Campbell County School District #1
Gillette, Wyoming
Mathematics - Kindergarten

Bridges is the Campbell County School District's adopted math program for kindergarten, first, and second grades. Our students participate in games and activities that help them learn mathematics in a motivating way. Students work in the number corner (calendar) which covers mathematics strands that are taught in kindergarten. Students explore and learn about mathematics in a hands-on, activity-based program. Kindergarten students enjoy math and see mathematics in a more positive way.

Kindergarten students work on the following strands of mathematics: number sense, problem solving, measurement, statistics & probability, geometry, and algebraic concepts & relationships. Our kindergarten curriculum is focused on teaching our students the following objectives:
- Count, read, and write numbers and understand the relationships between number and objects.
- Learn strategies to solve problems.
- Recognize and name coins, and measure length with non-standard units.
- Classify objects based on attributes such as size, color, and shape.
- Sort and name geometric shapes such as circle, square, triangle, and rectangle.
- Describe and create three-element patterns.

The following programs may also be used to support Bridges: Read It, Draw It, Solve It; Box It-Bag It; and Math Their Way.

MA-KI-01 NUMBER SENSE (Content Standard)
    State Standard and Benchmark Correlation:
        MAKI.1.1 Read & Represent Numbers Up to 9
    NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of forms. The students will construct number meanings and interpret the multiple uses of numbers by using a variety of physical materials (manipulatives). Students will demonstrate an understanding of our numeration system by relating counting, graphing, and place value concepts. They will compare number values and order sets of numbers.
    NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 38.
    MA-KI-01-01 - Cardinal Numbers (Objective)
    C - Critical--Assessment Reporting Required
        The student will recognize the cardinal numbers zero through 10. (Knowledge)
    MA-KI-01-02 - Count Sets of Objects (Objective)
    C - Critical--Assessment Reporting Required
        The student will count sets of objects (0 - 10). (Knowledge)
    MA-KI-01-03 - Count Orally to 30 (Objective)
    C - Critical--Assessment Reporting Required
        The students will count orally to 30.
    MA-KI-01-04 - Write Cardinal Numbers (Objective)
    T - Teach
        The students will write cardinal numbers zero through 10.

MA-KI-01-05 - Number Conservation (Objective)
T - Teach
  The students will differentiate when up to ten objects are placed close together or are
  widely spaced but are still the same number.
MA-KI-01-06 - Demonstrate Relationship Between Numbers/Objects (Objective)
C - Critical--Assessment Reporting Required
  The students will demonstrate the relationship between concrete objects and numbers in a
  one-to-one relationship.   The student will match a numeral to the number of objects in a
  set (0-10). The student will estimate the number of objects in a variety of whole-number
  sets.
  NCTM Addenda K Book, pp. 7-11
MA-KI-01-07 - Identify Larger and Smaller of Two sets (Objective)
T - Teach
  The students will identify which set has more or fewer members from two sets with 0 to
  10 members.
  NCTM Addenda K Book, pg. 9
MA-KI-01-08 - Investigate Fractional Concepts (Objective)
S - Supporting
  The students will recognize whole and one-half of a region. They will investigate
  dividing a region into two equal parts. Concrete objects should be used.
MA-KI-01-09 - Separate Set Into Two Parts and Name Each Part (Objective)
S - Supporting
  The students will use manipulatives to separate sets of 0 to 10 into two parts and name
  each part of the set.

MA-KI-03 PROBLEM SOLVING (Content Standard)
  State Standard and Benchmark Correlation:
      MAKI.1.5 Act Out or Use Objects to Solve Problems
  PROBLEM SOLVING is an approach for investigating and understanding mathematical
  content. The students will develop and apply strategies to investigate and solve a wide
  variety of problems from both across the curriculum and real-life, practical situations.
  Students will verify and interpret results with respect to the original problem.
  NCTM -   Curriculum & Evaluation Standards for School Mathematics, p. 23.
  MA-KI-03-01 - Problem Solving (Objective)
  T - Teach
      The students will act out or use objects as strategies to solve problems. This could be an
      individual or group activity. Calculators may be introduced as a tool to assist with
      problem solving.

MA-KI-04 MEASUREMENT (Content Standard)
  State Standard and Benchmark Correlation:
      MAKI.1.3 Recognize/Name Penny, Nickel, Dime, Quarter
      MAKI.3.1 Estimate/Measure Length Up to 9 Units
  MEASUREMENT is the process of measuring using actual measuring devices and
  understanding concepts related to units of measurement in both US Customary and metric
  systems. Students will learn how to measure and will understand and apply the attributes of

length, capacity/volume, weight/mass, time, temperature, and money. Estimation activities and connections to everyday situations will be integrated throughout.
NCTM -   Curriculum & Evaluation Standards for School Mathematics, p. 51.
MA-KI-04-01 - Recognize a Penny, Nickel, Dime, and Quarter (Objective)
T - Teach
   The students will recognize a penny, nickel, dime, and quarter using real coins.
MA-KI-04-02 - Concepts of Measurement (Objective)
T – Teach
   The students will use estimation and comparison to investigate measurement concepts relative to length (using non-standard units up to 9 units), weight/mass, and capacity/volume.

MA-KI-05 STATISTICS AND PROBABILITY (Content Standard)
   State Standard and Benchmark Correlation:
      MAKI.5.1 Sort Real Objects to Create Graphs
      MAKI.5.2 Communicate Conclusions From a Set of Data
   Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them.
   DATA ANALYSIS is the process of formulating and solving problems that involve collecting and analyzing data to make decisions and predictions based on that information. Students will collect, organize, construct, read, describe, and interpret displays of data through tables, charts, and graphs. The students will explore concepts of chance by performing simple probability experiments.
   NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 54.
MA-KI-05-01 - Classifying and Sorting (Objective)
T - Teach
   The students will classify and sort objects according to their critical attributes, such as size, shape, color, texture, etc., to demonstrate logical connections.
MA-KI-05-02 - Graphing (Objective)
T - Teach
The students will participate with the class in setting up, reading, and interpreting a variety of pictorial graphs. Students will sort real objects to create graphs and communicate conclusions based on a set of data (i.e., Which has more or less?).
NCTM Addenda Book, pp. 14-18

MA-KI-06 GEOMETRY (Content Standard)
   State Standard and Benchmark Correlation:
      MAKI.2.1 Recognize/Name/Compare/Sort Geometric Shapes
      MAKI.2.2 Select/Use/Communicate Organizational Methods
   GEOMETRY is the exploration of the properties of two- and three-dimensional shapes. The students will develop spatial sense by describing, modeling, drawing, and classifying shapes. They will investigate and predict the results of combining, subdividing, and changing shapes. Students will compare various planar figures using congruency and lines of symmetry. They will informally determine perimeter of basic shapes. The students will relate geometric ideas to numbers and measurement ideas, as well as recognizing and appreciating geometry in their own world.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 48.
MA-KI-06-01 - Planar and Solid Figures (Objective)
T - Teach
    The students will recognize, name, compare, and sort geometric shapes (circles, triangles, rectangles, and squares). (Squares are a specific type of rectangle.) Students will explore three-dimensional shapes (spheres, cubes) and be able to relate them to real-world objects.
    NCTM Addenda Book, pages 19-24
MA-KI-06-02 - Organizational Methods/Geometric Shapes to Solve Problems (Objective)
T - Teach
    Students will select, use, and communicate organizational methods in problem-solving situations using geometric shapes.
    Bridges: shape sorting, geoboards, pattern block activities.

MA-KI-07 ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)
    State Standard and Benchmark Correlation:
        MAKI.4.1 Recognize/Describe/Create 3-Element Patterns
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing.
MA-KI-07-01 - Patterns (Objective)
C - Critical--Assessment Reporting Required
    The students will recognize, describe, and create three-element patterns with concrete objects.
    Example: People, action, object, linear, etc.
    NCTM Addenda Book, pages 1-6

Campbell County School District #1
Gillette, Wyoming

Mathematics - Grade 1

Bridges is the Campbell County School District's adopted math program for kindergarten, first, and second grades. Our students participate in games and activities that help them learn mathematics in a motivating way. Students work in the number corner (calendar) which covers mathematics strands that are taught in first grade. Students explore and learn about mathematics in a hands-on, activity-based program. First-grade students enjoy math and see mathematics in a more positive way.

First-grade students work on the following strands of mathematics: number sense, problem solving, measurement, statistics & probability, geometry, and algebraic concepts & relationships. Our first-grade curriculum is focused on teaching our students the following objectives:

- Understand number conservation and place value.
- Count, read, and write ones, fives, tens, and up to 100.
- Understand place value to tens.
- Understand number relationships.
- Learn addition and subtraction facts to and from 10.
- Learn the concepts of addition and subtraction.
- Develop and apply strategies to solve a variety of problems, including: Make a Picture and Logical Reasoning.
- Measure and weigh objects.
- Compare and measure units of capacity or volume.
- Identify and state the value of coins and a dollar bill.
- Show and read time to the hour and half-hour.
- Read and interpret a variety of graphs.
- Collect and organize information to create graphs, charts, and tables.
- Recognize, describe, and extend linear patterns with at least four different objects.

The following programs may also be used to support Bridges: Rocket Math; Math: the Problem Solver; Read It, Draw It, Solve It; Box It-Bag It; and Math Their Way.

MA-01-01 - NUMBER SENSE AND OPERATIONS (Content Standard)
State Standard and Benchmark Correlation:
MA1.1.1 Use Place Value to Read/Represent Numbers to 99
MA1.1.2 Compare Values of Sets of Objects; Order Numbers
NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of forms. The students will construct number meanings and interpret the multiple uses of numbers by using a variety of physical materials (manipulatives). Students will demonstrate an understanding of our numeration system by relating counting, grouping, and place value concepts. They will compare number values and order sets of numbers.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 38.

MA-01-01-01 - Understand Number Conservation/Value (Objective)
T - Teach
>The students will differentiate when up to 10 objects are placed close together or are widely spaced but are still the same number (number conservation). Students will estimate the number of objects in a given set up to 100. The students will recognize 'more than' and 'less than' in two sets that are organized in the same way in quantities to 20. (Comprehension)

MA-01-01-02 - Count and Write by Ones, Fives, Tens to 100 (Objective)
C - Critical--Assessment Reporting Required
>The students will count and write by ones, fives, and tens to one hundred; or when given a starting number, continue writing numbers up to 100. Students will explore and investigate to the hundreds place and use the appropriate mathematical language (ones, tens, hundreds).
>Student text pages: 249-250, 260, 261-262

MA-01-01-03 - Understand Place Value to Tens (Objective)
C - Critical--Assessment Reporting Required
>The students will identify and demonstrate an understanding of place value for numbers up to 99. It is expected that concepts will be developed using concrete objects, and students will be able to explain place value with their models and diagrams. (Comprehension)
>Student Text Page: 227

MA-01-01-04 - Number Relationships (Objective)
C - Critical--Assessment Reporting Required
>The students will demonstrate an understanding of number relationships. Students will recognize ordinal numbers first through fifth by recording the position of an item. Students will compare number values and order sets of numbers by using numerical sequence to recognize the number that comes before, after, and between, through 100. (Comprehension)

MA-01-01-05 - Part-Whole Relationships (Objective)
T - Teach
>The students will demonstrate the ability to divide a region into two equal parts, and they will understand the concept of one-half. (Application)

MA-01-01-06 - Demonstrate Awareness of Grouping, Fair Shares (Objective)
S - Supporting
>The students will explore, discover, and investigate sharing equally any given quantity. Students will use concrete objects to solve problems.

MA-01-02 - NUMBER OPERATIONS (Content Standard)
>State Standard and Benchmark Correlation:
>>MA1.1.4 Demonstrate Computational Fluency--Add to 10
>NUMBER OPERATIONS includes the varied arithmetical processes that connect students' intuitions and informal language to operations, including the mathematical language and symbols of each operation. The students will develop meaning for the operations of addition, subtraction, multiplication, and division by focusing on concepts and relationships through the use of manipulatives and diagrams. Students will use strategies for math facts and develop fluency in recall. Students will be able to relate the operations to real-world

situations and evaluate the reasonableness of results. They will select and use appropriate computational methods from among mental computation (mental math), estimation, and calculation.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 41.

MA-01-02-01 - Addition Facts to 10 (Objective)

C - Critical--Assessment Reporting Required

The students will compute addition problems of whole numbers with sums through ten in horizontal and vertical notation. The students will demonstrate fluent use of these basic facts. Manipulatives and calculators will NOT be used for computation on the assessment.

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 30 facts in three minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:
- Timed practices should be administered using the same guidelines as the assessment.
- Teachers should use up to 50-fact practice pages that have different combinations and arrangements of the arithmetic facts.
- Rocket Math may be used as a resource.
- Practice on facts should be ongoing throughout the year in a non-threatening environment.
- Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.
- Accuracy should be emphasized over speed.
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording of a student's progress toward the goal should be confidential between teacher, student, and parents.
- Test may be given orally in the event student does not possess the fine motor skills to complete the written test.

NCTM Addenda 1st Grade Book, pages 6-12

MA-01-02-02 - Subtraction Facts (Minuends to 10) (Objective)

C - Critical--Assessment Reporting Required

The students will compute subtraction problems of whole numbers with minuends through ten in vertical and horizontal notation. The students will demonstrate fluent use of these basic facts. Manipulatives and calculators will NOT be used for computation on the assessment. (Knowledge)

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 25 facts in four minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:
- Rocket Math may be used as a resource.
- Timed practices should be administered using the same guidelines as the assessment. Teachers should use practice pages containing 20-50 facts that have different combinations.
- Practice on facts should be ongoing throughout the year in a non-threatening environment.
- Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.

- Accuracy should be emphasized over speed (One- and two-minute speed drills should not be used.)
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording of a students' progress toward the goal should be confidential between teacher, student, and parents.
- Test may be given orally in the event student does not possess the fine motor skills to complete written test.

Student text pages: 71-72, 74, 75-76, 77-78, 79-80, 81-82, 83, 84, 85, 105, 124, 158, 159-160, 161-162, 63, 165-166, 167-168, 169-170, 171-172, 204, 205-206

MA-01-02-03 - Concepts -- Add and Subtract (Objective)

C - Critical--Assessment Reporting Required

Students will demonstrate an understanding of the concepts and processes of addition and subtraction. It is expected that concepts will be developed using concrete objects. The students should be taught and encouraged to use fact strategies. Students may use objects, drawings, and verbal or written communication to demonstrate their understanding.

MA-01-02-04 - Add Multiples of Ten to 50 (Objective)

S - Supporting

The students will compute addition problems of whole numbers involving multiples of ten through 50. Manipulative and calculator use is encouraged in the development of concepts, strategies, and patterns. (Comprehension)

MA-01-02-05 - Subtract Multiples of Ten to 50 (Objective)

S - Supporting

The students will compute subtraction problems involving multiples of ten through 50. Manipulative and calculator use is encouraged in the development of concepts, strategies, and patterns. (Comprehension)

MA-01-03 - PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:
MA1.1.5 Make a Picture/Use Objects to Solve Problems
MA1.1.6 Explain Procedures/Results When Solving Problems

PROBLEM SOLVING is an approach for investigating and understanding mathematical content. The students will develop and apply strategies to investigate and solve a wide variety of problems from both across the curriculum and real-life, practical situations. Students will verify and interpret results with respect to the original problem.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 23.

MA-01-03-01 - Problem Solving - Logical Reasoning (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate the ability to explain how to solve a problem using the critical strategies. At all levels, choosing the appropriate operation should be included. Calculators WILL be used as a computational tool. The explanation should be written, but students may clarify orally. The strategy that is to be emphasized and critically assessed for this objective is: LOGICAL REASONING

MA-01-03-02 - Problem Solving - Make a Picture/Use Objects to Solve Problems (Objective)

C - Critical--Assessment Reporting Required

The students will explain how to solve a problem using the critical strategies. At all levels, choosing the appropriate operation should be included. The explanation should be written, but students may clarify orally. The strategy that is to be emphasized and critically assessed for this objective is: <u>MAKE A PICTURE OR USE OBJECTS TO SOLVE PROBLEMS</u>

    The Problem Solver, I - pages 13, 14, 15, 46, 47, 48, 59, 70

    Read It, Draw It, Solve It, I - pages 67, 98, 111

MA-01-04 - MEASUREMENT (Content Standard)

State Standard and Benchmark Correlation:

    MA1.1.3 Use Coins to Compare Values (More/Less)

    MA1.3.1 Estimation/Measurement of Length to 99 Units

    MA1.3.2 Estimation/Measurement of Capacity w/Non-Standard .Units

    MA1.3.3 Tell Time to Nearest Half-Hour (Analog & Digital)

MEASUREMENT is the process of measuring using actual measuring devices and understanding concepts related to units of measurement in US Customary (inches/pounds). Students will learn how to measure and will understand and apply the attributes of length, capacity/volume, weight/mass, time, temperature, and money. Estimation activities and connections to everyday situations will be integrated throughout.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 51.

MA-01-04-01 - How to Measure and Weigh (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate an understanding of how to measure and weigh objects using actual measuring devices. This will include activities with non-standard units and standard units in US Customary (inches) up to 99 units. Items to be measured should be close to the unit of measure with little or no rounding necessary. The students will estimate and compare objects with greater or lesser mass (weight) using actual measuring devices. Students will work with US Customary units (pound). (Comprehension)

MA-01-04-02 - Identify Coins and Bills and Their Values (Objective)

C - Critical--Assessment Reporting Required

The students will be able to identify and state the value of penny, nickel, dime, quarter, and dollar bill; they will compare values, more/less. (Knowledge)

SAMPLE QUESTION - Teacher Observable:

When shown a collection of currency (penny, nickel, dime, quarter, and dollar), the student will correctly identify each denomination and its value.

MA-01-04-03 - Show and Read Hour and 1/2 Hour on Clock (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate an ability to show and read time to the hour and half-hour, and they will be able to relate time to daily activities. (Comprehension)

Student text pages: 293-294, 297, 299, 300, 303

MA-01-04-04 - Capacity (Objective)

T - Teach

Students will compare, estimate, and measure units of capacity or volume using actual measuring devices. Students will work in US Customary (cups and gallons). They will relate capacity to daily life.

MA-01-05 - STATISTICS AND PROBABILITY (Content Standard)
    State Standard and Benchmark Correlation:
        MA-01-05-01 Collect/Classify Info to Create Graphs/Report Data
        MA-01-05-02 Use Graphs w/Pictures to Report About Data
        MA-01-05-03 Perform/Record Simple Probability Experiments
    Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them.
    DATA ANALYSIS is the process of formulating and solving problems that involve collecting and analyzing data to make decisions and predictions based on that information Students will collect, organize, construct, read, describe, and interpret displays of data through tables, charts, graphs, and tally marks. Students will explore concepts of chance by performing simple probability experiments.
    NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 54
    MA-01-05-01 - Graphing (Objective)
    T - Teach
        The students will form, read, and interpret a variety of graphs including physical graphs, pictorial graphs, tally marks, etc. This may be done as an interdisciplinary cooperative group activity. Students will communicate conclusions about a set of data using graphs with pictures. (Comprehension)
        NCTM Addenda 1st Grade Book, pages 13-17
    MA-01-05-02 - Simple Graphs, Charts, Tables (Objective)
    T - Teach
        The students will collect and organize information and use probability to create and use simple graphs, charts, and tables to represent relationships.

MA-01-06 - GEOMETRY (Content Standard)
    State Standard and Benchmark Correlation:
        MA-01-02-01 Recognize, Name, Compare, and Sort 2D/3D Objects
        MA-01-02-02 Explain Organizational Methods to Solve Problems in 2D/3D
    GEOMETRY is the exploration of the properties of two- and three-dimensional shapes. The students will develop spatial sense by describing, modeling, drawing, and classifying shapes. They will investigate and predict the results of combining, subdividing, and changing shapes. Students will compare various planar figures using congruency and lines of symmetry. They will informally determine perimeter of basic shapes. The students will relate geometric ideas to numbers and measurement ideas, as well as recognizing and appreciating geometry in their own world.
    NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 48.
    MA-01-06-01 - Sort Plane and Solid Figures (Objective)
    T - Teach
        The student will identify and sort plane and solid figures including rectangles, squares, (identified as a specific type of rectangle), circles, spheres, and cubes and communicate (orally or in written form) how they organized the objects. (Comprehension)
        NCTM Addenda 1st Grade Book, pages 19-24

MA-01-06-02 - Lines of Symmetry (Objective)
S - Supporting
The students will investigate lines of symmetry in planar geometric figures and describe similarities and differences of figures.

MA-01-07 - ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)
State Standard and Benchmark Correlation:
MA1.4.1 Manipulatives/Graphics to Create 4-Elem. Patterns
MA1.4.2 Apply Repeating Patterns to Solve Problems
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing.

MA-01-07-01 - Linear Patterns (Objective)
T - Teach
The student will recognize, describe, and extend linear patterns with at least four different concrete objects or representations. This should include discriminating by shapes and spatial concepts (such as color and size). Students will use manipulatives and graphic representations. Exploring number patterns with calculators is encouraged. This objective is assessed within problem-solving (MA-01-03-01). (Comprehension)
NCTM Addenda 1st Grade Book, pages 1-5

Campbell County School District # 1
Gillette, Wyoming
Mathematics - Grade 2

Bridges is the Campbell County School District's adopted math program for kindergarten, first, and second grades. Our students participate in games and activities that help them learn mathematics in a motivating way. Students work in the number corner (calendar) which covers mathematics strands that are taught in second grade. Students explore and learn about mathematics in a hands-on, activity-based program. Second grade students enjoy math and see mathematics in a more positive way.

Second-grade students work on the following strands of mathematics: number sense, problem solving, measurement, statistics & probability, geometry, and algebraic concepts & relationships. Our second-grade curriculum is focused on teaching our students the following objectives:
- Understand place value to hundreds.
- Understand number relationships up to 999.
- Read and recognize ordinal numbers from first to twelfth.
- Count by twos using even numbers to one hundred.
- Recognize and understand fractional parts of a whole.
- Know addition facts from 0 to 20.
- Know subtraction facts from 0 to 18.
- Understand concepts and processes of addition and subtraction.
- Develop and apply strategies to solve a variety of problems including: Guess & Check, and Act Out or Use Objects.
- Compare and measure objects to determine length and weight.
- Compare and measure units of capacity.
- Determine the value for three combined coins and make combinations up to one dollar.
- Read and write time using analog and digital clocks to the nearest five minutes.
- Know and use the days of the week and days of the month.
- Compare and interpret data using bar graphs and Venn diagrams.
- Identify and classify common geometric figures and describe relationships between planar and solid figures (squares, versus cube).
- Analyze and extend patterns.

The following programs may also be used to support Bridges: Rocket Math; Math the Problem Solver; Read It, Draw It, Solve It; Box It - Bag It; and Math Their Way.

MA-02-01 - NUMBER SENSE (Content Standard)
State Standard and Benchmark Correlation:
    MA2.1.1 Use Place Value to Read/Write Numbers to 999
    MA2.1.2 Compare and Order Whole Numbers Up to 999
NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of forms. The student will construct number meanings and interpret the multiple uses of numbers by using a variety of physical materials (manipulatives). Students will demonstrate an understanding of our numeration system by relating counting, graphing, and place value concepts. They will compare number values and order sets of numbers.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 38.

MA-02-01-01 - Understanding Place Value to Hundreds (Objective)
C - Critical--Assessment Reporting Required
The students will identify and demonstrate an understanding of place value for numbers to 999 given a three-digit numeral. It is expected that concepts will be developed with concrete objects, and students will be able to explain place value with models or diagrams. (Comprehension)
NCTM Addenda 2nd-Grade Book, page 18

MA-02-01-02 - Number Relationships (Objective)
C - Critical--Assessment Reporting Required
The students will demonstrate an understanding of number relationships by counting, comparing number values, and ordering sets of numbers up to 999. (Comprehension)

MA-02-01-03 - Count by Twos Using Even Numbers to 100 (Objective)
T - Teach
The students will count by twos using even numbers to one hundred. Students will either orally or in writing count from zero to one hundred by twos, or given a starting even number, continue counting by twos to a given number. (Knowledge)
NCTM Addenda 2nd-Grade Book, pages 11-12

MA-02-01-04 - Recognize Ordinal Numbers First to Twelfth (Objective)
T - Teach
The students will read and recognize the ordinal numbers first through twelfth by identifying the position of a specific object in a series. (Knowledge)

MA-02-01-05 - Fractional Parts: Part - Whole (Objective)
T - Teach
The students will recognize and demonstrate an understanding of unit fractions (1/2, 1/3, and 1/4) of a region when it is divided into two, three or four equal parts. The students will demonstrate an awareness of grouping, fair shares, and/or equal parts. Manipulatives and diagrams will be used to develop concepts and may be used during assessment. (Comprehension)
NCTM Addenda 2nd-Grade Book, pages 30-32

MA-02-01-06 - Identify 1/4, 3/4, 1/3, 2/3 of an Area/Group (Objective)
S - Supporting
The student will recognize 1/4, 3/4, 1/3, and 2/3 of a region or a group of objects when it is divided into equal parts. Manipulatives and diagrams should be used to develop concepts. Students will be able to distinguish a diagram or picture representing these fractional parts. (Knowledge)
NCTM Addenda Book, page 11

MA-02-02 - NUMBER OPERATIONS (Content Standard)
State Standard and Benchmark Correlation:
MA2.1.4 Computational Fluency--Add to 20, Subtract to 10
MA2.1.5 Solve Problems w/Mental Math/Estimation Strategies
NUMBER OPERATIONS includes the varied arithmetical processes that connect students' intuitions and informal language to operations, including the mathematical language and symbols of each operation. The students will develop meaning for the operations of addition, subtraction, multiplication, and division by focusing on concepts and relationships through

the use of manipulatives and diagrams. Students will use strategies for math facts and develop fluency in recall. Students will be able to relate the operations real-world situations and evaluate the reasonableness of results. They will select and use appropriate computational methods from among mental computation (mental math), estimation, and calculation.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 41.

MA-02-02-01 - Addition Facts (Objective)

C - Critical--Assessment Reporting Required

The student will know the addition facts 0 - 20. Manipulatives and calculators may be used to develop patterns and strategies, but **WILL NOT** be used for computation on the assessment. the assessment. (Knowledge)

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 50 facts in 5 minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:

• Rocket Math may be used as a resource.
• Teach fact families
• Timed practices should be administered using the same guidelines as the assessment. Teachers should practice pages containing 20 to 100 facts with different combinations and arrangements of those facts.
• Practice on facts should be ongoing throughout the year in a non-threatening environment.
• Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.
• Accuracy should be emphasized over speed.
• Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
• The recording of a student's progress toward the goal should be confidential between teacher, student, and parents.
• The district assessment test will not be used in practice.

NCTM Addenda Book, pages 14-16

MA-02-02-02 - Subtraction Facts 0 - 18 (Objective)

C - Critical--Assessment Reporting Required

The student will know the subtraction facts 2 - 18 with minuend 5 - 18 and subtrahend 2 - 9. Manipulatives and calculators may be used to develop patterns and strategies, but WILL NOT be used for computation on the assessment. (Knowledge)

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 50 facts in 6 minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:

• Rocket Math may be used as a resource.
• Teach fact families
• Timed practices should be administered using the same guidelines as the assessment. Teachers should use practice pages containing 20 to 100 facts with different combinations and arrangements of those facts.
• Practice on facts should be ongoing throughout the year in a non-threatening environment.
• Students should work toward 100 percent accuracy; students and parents should be

encouraged to practice the basic facts at home.
- Accuracy should be emphasized over speed.
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording of a student's progress toward the goal should be confidential between teacher, student, and parents.
- The district assessment test will not be used in practice.

NCTM Addenda Book, pages 14-16

MA-02-02-03 - Concepts: Addition and Subtraction (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate an understanding of the concepts and processes of addition and subtraction. Students will use mental math fact families and estimation strategies (referent to a group of 10) to solve problems. It is expected that concrete objects will be used to develop concepts. Students should be taught and encouraged to use fact strategies and to evaluate the reasonableness of results. Students may use objects, drawings, and written or verbal communication to demonstrate their understanding.

MA-02-02-04 - Two-Digit Addition (Objective)

S - Supporting

The students will investigate the sums of two-digit addition problems using procedures linked to their understanding of place-value concepts. It is expected that concepts will be developed at the concrete level using manipulatives. Students should be introduced to one-step front-end estimation. Teachers should identify this strategy as front-end estimation.

NCTM Addenda 2nd Grade Book, pages 14-17

MA-02-02-05 - Subtract With Multiples of 10 & Minuends to 90 (Objective)

S - Supporting

The students will investigate subtraction problems involving multiples of ten through ninety. Manipulative and calculator usage is encouraged in the development of strategies and patterns. (Comprehension)

NCTM Addenda 2nd Grade Book, pages 14-17

MA-02-02-06 - Subtraction (Objective)

S - Supporting

Students will investigate the difference of two- and three-digit subtraction problems using procedures linked to their understanding of place- value concepts. It is expected that concepts will be developed at the concrete level using manipulatives. (Comprehension)

NCTM Addenda 2nd Grade Book, pages 14-17

MA-02-03 - PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:

MA2.1.6 Look for Patterns/Guess & Check to Solve Problems

MA2.1.7 Explain Procedures/Results When Solving Problems

PROBLEM SOLVING is an approach to investigating and understanding mathematical content. The student will develop and apply strategies to solve a wide variety of problems, verify and interpret results with respect to the original problem.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 23.

MA-02-03-01 - Problem Solving - Guess and Check (Objective)
C - Critical--Assessment Reporting Required
   The students will demonstrate the ability to explain how to solve a problem using the
   critical strategy:
   GUESS AND CHECK (see Correctives and Enrichments pages - Problem Solving)
   At all levels, choosing the appropriate operation should be included. Calculators will be
   used as a computational tool. The explanation should be written but students may clarify
   orally. All of the following strategies need to be emphasized at the second-grade level:
   a) Logical reasoning
   b) Find or use a pattern
   c) Make a picture or diagram
  *d) Act out or use objects
  *e) Guess and check
   (*Indicates Critical assessment for this grade level.)
MA-02-03-02 - Problem Solving - Act Out or Use Objects (Objective)
C - Critical--Assessment Reporting Required
   The students will demonstrate the ability to explain how to solve a problem using the
   critical strategy:
   ACT OUT OR USE OBJECTS (see Correctives and Enrichments pages - Problem
   Solving)
   At all levels, choosing the appropriate operation should be included. Calculators will be
   used as a computational tool. The written explanation may be clarified orally. All of the
   following strategies need to be emphasized at the second-grade level:
    a) Logical reasoning
   b) Find or use a pattern
   c) Make a picture or diagram
  *d) Act out or use objects
  *e) Guess and check
   (*Indicates Critical assessment at this grade level.)

MA-02-04 MEASUREMENT (Content Standard)
   State Standard and Benchmark Correlation:
      MA2.1.3 Use Coins to Compare Values, Combine to $1
      MA2.3.1 Estimate/Measure Length to Nearest Inch
      MA2.3.2 Estimate/Measure Weight Using Non-Standard Units & US
      MEASUREMENT is the process of measuring using actual measuring devices and
      understanding concepts related to units of measurement in both US Customary and
      nonstandard systems. Students will learn how to measure and will understand the
      attributes of length, capacity/volume, weight/mass, time, temperature, and money.
      Estimation activities and connections to everyday situations will be integrated throughout.
      NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 51.
MA-02-04-01 - Length and Weight (Objective)
C - Critical--Assessment Reporting Required
   The students will compare and measure objects using actual measuring devices. Students
   will apply estimation and measurement or weight to content problems using non-standard
   units.

- Students will determine lengths in US Customary units (inch, feet).
- Students will determine weights in US Customary units (pounds) and in nonstandard units. The students will relate lengths and weights to daily life and identify the best unit of measure to use within a content problem. (Application) The student will demonstrate the ability to measure and weigh objects to the specified units. Some rounding may be required for the measurements.

MA-02-04-02 Length in US (Objective)
S - Supporting

The students will compare and measure objects using actual measuring devices. This will include estimating the length of objects. Students will determine lengths in US Customary units (feet). Students will relate lengths to daily life and identify the best unit of measure to use within a content problem. The student will demonstrate the ability to measure to the specified length for at least ten times. Some rounding may be required for the measurements. (Application)
Student text pages: 125-126

MA-02-04-03 - Capacity (Objective)
T - Teach

The students will compare and measure units of capacity using actual measuring devices. Students will work in US Customary (cups, quarts, gallons). They will relate capacity to daily life and identify the best unit of measure to use within a content problem. The student will identify standard volume containers or state when a certain unit would be used (i.e. a cup when baking or cooking). (Comprehension)

MA-02-04-04 - Money (Objective)
C - Critical--Assessment Reporting Required

The student will combine three coins to find total value. (Application)
Students will use coins to compare the values and make combinations up to one dollar.

MA-02-04-05 - Read/Write Time (Objective)
T - Teach

The students will read and write time using both analog and digital clocks to the nearest five minutes. Students will be able to relate time to daily activities. (Comprehension)

MA-02-04-06 - Days of the Week and Months of the Year (Objective)
C - Critical--Assessment Reporting Required

The students will use a calendar to identify a specific date. Students will be able to relate the calendar to daily activities, seasons, and real-live situations. Students will demonstrate knowledge of the days of the week and the months of the year.
NCTM Addenda 2nd-Grade Book, pages 13-14

MA-02-05 - STATISTICS AND PROBABILITY (Content Standard)
State Standard and Benchmark Correlation:
MA2.1.7 Explain Procedures/Results When Solving Problems
MA2.5.1 Collect/Organize/Report Data w/Graphs/Venn Diagram
MA2.5.2 Use Graphs/Venn Diagrams to Report About Data
MA2.5.3 Equally/Unequally Divided Spinners in Probability
Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them. Data Analysis is the process of formulating and solving problems that involve collecting and analyzing data to make

decisions and predictions based on that information. Students will collect, organize, construct, read, describe, and interpret displays of data through tables, charts, and graphs. Students will explore concepts of chance by performing simple probability experiments.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 54.

MA-02-05-01 - Graphing (Objective)

T - Teach

Students will collect, organize, compare, and interpret data using bar graphs and Venn diagrams. Students will communicate conclusions about a set of data using graphs, pictographs, and Venn diagrams. This can be done as an interdisciplinary, cooperative group activity. (Application)

NCTM Addenda 2nd Grade Book, pages 18-21

MA-02-05-02 - Probability (Objective)

T - Teach

The students will perform and record results from simple probability experiments (for example, coin toss).

NCTM Addenda 2nd Grade Book, pages 22-23

MA-02-06 - GEOMETRY (Content Standard)

State Standard and Benchmark Correlation:

MA2.2.1 Name/Classify/Describe 2D and 3D Geometric Objects

GEOMETRY is the exploration of the properties of two- and three-dimensional shapes. Students will develop spatial sense by describing, modeling, drawing, and classifying shapes. They will investigate and predict the results of combining, subdividing, and changing shapes. Students will compare various planar figures using congruency and lines of symmetry. They will informally determine the perimeter of basic shapes. The students will relate geometric ideas to numbers and measurement ideas, as well as recognizing and appreciating geometry in their own world.   NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 48.

MA-02-06-01 - Relationships Between Planar/Solid Figures (Objective)

C - Critical--Assessment Reporting Required

The students will identify and classify common geometric figures and describe the relationships between planar and solid figures (square, versus cube). (Squares should be classified as types of rectangles.) Students will reproduce figures by copying, drawing, and constructing models. (Comprehension)

NCTM Addenda 2nd Grade Book, pages 25-26

MA-02-06-02 - Lines of Symmetry (Objective)

T - Teach

Students will describe and compare plane geometric figures using lines of symmetry.

MA-02-06-03 - Geometric Transformations (Objective)

S - Supporting

The students will investigate geometric transformations (slides, flips, and turns) of planar figures. (Comprehension)

NCTM Addenda 2nd Grade Book, pages 26-30   Bridges, Unit 4

MA-02-07 - ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)
State Standard and Benchmark Correlation:
MA2.4.1 Manipulatives/Graphics to Describe/Create Patterns
MA2.4.2 Apply Knowledge of Patterns to Solve Problems
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing.
MA-02-07-01 - Analyze and Extend Patterns (Objective)
C - Critical--Assessment Reporting Required
The student will recognize, describe, create, and extend a variety of patterns by using manipulatives, numbers, and graphic representations (growing patterns). Exploring number patterns with calculators is encouraged. This will include finding the missing number in a sequence and identifying odd and even numbers to 100. (Analysis/Synthesis)
NCTM Addenda 2nd-Grade Book, pages 1-5, 11-12

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Campbell County School District #1
Gillette, Wyoming
Mathematics - Grade 3

Scott Foresman-Addison Wesley is the Campbell County School District's adopted math program for third, fourth, fifth, and sixth grades. Our students work to become proficient in a variety of strands in mathematics including: number sense, number operations, problem solving, measurement, statistics and probability, geometry, and algebraic concepts and relationships.

Investigations units may be used instead of the Scott Foresman-Addison Wesley textbook. The following programs may also be used to support Scott Foresman-Addison Wesley: Rocket Math; Math: The Problem Solver; Bridges; Visual Math; and Opening Eyes to Math.

The third grade curriculum is focused on teaching students the following objectives:
- Place value to 999,999.
- Fractional parts of figure/sets to ten.
- Computational fluency of addition and subtraction for facts through 20.
- Estimating and adding of 2- and 3-digit numbers with regrouping.
- Estimating and subtraction of 2- and 3-digit numbers.
- Multiplication of facts 0, 1, 2, 5 and 9 through 5x9.
- Solving problems including: Make an Organized List strategy.
- Compare and measure objects to determine length, weight, and capacity.
- Measure to the nearest ½ inch.
- Read and write time to five- and one-minute intervals.
- Collect, represent, and analyze data in horizontal and vertical bar graphs.
- Predict and record results of simple probability experiments.
- Compare properties of plane and solid figures including: circles, cubes, rectangles, squares, triangles, rectangular prisms, and cylinders.
- Determine perimeter of triangles, squares, and rectangles.
- Understand and identify congruency of shapes.

MA-03-01 - NUMBER SENSE (Content Standard)
State Standard and Benchmark Correlation:
MA.3.1.1 Place Value to Read/Write Numbers Up to 9,999
MA.3.1.2 Compare and Order Whole Numbers Up to 9,999
MA.4.1.7 Recognize Fractions as Parts of a Whole with Area Model
NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of forms. The students will construct number meanings and interpret the multiple uses of numbers by using a variety of physical materials (manipulatives). Students will demonstrate an understanding of our numeration system by relating counting, graphing, and place value concepts. They will compare number values and order sets of numbers.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 38.
MA-03-01-01 - Place Value and Number Relationships (Objective)
C - Critical--Assessment Reporting Required
The students will identify and demonstrate an understanding of place value for numbers up to 9,999. It is expected that concepts will be developed using concrete materials and

that students will show their understanding with models or diagrams both orally and in writing. Students will use the concept of place value to read and write numerals up to 9,999. This will include translating numerals into words and vice versa. Students will demonstrate an understanding of number relationships (<, >, =, not equal, least/greatest) by comparing number values and ordering sets of numbers up to 9,999. (Comprehension)
Student text pages: 51-67, 88

MA-03-01-02 - Fractional Parts of Figure/Set to Tenths (Objective)
C - Critical--Assessment Reporting Required
The students will recognize and show an understanding of the fractions with denominators up to 10ths when given a symmetrical shape (part-whole) or set of congruent items divided into equal parts (part-set). Manipulatives will be used to develop part-whole and part-set concepts. Students will show their understanding with models, diagrams, and explanations. (Knowledge)
Student text pages: 412-413, 424-425, 434

MA-03-01-03 - Concepts of Equivalent Fractions (Objective)
S - Supporting
The students will use manipulatives to explore concepts of equivalency of fractions. The students should use models and diagrams to explain his understanding. Students should not be expected to use the algorithm.
Student text pages: 416-417

MA-03-01-04 - Computational Fluency - Add/Subtract to 20 (Objective)
T - Teach
The students will know addition facts to 20, and they will know subtraction facts to 20.

MA-03-02 - NUMBER OPERATIONS (Content Standard)
State Standard and Benchmark Correlation:
**MA3.1.4 Computational Fluency--Add to 20, Subtract From 20 (teach)
MA3.1.5 +/- 2-3 Digit Numbers, With/Without Regrouping
MA3.1.7 Solve Problems w/Estimation/Front-End Loading/Rounding
MA3.1.8 Explain Procedures/Results When Solving Problems
MA4.1.4 Computational Fluency: Add/Subtract to 20, Multiply 0-10
NUMBER OPERATIONS includes the varied arithmetical processes that connect students' intuitions and informal language to operations, including the mathematical language and symbols of each operation. The students will develop meaning for the operations of addition, subtraction, multiplication, and division by focusing on concepts and relationships through the use of manipulatives and diagrams. Students will use strategies for math facts and develop fluency in recall. Students will be able to relate the operations to real-world situations and evaluate the reasonableness of results. They will select and use appropriate computational methods from among mental computation (mental math), estimation, and calculation.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 41.

MA-03-02-01 - Estimating and Adding 2- & 3-Digit Numbers (Objective)
C - Critical--Assessment Reporting Required
The students will compute two- and three- digit addition problems (two addends). Problems will be in either horizontal or vertical format. This will include adding money with the dollar sign and decimal point. It is expected that concepts will be developed using concrete objects. The students will show an understanding of concepts and processes

using manipulatives, diagrams, and written communication. The students will recognize when an estimate is appropriate and will use a variety of estimation (rounding) and mental computation (mental math) strategies to solve problems. Students will explain and justify their choice of procedures used and will evaluate the reasonableness of results.

Estimation:

• Students will use the estimation strategy of rounding to solve problems.
• Students will explain how they used rounding to get their answers.

Mental Math:

• Students will use mental math computation when practical for selected parts of the problem.
• Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper computations.

NCTM Addenda, 2nd Grade Book, pages 10-15

Student text pages (adding): 96-99, 102-104, 106-112, 114-115

Student text pages (estimation): 68-69, 70-71, 102-104, 108-112, 116-117, 187, 189

NCTM Addenda 2nd Grade Book, pages 14-17

MA-03-02-02 - One-Step Front-end Estimation for Addition (Objective)

T - Teach

The students will be introduced to one-step front-end estimation (front-end loading) for addition.

Student text pages: 136-137, 140, 142

MA-03-02-03 - Estimating and Subtracting 2-3 Digit Numbers (Objective)

C - Critical--Assessment Reporting Required

The students will compute two- and three- digit subtraction problems involving regrouping to the hundreds place and excluding zeros in the minuend. Problems will be in either horizontal or vertical format. This will include subtracting money with the dollar sign and decimal point. Problem situations should include the different forms of subtraction: comparison, part-whole, completion, and take-away. It is expected that concepts will be developed using concrete objects. The students will show an understanding of concepts and processes using manipulatives, diagrams, and written communication. Students will recognize when an estimate is appropriate and will use the estimation strategy of rounding to solve problems. (Comprehension)

Student text pages (subtracting): 158-159, 162-163, 164-165, 166-167,
168-169, 170-173, 174-175, 188-189

Student text pages (estimating): 156-157, 160, 163, 168, 170, 175, 181, 196

NCTM Addenda 2nd Grade Book, pages 14-17

MA-03-02-04 - Multiplication Facts of 0, 1, 2, 5, & 9 thru 5x9 (Objective)

C - Critical--Assessment Reporting Required

The students will know the multiplication facts of 0, 1, 2, 5, and 9 up through 5x9 using the appropriate strategy. It is expected that concepts will be developed using concrete objects and diagrams. This will include both repeated addition and rectangular array models. Students should be encouraged to use fact strategies, and explain procedures used. Manipulatives and calculators should be used to develop patterns and strategies, but WILL NOT be used to perform computations on the assessment.

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 80 facts in four minutes or less with 80 percent accuracy. In using timed tests

in the classroom, teachers need to be cognizant of the following:
- Rocket Math may be used as a resource.
- Timed practices should be administered using the same guidelines as the assessment. Teachers should use practice pages containing 20-100 facts with different combinations and arrangements of those facts.
- Practice on facts should be ongoing throughout the year in a non-threatening environment.
- Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.
- Accuracy should be emphasized over speed.
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording of a student's progress toward the goal should be confidential between teacher, student, and parents.

Formal CRT: Teachers will administer Form A of the district assessment (with Form B as a retest if needed). They will report the PERCENT OF MASTERY for each student. The district assessment test will not be used in practice.

Student text pages: 212-217, 218-219, 220-221

NCTM Addenda 3rd-Grade Book, pages 9-10, 14-15

MA-03-02-05 - Multiplication Facts of Squares, 3, 4, 6, 7, 8 (Objective)

S - Supporting

The students will know the multiplication facts of squares 3, 4, 6, 7, and 8 using the appropriate strategy. Manipulatives and calculators should be used to develop patterns and strategies, but not to perform fact computations.

Student text pages: 240-247

NCTM Addenda 3rd-Grade Book, pages 9-10, 14-15

MA-03-03 - PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:

MA3.01.6 Make Organized List, Break Problems Into Parts

MA3.01.8 Explain Procedures/Results When Solving Problems

PROBLEM SOLVING is an approach to investigating and understanding mathematical content. The student will develop and apply strategies to solve a wide variety of problems, and verify and interpret results with respect to the original problem.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 23.

MA-03-03-01 - Problem Solving - Make an Organized List (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate the ability to explain how to solve a problem using the critical strategy:

MAKE AN ORGANIZED LIST

At all levels, choosing the appropriate operation should be included. Calculators and/or preprinted calculation tools may be used as a computational tool. The explanation must be written. All of the following strategies need to be emphasized at the third-grade level:
- Logical reasoning
- Find or use a pattern
- Make a picture or diagram

- Act out or use objects
- Make an organized list

MA-03-04 - MEASUREMENT (Content Standard)

State Standard and Benchmark Correlation:

MA3.1.3 Use Coins & Bills to Compare; Combine Values to $5

MA3.3.1 Estimation/Measurement of Length in US Customary

MA3.3.2 Estimation/Measurement of Capacity in US Customary

MA3.3.3 Demonstrate Relationships Within US Customary Units

MA3.3.4 Determine Perimeter of Rectangles/Squares With Models

MA3.3.5 Tell AM/PM Time to Nearest Minute (Analog/Digital)

MEASUREMENT is the process of measuring using actual measuring devices and understanding concepts related to units of measurement in the US Customary system. Students will demonstrate how to measure and will understand the attributes of length, capacity/volume, weight/mass, time, temperature, and money. Estimation activities and connections to everyday situations will be integrated throughout.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 51.

MA-03-04-01 - Length/Weight/Capacity (Objective)

C - Critical--Assessment Reporting Required

The students will compare and measure objects using actual measuring devices. This will include estimating the lengths, weights, and capacities of objects.

- Students will determine lengths in US Customary (inch, foot, yard)
- Students will determine weights in US Customary (ounce, pound)
- Students will determine capacity in US Customary (cup, pint, quart, gallon)
- Students will relate lengths, weights, and capacities to daily life and identify the best unit of measure to use within a content problem.
- Students will demonstrate relationships with US Customary units in problem-solving situations.

    Student text pages:

    Length - 436-437, 440-443, 470-473

    Weight - 490-493, 498

    Capacity - 486-487, 488-489, 498

NCTM Addenda Book, pages 14, 23-25

MA-03-04-02 - Length: Measure 1/2 Inch (Objective)

T - Teach

The students will measure items using actual measuring devices. This will include estimating the length of objects. Students will determine lengths in US Customary units (1/2 inch). Students will relate lengths to daily life and identify the best unit of measure to use within a content problem. (Comprehension)

MA-03-04-03 - Money (Objective)

C - Critical--Assessment Reporting Required

Students will recognize, combine the value of, and compare coins and bills up to five dollars. The students will use real money and relate money to daily life. (Application)

QUESTION DESCRIPTION: The students will be asked to give the total value of a group of coins.

Student text pages: 126-129

MA-03-04-04 - Time (Objective)
C - Critical--Assessment Reporting Required
The students will read and write time to five-minute and one-minute intervals, including minutes before and after the hour, A.M., and P.M. Students will relate time to daily activities and read both digital and analog clocks. (Application)
QUESTION DESCRIPTION: The students will be asked to read and write the time shown on a clock to one-minute and five-minute intervals.
Student text pages: 74-77, 86
MA-03-04-05 - Use a Calendar (Objective)
R - Reinforce
The students will use a calendar to identify a specific date. The students will be able to relate the calendar to daily activities, seasons, and real-life situations. Students will demonstrate knowledge of the days of the week and the months of the year. (Application)
   QUESTION DESCRIPTION: The students will be shown a one-month calendar and asked a question about that month.
Example: What date is the second Tuesday?
Student text page: 82-83, 86, 270
   See also Math Routines.

MA-03-05 - STATISTICS AND PROBABILITY (Content Standard)
State Standard and Benchmark Correlation:
   MA3.5.1 Collect/Organize/Compare Data w/Graphs/Venn Diagram
   MA3.5.2 Use Graphs & Venn Diagrams to Report About Data
   MA3.5.3 Predict/Perform/Record Probability Experiments Results
Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them. Data Analysis is the process of formulating and solving problems that involve collecting and analyzing data to make decisions and predictions based on that information. Students will collect, organize, read, construct, describe, and interpret displays of data through tables, charts, and graphs. The students will explore concepts of chance by performing simple probability experiments.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 54.
MA-03-05-01 - Data Analysis (Objective)
C - Critical--Assessment Reporting Required
The students will collect, represent, and analyze data using appropriate graphs including horizontal and vertical bar graphs. Students will draw and state conclusions by interpreting and predicting information from tables, graphs, and charts. This may be done as an interdisciplinary, cooperative group activity. (Analysis)
Student text pages: 10-18, 26-35
NCTM Addenda 3rd-Grade Book, pages 20-25
MA-03-05-02 - Probability (Objective)
C - Critical - Assessment Reporting Required
The students will predict, perform, and record results from simple probability experiments (for example, coin toss).
NCTM Addenda 2nd-Grade Book, pages 499-512

MA-03-05-03 - Venn Diagram (Objective)
R - Reinforce
    The students will organize, report, and communicate conclusions about a set of data using Venn diagrams.

MA-03-06 - GEOMETRY (Content Standard)
C - Critical--Assessment Reporting Required
    State Standard and Benchmark Correlation:
        MA3.2.1 Describe 2D & 3D Geometric Objects & Relationships
        MA3.2.2 Describe/Compare Geometric Objects w/Congruency/Lines
        MA3.3.4 Determine Perimeter of Rectangles/Squares with Models
GEOMETRY is the exploration of the properties of two-and three-dimensional shapes. The students will develop spatial sense by describing, modeling, drawing, and classifying shapes. The students will investigate and predict the results of combining, subdividing, and changing shapes. They will compare various planar figures using congruency and lines of symmetry. They will informally determine perimeter of basic shapes. Students will relate geometric ideas to numbers and measurement ideas, as well as recognizing and appreciating geometry in their own world.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 48.

MA-03-06-01 - Compare Properties of Plane and Solid Figures (Objective)
C-CS - Critical-Assessment at Content Standard
    The students will classify and describe plane and solid figures by their properties. They will communicate their understanding of the geometric shapes and relationships. These will include circles, rectangles, squares (identified as a specific type of rectangle), triangles, cubes, rectangular prisms, and cylinders. (Analysis) The students will determine lines of symmetry in various planar figures.
Student text pages: 322-325, 332-333
NCTM Addenda 3rd-Grade Book, pages 26-30
Resource: GRANDFATHER TANG'S STORY

MA-03-06-02 - Concepts of Perimeter and Congruency (Objective)
C-CS - Critical-Assessment at Content Standard
    The students will investigate the concept of and informally determine perimeter of triangles and rectangles, including squares. They will explore and develop notions about congruency of shapes.

MA-03-06-03 - Right Angles (Objective)
S - Supporting
    The students will explore properties and concepts of right angles, and they will identify them in the environment. This should include connections to 3D real-world objects and planar figures.

MA-03-06-04 - Geometric Transformations (Objective)
S - Supporting
    The students will investigate geometric transformations (slides, flips, and turns) of planar figures. (Comprehension)
NCTM Addenda 2nd-Grade Book, pages 26-30
NCTM Addenda 3rd-Grade Book, page 30

MA-03-07 - ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)
State Standard and Benchmark Correlation:
MA3.4.1 Use Manipulatives, Numbers, Graphics for Patterns
MA3.4.2 Apply Knowledge of Patterns to Solve Problems
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing.
MA-03-07-01 - Understanding Patterns (Objective)
R - Reinforce
The students will recognize, describe, extend, and create patterns by using manipulatives, numbers, and graphic representations. This will include arithmetic sequences. (Analysis/Synthesis)
NCTM Addenda 3rd-Grade Book, pages 1-8

last update 6/25/2009
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Campbell County School District #1
Gillette, Wyoming

Mathematics - Grade 4

Scott Foresman-Addison Wesley is the Campbell County School District's adopted math program for third, fourth, fifth, and sixth grades. Our students work to become proficient in a variety of strands in mathematics including: number sense, number operations, problem solving, measurement, statistics and probability, geometry, and algebraic concepts and relationships.

Investigations units may be used instead of the Scott Foresman-Addison Wesley textbook. The following programs may also be used to support Scott Foresman-Addison Wesley: Rocket Math; Math: the Problem Solver; Visual Math; and Opening Eyes to Math.

The fourth-grade curriculum is focused on teaching students the following objectives:
- Place value and number relationships to 999,999.
- Identify and understand sets of equivalent fractions.
- Add, subtract, and estimate.
- Multiplication facts up to 10 x 10.
- Multiply 3 digits by one digit.
- Division facts up to 9.
- Divide 3 digits by one digit with or without remainders.
- Problem solving – including: Make a Table and Work Backwards strategies.
- Compare and measure to determine length, weight, and capacity using customary units of inch, foot, year, ounce, pound, teaspoon, tablespoon, cup, pint, quart, and gallon.
- Measure to the nearest ½ inch and 1/4 inch.
- Determine the value of and compare coins and bills up to ten dollars.
- Read and write time to the nearest five- and one-minute intervals. Use elapsed time to the nearest minute.
- Collect and analyze data using line graphs. Draw and state conclusions from tables, graphs, charts, and Venn diagrams.
- Perform and record results from simple probability experiments; predict all possible outcomes of a situation or event.
- Identify and describe planar and solid figures.
- Determine perimeter and area of rectangles.
- Recognize, create, and generalize patterns.

MA-04-01 - NUMBER SENSE (Content Standard)
State Standard and Benchmark Correlation:
MA4.1.1 Place Value Concept; Read/Write Numbers to 9,999
MA4.1.2 Compare & Order Whole Numbers
MA4.1.7 Recognize Fractions as Parts of Whole w/Area Model
NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of forms. The students will construct number meanings and interpret the multiple uses of numbers by using a variety of physical materials (manipulatives). Students will demonstrate an understanding of our numeration system by relating counting, graphing, and place value concepts. They will compare number values and order sets of numbers.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 38.

MA-04-01-01 - Place Value and Number Relationships (Objective)

C - Critical--Assessment Reporting Required

The students will identify and demonstrate an understanding of place value for numbers up to 999,999. It is expected that concepts will be reinforced using concrete materials and that students will show their understanding with models or diagrams, both orally and in writing. The students will use the concept of place value to read and write numbers up to 999,999 using words and expanded form. Students will demonstrate an understanding of number relationships (<, >, =, not equal, least/greatest) by comparing number values and ordering sets of numbers up to 999,999. (Comprehension)

Student text pages: 52-57, 62-63, 66-67, 69

Investigations Mathematical Thinking

MA-04-01-02 -Fractions: Equivalency Concepts (Objective)

C - Critical--Assessment Reporting Required

The students will identify and show an understanding of sets of equivalent fractions by using manipulatives or diagrams. Students will recognize commonly used fractions (halves, thirds, fourths) as parts of a whole using an area model. This should be taught and assessed from a concrete level using manipulatives, models, and diagrams. The students will not be required to perform the algorithm. This will include comparing fractions in tenths to decimals in tenths. Students will differentiate among mixed numerals, unit fractions, simple fractions, and whole numbers. They will demonstrate an understanding of what each means by using models, diagrams, and manipulatives. Students will not be expected to convert improper fractions using an algorithm. (Comprehension)

Student text pages: 398-405, 392-393

NCTM Addenda 4th-Grade Book, pages 9-12

Investigations Different Shapes, Equal Pieces

MA-04-01-03 - Translate Written Dollar Amount to Words (Objective)

S - Supporting

The students will correctly read and show an understanding of a written monetary value. (Comprehension)

Shown $36.75 in written form, the student will say thirty-six dollars and seventy-five cents.

MA-04-01-04 - Computational Fluency With Basic Facts (Objective)

T - Teach

The students will know the basic facts and will add to 20 and subtract from 20.

MA-04-02 - NUMBER OPERATIONS (Content Standard)

State Standard and Benchmark Correlation:

MA4.1.4 Computational Fluency: +/- to 20, Multiply by 0-10

MA4.1.5 +/- by Thousands; Multiply 100's by Single Digit

MA4.1.8 Use Estimation Strategies to Solve Problems

MA5.1.2 Computational Fluency with Basic Facts

MA5.1.3 Understand Whole Number Operations

NUMBER OPERATIONS includes the varied arithmetical processes that connect students' intuitions and informal language to operations, including the mathematical language and symbols of each operation. The students will develop meaning for the operations of addition,

subtraction, multiplication, and division by focusing on concepts and relationships through the use of manipulatives and diagrams. Students will use strategies for math facts and develop fluency in recall. Students will be able to relate the operations to real-world situations and evaluate the reasonableness of results. They will select and use appropriate computational methods from among mental computation (mental math), estimation, and calculation. NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 41.

MA-04-02-01 - Add and Subtract; Estimate (Objective)

C - Critical--Assessment Reporting Required

The students will add and subtract whole numbers to thousands. Problems will include regrouping and zeros in the minuend. Problem situations should include the different forms of subtraction: comparison, part-whole, completion, and take-away. Problems will be in horizontal or vertical format. This will include using money with a dollar sign and decimal point. It is expected that concepts will be reinforced using concrete objects, and students will show their understanding of concepts and processes by using manipulatives, diagrams, and written communication. The students will recognize when an estimate is appropriate and will use a variety of estimation (rounding) and mental computation (mental math) strategies to solve problems. Students will explain and justify their choice of procedures used and will evaluate the reasonableness of results. No calculators or prepared calculation aids will be used during assessment. (Comprehension)

Estimation:

a) Students will use the estimation strategy of rounding to solve problems.

b) Students will explain how they used rounding to get their answers.

c) Students will recognize that the words *about* and *approximately* indicate estimation.

Mental Math:

a) Students will use mental math computation when practical even for selected parts of the problem.

b) Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper-computations. (Comprehension)

SAMPLE QUESTION:

	Add:	82	A.	965
		56	*B.	985
		273	C.	869
	+	9	D.	1085
		565		

Student text pages:

Add/Subtract: 96-97, 98-99, 104-124, 128-129, 132-133

Estimation: 98-99, 100-101

Mental Math: 120-121

Investigations Landmarks in the Thousands

MA-04-02-02 - Front-end Estimation With Adjustments (Objective)

T - Teach

Students will be introduced to front-end estimation with adjustments.

Student text pages: 108-109, 124

MA-04-02-03 - Multiplication Facts to 10 x 10 (Objective)

C - Critical--Assessment Reporting Required

The students will identify the products of multiplication facts with zero through ten as

factors. It is expected that concepts will be reinforced using concrete objects and diagrams. This will include both repeated addition and rectangular array models. Students should be encouraged to use fact strategies and explain procedures used. Manipulatives and calculators should be used to develop patterns and strategies but **WILL NOT** be used to perform computations on the assessment.

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 100 facts in five minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:

- Timed practices should be administered using the same guidelines as the assessment. Teachers should use practice pages containing 20-100 facts with different combinations and arrangements of those facts.
- Practice on facts should be ongoing throughout the year in a non-threatening environment.
- Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.
- Rocket Math may be used as a resource.
- Accuracy should be emphasized over speed.
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording of a student's progress toward the goal should be confidential between teacher, student, and parents.

    Formal CRT: Teachers will administer Form A of the district assessment (with Form B as a retest if needed). The district assessment test will not be used in practice.

Student text pages: 120-121, 122-123, 124-125, 127, 132-133, 135

NCTM Addenda 4th-Grade Book, pages 2-4

Investigations Packages and Groups

MA-04-02-04 - Multiply 3 Digit by 1 Digit (Objective)

C - Critical--Assessment Reporting Required

The students will compute the product of a three-digit numeral and a one-digit numeral. It is expected that concepts will be developed using concrete objects. The students will show their understanding by using manipulatives, diagrams, and written communication. The students will recognize when an estimate is appropriate and will use a variety of estimation and mental math strategies. Calculators or prepared calculation aids will not be used during the assessment.   (Comprehension)

SAMPLE QUESTION:

Multiply:	547		A. 556
	x 9		*B. 4923
	----		C. 4924
			D. 4523

Student text pages:

Multiplication: 200-203, 206-207, 210-222, 230-231

Estimation: 204-205, 211, 226

Mental Math: 208, 228-229, 240-241

MA-04-02-05 - Division Facts to 9 (Objective)

C - Critical--Assessment Reporting Required

The students will identify the quotient for division facts with one to nine as factors. It is

expected that concepts will be developed using concrete objects. The students will show their understanding by using manipulatives, diagrams, and written communication. Students will explain the procedures used. Manipulatives and calculators **WILL NOT** be used to perform computations on the assessment. (Knowledge)

ASSESSMENT: The students will demonstrate fluent use of arithmetic facts by being able to complete 100 facts in five minutes or less with 80 percent accuracy. In using timed tests in the classroom, teachers need to be cognizant of the following:

- Timed practices should be administered using the same guidelines as the assessment. Teacher should use practice pages containing 20-100 facts with different combinations and arrangements of those facts.
- Rocket Math may be used as a resource.
- Practice on facts should be ongoing throughout the year in a non-threatening environment.
- Students should work toward 100 percent accuracy; students and parents should be encouraged to practice the basic facts at home.
- Accuracy should be emphasized over speed.
- Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
- The recording to a student's progress toward the goal should be confidential between teacher, student, and parents.

Formal CRT: Teachers will administer Form A of the district assessment (with Form B as a retest if needed).   The district assessment test will not be used in practice.

Student text pages: 166-179

MA-04-02-06 - Divide 3-Digit by 1-Digit With/Without Remainder (Objective)

C - Critical--Assessment Reporting Required

The students will compute division problems involving one-digit divisors and three-digit dividends with or without remainders. It is expected that concepts will be developed using concrete objects. The students will show their understanding of concepts and processes by using manipulatives, diagrams, and written communication. The students will recognize when an estimate is appropriate and will use a variety of estimation strategies. Calculators or prepared calculation aids will not be used during the assessment. (Comprehension)

Student text pages:
    Division: 296-297, 300-314
      Estimation: 302-303, 310-311

MA-04-02-07 Add/Subtract Mixed Numbers With Like Denominators
-- No Regrouping (Objective)

T - Teach

The students will show addition and subtraction of two mixed numerals with common denominators of 10 or less using manipulatives, models, or diagrams. This should be taught and assessed from a concrete standpoint. Students are not expected to perform the operations using an algorithm. Renaming is not expected. (Comprehension)

Addison-Wesley resource text pages: 346, 408-409

MA-04-03 PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:
    MA4.1.6 Explain Choice of Strategies; Justify Results

MA.4.4.1 Patterns

MA.4.4.2 Apply Knowledge of Patterns to Solve Problems

PROBLEM SOLVING is an approach to the investigation and understanding of mathematical content. The students will develop and apply strategies to solve a wide variety of problems, verify and interpret results with respect to the original problem. NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 23.

MA-04-03-01 - Problem Solving Strategy - Make a Table (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate the ability to explain how to solve a problem using the critical strategy: MAKE A TABLE

At all levels, choosing the appropriate operation should be included. Calculators and/or preprinted calculation tools may be used as a computational tool. All of the following strategies need to be emphasized at the fourth-grade level: (Application)

a) Logical reasoning

b) Find or use a pattern

c) Make a picture or diagram

d) Act out or use objects

e) Make an organized list

*f) Make a table

*g) Work backwards

(* Indicates critical assessment for this grade level.)

Creative Publications: The Problem Solver 4

Addison-Wesley Publ: Problem-Solving Experiences 4

NCTM: Curriculum & Evaluation Standards for School Mathematics, pp. 23-25.

CCSD Problem Solving Guide, Grade 4

Student text pages: 4-5, 234-237, 462-463

MA-04-03-02 - Problem Solving Strategy - Work Backwards (Objective)

S - Supporting

The students will demonstrate the ability to explain how to solve a problem using the critical strategy: WORK BACKWARDS

At all levels, choosing the appropriate operation should be included. Calculators and/or preprinted calculation tools may be used as a computational tool. All of the following strategies need to be emphasized at the fourth-grade level: (Application)

a) Logical reasoning

b) Find or use a pattern

c) Make a picture or diagram

d) Act out or use objects

e) Make an organized list

*f) Make a table

*g) Work backwards

(* Indicates critical assessment for this grade level.)

Creative Publications: The Problem Solver 4

Addison-Wesley Publ: Problem-Solving Experiences 4

NCTM: Curriculum & Evaluation Standards for School Mathematics, pp. 23-25.

CCSD Problem Solving Guide, Grade 4

Student text pages: 332-333

MA-04-04 - MEASUREMENT (Content Standard)
State Standard and Benchmark Correlation:
MA4.1.3 Compare Values, Combine Coins/Bills, Make Change
MA4.3.1 Estimate, Measure Length in US Customary Units
MA4.3.2 Estimate, Measure Weight in US Customary Units
MA4.3.3 Estimate, Measure Capacity in US Customary Units
MA4.3.4 Demonstrate Relationships Within US Customary System
MA4.3.6 Compare Seconds/Minutes/Hours; Tell Elapsed Time
MEASUREMENT is the process of measuring using actual measuring devices and
understanding concepts related to units of measurement in the US Customary system.
Students will demonstrate how to measure and will understand the attributes of length,
capacity/volume, weight/mass, time, temperature, and money. Estimation activities and
connections to everyday situations will be integrated throughout.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 51.
MA-04-04-01 - Length, Weight, Capacity, Time (Objective)
C - Critical--Assessment Reporting Required
The students will compare and measure using actual measuring devices. This will include
estimating the object's length, weight, and capacity.
- Students will determine length in US customary units (inch, foot, yard).
- Students will determine weight in US customary units (ounce, pound).
- Students will determine capacity in US customary units (teaspoon, tablespoon, cup,
  pint, quart, gallon).
The students will relate lengths, weights, and capacities to daily life and identify the best
unit of measure to use within a content problem. Students will demonstrate relationships
within the U.S. Customary system, given an equivalence chart in problem-solving
situations. (Application)
Students will read and write time to the nearest five- and one-minute intervals including
before and after the hour, A.M., and P.M. Students will relate time to daily activities and
use both digital and analog clocks. The students will use basic relationships to make
simple conversions (minutes, seconds, hours) to solve problems. Students will use elapsed
time to the nearest minute in problem solving situations.
Student text pages: 74-79, 84, 86-87
Student text pages: 414-415m 416-417, 418-419, 456-461, 503-507, 510-513
MA-04-04-02 - Units of Length--U.S. Customary (Objective)
T - Teach
The students will compare and measure units of length using actual measuring devices.
Students will work in US Customary units (½ and 1/4 inch). They will relate length to
daily life and identify the best unit of measure to use within a content problem.
(Application)
MA-04-04-03 - Relationships Within US and Metric Systems (Objective)
T - Teach
The students will use basic relationships within both the US Customary and metric
systems to solve content problems (not converting between systems). This is to include
basic units of length, capacity, and mass. Students will determine which units are best to
use in everyday situations. Students will use teaspoon, tablespoon, cups, pints, quarts, and
gallons to estimate and measure capacity.

MA-04-04-04 - Money (Objective)
C - Critical--Assessment Reporting Required
   The students will determine the value of and compare coins and bills up to ten dollars. The students will make change to five dollars by using the fewest coins possible (including half-dollar). This will include counting change back using an add-on process. Students will relate money to real-life situations. (Application)
   QUESTION DESCRIPTION:
      Test questions will be of two types:
            a. Counting coins/bills
            b. Selecting appropriate coins/bills
   Student text pages: 126-127, 130-131

MA-04-05 - STATISTICS AND PROBABILITY (Content Standard)
   State Standard and Benchmark Correlation:
      MA4.5.1 Collect/Organize/Compare Data w/Graphs/Charts/Tables
      MA4.5.2 Graphs/Venn Diagrams/Charts/Tables to Report Conclusions
      MA4.5.3 Predict, Perform, Record Results of Experiments
      MA4.5.4 Predict All Possible Outcomes of Situation/Event
Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them.
DATA ANALYSIS is the process of formulating and solving problems that involve collecting and analyzing data to make decisions and predictions based on that information. Students will collect, organize, construct, read, describe, and interpret displays of data through tables, charts, graphs, and Venn diagrams. The students will explore concepts of chance by performing simple probability experiments.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 54.
MA-04-05-01 - Data Analysis (Objective)
C - Critical--Assessment Reporting Required
   The students will collect, represent, and analyze data using appropriate graphs including line graphs. Students will draw and state conclusions by interpreting and predicting information from tables, graphs, charts, and Venn diagrams. This may be done as an inter- disciplinary cooperative group activity. (Analysis)
   Student text page: 6-7, 10-17, 20-21, 26-29
   NCTM Addenda 4th-Grade Book, pages 17-22
   Investigations Changes Over Time
MA-04-05-02 - Probability (Objective)
C - Critical--Assessment Reporting Required
   The students will predict all possible outcomes of a given situation or event. Students will perform and record results from simple probability experiments (for example, coin toss).
   Student text pages: 540-555

MA-04-06 - GEOMETRY (Content Standard)
   State Standard and Benchmark Correlation:
      MA4.2.1 Classify/Describe 2D & 3D Geometric Objects
      MA4.2.2 Understand Images Resulting From Reflections
      MA4.3.5 Determine Area/Perimeter of Rectangles & Squares

GEOMETRY is the exploration of the properties of two-and three-dimensional shapes. The students will develop spatial sense by describing, modeling, drawing, and classifying shapes. Students will investigate and predict the results of combining, subdividing, and changing shapes. They will compare various planar figures using congruency, reflections/flips, slides, lines of symmetry, and parallel, perpendicular, and intersecting lines. They will determine perimeter of basic shapes. Students will relate geometric ideas to numbers and measurement ideas, as well as recognizing and appreciating geometry in their own world.
NCTM - Curriculum & Evaluation Standards for School Mathematics, p. 48.

MA-04-06-01 - Compare Planar and Solid Figures (Objective)
C - Critical--Assessment Reporting Required
   The students will identify, classify, and describe lines, planar and solid figures. They will compare various planar figures using congruency, reflections/flips, slides, lines of symmetry, and parallel, perpendicular, and intersecting lines. Students will classify and describe two- and three-dimensional objects by their attributes, sides, edge, vertices, and faces. These should include circle, rectangle, square (as a specific type of rectangle), triangle, cube, sphere, rectangular prism, cylinder, cone, and pyramid. Students will determine perimeter and area of rectangles (including squares) in problem-solving situations. Students will informally be introduced to area of triangles. The students will select, use, and communicate organizational methods in problem-solving situations, appropriate to grade level.
   Student text pages: 343-347, 352-356, 360-363, 368-369, 370, 371, 373-381
   NCTM Addenda 4th-Grade Book
   Investigations Seeing Solids and Silhouettes
   Chapter 8, pages 344-377
   All Problem Solving, 8-1 through 8-14

MA-04-06-02 - Properties of N-Gons (Objective)
T – Teach
   The students will investigate the properties of n-gons (pentagons, hexagons, octagons) including symmetry and congruency.

MA-04-06-03 - Compare Angles (Objective)
T – Teach
   The students will explore properties and concepts of right angles and will identify them in the environment. This should include investigations with estimating and measuring angles less than 90 degrees (acute) and greater than 90 degrees (obtuse), and their existence in planar and solid figures.
   Student text pages: 350-351
   NCTM Addenda 4th-Grade Book, pages 23-25

MA-04-07 - ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)
   State Standard and Benchmark Correlation:
      MA4.4.1 Patterns
      MA4.4.2 Apply Knowledge of Patterns to Solve Problems
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing.

MA-04-07-01 - Patterns (Objective)
C - Critical - Assessment Reporting Required

The students will describe, extend, create, and generalize geometric and numeric patterns by using manipulatives, numbers, and graphic representations. Students will experience a variety of patterns within the critical skills taught in the fourth-grade curriculum. Students will also extend patterns beyond the given format. This will include numeric sequences such as finding the rule and the Fibonacci sequence. Students will communicate their understanding in writing when given a pattern and use patterns to solve problems.

Example: Extend a pattern: 5, 10, 15, 20 . . . . . If this pattern continues, what number would be on the 9th step?

Student text pages:
   In and Out puzzles: pages 32-33, 42, 112, 121, and 173
   Variety of Patterning: pages 136-137
   Technology extension: page 489

Scott Foresman Teachers Edition:
   Index page E5 for student activities sorted by skill
   Start-up and lessons on Followup activities include patterning.

Investigations Units: Mathematical Thinking at Grade 4,
   Number Patterns, pages 46, 48, 54, and 58
   Geometric Patterns, pages 64, 66, 72, 78, and 83

Additional patterns are on page 85 of the Math Information and Assessment booklet.

Skip Counting: http://www,edhelperblog.com/cgi-bin/geom2.cgi

The Problem Solver 4 - 1987 Creative Publications, ex. 29, 30, 37

Many examples of patterns can be found in <u>Extend Your Thinking</u> blacklines. A few examples are 4-10, 6-3, 8-3, and 12-10.

Campbell County School District #1
Gillette, Wyoming
Mathematics - Grade 5

Scott Foresman-Addison Wesley is the Campbell County School District's adopted math program for third, fourth, fifth, and sixth grades. Our students work to become proficient in a variety of strands in mathematics including: number sense, number operations, problem solving, measurement, statistics and probability, geometry, and algebraic concepts and relationships.

Investigations units may be used instead of the Scott Foresman-Addison Wesley textbook. The following programs may also be used to support Scott Foresman-Addison Wesley: Rocket Math; Math: the Problem Solver; Visual Math; and Opening Eyes to Math.

The fifth-grade curriculum is focused on teaching students the following objectives:
- Place value up to 999,999.
- Read and write decimals to thousandths.
- Identify and understand factors and multiples up to 100.
- Compare and order fractions with like and unlike denominators up to 12.
- Multiply 2- to 4-digit numbers by 2-digit numbers.
- Divide 3- to 4-digit numbers by 1- to 2-digit numbers.
- Add and subtract fractions with unlike denominators.
- Add and subtract whole and decimal numbers.
- Problem solving including: Make it Simpler strategy.
- Measure objects to determine length using US customary units of ½ inch, ¼ inch, and ⅛ inch and metric units of 1 centimeter and 1 mm.
- Measure objects to determine weight using US customary units of ounce, pound, and metric units of gram and kilogram.
- Create bar or line graphs to represent data and determine mean, mode, and median.
- Classify and draw polygons, compare and contrast the attributes of various geometric shapes.
- Represent the idea of a variable within addition and subtraction sentences using whole numbers.

MA-05-01 - NUMBER OPERATIONS AND CONCEPTS (Content Standard)
State Standard and Benchmark Correlation:
MA5.1.1 Place Value to Read/Write Whole Numbers/Decimals
MA5.1.2 Computational Fluency With Basic Facts
MA5.1.3 Understand Whole Number Operations
MA5.1.5 Add/Subtract Decimals to Hundredths
MA5.1.6 Understand Fractions as Parts of Wholes
MA5.1.7 Order/Compare/Add/Subtract Fractions w/Like Denominators
NUMBER OPERATIONS is the arithmetic of whole numbers, fractions, decimals, integers, and rational numbers. Students will apply number theory concepts (factors, multiples, and primes) and use ratios and proportions in solving real-life problems. The students will understand how the basic arithmetic operations are related to one another and will be able to select and use an appropriate method for computing from among mental computation (mental math), paper- and-pencil, or calculator. They will be able to employ a variety of estimation

strategies (including rounding, special products and compatible numbers) to check reasonableness of results and to solve problems.

NCTM - Curriculum & Evaluation Standards for School Mathematics, pages 91-97.

Student Text Pages: 114, 136, 221, 389, 40

NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of equivalent forms. The student will recognize that numbers have multiple representations and develop number sense for whole numbers, fractions, decimals, integers, ratios, and proportions. Students should use concrete materials, diagrams, and calculators to construct number meanings. They will use number sense in comparing rational numbers, performing mental computation, and estimation and in justifying the reasonableness of solutions to problems.

NCTM - Curriculum & Evaluation Standards for School Mathematics, pp.87-90.

MA-05-01-01 - Place Value and Number Relationships (Objective)

C - Critical--Assessment Reporting Required

The students will identify and demonstrate an understanding of place value for numbers up to 999,999. Students will show their understanding with models or diagrams both orally and in writing. The students will use the concept of place value to read and write numbers up to 999,999. Students will demonstrate an understanding of number relationships (<, >, =, not equal, least/greatest) by comparing number values and ordering sets of numbers up to 999,999. (Comprehension)

Student Text Pages: 54-55, 56-57, 60-61

MA-05-01-02 - Decimals to Thousandths (Objective)

C - Critical--Assessment Reporting Required

The students will read and write decimal numerals to thousandths and demonstrate an understanding of the place value concepts using manipulatives, diagrams, and written communication.   Students will demonstrate an understanding of decimal relationships (>, <, =, least/greatest) by comparing decimal values and ordering sets of decimal numbers. Students will compare and order whole and decimal numbers. (Knowledge)

SAMPLE QUESTIONS:
  1) seventeen and four hundredths is what as a number?
        A. 17.4   B. 174   *C. 17.04   D. 17.400
  2) 20.7 is read:
        *A. twenty and seven tenths
         B. two zero point seven
         C. twenty and point seven tenths
         D. twenty point seven tenths

Student text pages: 66-67, 68-69, 70-71, 72-73, 74-75

NCTM Addenda 5th-Grade Book: pages 8-9

MA-05-01-03 - Factors; Multiples (Objective)

C - Critical--Assessment Reporting Required

The students will identify and understand factors and multiples of whole numbers up to 100. They will be able to apply these concepts to solve problems.

Student text pages: Factors - 202-203
                        Multiples - 112-113

MA-05-01-04 - Relationships: Decimals, Fractions (Objective)
T - Teach
   The students will represent fractions in tenths as decimals and vice versa, and they will
   demonstrate an understanding of the relationship between them. Students will use
   manipulatives to investigate and convert improper fractions to mixed numerals or whole
   numbers and vice versa. (Comprehension)
   Student text pages: 322-323, 324-325, 330-331, 336-337
MA-05-01-05 - Add/Subtract and Compare and Order Proper Fractions (Objective)
C - Critical--Assessment Reporting Required
   The students will show a complete understanding of equivalence. They will compare and
   order unit fractions and perform the operations of addition and subtraction of **unlike/like**
   denominators up to twelve. Students should use manipulatives, diagrams, or models as
   needed to understand concepts and explain solutions. Students should compare fractions
   in relationship to 0, 1/2, and 1. (Comprehension) Students should not be required to
   perform the algorithm. Simple denominators less than 12 that can easily be demonstrated
   with manipulatives should be used. Simplifying answers should be encouraged but not
   required for mastery of objective. Problems will be in horizontal or vertical format.
   (Comprehension)
   Student text pages: 348-351, 352-353, 335-337, 358-363, 366
   RESOURCES: Explorer calculator to verify answers during instruction only.
   Student text pages: can be integrated with 314-317
MA-05-01-06 - Multiply 2- to 4-Digit Numbers by 2-Digit Numbers (Objective)
C - Critical--Assessment Reporting Required
   The students will multiply a two- to four-digit number by a two-digit number and by
   multiples of 10. Problems will be in horizontal or vertical format. The students should be
   able to estimate products for a reasonable answer using mental math, distributive property
   (break apart), and rounding strategies..
   Estimation:
   • Students will use the estimation strategy of rounding to solve problems.
   • Students will explain how they used rounding to get their answers.
   Mental Math:
   • Students will use mental math computation when practical, even for selected parts of
     the problem.
   • Students will be able to explain the procedures they are using with either oral or written
     justification.
   • Students will use mental math skills to justify the reasonableness of solutions when
     using technology or pencil-and-paper computations.
   It is expected that concepts will be developed using concrete objects. Students will show
   their understanding by using manipulatives and diagrams. (Comprehension)
   Relationships: Students will be able to demonstrate an understanding of whole number
   operations by explaining the relationship between the operations of addition, subtraction,
   multiplication, and division. (Repeated addition and opposite operations,)
   SAMPLE QUESTIONS:
   <u>Multiply</u>:   247   A. 2223
                        X 36   B. 75,582
                        ------   *C. 8892

D. 77,586

Rounding: Estimate the product of 53-75

          A. 3500
        *B. 4000
          C. 4400
          D. 4200

Mental Math: Use mental math (break apart) to find the product.

7 x 89	3 x 195
7 x (80 + 9)	3 x (200 - 5)
(7 x 80) + (7 x 9)	(3 x 200) - (3 x 5)
560 + 63	600 - 15
623	585

Student text pages: 111-127
  Mental Math: 112-113
  Rounding: 114-115
  Break Apart: 122-123
  Special Numbers: Multiples of 10 - See Inservice workshops B5
  RESOURCES: Calculators to verify answers during instruction only.

MA-05-01-07 - Divide 3- or 4-digit number by 1- or 2-digit number (Objective)

C - Critical--Assessment Reporting Required

The students will compute division problems involving one-digit divisors and three- or four-digit dividends with or without remainders. The students will compute the quotient of three- or four-digit whole numbers divided by all two-digit divisors through 20 and multiples of ten with or without a remainder. Students will write remainders as a remainder and as a fraction. The students should be able to estimate quotients for a reasonable answer using compatible numbers, special quotients, and rounding strategies.

Estimation:
• Students will use the estimation strategy of rounding to solve problems.
• Students will explain how they used rounding to get their answers.

Mental Math:
• Students will use mental math computation when practical, even for selected parts of the problem.
• Students will be able to explain the procedures they are using with either oral or written justification.
• Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper computations.

It is expected that concepts will be taught using concrete objects. The students will show his understanding of concepts by using manipulatives and diagrams. (Comprehension)

Relationships: Students will demonstrate an understanding of whole number operations by explaining the relationship between the operations of addition, subtraction, multiplication, and division. (Repeated subtraction and opposite operations

SAMPLE QUESTION:

    ‾‾‾‾‾
  5)347   A. 69 r.4
               B. 68 r.9/5
               *C. 69 r.2/5

D. 69 r.7
Student text pages: 170-171, 172-173, 174, 178-179, 180-181,
182-185, 186-189, 222-223, 230-237
Compatible numbers: 172-173, 174, 224-225, 226-228
Special quotients: 170-171
RESOURCE: Explorer calculators to verify answers during instruction only.

MA-05-01-08 - Add and Subtract Whole and Decimal Numbers (Objective)

C - Critical--Assessment Reporting Required

The students will add and subtract combinations of decimal numbers to hundredths and whole numbers. Problems may be in horizontal or vertical format. Students should be able to estimate and evaluate a reasonable answer using compatible numbers and rounding strategies.(Comprehension)

Student text pages: 82-87, 90-97, 98-99

NCTM Addenda 5th-Grade Book, pages 8-10

RESOURCE: Calculators may be used to verify answers during instruction only.

MA-05-01-09 - Basic Facts for Operations (Objective)

R - Reinforce

The students will maintain fluency with basic arithmetic facts for addition, subtraction, multiplication, and division. The goal is to complete 100 facts within five minutes or less with 80 percent accuracy.

ASSESSMENT: In using timed tests in the classroom, teachers need to be cognizant of the following:

• Timed practices should be administered using the same guidelines as the assessment. Teachers should use practice pages containing 20-100 facts with different combinations and arrangements of those facts.
• Rocket Math may be used as a resource.
• Practice on facts should be on-going throughout the year in a non-threatening environment.
• Students should work toward 100 percent accuracy.
• Students and parents should be encouraged to practice the basic facts at home.
• Accuracy should be emphasized over speed.
• Teachers should use classroom techniques that minimize anxiety and/or feelings of failure for students.
• The recording of students' progress toward the goal should be confidential between teacher, student, and parents.

MA-05-01-10 - Addition and Subtraction (Objective)

R - Reinforce

The students will compute two- to four- digit addition and subtraction problems. Problems will include regrouping and zeros in the minuend. Problem situations should include the different forms of subtraction: comparison, part-whole, completion, and take-away. The students will recognize when an estimate is appropriate and will use a variety of mental math and estimation strategies in solving problems. Problems will be in horizontal or vertical format. (Comprehension)

Estimation:

• Students will use the estimation strategy of rounding to solve problems.
• Students will explain how they used rounding to get their answers.

Mental Math:
- Students will use mental math computation when practical, even for selected parts of the problem.
- Students will be able to explain the procedures they are using with either oral or written justification.
- Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper computations.
- Student text pages: 81-89

Mental Math, pages 11, 13, 59, 123

MA-05-01-11 - Front-End Estimation (Objective)

S - Supporting

Students will be introduced to front-end estimation with adjustment.
Student text pages: 82-83

MA-05-01-12 - Multiply Two Decimals (Objective)

S - Supporting

The students will multiply two decimals to tenths and hundredths. (Comprehension)
Student Text Pages: 144-149, 150-151, 439

MA-05-03 - PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:
MA5.1.4 Estimating & Problem Solving; Explain Strategies, Justify Results
MA5.4.2 Apply Knowledge of Patterns to Solve Problems

PROBLEM SOLVING is the process by which students experience the power and usefulness of mathematics in the world around them. It is also a method of inquiry and application. The student will develop the ability to understand and apply a variety of strategies (e.g. Make It Simpler, Make a Table, Look for Patterns) and learn to evaluate appropriate strategies for a given situation.   The students will utilize computers and calculators as problem-solving tools. The students should frequently work cooperatively in small groups to solve problems.
NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 75-77.

MA-05-03-01 - Problem Solving Strategy - Make it Simpler (Objective)

C - Critical--Assessment Reporting Required

The students will demonstrate the ability to explain how to solve a problem using the critical strategy: MAKE IT SIMPLER. At all levels, choosing the appropriate operation should be included. Calculators and/or preprinted calculation aids may be used during instruction and assessment.

All of the following strategies need to be emphasized at the fifth-grade level: (Application)
- Logical reasoning
- Find or use a pattern
- Make a picture or diagram
- Act out or use objects
- Make an organized list
- Make a table
- Work backwards
*• Make it simpler

(* Indicates critical assessment for this grade level.)

The explanation must be written.

MA-05-04 - MEASUREMENT (Content Standard)
State Standard and Benchmark Correlation:
MA5.3.1 Estimate/Measure Length in US Customary Units
MA5.3.2 Estimate/Measure Weight in US Customary Units
MEASUREMENT is the estimation and selection of appropriate units and tools to determine length, weight, money, time, and capacity. The students will develop an understanding--rather than the rote memorization--of formulas, and he will acquire estimation strategies that relate to familiar personal experiences.
NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 116-117.
MA-05-04-01 - Length and Weight (Objective)
C - Critical--Assessment Reporting Required
The students will compare and measure objects using actual measuring devices. This will include estimating the lengths and weights of objects. Students will use a ruler to measure objects to a given degree of accuracy both in US Customary units (1/2 ", 1/4", 1/8") and metric units (1 cm and 1 mm).
• Students will determine lengths in US Customary units (feet, yards, and miles).
• Students will determine weights in US Customary units (ounce, pound) and in metric units (gram, kilogram).
• Students will relate lengths and weights to daily life and identify the best unit of measure to use within a content problem. (Application)
ASSESSMENT DESCRIPTION: Teacher Observable
Student text pages: 388-389, 440-441, 500-501, 502-503
NCTM Addenda 5th-Grade Book: pages 11-12
MA-05-04-02 - Capacity (Objective)
T - Teach
The students will estimate, compare and measure units of capacity using actual measuring devices. Students will work in US Customary units (cup, pint, quart, gallon, tablespoons, teaspoons) and in metric units (liter, milliliter). They will relate capacity to daily life and identify will relate the best unit of measure to use within a content problem. (Application)
Student text pages: 510-511, 512-513
MA-05-04-03 - Relationships Within US and Metric Systems (Objective)
S - Supporting
The students will use basic relationships within both the US Customary and metric systems to solve content problems (not converting between systems). This is to include basic units of length, capacity, and mass. Students will determine which units are best to use in everyday situations.
Student text pages: 514-515
MA-05-04-04 - Money (Objective)
R - Reinforce
The students will determine the value of and compare coins and bills up to $10. They will make change to $10 using the fewest coins possible. This will include counting change back using an add-on process. The students will relate money to real-life situations. (Application)
Student text pages: 96-97, 104, 123, 153, 157, 179, 445

MA-05-04-05 - Understand Time Conversion Facts (Objective)

T - Teach

The students will demonstrate an understanding of the relationships among basic units of time (second, minute, hour, day, week). The students will be able to relate time to daily activities. This will include using elapsed time to the nearest minute and making conversions that are practical and appropriate to everyday use. Calculators may be used for the computations, and students should be able to demonstrate an understanding of the use of the integer division key to make conversions. (Application)

Student text pages: 21, 38, 87, 153, 383, 393, 430, 475, 517

MA-05-05 - STATISTICS AND PROBABILITY (Content Standard)

State Standard and Benchmark Correlation:

MA5.5.1 Bar Graphs for Categorical Data

MA5.5.2 Find/Interpret Mode for Data Sets

Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them.

DATA ANALYSIS is the process of formulating and solving problems that involve the systematic collection, organization, interpretation, and analysis of information. Students will construct, read, and interpret tables, charts, and graphs. They will make inferences and convincing arguments based on the data. Students will generate new information and hypothesize situations based on the analysis. Students will explore probability in real-world situations by devising and performing experiments. They will compare experimental and theoretical probabilities and use them to make predictions.

NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 105-111.

MA-05-05-01 - Create Bar or Line Graph to Represent Data (Objective)

C - Critical--Assessment Reporting Required

The students will collect, represent, analyze, and interpret data including mean, median, and mode to answer given questions by creating bar and line graphs. Students will draw and state conclusions to solve problems using tables, charts, and graphs. Students should explore the use of software to organize and display data. This may be done as an interdisciplinary cooperative group activity. (Analysis)

Student text pages: 6-11, 12-13, 16-17, 26-29, 30-31, 190-192, 258-259

NCTM Addenda 5th-Grade Book, pages 9-10, 16-23

MECC Software: Math Keys

MA-05-05-02 - Experiments and Predicting Outcomes (Objective)

T - Teach

Students will predict the probable outcome of simple experiments and compare their predictions to the actual outcome by performing the experiment.

Student text pages: 546-547, 548-549, 550-551, 554-555, 556-557, 558-559

NCTM Addenda 5th-Grade Book, pages 16-23

MA-05-06 - GEOMETRY (Content Standard)

State Standard and Benchmark Correlation:

MA5.2.1 Describe/Draw/Classify 2-D Figures

MA5.2.3 Use Congruency/Lines of Symmetry; Compare Objects

MA5.3.5 Area/Perimeter of Triangles/Rectangles/Squares

GEOMETRY - The students will discover relationships and develop spatial sense by constructing, drawing, describing, measuring, visualizing, comparing, transforming, and classifying one-, two-, and three-dimensional geometric figures. Students will select and use appropriate methods, tools, and units to solve problems involving angle measure, perimeter, circumference, area, and volume. The students will make conjectures about geometric figures based on concepts involving transformations, congruency, and similarity.

NCTM - Curriculum & Evaluation Standards for School Mathematics, p.112.

MA-05-06-01 - Polygons (Objective)

C - Critical--Assessment Reporting Required

The students will classify, describe, and draw parallelograms, quadrilaterals and other polygons using acute, obtuse, and right angles, parallel and perpendicular lines, and symmetry. This will include using appropriate methods and tools (protractor, compass, rulers, etc.) to measure and draw. Given similar and congruent shapes, students will make conjectures about the relationships. This will include comparing and contrasting the attributes of various geometric shapes. The students will solve problems involving the area and the perimeter of polygons including squares, rectangles, and triangles. This will include using appropriate units of measure. The concept of area of a triangle should be developed based on squares and rectangles. Squares should be identified as specific types of rectangles. Students will communicate organizational methods used in these problem-solving situations. (Comprehension)

Student text pages:
   Lines: 270-271
   Angles: 270-271, 272-273, 274-275
   Congruent & Similar - 284-285, 286-287, 289
   Area & Perimeter: 437, 450-451, 464-465, 466-467, 468-469, 470-471
NCTM Addenda 5th-Grade Book, pages 24-31

MA-05-06-02 - 3-D Shapes (Objective)

R - Reinforce

The students will classify, describe, and draw three-dimensional geometric shapes including rectangular prisms, spheres, cylinders, cones, and square and triangular pyramids.

Student text pages: 276-277

MA-05-06-03 - Similarity, Congruence, and Transformations (Objective)

S - Supporting

Students will investigate concepts related to the symmetry, similarity, and congruence of geometric figures. The students will investigate geometric transformations (translations, rotations, and reflections) of planar figures.

Student text pages: 284-285, 286-287
NCTM Addenda 5th-Grade Book, pages 2-3

MA-05-07 - ALGEBRAIC CONCEPTS AND RELATIONSHIPS (Content Standard)

C - Critical--Assessment Reporting Required

State Standard and Benchmark Correlation:
   MA5.4.1 Patterns
   MA5.4.2 Apply Knowledge of Patterns to Solve Problems
   MA5.4.3 Represent Variables Within Addition/Subtraction

PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing. Students will explore algebraic concepts in informal ways (emphasizing physical models, data, and graphs) to prepare for the formal study of algebra. They will be able to generalize number patterns and develop an understanding of the concepts of variables, expressions, and equations.
NCTM Standards, pages 102-104

MA-05-07-01 - Patterns (Objective)

C-CS - Critical- Assessment at Content Standard

The students will recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. This will include arithmetic sequences. The focus should be on extending students' ability to generalize and interpret patterns involving numbers, shapes, data, and graphs within problem-solving situations. Students will communicate their understanding in writing and use patterns to solve problems. (Application)
Student text pages: 22-24, 244-245, 472-473
NCTM Addenda 5th-Grade Book: pages 3-7

MA-05-07-02 - Variables   (Objective)

C-CS - Critical- Assessment at Content Standard

Students will represent the idea of a variable as an unknown quantity, a letter, or a symbol within addition and subtraction sentences using whole numbers.
Student text pages - 55, 63, 73, 86-87, 91, 96, 102, 169, 185, 201, 205, 371, 472-473
        Algebra - pages 22-23, 244-245, 472-473
     Algebra readiness - pages 55, 57, 53, 73, 77, 86, 87, 91, 96, 102, 113, 137, 145, 157, 169, 174, 185, 201, 205, 223, 227, 255, 277, 309, 325, 349, 371, 373, 391, 407, 445, 447, 457, 459, 471, 491, 495, 513, 531.

last update 6/25/2009
pc

Campbell County School District # 1
Gillette, Wyoming

Mathematics - Grade 6

Scott Foresman-Addison Wesley is the Campbell County School District's adopted math program for third, fourth, fifth, and sixth grades. Our students work to become proficient in a variety of strands in mathematics including: number sense, number operations, problem solving, measurement, statistics and probability, geometry, and algebraic concepts and relationships.

Connected Math units may be used instead of the Scott Foresman-Addison Wesley textbook. The following programs may also be used to support Scott Foresman-Addison Wesley: Rocket Math; Math: The Problem Solver; Visual Math; and Opening Eyes to Math.

The sixth-grade curriculum is focused on teaching students the following objectives:
- Demonstrate an understanding between decimals, fractions, and percents.
- Identify prime numbers and find the prime factorization of numbers to 100.
- Divide 2-digit numbers with or without remainders.
- Add and subtract mixed numbers and fractions.
- Multiply fractions using manipulatives, models, or diagrams.
- Multiply decimals using 1- or 2-digit decimals by whole numbers and by powers of 10.
- Problem solving including: Guess and Check strategy.
- Compare and measure objects using US Customary units of 1/8 inch and 1/16 inch and metric units of 1 mm.
- Determine weights in US Customary units of pound and ounce, and metric units of grams, and kilograms.
- Determine capacity in US Customary units of cup, pint, quart, gallon, and in metric units of liter and milliliter.
- Conversions of US measurement and time.
- Interpret graphs and circles.
- Recognize and predict the probability outcome of simple experiments.
- Classify and draw representations of a variety of two-dimensional polygons including triangles, squares, and rectangles.
- Determine relationships of geometric shapes using concepts of symmetry, similarity, and congruence.
- Determine perimeter and area of regular polygons such as squares, rectangles, and parallelograms.
- Describe a constant rate of change when solving problems.

MA-06-01 - NUMBER SENSE (Content Standard)
    State Standard and Benchmark Correlation:
        MA-06-01-01 Place Value to Read/Write Decimals to 1000ths
        *MA6.1.4 Explain Estimation & Problem Solving Strategies (taught)
        *MA6.105 Prime/Composite Numbers; Prime Factorization (taught)
        *MA6.106 Fractions, Mixed Numbers, Improper Fractions   (taught)

**MA6.107 Add/Subtract Mixed Numbers, Like Denominators (taught)
**MA6.1.8 Repeated Multiplication in Exponential Form (taught)

NUMBER SENSE is the ability to understand, represent, and use numbers in a variety of equivalent forms. The students will recognize that numbers have multiple representations and develop number sense for whole numbers, fractions, decimals integers, ratios, and proportions. Students should use concrete materials, diagrams, and calculators to construct number meanings. They will use number sense in comparing rational numbers, performing mental computation and estimation, and in justifying the reasonableness of solutions to problems.

NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 87-90.

MA-06-01-01 Relationships: Decimals, Fractions, Percents (Objective)

C - Critical--Assessment Reporting Required
The students will represent fractions in tenths and hundredths as decimals and percents and vice versa. Students will demonstrate an understanding of the relationship between them.
Student text pages: 296-299, 548-559
Review from last year's Masters, page 19

MA-06-01-02 - Place Value and Number Relationships (Objective)

T - Teach
The students will explore place value concepts and symbolic and written notation to numbers from the 1000ths to the millions. The students will show their understanding with models or diagrams both orally and in writing. Students will use the concept of place value to read and write numbers from the 1000ths up to the millions in words, standard, and expanded form. Students will demonstrate an understanding of number relationships (<, >, =, not equal, least/greatest) by comparing number values and ordering sets of numbers up to millions. (Comprehension)
Student text pages: 62-65, 70-73

MA-06-01-03 - Estimation of Sums and Differences (Objective)

T - Teach
The students will use a variety of mental computation (mental math) and estimation techniques to compute sums and differences for whole numbers, mixed numbers, and decimals.
Estimation:
• Students will explain how they use the strategy to get their answers.
• Students will compare two different methods of estimation and explain the difference.
Estimation methods text pages:
    Rounding - pages 158-160
       Front-end with adjusting - pages 84-86
         Compatible numbers - pages 158-160
Mental Math:
• Students will use mental math computation when practical, even for selected parts of the problem.
• Students will be able to explain the procedures they are using with either oral or written justification.
• Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper computation.

Mental Math Methods text pages:
    Break apart (distributive property) - pages 80-81
    Compatible numbers - pages 80-81
    Compensation - pages 80-81
MA-06-01-04 - Factors; Multiples (Objective)
R - Reinforce
    The students will identify and understand factors and multiples of whole numbers. They
    will be able to apply these concepts to solve problems.
    Student text pages: 274-276, 280, 270-272, 315
MA-06-01-05 - Prime Numbers; Prime Factorization (Objective)
T - Teach
    The students will identify and understand prime and composite numbers. The students will
    write repeated multiplication to find the prime factorization of numbers to 100. Students
    will investigate concepts of powers and writing answers in exponential form.
    Student text pages: 74-77, 270-272

MA-06-02 - NUMBER OPERATIONS (Content Standard)
    State Standard and Benchmark Correlation:
        MA6.1.2 Multiply Decimals; Divide Whole Numbers, Decimals
        MA6.1.7 Add/Subtract Mixed Numbers, Like Denominators
NUMBER OPERATIONS is the arithmetic of whole numbers, fractions, decimals, integers,
and rational numbers. Students will apply number theory concepts (factors, multiples, and
primes) and use ratios and proportions in solving real-life problems. The students will
understand how the basic arithmetic operations are related to one another and will be able to
select and use an appropriate method for computing from among paper-and-pencil, calculator,
and mental computations; mental math, break apart (distributive property), and compatible
numbers. They will be able to employ a variety of estimation strategies (including rounding
and compatible numbers) to check the reasonableness of results and to solve problems.
Student text pages:
    Mental Math: 80-82
      Estimation: 66-68, 88-90, 142-144, 158-160, 360-362
NCTM - Curriculum & Evaluation Standards for School Mathematics, pages 91-97
MA-06-02-01 - Subtract With Regrouping and Zeros in Minuend (Objective)
R - Reinforce
    The students will estimate and compute subtraction problems involving regrouping and
    zeros in the minuend. (Comprehension)
    Student text pages:
    Review from last year's Masters, page 1
MA-06-02-02 - Multiply 4-Digit by 2-Digit Number (Objective)
R - Reinforce
    The students will estimate and multiply a four-digit number by a two-digit number.
    Students will multiply by multiples and powers of ten. Problems will be in horizontal or
    vertical format. Students will be able to estimate products for a reasonable answer using
    mental math, distributive property (break apart), and rounding strategies.
    (Comprehension)
    Student text pages:

Review from last year's Masters, page 3
    Estimation: Rounding - text pages 88-90
                      Compatible numbers - pages 88-90
    Mental Math**:** Distributive property (break apart), pages 80-81
                      Compatible numbers - pages 80-81
                      Compensation - pages 80-81

MA-06-02-03 - Divide by 2-Digit Number (with or without remainder) (Objective)

C - Critical--Assessment Reporting Required

The students will compute the quotient of three- and four-digit whole numbers or decimals numbers (10ths and 100th's) divided by a two-digit whole number with or without a remainder. It is expected that concepts will be developed using concrete objects. The students will show their understanding of concepts and processes using manipulatives and diagrams. The students will estimate quotients and will evaluate the reasonableness of the answer. Mental Math strategies should be encouraged when appropriate.

<u>Estimation</u>:
• Students will explain how they use the strategy to get their answers.
• Students will compare two different methods of estimation and explain the difference.
Estimation methods - student text pages:
Rounding - text pages 88-90, 158-160
Compatible numbers - text pages 88-90, 158-160

<u>Mental Math:</u>
• Students will use mental math computation when practical even for selected parts of the problem.
• Students will be able to explain the procedures they are using with written justification.
• Students will use mental math skills to justify the reasonableness of solutions when using technology or pencil-and-paper computation.
Mental Math Methods - text pages:
    Compatible numbers - pages 80-81
    Compensation - page 81
        Distributive Property to break numbers apart, text pg.81
    Special products (multiples of 10, 100, 1000) 187-188
RESOURCE: Explorer calculator for verifying answers during instruction only
Addison-Wesley text, 1991: chapter 4, Reteaching blackline masters
    Building Thinking Skills blackline masters
    Challenges blackline masters
    SFAW text - chapter 2, lessons 2-5, 2-7

MA-06-02-04 - Add and Subtract Mixed Numbers and Fractions (Objective)

C - Critical--Assessment Reporting Required

The students will add and subtract a combination of fractions and mixed numbers with like and unlike denominators. The students will demonstrate their understanding using manipulatives, models, and/or diagrams which may be used on assessment. Students will use manipulatives to investigate and convert improper fractions to mixed numbers or whole numbers and vice versa. Students will use estimation and evaluate the reasonableness of answers. The students will subtract a proper fraction from a whole number. (Simplify answer) (Comprehension)
Student text pages: 316-353

RESOURCE: Explorer calculators during instruction only
Addison-Wesley text, 1991, Addition & Subtraction of Fractions, pp. 206-207
See attached review master 7-9

MA-06-02-05 - Concepts--Multiply Fractions (Objective)

S - Supporting
The students will demonstrate an understanding of the product of two fractions in oral and written form by using manipulatives, models, and/or diagrams. Students should not be expected to use an algorithm to compute. Manipulatives or diagrams should be used in used in teaching and may be used for assessment. (Comprehension)
Student text pages: 368-370
RESOURCE: Explorer calculators during instruction only
Addison-Wesley text, 1991, Multiplication of Fractions, pp. 220-221
See attached review master 8-2

MA-06-02-06 - Add and Subtract Mixed Decimals (Objective)

R - Reinforce
The students will add and subtract two mixed-decimal numbers. Manipulatives should be used. Problems will be in vertical or horizontal format. This will include estimating and rounding. Students will order and compare decimals whole-number combinations. (Comprehension)

MA-06-02-07 - Multiply Decimals (Objective)

C - Critical--Assessment Reporting Required
The students will multiply two one- or two-digit decimals by decimals and by whole numbers, and by powers of 10 in computation and problem-solving situations. Manipulatives should be used. Students will use mental math and rounding strategies to estimate products to the nearest whole numbers. Students will estimate products to the nearest whole number and evaluate the reasonableness of answers. Problems will be in horizontal and vertical format. (Comprehension)
Example - Multiplication by multiples and powers of 10:

$2.3 \times 1000 =$ a. 23000
*b. 2300
c. 2.3
d. 23

Student text pages: 175, 184
RESOURCE: Calculators for checking during instruction only
Addison Wesley text, Multiplying Decimals, pp. 72-73
See attached review master 3-6

MA-06-03 - PROBLEM SOLVING (Content Standard)

State Standard and Benchmark Correlation:
MA6.4.3 Variables
PROBLEM SOLVING is the process by which students experience the power and usefulness of mathematics in the world around them. It is also a method of inquiry and application. The students will develop the ability to understand and apply a variety of strategies (e.g., guess and check, make a table, look for patterns), and they will learn to evaluate appropriate strategies for a given situation. The students may utilize computers and calculators as problem-solving tools and frequently work cooperatively in small groups to solve problems.

NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 75-77.

MA-06-03-01 - Problem Solving Strategy - Guess and Check (Objective)
C - Critical--Assessment Reporting Required
> The students will demonstrate the ability to explain how to solve a problem using the critical strategy: GUESS AND CHECK

At all levels, choosing the appropriate operation should be included. Calculators will be used as a computational tool. All of the following strategies need to be emphasized at the sixth-grade level: (Application)

a) Logical reasoning	f) Make a table
b) Find or use a pattern	g) Work backwards
c) Make a picture or diagram	h) Make it simpler
d) Act out or use objects	*i) Guess and check
e) Make an organized list	

> (* Indicates critical assessment for this grade level.)

The explanation must be written. Calculators WILL BE used as a computational tool.
RESOURCES: Addison Wesley text (Problem Solving) pp. 66-67
See attached review master 3-3
Creative Publications: The Problem Solver 4
Addison-Wesley Publ: Problem-Solving Experiences 4
NCTM: Curriculum & Evaluation Standards for School Mathematics, pp. 23-25.
CCSD Problem Solving Guide, Grade 4
Student text pages:
Problem Solving Handbook, page 172
Review from last year's Masters, page 14

MA-06-04 - MEASUREMENT (Content Standard)
State Standard and Benchmark Correlation:
> MA6.3.1 Estimate/Measure Length in Metric Units
> MA6.3.2 Estimate/Measure Weight in US Customary Units
> MA6.3.3 Estimate/Measure of Capacity in US Customary Units
> MA6.3.4 Relationships Within US/Metric Systems
> **MA6.3.5 Determine Area/Perimeter of Polygons (taught)*

MEASUREMENT is the estimation of and selection of appropriate units and tools to determine length, weight, money, time, and capacity. The students will develop an understanding--rather than the rote memorization--of formulas and will acquire estimation strategies relating to familiar personal experiences.
NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 116-117.

Science:	Electrical Energy - Act.II	Life Science - Act. 1, 4
	Geology, Act. 2-8	The Eye, Act. 2, 11, 12

MA-06-04-01 - Length, Weight, Capacity, Conversions: US Measurement, Time (Objective)
C - Critical--Assessment Reporting Required
> The students will compare and measure objects using actual measuring devices. This will include comparing and estimating the lengths, weights, and capacities of objects.
> - Students will determine lengths in US Customary units (1/8", 1/16") and in metric units (centimeters and meters).

- Students will determine weights in US Customary units (pound, ounce) and in metric units (grams, kilograms).
- Students will determine capacity in US Customary units (cup, pint, quart, gallon) and in metric units (liter, milliliter).

The students will relate units of measure to daily life and identify the best unit to use a problem-solving situation. (Application) The students will relate time to real-life problem situations. They will demonstrate an under- standing of the relationships and basic units of time (seconds, minutes, hours, days, weeks, months, and years). This will include making conversions that are practical and appropriate to everyday use. Calculators may be used for computation, and students will demonstrate an understanding of the use of the integer division key to make conversions. The students will relate units of measure to problem-solving situations and demonstrate an understanding of the relationships of US units of measurement. This will include practical conversions in the basic units of length, capacity, and mass by use of a reference sheet. Students will determine which units are best to use in everyday situations.
Student Text Pages: 214-221
Review from last year's Masters, page 15

MA-06-04-02 - Converting Metric Units of Measurement (Objective)

T - Teach

The students will relate units of measure to problem-solving situations and demonstrate an understanding of the relationships of metric units of measurement. This will include practical conversions in the basic units of length, capacity, and mass. Students will determine which units are best to use in everyday situations.
Student text pages: 214-219

MA-06-04-03 - Money (Objective)

R - Reinforce

The students will determine the value of and compare coins and bills up to $10, and they will make change to $10 using the fewest coins possible. This will include counting change back using an add-on process. Students will relate money to real-life situations. (Application)
NCTM Addenda 6th-Grade Book: pages 12-13

MA-06-05 - STATISTICS AND PROBABILITY (Content Standard)

State Standard and Benchmark Correlation:
  MA6.5.1 Collect/Organize/Describe Data With Line Graphs
  MA6.5.2 Probability Concepts to Show Likelihood of Events
Students will have experiences with data analysis and concepts of chance (probability) that allow them to describe and interpret the world around them.
DATA ANALYSIS is the process of formulating and solving problems that involve the systematic collection, organization, interpretation, and analysis of information. Students will construct, read, and interpret tables, charts, and graphs. They will make inferences and convincing arguments based on the data. Students will generate new information and hypothesize situations based on the analysis. The students will explore probability in real-world situations by devising and performing experiments. They will compare experimental and theoretical probabilities and use them to make predictions.
NCTM - Curriculum & Evaluation Standards for School Mathematics, pp. 105-111

Science: Life Science - Activities 1, 4, 6
            Geology, Activity 9

MA-06-05-01 - Interpreting Line and Circle Graphs - (Objective)

C - Critical--Assessment Reporting Required
   The students will collect, represent, analyze, and interpret a variety of graphs including
   line and circle graphs. Students will draw and state conclusions to solve problems using
   tables, charts, and graphs. Students should use software to organize and display data. This
   may be done as an interdisciplinary cooperative group activity. (Analysis)
   NCTM Addenda 6th-Grade: pages 12-13, 16-19
   Student text pages: 6-13, 22-29
   Review from last year's Masters, page 8

MA-06-05-02 - Probability: Experiments and Predicting Outcomes (Objective)

C - Critical - Assessment Reporting Required
   Students will recognize, communicate, and predict the probable outcome of simple
   experiments and compare their predictions to the actual outcome by performing the
   experiment.
   NCTM Addenda 5th-Grade Book, pages 16-23
   Student text pages: 622-636
   Review from last year's Masters, page 20

MA-06-05-03 - Measurement of Central Tendency (Objective)

S - Supporting
   Students will explore the relationships between mean, median, and mode from a given set
   of data. Students should investigate data from real-life situations for misrepresentations,
   misleading graphs, and faulty arguments. (Analysis)
   NCTM Addenda 6th-Grade Book, pages 19-23
   Student text pages: 36-55

MA-06-06 - GEOMETRY (Content Standard)

   State Standard and Benchmark Correlation:
       MA6.2.1 Represent 1D and 2D Objects and Angles
       MA6.2.2 Identify/Classify Congruent Objects

GEOMETRY - The students will discover relationships and develop spatial sense by
constructing, drawing, describing, measuring, visualizing, comparing, transforming, and
classifying one-, two-, and three-dimensional geometric figures. Students will select and use
appropriate methods, tools, and units to solve problems involving angle measure, perimeter,
circumference, area, and volume. The students will make conjectures about geometric figures
based on concepts involving transformations, congruency, and similarity.
NCTM - Curriculum and Evaluation Standards for School Mathematics, p. 112.

MA-06-06-01 - Circles (Objective)

C - Critical--Assessment Reporting Required
   The students will identify the parts of a circle (center, radius, diameter, chord,
   circumference) and estimate and compute the circumference and area using a reference
   sheet. (Knowledge)
   Student text pages: 244-251

MA-06-06-02 - Basic Properties of Polygons; Lines of Symmetry (Objective)

C - Critical--Assessment Reporting Required

The students will classify, describe, and draw representations of a variety of two-dimensional polygons including triangles, squares, and rectangles. Students will make conjectures about relationships of geometric shapes involving concepts of symmetry, similarity, and congruence. Polygons should be used to construct solid figures such as right prisms and pyramids. (Comprehension)
NCTM Addenda 6th-Grade Book: pages 24-27
Student text pages: 424-445, 540-542

MA-06-06-03 - Perimeter/Area of Square, Rectangle, Triangle (Objective)
T - Teach
The students will solve problems involving the perimeter and area of regular polygons, squares, rectangles, triangles, and parallelograms with the use of a reference sheet. Squares should be identified as a type of rectangle, and using the correct units of measure will be emphasized. (Application)
Student text pages: 210-212, 226-242
Review from last year's Masters, pages 16 and 17

MA-06-06-04 - One-Dimensional Shapes (Objective)
T - Teach
The students will classify, describe, and draw lines, rays, segments, and angles. They will use appropriate tools to investigate parallel and perpendicular relationships and angle measure.
Student text pages: 402-414
Review from last year's Masters, page 9

MA-06-06-05 - Transformations (Objective)
S - Supporting
The students will investigate the geometric transformations of figures including translations (slides) and reflections (flips).
Student text pages: 438-452

MA-06-07 - ALGEBRA (Content Standard)
State Standard and Benchmark Correlation:
  MA6.4.1 Patterns
  MA6.4.2 Describe Constant Rate of Change w/Patterns
  MA6.4.3 Variables
PATTERNS are the regularities occurring in events, shapes, designs, and sets of numbers. They are everywhere, and are the essence of mathematics. Students will be able to recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations. They will communicate their understanding in writing. Students will explore algebraic concepts in informal ways (emphasizing physical models, data, and graphs) to prepare for the formal study of algebra. They will be able to generalize number patterns and develop an understanding of the concepts of variables, expressions, and equations.
NCTM Standards, pages 102-104

MA-06-07-01 - Patterns (Objective)
C - Critical - Assessment Reporting Required
The students will recognize, describe, extend, create, and generalize patterns by using manipulatives, numbers, and graphic representations including charts and graphs.*
Students will apply their knowledge of patterns to describe a constant rate of change when

solving problems. Students should have numerous opportunities to analyze relationships and to attempt written descriptions of relationships by using variables within any whole-number operation. Students will communicate their understanding in writing and use patterns to solve problems. (Application)
*Calculators may be used for computation.
NCTM Addenda 6th-Grade Book: pages 1-9
Student text pages: 14-17, 100-103, 106-121

MA-06-07-02 - Coordinate System (Objective)

S - Supporting

The students will understand and use the Cartesian coordinate system. They will be able to identify the x and y axis, origin, and plot ordered pairs in all four quadrants. (Application)
NCTM Addenda 6th-Grade Book: pages 1-9
Student text pages: 484-487

MA-06-07-03 - Integers (Objective)

T - Teach

The students will be able to demonstrate an understanding of positive and negative integers by using a number line as they apply to real-life situations. They will investigate the properties of addition and subtraction of positive and negative integers using informal methods and manipulatives (i.e., two-colored counters). They should not be given rules to perform the operations, but should instead be encouraged to derive the generalizations occurring from numerous examples.
Student text pages - 461-473

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