

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Mathematics

Grade Level: 3

Date of Board Approval: 2017

Planned Instruction

Title of Planned Instruction: Grade 3 Mathematics

Subject Area: Mathematics

Grade(s): 3

Course Description:

Students will develop an understanding of multiplication and division and strategies for multiplication and division within 100. Students will develop an understanding of fractions, especially unit fractions. Students will develop an understanding of the structure of rectangular arrays and of area. Students will describe and analyze two dimensional shapes. Students will make sense of problems and persevere in solving them. They will reason abstractly and quantitatively. Students will construct viable arguments and will critique the reasoning of others. Students will model with mathematics and use appropriate tools strategically. They will attend to precision and students will look for and make use of structure. The students will look for and express regularity in repeated reasoning.

Time/Credit for the Course: Full Course- 90 minutes a day/5 days a week

Curriculum Writing Committee:

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Curriculum Map

1. Marking Period One

- Multiplication with factors 2-10 (20 days)
- Addition and Subtraction within 1000 (10 days)
- Perimeter (3 days)
- Money- GAP Lessons (8 days)
- Ordering numbers (2 days)
- Classroom Diagnostic Testing (CDT) (2 days)

2. Marking Period Two

- Division with multiples of tens/using models (12 days)
- Division of factors 1-10/ using models (12 days)
- Area (7 days)
- Two-Dimensional Shapes (14 days)

3. Marking Period Three

- Fractions/Comparing fractions (14 days)
- Time, Length, Liquid and Mass (14 days)
- Representing and Interpreting Data and Using different displays of data (10 days)
- Two-Step problems (5 days)
- Classroom Diagnostic Testing (CDT) (2 days)

4. Marking Period Four-

- Getting Ready for Fourth Grade:
- Numbers to Ten Thousand (5 days)
- Read and Write Numbers to Ten Thousand (5 days)
- Relative Size on a Number Line (7 days)
- Compare 3 -and 4- Digit Numbers (7 days)
- Use Multiplication Patterns (6 days)
- Model Division with Remainders (6 days)
- Model Tenths and Hundredths (6 days)
- PSSA's (3 days)

Curriculum Plan

Mathematical Standard Areas:

Operations and Algebraic Thinking
Numbers and Operations in Base Ten
Measurement and Data

Standards Addressed: CC.2.2.3.A.1, CC.2.2.3.A.2, CC.2.2.3.A.3, CC.2.2.3.A.4, CC.2.1.3.B.1, CC.2.4.3.A.6, CC.2.4.3.A.3, CC.2.4.3.A.6,

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

The students will be able to apply place value strategies to solve problems.

The students will be able to find and use the perimeters of plane figures.

The students will be able to count, compare, and make change using a collection of coins and one dollar bills.

The students will be able to use properties to simplify and solve multiplication problems.

Objectives:

Students will be able to:

- Round two- and three-digit whole numbers to the nearest ten or hundred, respectively. DOK1
- Add two- and three-digit whole numbers (limit sums from 100 through 1,000) and/or subtract two- and three-digit numbers from three-digit whole numbers. DOK1
- Multiply one-digit whole numbers by two-digit multiples of 10 (from 10 through 90). DOK1
- Order a set of whole numbers from least to greatest or greatest to least (up through 9,999, and limit sets to no more than four numbers). DOK2
- Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, exhibiting rectangles with the same perimeter and different areas, and exhibiting rectangles with the same area and different perimeters. Use the same units throughout the problem. DOK 2

- Compare total values of combinations of coins (penny, nickel, dime, and quarter) and/or dollar bills less than \$5.00. DOK2
- Make change for an amount up to \$5.00 with no more than \$2.00 change given (penny, nickel, dime, quarter, and dollar). DOK1
- Round amounts of money to the nearest dollar. DOK1

PLANNED INSTRUCTION

Mathematical Standard Areas:

Operations and Algebraic thinking

Measurement and Data

Geometry

Standards Addressed: CC.2.2.3.A.1, CC.2.2.3.A.2, CC.2.2.3.A.3, CC.2.2.3.A.4, CC.2.1.3.B.1, CC.2.3.3.A.1, CC.2.3.3.A.2, CC.2.4.3.A.3, CC.2.4.3.A.5, CC.2.4.3.A.6,

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

The students will be able to find the area of plane figures.

The students will be able to understand various meanings of multiplication and division.

The students will be able to solve mathematical and real word problems using multiplication and division, including determining the missing number in a multiplication and or division equation.

The students will be able to relate division to a missing number multiplication equation.

The students will be able to analysis characteristics of polygons.

Objectives:

Students will be able to:

- Interpret and/or describe products of whole numbers (up to and including 10×10).
Example 1: Interpret 35 as the total number of objects in 5 groups, each containing 7 objects. Example 2: Describe a context in which a total number of objects can be expressed as 5×7 . DOK2
- Interpret and/or describe whole-number quotients of whole numbers (limit dividends through 50 and limit divisors and quotients through 10). Example 1: Interpret $48 \div 8$ as the number of objects in each share when 48 objects are partitioned equally into 8 shares, or as a number of shares when 48 objects are partitioned into equal shares of 8 objects each. Example 2: Describe a context in which a number of shares or a number of groups can be expressed as $42 \div 8$. DOK2
- Use multiplication (up to and including 10×10) and/or division (limit dividends through 50 and limit divisors and quotients through 10) to solve word problems in situations

involving equal groups, arrays, and/or measurement quantities. DOK2

- Determine the unknown whole number in a multiplication (up to and including 10×10) or division (limit dividends through 50 and limit divisors and quotients through 10) equation relating three whole numbers. Example: Determine the unknown number that makes an equation true. DOK2
- Interpret and/or model division as a multiplication equation with an unknown factor. Example: Find $32 \div 8$ by solving $8 \times ? = 32$. DOK2
- Explain that shapes in different categories may share attributes and that the shared attributes can define a larger category. Example 1: A rhombus and a rectangle are both quadrilaterals since they both have exactly four sides. Example 2: A triangle and a pentagon are both polygons since they are both multi-sided plane figures. DOK3
- Recognize rhombi, rectangles, and squares as examples of quadrilaterals and/or draw examples of quadrilaterals that do not belong to any of these subcategories. DOK3
- Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Example 1: Partition a shape into 4 parts with equal areas. Example 2: Describe the area of each of 8 equal parts as $1/8$ of the area of the shape. DOK2

PLANNED INSTRUCTION

Mathematical Standard Areas:

Numbers and Operations-Fractions
Operations and Algebraic Thinking
Measurement and Data

Standards Addressed: CC.2.1.3.C.1, CC.2.2.3.A.1, CC.2.2.3.A.2, CC.2.2.3.A.3, CC.2.2.3.A.4, CC.2.1.3.B.1, CC.2.3.3.A.1, CC.2.3.3.A.2, CC.2.4.3.A.1, CC.2.4.3.A.2, CC.2.4.3.A.3, CC.2.4.3.A.4, CC.2.4.3.A.5, CC.2.4.3.A.6,

Link to Standards in SAS

<http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20Pr eK-12%20March%202014.pdf>

Goals:

The students will be able to develop and apply number theory concepts to compare quantities and magnitudes of fractions and whole numbers.

The students will be able to use operations, patterns, and estimation strategies to solve problems
(may include word problems).

The students will be able to use the attributes of liquid volume, mass, and length of objects.

The students will be able to determine or calculate time and elapsed time.

The students will be able to organize, display, and answer questions based on data.

Objectives:

Students will be able to:

- Demonstrate that when a whole or set is partitioned into y equal parts, the fraction $1/y$ represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary). DOK3
- Represent fractions on a number line (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary). DOK2
- Recognize and generate simple equivalent fractions (limit the denominators to 1, 2, 3, 4, 6, and 8 and limit numerators to whole numbers less than the denominator).
Example 1: $1/2 = 2/4$ Example 2: $4/6 = 2/3$. DOK3
- Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (limit denominators to 1, 2, 3, 4, 6, and 8). Example 1: Express 3 in the form $3 = 3/1$. Example 2: Recognize that $6/1 = 6$. DOK3

- Compare two fractions with the same denominator (limit denominators to 1, 2, 3, 4, 6, and 8), using the symbols $>$, $=$, or $<$, and/or justify the conclusions. DOK2
- Solve two-step word problems using the four operations (expressions are not explicitly stated). Limit to problems with whole numbers and having whole-number answers. DOK2
- Represent two-step word problems using equations with a symbol standing for the unknown quantity. Limit to problems with whole numbers and having whole-number answers. DOK3
- Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers. DOK3
- Solve two-step equations using order of operations (equation is explicitly stated with no grouping symbols). DOK2
- Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations. Example 1: Observe that 4 times a number is always even. Example 2: Explain why 6 times a number can be decomposed into three equal addends. DOK2
- Create or match a story to a given combination of symbols ($+$, $-$, \times , \div , $<$, $>$, and $=$) and numbers. M03.B-O.3.1.7 Identify the missing symbol ($+$, $-$, \times , \div , $<$, $>$, and $=$) that makes a number sentence true. DOK3
- Complete a scaled pictograph and a scaled bar graph to represent a data set with several categories (scales limited to 1, 2, 5, and 10). DOK2
- Solve one- and two-step problems using information to interpret data presented in scaled pictographs and scaled bar graphs (scales limited to 1, 2, 5, and 10). Example 1: (One-step) “Which category is the largest?” Example 2: (Two-step) “How many more are in category A than in category B?” DOK2
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Display the data by making a line plot, where the horizontal scale is marked in appropriate units—whole numbers, halves, or quarters. DOK2
- Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables. Example: Convert a tally chart to a bar graph. DOK3
- Tell, show, and/or write time (analog) to the nearest minute. DOK2
- Calculate elapsed time to the minute in a given situation (total elapsed time limited to 60 minutes or less). DOK3
- Measure and estimate liquid volumes and masses of objects using standard units (cups [c], pints [pt], quarts [qt], gallons [gal], ounces [oz.], and pounds [lb.]) and metric units (liters [l], grams [g], and kilograms [kg]). DOK3
- Add, subtract, multiply, and divide to solve one step word problems involving masses or liquid volumes that are given in the same units. DOK2

- Use a ruler to measure lengths to the nearest quarter inch or centimeter. DOK1
- Demonstrate that when a whole or set is partitioned into y equal parts, the fraction $1/y$ represents 1 part of the whole and/or the fraction x/y represents x equal parts of the whole (limit denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; and no simplification necessary). DOK2
- Recognize and generate simple equivalent fractions (limit the denominators to 1, 2, 3, 4, 6, and 8 and limit numerators to whole numbers less than the denominator).
Example 1: $1/2 = 2/4$ Example 2: $4/6 = 2/3$. DOK2
- Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (limit denominators to 1, 2, 3, 4, 6, and 8). Example 1: Express 3 in the form $3 = 3/1$. Example 2: Recognize that $6/1 = 6$. DOK2
- Compare two fractions with the same denominator (limit denominators to 1, 2, 3, 4, 6, and 8), using the symbols $>$, $=$, or $<$, and/or justify the conclusions. DOK3

PLANNED INSTRUCTION

Mathematical Standard Areas:

Numbers and Operations in Base Ten (Numbers to ten thousand)
Numbers and Operations in Base Ten (read and write numbers to ten thousands)
Numbers and Operations in Base Ten (relative size on a number line)
Numbers and Operations in Base Ten (compare three and four digit numbers)
Operations and Algebraic Thinking (use multiplication patterns)
Operations and Algebraic Thinking (model division with remainders)
Numbers and Operations- Fractions (model tenths and hundredths)

Standards Addressed: CC.2.1.4. B.1, CC.2.1.4. B.2, C C.2.1.4.C.3, CC.2.2.4. A.4

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Goals:

Apply place-value and numeration concepts to compare, find equivalencies, and round.
Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., $19/100$).
Recognize, describe, extend, create, and replicate a variety of patterns.
Use operations to solve problems.

Objectives:

Students will be able to:

- 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. DOK3
- Recognize that in the number 770, the 7 in the hundreds place is ten times the 7 in the tens place. DOK3
- Read and write whole numbers in expanded, standard, and word form through 1,000,000. Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols. DOK2
- 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. DOK3
- Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders. DOK2

Assessments: See District Assessment Plan.

Core Program Assessments

Star Math

Classroom Diagnostic Testing (CDT)

Basic Fact Fluency Assessments

Remediation

Core Program Reteach/Remediation Activities

Fast Math

Study Island

SMARTEExchange

KahnAcademy

Extensions

Core Program Enrichment /Extension Activities

Fast Math

Study Island

SMARTEExchange

KahnAcademy

Materials and Resources:

Study Island

Fast Math

Rocket Math

Core Program Activities

KahnAcademy

SMARTEExchange

Pennsylvania Department of Education- www.pde.org