# Afterschool Achievers: Math Club

# Grades K-8

**correlated to**

# North Carolina Mathematics Standard Course of Study and Grade Level Competencies


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# Afterschool Achievers: Math Club © 2002
## correlated to
# North Carolina Mathematics Standard Course of Study
## and
# Grade Level Competencies
# Kindergarten

## COMPETENCY GOAL 1

**The learner will recognize, model, and write whole numbers through 30.**

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 1.01 Develop number sense for whole numbers through 30.<br><br>a) Connect model, number word (orally), and number, using a variety of representations. | **Instructor's Guide:** 2, 4, 7, 9, 12, 14, 17, 19, 22, 24, 29, 34, 39, 44, 49, 54, 59, 64, 69, 74, 79, 84, 89, 94, 99, 76, 81 |
| b) Count objects in a set. | **Instructor's Guide:** 2, 4, 5, 7, 9, 10, 12, 14, 17, 19, 22, 24, 27, 29, 30, 32, 34, 35, 39, 44, 49, 54, 55, 59, 60, 68, 69, 72, 74, 77, 79, 80, 81, 84, 85, 89, 94, 99, 104, 105, 109, 110, 114, 119, 124, 129, 130, 134, 135, 139, 144, 149, 154, 155, 159, 164 |
| c) Read and write numerals. | **Instructor's Guide:** 4, 5, 9, 14, 17, 19, 22, 24, 27, 29, 32, 34, 35, 38, 39, 44, 48, 49, 54, 58, 59, 60, 64, 68, 69, 74, 79, 80, 84, 88, 89, 94, 98, 99, 103, 105, 108, 110, 118, 124, 129, 134, 139, 155 |
| d) Compare and order sets and numbers. | **Instructor's Guide:** 38, 48, 58, 62, 68, 82, 88, 98, 103, 104, 108, 109, 112, 114, 118, 119, 124, 129, 134, 139, 149, 154, 162 |
| e) Use ordinals ($1^{st}$-$10^{th}$). | **Instructor's Guide:** 163 |
| f) Estimate quantities fewer than or equal to 10. | **Instructor's Guide:** 10, 60, 65, 67, 85, 110, 135, 142, 144, 149, 154, 159, 160, 164, 169, 174, 177, 179 |
| g) Recognize equivalence in sets and numbers 1-10. | **Instructor's Guide:** 2, 4, 7, 9, 12, 14, 17, 19, 22, 24, 29, 34, 39, 44, 49, 54, 59, 64, 69, 74, 79, 84, 89, 94, 99, 76, 81 |

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 1.02 Share equally (divide) between two people; explain. | **Not covered.** |
| 1.03 Solve problems and share solutions to problems in small groups. | **Instructor's Guide:** 10, 38, 48, 58, 60, 62, 67, 68, 82, 85, 88, 98, 103, 104, 108, 109, 110, 112, 114, 118, 119, 124, 127, 129, 134, 135, 139, 142, 144, 149, 154, 159, 160, 162, 164, 169, 174, 179 |

## COMPETENCY GOAL 2

**The learner will explore concepts of measurement.**

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 2.01 Compare attributes of two objects using appropriate vocabulary (color, weight, height, width, length, texture). | **Instructor's Guide:** 15, 40, 47, 65, 90, 92, 180 |
| 2.02 Recognize concepts of calendar time using appropriate vocabulary (days of the week, months of the year, seasons). | **Instructor's Guide:** 28 |

## COMPETENCY GOAL 3

**The learner will explore concepts of geometry.**

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 3.01 Identify, build, draw, and name triangles, rectangles, and circles; identify, build, and name spheres and cubes. | **Instructor's Guide:** 1, 6, 11, 16, 21, 26, 45, 53, 61, 70, 71 |
| 3.02 Compare geometric shapes (identify likenesses and differences). | **Instructor's Guide:** 1, 11, 16, 21, 26, 61, 66, 71 |
| 3.03 Model and use directional and positional vocabulary. | **Instructor's Guide:** 42, 69, 95, 125 |
| 3.04 Complete simple spatial visualization tasks and puzzles. | **Instructor's Guide:** 42, 95, 125 |

## COMPETENCY GOAL 4

**The learner will collect, organize and display data.**

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 4.01 Collect and organize data as a group activity. | **Instructor's Guide:** 93 |
| 4.02 Display and describe data with concrete and pictorial graphs as a group activity. | **Instructor's Guide:** 93 |

## COMPETENCY GOAL 5

**The learner will model simple patterns and sort objects.**

| Competency Objectives, Kindergarten | Afterschool Achievers: Math Club, Kindergarten |
|---|---|
| 5.01 Sort and classify objects by one attribute. | **Instructor's Guide:** 1, 3, 6, 8, 11, 13, 16, 18, 21, 25, 26, 28, 31, 33, 36, 40, 41, 46, 51, 52, 56, 61, 66, 71, 76, 81, 83, 86, 91, 92, 96, 101, 102, 106, 111, 116, 123, 138, 147, 153, 168 |
| 5.02 Create and extend patterns with actions, words, and objects. | **Instructor's Guide:** 50, 57, 72, 75, 97, 100, 121, 126, 131, 136, 141, 146, 151, 156, 157, 161, 166, 167, 171, 175, 176 |

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## correlated to
# North Carolina Mathematics Standard Course of Study
## and
# Grade Level Competencies
# Grade 1

## COMPETENCY GOAL 1

**The learner will read, write, and model whole numbers through 99 and compute with whole numbers.**

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 1.01 Develop number sense for whole numbers through 99.<br><br>a) Connect model, number word, and number using a variety of representations. | **Instructor's Guide:** 9, 17, 22, 24, 30, 50, 54, 59, 62, 69, 72, 74, 79, 84, 86, 89, 91, 92, 99, 104, 107, 109, 110, 114, 119, 122, 124, 129, 130, 134, 137, 139, 142, 144, 149, 150, 164, 166, 167, 169, 170, 177 |
| b) Use efficient strategies to count the number of objects in a set. | **Instructor's Guide:** 2, 4, 5, 28, 65, 85 |
| c) Read and write numbers. | **Instructor's Guide:** 2, 4, 5, 28, 37, 67, 68, 82, 83, 97, 116, 141 |
| d) Compare and order sets and numbers. | **Instructor's Guide:** 2, 4, 5, 7, 12, 17, 22, 27, 28, 35, 37, 38, 45,48, 58, 60, 64, 67, 68, 69, 74, 79, 80, 82, 83, 84, 88, 89, 94, 97, 98, 99, 103, 104, 105, 108, 109, 112, 114, 116, 118, 119, 124, 129, 134, 139, 141, 155, 183, 202 |
| e) Build understanding of place value (ones, tens). | **Instructor's Guide:** 123, 125, 136, 138, 141, 145, 146, 156, 161, 172, 176 |
| f) Estimate quantities fewer than or equal to 100. | **Instructor's Guide:** 32 |
| g) Recognize equivalence in sets and numbers 1-99. | **Instructor's Guide:** 9, 17, 22, 24, 30, 50, 54, 59, 62, 69, 72, 74, 79, 84, 86, 89, 91, 92, 99, 104, 107, 109, 110, 114, 119, 122, 124, 129, 130, 134, 137, 139, 142, 144, 149, 150, 164, 166, 167, 169, 170, 177 |

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 1.02 Use groupings of 2's, 5's, and 10's with models and pictures to count collections of objects. | **Instructor's Guide:** 123, 125, 136, 138, 141, 145, 146, 156, 161, 172, 176 |
| 1.03 Develop fluency with single digit addition and corresponding differences using strategies such as modeling, composing and decomposing quantities, using doubles, and making tens. | **Instructor's Guide:** 10, 24, 30, 50, 54, 59, 62, 69, 70, 72, 74, 79, 84, 89, 90, 91, 92, 99, 104, 107, 110, 114, 119, 122, 129, 130, 134, 137, 142, 144, 150, 154,159, 162, 164, 167, 169, 170, 174, 177, 179 |
| 1.04 Create, model, and solve problems that use addition, subtraction, and fair shares (between two or three). | **Instructor's Guide:** 10, 60, 65, 67, 85, 110, 135, 142, 144, 149, 154, 159, 160, 164, 169, 174, 177, 179 |

## COMPETENCY GOAL 2

**The learner will use non-standard units of measure and tell time.**

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 2.01 For given objects:<br>a) Select an attribute (length, capacity, mass) to measure (use non-standard units). | **Instructor's Guide:** 15, 42, 43, 47, 55, 88, 95, 103, 115, 127, 133, 143, 178 |
| b) Develop strategies to estimate size. | **Instructor's Guide:** 15, 42, 43, 115 |
| c) Compare, using appropriate language, with respect to the attribute selected. | **Instructor's Guide:** 42 |
| 2.02 Develop an understanding of the concept of time.<br>a) Tell time at the hour and half-hour. | **Instructor's Guide:** 57, 135, 147, 148, 175 |
| b) Solve problems involving applications of time (clock and calendar). | **Instructor's Guide:** 47, 57, 93, 98, 135, 147, 148, 175 |

## COMPETENCY GOAL 3

**The learner will identify, describe, draw, and build basic geometric figures.**

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 3.01 Identify, build, draw, and name parallelograms, squares, trapezoids, and hexagons. | **Instructor's Guide:** 3, 8, 12, 13, 18, 21, 23, 60, 61, 66, 80, 100, 132, 153 |
| 3.02 Identify, build, and name cylinders, cones, and rectangular prisms. | **Instructor's Guide:** 87, 120, 132, 140 |
| 3.03 Compare and contrast geometric figures. | **Instructor's Guide:** 3, 8, 12, 13, 18, 21, 23, 60, 61, 66, 80, 100, 132, 153 |
| 3.04 Solve problems involving spatial visualization. | **Instructor's Guide:** 20, 40 |

## COMPETENCY GOAL 4

**The learner will understand and use data and simple probability concepts.**

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 4.01 Collect, organize, describe, and display data using line plots and tallies. | **Instructor's Guide:** 76, 96, 151, 163 |
| 4.02 Describe events as certain, impossible, more likely or less likely to occur. | **Not covered.** |

## COMPETENCY GOAL 5

**The learner will demonstrate an understanding of classification and patterning.**

| Competency Objectives, Grade 1 | Afterschool Achievers: Math Club, Grade 1 |
|---|---|
| 5.01 Sort and classify objects by two attributes. | **Instructor's Guide:** 3, 8, 12, 13, 18, 21, 23, 48, 53, 58, 60, 61, 63, 66, 80, 100, 132, 153, 158, 160, 180 |
| 5.02 Use Venn diagrams to illustrate similarities and differences in two sets. | **Not covered.** |
| 5.03 Create and extend patterns, identify the pattern unit, and translate into other forms. | **Instructor's Guide:** 11, 16, 26, 31, 36, 41, 46, 51, 56, 61, 66, 71, 81, 91, 101, 111, 131, 141, 171 |

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## and
# Grade Level Competencies
# Grade 2

## COMPETENCY GOAL 1

**The learner will read, write, model, and compute with whole numbers through 999.**

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| 1.01 Develop number sense for whole numbers through 999.<br><br>a) Connect model, number word, and number using a variety of representations. | **Instructor's Guide:** 36, 40, 51, 60, 90, 122, 123 |
| b) Read and write numbers. | **Instructor's Guide:** 25, 36, 40, 51, 60, 70, 85, 90, 122, 123, 155 |
| c) Compare and order. | **Instructor's Guide:** 36, 40, 51, 60, 90, 122, 123 |
| d) Rename. | **Instructor's Guide:** 60, 176 |
| e) Estimate. | **Not covered.** |
| f) Use a variety of models to build understanding of place value (ones, tens, hundreds). | **Instructor's Guide:** 36, 40, 51, 60, 90, 122, 123 |
| 1.02 Use area or region models and set models of fractions to explore part-whole relationships in contexts.<br><br>a) Represent fractions (halves, thirds, fourths) concretely and symbolically. | **Instructor's Guide:** 48, 57, 80, 97, 138 |
| b) Compare fractions (halves, thirds, fourths) using models. | **Instructor's Guide:** 48, 57, 80, 97, 138 |

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| c) Make different representations of the same fraction. | **Instructor's Guide:** 48, 57, 80, 97, 138 |
| d) Combine fractions to describe parts of a whole. | **Instructor's Guide:** 48, 57, 80, 97, 138 |
| 1.03 Create, model, and solve problems that involve addition, subtraction, equal grouping, and division into halves, thirds, and fourths (record in fraction form). | **Instructor's Guide:** 48, 57, 80, 97, 138 |
| 1.04 Develop fluency with multi-digit addition and subtraction through 999 using multiple strategies.<br>a) Strategies for adding and subtracting numbers. | **Instructor's Guide:** 67, 117, 127, 137, 146, 164, 166, 176 |
| b) Estimation of sums and differences in appropriate situations. | **Instructor's Guide:** 22, 54, 67, 87, 100, 127 |
| c) Relationships between operations. | **Instructor's Guide:** 4, 5, 9, 12, 14, 19, 22, 27, 29, 33, 42, 49, 54, 79, 84, 89, 94, 99, 102, 104, 107, 109, 114 |
| 1.05 Create and solve problems using strategies such as modeling, composing and decomposing quantities, using doubles, and making tens and hundreds. | **Instructor's Guide:** 36, 40, 51, 60, 90, 122, 123 |
| 1.06 Define and recognize odd and even numbers. | **Instructor's Guide:** 17, 18, 26, 46, 61, 96, 116, 154 |

## COMPETENCY GOAL 2

**The learner will recognize and use standard units of metric and customary measurement.**

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| 2.01 Estimate and measure using appropriate units.<br>a) Length (meters, centimeters, feet, inches, yards). | **Instructor's Guide:** 7, 30 |
| b) Temperature (Fahrenheit). | **Instructor's Guide:** 93 |
| 2.02 Tell time at five-minute intervals. | **Instructor's Guide:** 47, 58, 82, 108 |

## COMPETENCY GOAL 3

**The learner will perform simple transformations.**

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| 3.01 Combine simple figures to create a given shape. | **Instructor's Guide:** 115 |
| 3.02 Describe the change in attributes as two- and three-dimensional figures are cut and rearranged. | **Instructor's Guide:** 115 |
| 3.03 Identify and make:<br>a) Symmetric figures. | **Instructor's Guide:** 153 |
| b) Congruent figures. | **Instructor's Guide:** 75 |

## COMPETENCY GOAL 4

**The learner will understand and use data and simple probability concepts.**

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| 4.01 Collect, organize, describe, and display data using Venn diagrams (three sets) and pictographs where symbols represent multiple units (2's, 5's, 10's). | **Instructor's Guide:** 25, 70, 155, 161 |
| 4.02 Conduct simple probability experiments; describe the results and make predictions. | **Not covered.** |

# COMPETENCY GOAL 5

**The learner will recognize and represent patterns and simple mathematical relationships.**

| Competency Objectives, Grade 2 | Afterschool Achievers: Math Club, Grade 2 |
|---|---|
| 5.01 Identify, describe, translate, and extend repeating and growing patterns. | **Instructor's Guide:** 6, 11, 21, 41, 51, 56, 66, 91, 126, 131, 171 |
| 5.02 Write addition and subtraction number sentences to represent a problem; use symbols to represent unknown quantities. | **Instructor's Guide:** 4, 5, 9, 12, 14, 19, 22, 27, 29, 33, 42, 49, 54, 79, 84, 89, 94, 99, 102, 104, 107, 109, 114 |

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## and
# Grade Level Competencies
# Grade 3

## COMPETENCY GOAL 1

**The learner will model, identify, and compute with whole numbers through 9,999.**

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| 1.01 Develop number sense for whole numbers through 9,999.<br><br>a) Connect model, number word, and number, using a variety of representations. | **Instructor's Guide:** 5, 35, 60, 103, 127 |
| b) Build an understanding of place value (ones through thousands). | **Instructor's Guide:** 5, 35, 48, 60, 103, 127, 140 |
| c) Compare and order. | **Instructor's Guide:** 22, 153 |
| 1.02 Develop fluency with multi-digit addition and subtraction through 9,999 using:<br><br>a) Strategies for adding and subtracting numbers. | **Instructor's Guide:** 1, 2, 4, 6, 8, 9, 10, 11, 12, 14, 16, 19, 24, 26, 31, 33, 34, 36, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 144, 154, 164 |
| b) Estimation of sums and differences in appropriate situations. | **Instructor's Guide:** 40, 70, 75, 105, 155 |
| c) Relationships between operations. | **Instructor's Guide:** 33, 71, 85, 112, 175 |
| 1.03 Develop fluency with multiplication from 1 x 1 to 12 x 12 and division up to two-digit by one-digit numbers using:<br><br>a) Strategies for multiplying and dividing numbers. | **Instructor's Guide:** 64, 69, 77, 79, 84, 86, 89, 91, 97, 102, 126, 131, 136, 138, 147, 149, 153, 154, 164, 169, 170, 171, 174, 174, 179 |

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| b) Estimation of products and quotients in appropriate situations. | **Not covered.** |
| c) Relationships between operations. | **Instructor's Guide:** 33, 71, 85, 112, 175 |
| 1.04 Use basic properties (identity, commutative, associative, order of operations) for addition, subtraction, multiplication, and division. | **Instructor's Guide:** 21, 47, 58, 74, 76, 81, 86, 96, 98, 99, 101, 104, 106, 109, 114, 116, 118, 121, 126, 131, 136, 138, 153, 156, 169 |
| 1.05 Use area or region models and set models of fractions to explore part-whole relationships.<br>a) Represent fractions concretely and symbolically (halves, fourths, thirds, sixths, eighths). | **Instructor's Guide:** 82, 83, 137, 145, 150 |
| b) Compare and order fractions (halves, fourths, thirds, sixths, eighths) using models and benchmark numbers (zero, one-half, one); describe comparisons. | **Instructor's Guide:** 82, 83, 145 |
| c) Model and describe common equivalents, especially relationships among halves, fourths, and eighths, and thirds and sixths. | **Instructor's Guide:** 82, 83, 137, 145, 150 |
| d) Understand that the fractional relationships that occur between zero and one also occur between every two consecutive whole numbers. | **Not covered.** |
| e) Understand and use mixed numbers and their equivalent fraction forms. | **Not covered.** |
| 1.06 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 14, 16, 19, 24, 26, 31, 33, 34, 36, 37, 39, 41, 46, 49, 51, 53, 56, 61, 66, 68, 85, 94, 144, 154, 164 |

## COMPETENCY GOAL 2

**The learner will recognize and use standard units of metric and customary measurement.**

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| 2.01 Solve problems using measurement concepts and procedures involving:<br>a) Elapsed time. | **Instructor's Guide:** 17, 38, 72, 88, 125 |
| b) Equivalent measures within the same measurement system. | **Instructor's Guide:** 13, 17, 50, 63, 80, 100, 110, 113, 133, 148, 155, 156, 160, 161, 166 |
| 2.02 Estimate and measure using appropriate units.<br>a) Capacity (cups, pints, quarts, gallons, liters). | **Instructor's Guide:** 113, 160, 166 |
| b) Lengths (miles, kilometers). | **Instructor's Guide:** 50, 128 |
| c) Mass (ounces, pounds, grams, kilograms) | **Instructor's Guide:** 52 |
| d) Temperature (Fahrenheit, Celsius). | **Instructor's Guide:** 128 |

## COMPETENCY GOAL 3

**The learner will recognize and use basic geometric properties of two- and three-dimensional figures.**

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| 3.01 Use appropriate vocabulary to compare, describe, and classify two- and three-dimensional figures. | **Instructor's Guide:** 3, 15, 45, 57, 65, 93, 107, 111, 123, 135, 142, 143, 178 |
| 3.02 Use a rectangular coordinate system to solve problems.<br>a) Graph and identify points with whole number and/or letter coordinates. | **Instructor's Guide:** 165 |
| b) Describe the path between given points on the plane. | **Not covered.** |

## COMPETENCY GOAL 4

**The learner will understand and use data and simple probability concepts.**

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| 4.01 Collect, organize, analyze, and display data (including circle graphs and tables) to solve problems. | **Instructor's Guide:** 25 |
| 4.02 Determine the number of permutations and combinations of up to three items. | **Instructor's Guide:** 147, 168 |
| 4.03 Solve probability problems using permutations and combinations. | **Not covered.** |

## COMPETENCY GOAL 5

**The learner will recognize, determine, and represent patterns and simple mathematical relationships.**

| Competency Objectives, Grade 3 | Afterschool Achievers: Math Club, Grade 3 |
|---|---|
| 5.01 Describe and extend numeric and geometric patterns. | **Instructor's Guide:** 21, 47, 58, 67, 74, 76, 81, 86, 96, 98, 99, 101, 104, 106, 109, 114, 116, 118, 121, 126, 131, 136, 138, 153, 156, 169 |
| 5.02 Extend and find missing terms of repeating and growing patterns. | **Instructor's Guide:** 21, 47, 58, 67, 74, 76, 81, 86, 96, 98, 99, 101, 104, 106, 109, 114, 116, 118, 121, 126, 131, 136, 138, 153, 156, 169 |
| 5.03 Use symbols to represent unknown quantities in number sentence | **Instructor's Guide:** 56 |
| 5.04 Find the value of the unknown in a number sentence. | **Instructor's Guide:** 56 |

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# North Carolina Mathematics Standard Course of Study
## and
# Grade Level Competencies
# Grade 4

## COMPETENCY GOAL 1

**The learner will read, write, model, and compute with non-negative rational numbers.**

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| 1.01 Develop number sense for rational numbers 0.001 through 99,999.<br><br>a) Connect model, number word, and number, using a variety of representations. | **Instructor's Guide:** 27, 107, 112, 113, 133, 144, 145, 147, 150 |
| b) Build an understanding of place value (hundredths through ten thousands). | **Instructor's Guide:** 27, 95, 97, 103, 112, 133, 143, 147, 175, 178 |
| c) Compare and order rational numbers. | **Instructor's Guide:** 12, 102 |
| d) Make estimates of rational numbers in appropriate situations. | **Instructor's Guide:** 25, 100, 122, 124, 129, 134, 177 |
| 1.02 Develop fluency with multiplication and division:<br><br>a) Two-digit by two-digit multiplication (larger numbers with calculator). | **Instructor's Guide:** 108, 119, 125, 129, 134, 139, 170, 171, 172 |
| b) Up to three-digit by two-digit division (larger numbers with calculator). | **Instructor's Guide:** 84, 134, 139, 141, 142, 146, 151, 156, 161, 166, 170, 171, 176 |
| c) Strategies for multiplying and dividing numbers. | **Instructor's Guide:** 108, 119, 125, 129, 134, 139, 170, 171, 172 |
| d) Estimation of products and quotients in appropriate situations. | **Instructor's Guide:** 129, 134 |

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| e) Relationships between operations. | **Instructor's Guide:** 57 |
| 1.03 Solve problems using models, diagrams, and reasoning about fractions and relationships among fractions involving halves, fourths, eighths, thirds, sixths, twelfths, fifths, tenths, hundredths, and mixed numbers. | **Instructor's Guide:** 82, 107, 113, 120, 132, 133, 144, 145, 150, 154, 155 |
| 1.04 Develop fluency with addition and subtraction of non-negative rational numbers with like denominators, including decimal fractions through hundredths.<br>a) Develop and analyze strategies for adding and subtracting numbers. | **Instructor's Guide:** 2, 4, 9, 14, 18, 23, 43, 77, 89, 94, 87, 97, 99, 102, 149, 155, 160, 164, 165 |
| b) Estimate sums and differences. | **Instructor's Guide:** 25, 100, 122, 124, 129, 134, 177 |
| c) Judge the reasonableness of solutions. | **Instructor's Guide:** 25, 100, 122, 124, 129, 134, 177 |
| 1.05 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 4, 6, 9, 14, 19, 24, 25, 29, 34, 36, 41, 46, 48, 49, 54, 59, 61, 64, 66, 69, 71, 74, 76, 78, 79, 81, 84, 86, 93, 96, 97, 117, 118, 124, 129, 134, 138, 139, 141, 142, 146, 151, 156, 159, 161, 164, 166, 170, 171, 176 |

## COMPETENCY GOAL 2

**The learner will understand and use perimeter and area.**

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| 2.01 Develop strategies to determine the area of rectangles and the perimeter of plane figures. | **Instructor's Guide:** 10, 35, 53, 88, 137 |
| 2.02 Solve problems involving perimeter of plane figures and the areas of rectangles. | **Instructor's Guide:** 10, 53, 137 |

## COMPETENCY GOAL 3

**The learner will recognize and use geometric properties and relationships.**

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| 3.01 Use the coordinate system to describe the location and relative position of points and draw figures in the first quadrant. | **Instructor's Guide:** 135 |
| 3.02 Describe the relative position of lines using concepts of parallelism and perpendicularity. | **Instructor's Guide:** 85, 153, 158 |
| 3.03 Identify, predict, and describe the results of transformations of plane figures.<br>a) Reflections. | **Instructor's Guide:** 163 |
| b) Translations. | **Instructor's Guide:** 163 |
| c) Rotations. | **Instructor's Guide:** 163 |

## COMPETENCY GOAL 4

**The learner will understand and use graphs, probability, and data analysis.**

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| 4.01 Collect, organize, analyze, and display data (including line graphs and bar graphs) to solve problems. | **Instructor's Guide:** 31, 83, 91, 140 |
| 4.02 Describe the distribution of data using median, range and mode. | **Not covered.** |
| 4.03 Solve problems by comparing two sets of related data. | **Not covered.** |
| 4.04 Design experiments and list all possible outcomes and probabilities for an event. | **Not covered.** |

## COMPETENCY GOAL 5

**The learner will demonstrate an understanding of mathematical relationships.**

| Competency Objectives, Grade 4 | Afterschool Achievers: Math Club, Grade 4 |
|---|---|
| 5.01 Identify, describe, and generalize relationships in which:<br><br>a) Quantities change proportionally. | **Not covered.** |
| b) Change in one quantity relates to change in a second quantity. | **Instructor's Guide:** 140 |
| 5.02 Translate among symbolic, numeric, verbal, and pictorial representations of number relationships. | **Instructor's Guide:** 4, 6, 9, 14, 36, 40, 41, 46, 59, 61, 65, 66, 69, 71, 74, 76, 79, 81, 84, 96, 101, 107, 111, 115, 116, 120, 121, 126, 131, 136, 141, 145, 150, 152, 156, 161, 162, 165, 166, 167, 170, 171, 172, 176 |
| 5.03 Verify mathematical relationships using:<br><br>a) Models, words, and numbers. | **Instructor's Guide:** 7, 31, 36, 41, 45, 46, 48, 51, 56, 61, 65, 66, 71, 78, 91, 96, 116, 131, 136 |
| b) Order of operations and the identity, commutative, associative, and distributive properties. | **Instructor's Guide:** 15, 57, 67, 90, 115, 122, 157 |

# Afterschool Achievers: Math Club, Grade 5 © 2002 correlated to North Carolina Mathematics Grade Level Competencies Grade 5

## COMPETENCY GOAL 1

**The learner will understand and compute with non-negative rational numbers.**

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 1.01 Develop number sense for rational numbers 0.001 through 999,999.<br><br>a) Connect model, number word, and number using a variety of representations. | **Instructor's Guide:** 1, 6, 11, 16, 18, 21, 45, 56, 76, 114, 131, 136, 141, 149, 151, 165, 171, 176 |
| b) Build an understanding of place value (thousandths through hundred thousands). | **Instructor's Guide:** 54, 77, 104, 129, 134, 148,152, 157, 172, 174, 179 |
| c) Compare and order rational numbers. | **Instructor's Guide:** 3, 20, 31, 91, 157 |
| d) Make estimates of rational numbers in appropriate situations. | **Instructor's Guide:** 13, 25, 33, 53, 68, 74, 78, 79, 80, 93, 100, 105, 112, 118, 125, 130, 135, 147, 148, 160, 163, 170 |
| 1.02 Develop fluency in adding and subtracting non-negative rational numbers (halves, fourths, eighths; thirds, sixths, twelfths; fifths, tenths, hundredths, thousandths; mixed numbers).<br><br>a) Develop and analyze strategies for adding and subtracting numbers. | **Instructor's Guide:** 4, 6, 9, 13, 14, 15, 19, 24, 25, 29, 34, 39, 42, 50, 53, 59, 62, 64, 68, 69, 74, 75, 78, 79, 82, 93, 97, 100, 117, 118, 119, 122, 124, 147, 163, 165, 177 |
| b) Estimate sums and differences. | **Instructor's Guide:** 13, 25, 33, 53, 68, 74, 78, 79, 93, 100, 118, 147, 148, 163 |
| c) Judge the reasonableness of solutions. | **Instructor's Guide:** 13, 25, 33, 53, 68, 74, 78, 79, 93, 100, 118, 147, 148, 163 |

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 1.03 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 4, 6, 9, 13, 14, 15, 19, 24, 25, 29, 34, 39, 42, 50, 53, 59, 62, 64, 68, 69, 74, 75, 78, 79, 82, 93, 97, 100, 117, 118, 119, 122, 124, 147, 163, 165, 177 |

## COMPETENCY GOAL 2

**The learner will recognize and use standard units of metric and customary measurements.**

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 2.01 Estimate the measure of an object in one system given the measure of that object in another system. | **Instructor's Guide:** 30 |
| 2.02 Identify, estimate, and measure the angles of plane figures using appropriate tools. | **Instructor's Guide:** 102, 110, 123, 128, 140, 153 |

## COMPETENCY GOAL 3

**The learner will understand and use properties and relationships of plane figures.**

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 3.01 Identify, define, describe, and accurately represent triangles, quadrilaterals, and other polygons. | **Instructor's Guide:** 22, 35, 102, 115, 138, 153 |
| 3.02 Make and test conjectures about polygons involving:<br>a) Sum of the measures of interior angles. | **Instructor's Guide:** 102, 110 |
| b) Lengths of sides and diagonals. | **Instructor's Guide:** 3, 23, 35, 43, 63, 110, 115, 128, 138, 140, 153 |
| c) Parallelism and perpendicularity of sides and diagonals. | **Instructor's Guide:** 138, 153 |
| 3.03 Classify plane figures according to types of symmetry (line, rotational). | **Not covered.** |

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 3.04 Solve problems involving the properties of triangles, quadrilaterals, and other polygons.<br><br>a) Sum of the measures of interior angles. | **Instructor's Guide:** 102, 110 |
| b) Lengths of sides and diagonals. | **Instructor's Guide:** 3, 23, 35, 43, 63, 110, 115, 128, 138, 140, 153 |
| c) Parallelism and perpendicularity of sides and diagonals. | **Instructor's Guide:** 138, 153 |

## COMPETENCY GOAL 4

**The learner will understand and use graphs and data analysis.**

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 4.01 Collect, organize, analyze, and display data (including stem-and-leaf plots) to solve problems. | **Instructor's Guide:** 151, 156, 161, 166, 176 |
| 4.02 Compare and contrast different representations of the same data; discuss the effectiveness of each representation. | **Instructor's Guide:** 131, 151, 156, 161, 176 |
| 4.03 Solve problems with data from a single set or multiple sets of data using median, range, and mode. | **Not covered.** |

## COMPETENCY GOAL 5

**The learner will demonstrate an understanding of patterns, relationships, and elementary algebraic representation.**

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 5.01 Describe, extend, and generalize numeric and geometric patterns using tables, graphs, words, and symbols. | **Instructor's Guide:** 1, 6, 11, 16, 18, 21, 45, 46, 48, 56, 65, 76, 114, 126, 131, 136, 141, 147, 149, 165 |
| 5.02 Use algebraic expressions, patterns, and one-step equations and inequalities to solve problems. | **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 |

| Competency Objectives, Grade 5 | Afterschool Achievers: Math Club, Grade 5 |
|---|---|
| 5.03 Identify, describe, and analyze situations with constant or varying rates of change. | **Instructor's Guide:** 151, 171, 176 |

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# North Carolina Mathematics Standard Course of Study
## and
# Grade Level Competencies
# Grade 6

## COMPETENCY GOAL 1

**The learner will understand and compute with rational numbers.**

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 1.01 Develop number sense for negative rational numbers.<br><br>a) Connect model, number word, and number using a variety of representations, including the number line. | **Instructor's Guide:** 139, 164 |
| b) Compare and order. | **Not covered.** |
| c) Make estimates in appropriate situations. | **Not covered.** |
| 1.02 Develop meaning for percents.<br><br>a) Connect the model, number word, and number using a variety of representations. | **Instructor's Guide:** 104, 105, 151, 175 |
| b) Make estimates in appropriate situations. | **Instructor's Guide:** 175 |
| 1.03 Compare and order rational numbers. | **Instructor's Guide:** 25, 46, 51, 116, 119, 121, 156, 166 |
| 1.04 Develop fluency in addition, subtraction, multiplication, and division of non-negative rational numbers.<br><br>a) Analyze computational strategies. | **Instructor's Guide:** 2, 7, 10, 20, 22, 29, 32, 33, 37, 38, 40, 46, 47, 48, 54, 57, 58, 60, 65, 69, 80, 81, 88, 89, 91, 92, 93, 102, 103, 109, 116, 121, 124, 125, 129, 131, 139, 160, 164, 165, 172, 173, 174 |

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| b) Describe the effect of operations on size. | **Instructor's Guide:** 2, 7, 10, 20, 22, 29, 32, 33, 37, 38, 40, 46, 47, 48, 54, 57, 58, 60, 65, 69, 80, 81, 88, 89, 91, 92, 93, 102, 103, 109, 116, 121, 124, 125, 129, 131, 139, 160, 164, 165, 172, 173, 174 |
| c) Estimate the results of computations. | **Instructor's Guide:** 7, 22, 25, 32, 33, 37, 57, 60, 65, 89, 93, 104, 105, 110, 120, 121, 134, 145, 172, 173, 174 |
| d) Judge the reasonableness of solutions. | **Instructor's Guide:** 7, 22, 25, 32, 33, 37, 57, 60, 65, 89, 93, 104, 105, 110, 120, 121, 134, 145, 172, 173, 174 |
| 1.05 Develop fluency in the use of factors, multiples, exponential notation, and prime factorization. | **Instructor's Guide:** 1, 7, 35, 36, 48, 49, 51, 62, 63, 73, 75, 80, 82, 83, 107, 157, 158 |
| 1.06 Use exponential, scientific, and calculator notation to write very large and very small numbers. | **Instructor's Guide:** 1, 18, 51, 141, 157, 158, 161, 177, 178 |
| 1.07 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 5, 65, 130, 131, 141,145, 151, 155, 159, 165, 176 |

## COMPETENCY GOAL 2

**The learner will select and use appropriate tools to measure two- and three-dimensional figures.**

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 2.01 Estimate and measure length, perimeter, area, angles, weight, and mass of two- and three-dimensional figures, using appropriate tools. | **Instructor's Guide:** 85, 87, 88, 90, 97, 98, 107, 108, 115, 126, 142, 143, 144, 147, 155, 176, 180 |
| 2.02 Solve problems involving perimeter/circumference and area of plane figures. | **Instructor's Guide:** 85, 87, 88, 90, 97, 98, 107, 108, 115, 126, 142, 143, 144, 147, 155, 176, 180 |

## COMPETENCY GOAL 3

**The learner will understand and use properties and relationships of geometric figures in the coordinate plane.**

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 3.01 Identify and describe the intersection of figures in a plane. | **Not covered.** |
| 3.02 Identify the radius, diameter, chord, center, and circumference of a circle; determine the relationships among them. | **Instructor's Guide:** 142, 143, 155 |
| 3.03 Transform figures in the coordinate plane and describe the transformation. | **Not covered.** |
| 3.04 Solve problems involving geometric figures in the coordinate plane. | **Not covered.** |

## COMPETENCY GOAL 4

**The learner will understand and determine probabilities.**

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 4.01 Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle. | **Instructor's Guide:** 122, 123, 127, 128 |
| 4.02 Use a sample space to determine the probability of an event. | **Instructor's Guide:** 122, 123, 127, 128, 132, 133 |
| 4.03 Conduct experiments involving simple and compound events. | **Instructor's Guide:** 127, 132, 133 |
| 4.04 Determine and compare experimental and theoretical probabilities for simple and compound events. | **Instructor's Guide:** 122, 123 |
| 4.05 Determine and compare experimental and theoretical probabilities for independent and dependent events. | **Instructor's Guide:** 122, 127, 128, 133 |

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 4.06 Design and conduct experiments or surveys to solve problems; report and analyze results. | **Instructor's Guide:** 122, 123, 127, 128, 132, 133, 135, 140 |

## COMPETENCY GOAL 5

**The learner will demonstrate an understanding of simple algebraic expressions.**

| Competency Objectives, Grade 6 | Afterschool Achievers: Math Club, Grade 6 |
|---|---|
| 5.01 Simplify algebraic expressions and verify the results using basic properties of rational numbers.<br><br>a) Identity. | **Instructor's Guide:** 75 |
| b) Commutative. | **Instructor's Guide:** 58, 75 |
| c) Associative. | **Instructor's Guide:** 57, 58 |
| d) Distributive. | **Instructor's Guide:** 55, 95 |
| e) Order of operations. | **Instructor's Guide:** 41, 50, 141, 161, 166, 169 |
| 5.02 Use and evaluate algebraic expressions. | **Instructor's Guide:** 41, 55, 64, 146 |
| 5.03 Solve simple (one- and two-step) equations or inequalities. | **Instructor's Guide:** 13, 16, 18, 27, 28, 56, 88, 98 |
| 5.04 Use graphs, tables, and symbols to model and solve problems involving rates of change and ratios. | **Instructor's Guide:** 100, 110 |

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## and
# Grade Level Competencies
# Grade 7

## COMPETENCY GOAL 1

**The learner will understand and compute with rational numbers.**

| Competency Objectives, Grade 7 | Afterschool Achievers: Math Club, Grade 7 |
|---|---|
| 1.01 Develop and use ratios, proportions, and percents to solve problems. | **Instructor's Guide:** 10, 44, 46, 54, 61, 77, 78, 82, 99, 100, 106, 104, 110, 129, 131, 151, 157, 162, 170, 177 |
| 1.02 Develop fluency in addition, subtraction, multiplication, and division of rational numbers.<br>a) Analyze computational strategies. | **Instructor's Guide:** 7, 8, 12, 13, 18, 19, 20, 22, 32, 33, 34, 38, 42, 43, 48, 50, 52, 53, 57, 59, 62, 63, 65, 68, 83, 88, 92, 93, 97, 98, 110, 111, 113, 115, 117, 118, 120, 127, 128, 133, 143, 145, 147, 148 |
| b) Describe the effect of operations on size. | **Instructor's Guide:** 35, 105, 116 |
| c) Estimate the results of computations. | **Instructor's Guide:** 25, 35, 55, 70, 80, 104, 135, 160 |
| d) Judge the reasonableness of solutions. | **Instructor's Guide:** 25, 35, 55, 70, 80, 104, 135, 160 |
| 1.03 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 10, 14, 16, 20, 25, 32, 35, 39, 40, 41, 46, 48, 49, 55, 60, 64, 70, 78, 80, 82, 86, 92, 93, 95, 96, 104, 105, 106, 109, 111, 112, 113,116, 121, 124, 127, 128, 129, 131, 136, 139, 150, 155, 157, 158, 159, 160, 170, 177 |

## COMPETENCY GOAL 2

**The learner will understand and use measurement involving two- and three-dimensional figures.**

| Competency Objectives, Grade 7 | Afterschool Achievers: Math Club, Grade 7 |
|---|---|
| 2.01 Draw objects to scale and use scale drawings to solve problems. | **Instructor's Guide:** 77, 78, 170 |
| 2.02 Solve problems involving volume and surface area of cylinders, prisms, and composite shapes. | **Instructor's Guide:** 24, 130, 145, 176, 180 |

## COMPETENCY GOAL 3

**The learner will understand and use properties and relationships in geometry.**

| Competency Objectives, Grade 7 | Afterschool Achievers: Math Club, Grade 7 |
|---|---|
| 3.01 Using three-dimensional figures:<br>a) Identify, describe, and draw from various views (top, side, front, corner). | **Instructor's Guide:** 84, 101, 176 |
| b) Build from various views. | **Instructor's Guide:** 79, 84, 147, 176 |
| c) Describe cross-sectional views. | **Not covered.** |
| 3.02 Identify, define, and describe similar and congruent polygons with respect to angle measures, lengths of sides, and proportionality of sides. | **Instructor's Guide:** 94, 101, 169, 179 |
| 3.03 Use scaling and proportional reasoning to solve problems related to similar and congruent polygons. | **Instructor's Guide:** 77, 170 |

## COMPETENCY GOAL 4

**The learner will understand and use graphs and data analysis.**

| Competency Objectives, Grade 7 | Afterschool Achievers: Math Club, Grade 7 |
|---|---|
| 4.01 Collect, organize, analyze and display data (including box plots and histograms) to solve problems. | **Instructor's Guide:** 122, 135, 137, 165 |
| 4.02 Calculate, use, and interpret the mean, median, mode, range, frequency distribution, and inter-quartile range for a set of data. | **Instructor's Guide:** 75, 83, 90, 91, 107,108, 123 |
| 4.03 Describe how the mean, median, mode, range, frequency distribution, and inter-quartile range of a set of data affect its graph. | **Instructor's Guide:** 75, 83, 90, 91, 107, 108, 123 |
| 4.04 Identify outliers and determine their effect on the mean, median, mode, and range of a set of data. | **Instructor's Guide:** 108 |
| 4.05 Solve problems involving two or more sets of data using appropriate statistical measures. | **Instructor's Guide:** 3, 22, 23, 125, 138 |

## COMPETENCY GOAL 5

**The learner will demonstrate an understanding of linear relations and fundamental algebraic concepts.**

| Competency Objectives, Grade 7 | Afterschool Achievers: Math Club, Grade 7 |
|---|---|
| 5.01 Identify, analyze, and create linear equations, sequences, and functions using symbols, graphs, tables, diagrams, and written descriptions. | **Instructor's Guide:** 5, 13, 16,18, 29, 56, 60, 63, 68, 73, 74, 83, 110, 146 |
| 5.02 Translate among different representations of algebraic expressions, equations and inequalities. | **Instructor's Guide:** 5, 13, 41, 56, 63, 110, 146 |
| 5.03 Use and evaluate algebraic expressions, linear equations or inequalities to solve problems. | **Instructor's Guide:** 5, 13, 16, 18, 29, 41, 56, 60, 61, 63, 64, 67, 68, 72, 73, 74, 83, 110, 146, 155 |
| 5.04 Develop fluency in the use of formulas to solve problems. | **Instructor's Guide:** 4, 50, 74, 92, 93, 113, 115, 126, 171, 180 |

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## and
# Grade Level Competencies
# Grade 8

## COMPETENCY GOAL 1

**The learner will understand and compute with real numbers.**

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| 1.01 Develop number sense for real numbers.<br>a) Define and use irrational numbers. | **Instructor's Guide:** 50, 74, 76, 118, 130, 145, 152, 153, 155, 171, 176 |
| b) Compare and order. | **Instructor's Guide:** 9, 26, 34, 96, 99 |
| c) Use estimates of irrational numbers in appropriate situations. | **Instructor's Guide:** 153 |
| 1.02 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil. | **Instructor's Guide:** 2, 10, 35, 44, 45, 100, 104, 109, 115, 147, 160, 162, 163, 168, 170, 173, 174 |

## COMPETENCY GOAL 2

**The learner will understand and use measurement concepts.**

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| 2.01 Determine the effect on perimeter, area or volume when one or more dimensions of two- and three-dimensional figures are changed. | **Instructor's Guide:** 4, 47, 48, 52 |
| 2.02 Apply and use concepts of indirect measurement. | **Instructor's Guide:** 10, 157, 158 |

## COMPETENCY GOAL 3

**The learner will understand and use properties and relationships in geometry.**

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| 3.01 Represent problem situations with geometric models. | **Instructor's Guide:** 4, 19, 24, 47, 48, 52, 53, 74, 76, 92, 93, 112, 113, 126, 130, 145, 144, 145, 155, 171, 176, 180 |
| 3.02 Apply geometric properties and relationships, including the Pythagorean theorem, to solve problems. | **Instructor's Guide:** 21, 50, 112, 113, 152 |
| 3.03 Identify, predict, and describe dilations in the coordinate plane. | **Not covered.** |

## COMPETENCY GOAL 4

**The learner will understand and use graphs and data analysis.**

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| 4.01 Collect, organize, analyze and display data (including scatterplots) to solve problems. | **Instructor's Guide:** 7, 8, 70, 75, 80, 110, 135, 150, 172, 173 |
| 4.02 Approximate a line of best fit for a given scatterplot; explain the meaning of the line as it relates to the problem and make predictions. | **Instructor's Guide:** 70, 75 |
| 4.03 Identify misuses of statistical and numerical data. | **Instructor's Guide:** 55 |

## COMPETENCY GOAL 5

**The learner will understand and use linear relations and functions.**

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| 5.01 Develop and understanding of function.<br>a) Translate among verbal, tabular, graphic, and algebraic representations of functions. | **Instructor's Guide:** 37, 97, 98, 127, 164 |
| b) Identify relations and functions as linear or nonlinear. | **Instructor's Guide:** 22, 29, 97, 98, 133 |

| Competency Objectives, Grade 8 | Afterschool Achievers: Math Club, Grade 8 |
|---|---|
| c) Find, identify, and interpret the slope (rate of change) and intercepts of a linear relation. | **Instructor's Guide:** 97, 98, 105 |
| d) Interpret and compare properties of linear functions from tables, graphs, or equations. | **Instructor's Guide:** 22, 29, 77, 97, 98, 133, 150 |
| 5.02 Write an equation of a linear relationship given: two points, the slope and one point on the line, or the slope and y-intercept. | **Instructor's Guide:** 105 |
| 5.03 Solve problems using linear equations and inequalities; justify symbolically and graphically. | **Instructor's Guide:** 5, 16, 18, 23, 41, 43, 64, 65, 86, 90, 120, 144, 154, 164 |
| 5.04 Solve equations using the inverse relationships of addition and subtraction, multiplication and division, squares and square roots, and cubes and cube roots. | **Instructor's Guide:** 14, 49, 50, 56, 86, 90, 92, 93, 117, 136, 152 |

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