WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

# COURSE DESCRIPTION

## Course Title: Mathematics- Grade 4

**Course Number:**  08423

**Course Prerequisites:**  Completion of Mathematics Grade 3

Course Description: (Include “no final exam” or “final exam required”)

This course continues to strengthen and prepare students for real world math applications and to be able to communicate mathematically. Content throughout fourth grade will also strengthen and build previously learned math skills. Students will be involved in hands-on activities that provide daily challenges to enhance student achievement.

Suggested Grade Level: Fourth Grade

**Length of Course:**        One Semester X Two Semesters       Other (Describe)

## Units of Credit: None (Insert *NONE* if appropriate.)

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s) (Insert certificate title and CSPG#) Elementary Education CSPG # 41

Certification verified by WCSD Human Resources Department:

X Yes       No

Board Approved Textbooks, Software, Materials:

Title: Mathematics

Publisher: Scott Foresman

**ISBN #**: **0-328-26367-2**

Copyright Date: 2008

Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: Spring 2012

Date Approved:

Implementation Year: 2012-2013

Suggested Supplemental Materials: (List or insert None)

Calculators, Successmaker Enterprises/Successmaker, base ten blocks, geoboards, clocks, dice, spinners, coins and dollar bills, rulers, elasped time rulers, fraction bars, multiplication charts, protractors, compasses, laptops, Microsoft Excel, capacity manipulatives, place value charts, number lines, fraction number lines, formula sheets, thermometers

Course Standards

PA Academic Standards: (List by Number and Description)

2.1 Numbers and Operations

2.2 Algebraic Concepts

2.3 Geometry

2.4 Data Analyis and Probability

PA Common Core Standards: (List by Number and Description)

2.1 Numbers and Operations

(B) Number and Operations in Base Ten

(C) Number and Operations-Fractions

2.2 Algebraic Concepts

(A) Operations and Algebraic Thinking

2.3 Geometry

(A) Geometry

2.4 Data Analysis and Probability

(A) Measurement and Data

WCSD Academic Standards: (List or None)

None

Industry or Other Standards: (List, Identify Source or None)

None

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

(List Objectives, PA Standards #’s, Other Standards (see samples at end))

**PA Standard: 2.1 Numbers and Operations**

**M04.A-T Numbers and Operations in Base Ten**

|  |  |  |  |
| --- | --- | --- | --- |
| **STD or EC Code** | **Performance Indicators** | **Mastery** | **Introduced** |
| M04.A-T.1.1.1 | Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one  place represents ten times what it represents in the place to its right. | X |  |
| M4.A.1.1.3 | Match the standard number form to the word form of decimal numbers (through the tenths place). | X |  |
| M04.A-T.1.1.2 | Read and write whole numbers in expanded, standard and word form through 1,000,000. | X |  |
| M04.A-T.1.1.3 | Compare two multi-digit numbers through1,000,000 based on meanings of the digits in each place, using >, =, and < symbols. | X |  |
| M04.A-T.1.1.4 | Round multi-digit whole numbers (through 1,000,000) to any place. | X |  |
| M04.A-T.2.2.2 | Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000). | X |  |
| M04.A-T.2.1.2 | Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers. | X |  |
| M04.A-T.2.1.3 | Divide up to four-digit dividends by one-digit divisors with answers written as whole –number quotients and remainders. | X |  |
| M04.A-T.2.1.4 | Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits x 1 digit, excluding powers of 10). | X |  |
| M4.A.2.1.2 | Solve problems involving addition or subtraction with decimals through the tenths or money to the cent and/or explain the solution. Limit to two-step problems. | X |  |
| M4.A.3.1.2 | Round amounts of money to the nearest dollar. | X |  |
| M4.A.3.2.1 | Solve addition or subtraction problems involving decimals through hundredths (decimal numbers must have the same number of places). | X |  |
| M5.A.3.1.2 | Use estimation to solve problems involving whole numbers and/or decimals (up to 2-digit multipliers, single-digit divisors or multiples of 10; whole numbers through thousands and decimals through hundredths). |  | X |
| M5.A.1.2.1 | Match the standard form to the word form of decimal numbers through the hundredths. |  | X |
| M5.A.1.2.2 | Identify the place value of a digit (from millions through hundredths). |  | X |
| M5.A.1.4.1 | Locate/Identify integers on a number line (greater than or equal to -20). |  | X |
| M6.A.1.3.3 | Use divisibility rules for 2, 3, 5 and/or 10 to draw conclusions and/or solve problems. |  | X |

**PA Standard: 2.1 Numbers and Operations**

**Fractions**

|  |  |  |  |
| --- | --- | --- | --- |
| **STD or EC Code** | **Performance Indicators** | **Mastery** | **Introduced** |
| M04.A-F.1.1.1 | Recognize and generate equivalent fractions. | X |  |
| M04.A-F.1.1.2 | Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or <, and justify the conclusions. | X |  |
| M04.A-F.2.1.1 | Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be reduced; no improper fractions as the final answer). | X |  |
| M04.A-F.2.1.2 | Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (for example, by using a visual fraction model.) | X |  |
| M04.A-F.2.1.3 | Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with subtraction; fractions do not need to be reduced; no improper fractions in the final answers). | X |  |
| M04. A-F.2.1.4 | Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100. | X |  |
| M04.A-F.2.1.5 | Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; final answers do not need to be reduced or written as a mixed number). | X |  |
| M04.A-F.2.1.6 | Multiply a whole number by a non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; final answers do not need to be reduced or written as a mixed number). | X |  |
| M04.A-F.2.1.7 | Solve word problems involving multiplication of a whole number by a fraction (denominators limited  to 2, 3, 4, 5, 6, 8, 10, 12, and 100). | X |  |
| M04.A-F.3.1.1 | Add two fractions with respective denominators 10  and 100. | X |  |
| M04.A-F.3.1.2 | Use decimal notation for fractions with  denominators 10 or 100. | X |  |
| M04.A-F.3.1.3 | Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions. | X |  |
| M4.A.1.1.1 | Write the fraction or decimal, including mixed numbers, which corresponds to a drawing or set—no simplification necessary. | X |  |
| M4.A.1.1.2 | Create a drawing or set that represents a given fraction or decimal, including mixed numbers (through the tenths). | X |  |
| M4.A.1.2.1 | Locate/identify fractions or decimals on a number line (decimals and fractions through the tenths—do not mix fractions and decimals). | X |  |
| M4.A.1.2.2 | Compare and/or order whole numbers through 6 digits and amounts of money to $100 (limit sets for ordering, to no more than 4 numbers). | X |  |
| M5.A.1.5.1 | Use or develop regions and/or sets (e.g., circle graph, base ten blocks) to model fractions and mixed numbers through hundredths (may include reducing the fractions). |  | X |
| M6.A.1.1.4 | Represent a mixed number as an improper fraction. |  | X |

PA Standard: 2.2 Algebraic Concepts:

**M04.B-O Operations and Algebraic Thinking**

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| --- | --- | --- | --- |
| **STD or EC Code** | **Performance Indicators** | **Mastery** | **Introduced** |
| M04.B-O.1.1.1 | Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative  comparisons as multiplication equations. | X |  |
| M04.B-O.1.1.2 | Multiply or divide to solve word problems involving multiplicative comparison, distinguishing  multiplicative comparison from additive comparison. | X |  |
| M04.B-O.1.1.3 | Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that  must be interpreted yielding a final answer that is a whole number. Represent these problems using  equations with a symbol or letter standing for the unknown quantity. | X |  |
| M04.B-O.1.1.4 | Identify the missing symbol (+, –, ×, ÷, =, <, >) that makes a number sentence true (single-digit divisor only). | X |  |
| M04.B-O.2.1.1 | Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors.  Determine whether a given whole number in the interval 1 through 100 is a multiple of a given onedigit number. Determine whether a given whole  number in the interval 1 through 100 is prime or composite. | X |  |
| M04.B-O.3.1.1 | Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. | X |  |
| M04.B-O.3.1.2 | Determine the missing elements in a function table (limit to +, –, or × and to whole numbers or money). | X |  |
| M04.B-O.3.1.3 | Determine the rule for a function given a table (limit to +, –, or × and to whole numbers). | X |  |

PA Standard: 2.3 Geometry

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| --- | --- | --- | --- |
| **STD or EC Code** | **Performance Indicators** | **Mastery** | **Introduced** |
| M04.C-G.1.1.1 | Draw points, lines, line segments, rays, angles  (right, acute, obtuse), and perpendicular and  parallel lines. Identify these in two-dimensional  figures. | X |  |
| M04.C-G.1.1.2 | Classify two-dimensional figures based on the  presence or absence of parallel or perpendicular  lines, or the presence or absence of angles of a  specified size. Recognize right triangles as a  category, and identify right triangles. | X |  |
| M04.C-G.1.1.3 | Recognize a line of symmetry for a twodimensional  figure as a line across the figure such  that the figure can be folded along the line into  mirroring parts. Identify line-symmetric figures and  draw lines of symmetry (up to two lines of  symmetry). | X |  |

PA Standard: 2.4 Data Analysis and Probability:

Measurement and Data

|  |  |  |  |
| --- | --- | --- | --- |
| **STD or EC Code** | **Performance Indicators** | **Mastery** | **Introduced** |
| M04.D-M.1.1.1 | Know relative sizes of measurement units within  one system of units including standard units (in., ft,  yd, mi; oz., lb; c, pt, qt, gal), metric units (cm, m,  km; g, kg; mL, L), and time (sec, min, hr, day, wk,  mo, yr). Within a single system of measurement,  express measurements in a larger unit in terms of  a smaller unit. **A table of equivalencies will be**  **provided.** | X |  |
| M04.D-M.1.1.2 | Use the four operations to solve word problems  involving distances, intervals of time (such as  elapsed time), liquid volumes, masses of objects;  money, including problems involving simple  fractions or decimals; and problems that require  expressing measurements given in a larger unit in  terms of a smaller unit. | X |  |
| M04.D-M.1.1.3 | Apply the area and perimeter formulas for  rectangles in real-world and mathematical  problems (may include finding a missing side  length). Whole numbers only. **The formulas will**  **be provided.** | X |  |
| M04.D-M.1.1.4 | Identify time (analog or digital) as the amount of  minutes before or after the hour. | X |  |
| M04.D-M.2.1.1 | Make a line plot to display a data set of  measurements in fractions of a unit (e.g., intervals  of 1/2, 1/4, or 1/8). | X |  |
| M04.D-M.2.1.2 | Solve problems involving addition and subtraction  of fractions by using information presented in line  plots (line plots must be labeled with common  denominators, such as 1/4, 2/4, 3/4). | X |  |
| M04.D-M.2.1.3 | Translate information from one type of display to  another (table, chart, bar graph, or pictograph). | X |  |
| M04.D-M.3.1.1 | Measure angles in whole-number degrees using a  protractor. With the aid of a protractor, sketch  angles of specified measure. | X |  |
| M04.D-M.3.1.1 | Solve addition and subtraction problems to find  unknown angles on a diagram in real-world and  mathematical problems. (Angles must be adjacent  and non-overlapping.) | X |  |
| M4.B.2.2.1 | Make reasonable estimates of weights, lengths and capacities of familiar objects (measurements in the same system). | X |  |
| M5.B.1.1.1 | Select the appropriate unit for measuring weight (mass), capacity, length, perimeter and area. |  | X |
| M5.B.1.2.1 | Convert using linear measurements, capacity, and weight (mass) within the same system to the unit immediately above or below the given unit (using only the units below—use a conversion chart or a “hint” with problems e.g., hint: 16oz = 1lb). • Metric using mm, cm, m and km; mL and L; g and kg • Customary using cup, pint, quart, gallon; in, ft, yd; oz, lb |  | X |
| M5.B.2.1.1 | Use a ruler to measure to the nearest 1/8 inch  or centimeter. |  | X |
| M5.B.2.2.3 | Solve problems involving weight, time, temperature, length and capacity (with the same units throughout—limited to 3 digits). |  | X |

ASSESSMENTS

PSSA Assessment Anchors Addressed: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

Portfolio Assessment:       Yes X No

District-wide Final Examination Required:       Yes X No

Course Challenge Assessment (Describe):

# REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Highlighted anchors are introductory anchors

### Content Sequence Dates

**Numbers and Operations**

**Problem Solving Continuous- as applied to other concepts**

M4.A.2.1.2

M4.A.3.2.1

M04.B-O.1.1.2

M04.B-O.1.1.3

M5.A.3.1.2

**Estimation September**

M04.A-T1.1.4

M04.A-T.2.1.4

**Place Value September**

M04.A-T.1.1.1

M4.A.1.1.3

M04.A-T.1.1.2

M04.A-T.1.1.3

M5.A.1.2.1

M5.A.1.2.2

M5.A.1.4.1

**Addition September**

M04.A-T.2.2.2

M04.A-T.2.1.4

**Subtraction September**

M04.A-T.2.2.2

M04.A-T.2.1.4

**Multiplication October/November**

M04.A-T.2.1.2

M04.A-T.2.1.4

M04.B-O.1.1.1

**Division October/November**

M04.A-T.2.1.3

M6.A.1.3.3

**Algebraic Concepts November**

M04.B-O.1.1.4

M04.B-O.2.1.1

M04.B-O.3.1.2

M04.B-O.3.1.3

**Money December**

M4.A.3.1.2

M4.A.1.2.2

**Patterns December**

M04.B-O.3.1.1

**Fractions January**

**Representing Fractions January**

M4.A.1.1.1

M4.A.1.1.2

M4.A.1.2.1

M5.A.1.5.1

M6.A.1.1.4

**Equivalent Fractions January**

M04.A-F.1.1.1

M04.A-F.2.1.2

**Comparing Fractions January**

M04.A-F.1.1.2

**Add and Subtract Fractions January**

M04.A-F.2.1.3

M04.A-F.2.1.1

M04.A-F.3.1.1

M04.D-M.2.1.2

**Problem Solving January**

M04.A-F.2.1.4

M04.A-F.2.1.7

**Multiply Fractions January**

M04.A-F.2.1.5

M04.A-F.2.1.6

**Decimals January**

M04.A-F.3.1.2

M04.A-F.3.1.3

**Geometry February**

**Points, Lines, Segments, Rays, Angles**

M04.C-G.1.1.1

M04.D-M.3.1.1

M04.D-M.3.1.2

**Classify 2 dimensional figures February**

M04.C-G.1.1.2

M04.C-G.1.1.3

**Symmetry February**

M04.C-G.1.1.3

**Patterns February**

M04.B-O.3.1.1

**Measurement March/April**

**Standard units**

M04.D-M.1.1.1

M5.B.2.1.1

M5.B.1.1.1

M5.B.1.2.1

M5.B.2.2.3

**Metric units March/April**

M04.D-M.1.1.1

**Problem Solving March/April**

M04.D-M.1.1.2

M04.D-M.2.1.2

M04.D-M.3.1.2

M5.B.2.2.3

**Area and Perimeter March/April**

M04.D-M.1.1.3

**Time March/April**

M04.D-M.1.1.4

**Data May/June**

**Tables, Charts, Bar Graph, Pictograph**

M04.D-M.2.1.3

**Line Plots May/June**

M04.D-M.2.1.1

M04.D-M.2.1.2

**Objectives:**

**Students will:**

* Apply place value concepts to show an understanding of multi-digit whole numbers.
* Use place value understanding and properties of operations to perform multi-digit arithmetic.
* Extend the understanding of fractions to show equivalence and ordering.
* Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
* Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).
* Represent and solve problems involving the four operations.
* Develop and/or apply number theory concepts to find factors and multiples.
* Generate and analyze patterns using one rule.
* Draw lines and angles and identify these in two-dimensional figures.
* Classify two-dimensional figures by properties of their lines and angles.
* Recognize symmetric shapes and draw lines of symmetry.
* Solve problems involving measurement and conversions from a larger unit to a smaller unit.
* Translate information from one type of data display to another.
* Represent and interpret data involving fractions using information provided in a line plot.
* Measure angles and use properties of adjacent angles to solve problems.

**WRITING TEAM:** Warren County School District Math Teachers

# WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination?       Yes X No

2. Does this course issue a mark/grade for the report card? X Yes       No

3. Does this course issue a Pass/Fail mark?       Yes X No

1. Is the course mark/grade part of the GPA calculation?       Yes X No

5. Is the course eligible for Honor Roll calculation?       Yes X No

6. What is the academic weight of the course?

X No weight/Non credit       Standard weight

      Enhanced weight (Describe)