, primes, factors, multiples) to represent numbers in various ways.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Apply number theory concepts (for example, primes, factors, multiples, exponents) in problem-solving situations.	Instructor's Guide: 14, 74, 85, 177, 178

Benchmark 4

Use the relationships among fractions, decimals, and percents, including the concepts of ratio and proportion, in problem-solving situations.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Use the relationships among fractions, decimals and percents, including the concepts of ratio and proportion in problem -solving situations (similarity, scale factor, unit rate).	Instructor's Guide: 3, 9, 10, 26, 44, 47, 48, 54, 59, 61, 96, 97, 104, 147, 151, 152, 153, 157

Benchmark 5

Develop, test, and explain conjectures about properties of integers and rational numbers.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Develop and test conjectures about properties of integers (Does $3 - 5 = 5 - 3$?) and rational numbers.	Instructor's Guide: 25, 41, 69, 71, 90, 95, 115, 117, 118, 121, 124, 141, 149, 161

Benchmark 6

Use number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Use number sense to estimate and justify the reasonableness of solutions to problems involving integers and rational numbers.	Instructor's Guide: 35, 45, 100, 109, 115, 135, 160

Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Represent, describe, and analyze patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Represent, describe, and analyze patterns (for example, geometric and numeric) and relationships using tables, graphs, verbal rules, and standard algebraic notation.	Instructor's Guide: 7, 8, 13, 18, 23, 28, 43, 62, 63, 68, 72, 73, 77, 78, 138, 143, 148

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
b Covert from one functional representation (table, graph, verbal rule, standard algebraic notation) to another.	Instructor's Guide: 5, 77, 102, 103, 133, 153

B e n c h m a r k 2

Describe patterns using variables, expressions, equations, and inequalities in problem-solving situations.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Describe patterns using variables, expressions, equations, and inequalities in problem-solving situations.	Instructor's Guide: 77, 153

B e n c h m a r k 3

Analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how the area of a circle changes as the radius increases, or how a person's height changes over time).

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how a person's height changes over time).	Instructor's Guide: 77, 133, 153

B e n c h m a r k 4

Distinguish between linear and nonlinear functions through informal investigations.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Distinguish between linear and nonlinear functions through informal investigations.	Instructor's Guide: 98

B e n c h m a r k 5

Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphical) and a variety of tools (physical materials, calculators, and computers).

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, and graphic).	Instructor's Guide: 16, 18, 29, 56, 114, 131, 144

S t a n d a r d 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

B e n c h m a r k 1

Read and construct displays of data using appropriate techniques (for example, line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Read and construct displays of data using appropriate techniques (for example, circle graphs, scatter plots, box and whisker plots, stem-and-leaf plots).	Instructor's Guide: 60, 70, 75, 110, 135, 172, 173

B e n c h m a r k 2

Display and use measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Display and use measures of central tendency, (such as mean median and mode) and measures of variability, (such as range and quartiles) in problem solving situations.	Instructor's Guide: 39, 70, 129

B e n c h m a r k 4

Formulate hypotheses, drawing conclusions, and making convincing arguments based on data analysis.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Formulate hypotheses, draw conclusions, and make convincing arguments based on data analysis.	Instructor's Guide: 125, 128, 142, 143

Benchmark 6

Make predictions and compare results using both experimental and theoretical probability drawn from real-world problems.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Use a model (list, tree diagram, area model) to determine theoretical probabilities to solve problems involving uncertainty.	Instructor's Guide: 125, 175
b Make predictions using theoretical probability in real-world problems.	Instructor's Guide: 125, 175

Benchmark 7

Use counting strategies to determine all of the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Use a model or counting technique to determine all the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).	Instructor's Guide: 27, 175

Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 2

Describe, analyze, and reason informally about the properties (for example, parallelism, perpendicularity, congruence) of two- and three-dimensional figures.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Describe, analyze and reason informally about the properties (for example, parallelism, perpendicularity, congruence, and similarity) of two- and three-dimensional figures.	Instructor's Guide: 4, 15, 32, 33, 50, 79, 82, 89, 91, 92, 93, 94, 101, 102, 103, 107, 108, 134, 147, 148, 169, 170, 179

Benchmark 3

Apply the concept of ratio, proportion and similarity in problem-solving situations.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Apply the concept of ratio, proportion, and similarity in problem-solving situations.	Instructor's Guide: 3, 10, 47, 48, 97, 104, 147, 151, 152, 153, 157

Benchmark 5

Solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions. (include right prisms and cylinders).	Instructor's Guide: 76, 126, 155, 171
b Apply the Pythagorean Theorem to solve real-world problems.	Instructor's Guide: 21, 50, 112, 113, 152, 153

Benchmark 6

Transform geometric figures using reflections, translations, and rotations to explore congruence.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Transform geometric figures using reflections, translations, and rotations to determine congruence.	Instructor's Guide: 82, 83

Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Benchmark 1

Estimate, use and describe measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Estimate, and use measures of, area, volume, capacity weight and angle comparisons to solve problems.	Instructor's Guide: 2

B e n c h m a r k 2

Estimate, make, and use direct and indirect measurements to describe and make comparisons.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Estimate, make, and use direct and indirect measurements to describe and make comparisons (for example, use a proportion to find the height of a flagpole).	Instructor's Guide: 10, 57

B e n c h m a r k 3

Read and interpret various scales including those based on number lines, graphs, and maps.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Read and interpret scales on number lines, graphs, and maps. (for example, given a map and a scale, determine the distance between two points on the map).	Instructor's Guide: 17, 47, 48, 75, 110, 172, 173

B e n c h m a r k 4

Develop and use formulas and procedures to solve problems involving measurement.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Develop and use formulas and procedures to solve problems involving measurement (for example, distance, area, surface area, and volume of right prisms and cylinders).	Instructor's Guide: 4, 74, 126, 130, 145, 156, 176

B e n c h m a r k 5

Describe how a change in an object's linear dimensions affects its perimeter, area, and volume.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Describe how a change in an object's linear dimensions affects its perimeter, area and volume (for example, how the area of a circle changes as the radius increases).	Instructor's Guide: 92, 93, 112, 113, 171

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.

Benchmark 1

Use models to explain how ratios, proportions, and percents can be used to solve real-world problems.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Use models to explain how ratios, proportions, and percents can be used to solve real-world problems.	Instructor's Guide: 100, 106, 151

Benchmark 2

Construct, use, and explain procedures to compute and estimate with whole numbers, fractions, decimals, and integers.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Apply order of operations to evaluate simple expressions with integers.	Instructor's Guide: 41, 69, 95, 115, 121, 124, 141, 161

Benchmark 4

Select and use appropriate methods of computing with commonly-used fractions and decimals, percents, and integers in problem-solving situations from among mental arithmetic, estimation, paper-and-pencil, calculator, and computer methods, and determining whether the results are reasonable.

Model Content Standards, Grade 8	Afterschool Achievers: Math Club, Grade 8
a Apply computational methods (including ratio and proportion) to solve problems involving commonly used fractions, decimals, percents, and integers (for example, discount, tax, sale price, unit price) and determine whether the results are reasonable.	Instructor's Guide: 99, 100, 106, 151



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