## SOUTHERN LEHIGH SCHOOL DISTRICT

5775 Main Street
Center Valley, PA 18034

## Scope and Sequence for Grade 3 Mathematics

## Standards for Mathematical Practice:

MP1 Make sense of problems and persevere in solving them.
MP2 Reason abstractly and quantitatively.
MP3 Construct viable arguments and critique the reasoning of others.
MP5 Use appropriate tools strategically.
MP6 Attend to precision.
MP4 Model with mathematics.

MP7 Look for and make use of structure.
MP8 Look for and express regularity in repeated reasoning.

## 3.OA - Operations and Algebraic Thinking

| CCSSM | PA Core Standards for Mathematics |
| :---: | :---: |
| Represent and solve problems involving multiplication and division. <br> 3.0A. 1 <br> Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as $5 \times 7$. <br> 3.0A. 2 <br> Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$. <br> 3.0A. 3 <br> Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. <br> This section continues on the next page... | CC. 2.2.3.A. 1 <br> Represent and solve problems involving multiplication and division. |

## 3.OA - Operations and Algebraic Thinking - Continued...



## 3.OA - Operations and Algebraic Thinking - Continued...

## CCSSM

## PA Core Standards for Mathematics

Multiply and Divide within 100.

### 3.0A. 7

Fluently multiply and divide within 100 , using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5=40$, one knows $40 \div 5$
$=8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

## 3.OA. 8

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

## 3.OA. 9

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

## CC.2.2.3.A. 4

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Pennsylvania System of School Assessment (PSSA)

## M03.B-O.3 Solve problems involving the four operations, and identify and explain patterns in arithmetic.

## M03.B-O.3.1

Use operations, patterns, and estimation strategies to solve problems (may include word problems).

## M03.B-O.3.1. 1

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.

## M03.B-O.3.1.2

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.

## M03.B-O.3.1.3

Assess the reasonableness of answers. Limit problems posed with whole numbers and having whole-number answers.

## M03.B-O.3.1.4

Solve two-step equations using order of operations
This section continues on the next page...
(equation is explicitly stated with no grouping symbols).

## 3.OA - Operations and Algebraic Thinking - Continued...

| CCSSM | PA Core Standards for Mathematics |
| :---: | :---: |
| 3.OA. 8 Continued... 3.OA. 9 Continued... | CC.2.2.3.A.4 Continued... |
| Pennsylvania System of School Assessment (PSSA) | M03.B-O Operations \& Algebraic Thinking |
| M03.B-O.3 Solve problems involving the four operations, and identify and explain patterns in arithmetic. Continued... |  |
| M03.B-O.3.1 Continued... <br> Use operations, patterns, and estimation strategies to solve problems (may include word problems). | M03.B-O.3.1.1 Continued... M03.B-O.3.1.2 Continued... M03.B-O.3.1.3 Continued... M03.B-O.3.1.4 Continued... |
|  | M03.B-O.3.1.5 <br> Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations. <br> Example 1: Observe that 4 times a number is always even. <br> Example 2: Explain why 6 times a number can be decomposed into three equal addends. |
|  | M03.B-O.3.1.6 <br> Create or match a story to a given combination of symbols $(+,-, \times, \div,<,>$, and $=$ ) and numbers. |
|  | M03.B-O.3.1.7 <br> Identify the missing symbol $(+,-, \times, \div,<,>$, and $=$ ) that makes a number sentence true. |

## 3.NBT - Number \& Operations in Base Ten

## CCSSM

PA Core Standards for Mathematics
Use place value understanding and properties of operations to perform multidigit arithmetic. (A range of algorithms may be used.)

## 3.NBT. 1

Use place value understanding to round whole numbers to the nearest 10 or 100 .
3.NBT. 2

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

## 3.NBT. 3

Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., $9 \times 80$, $5 \times 60$ ) using strategies based on place value and properties of operations.

Pennsylvania System of School Assessment (PSSA)

## M03.A-T. 1 Use place-value understanding and properties of operations to perform multi-digit arithmetic.

## M03.A-T.1.1

Apply place-value strategies to solve problems.

## M03.A-T.1.1.1

Round two- and three-digit whole numbers to the nearest ten or hundred, respectively.
M03.A-T.1.1.2
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.

## M03.A-T.1.1.3

Multiply one-digit whole numbers by two-digit multiples of 10 (from 10 through 90).

## M03.A-T.1.1.4

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).

## 3.NF - Number \& Operations - Fractions (Limited to w/ denominators 2, 3, 4, 6, 8)

## Develop understanding of fractions as numbers.

## 3NF. 1

Understand a fraction $1 / b$ as the quantity formed by 1 part when $a$ whole is partitioned into $b$ equal parts; understand a fraction $a / b$ as the quantity formed by a parts of size $1 / b$.

3NF. 2
Understand a fraction as a number on the number line; represent fractions on a number line diagram.
a) Represent a fraction $1 / b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $1 / b$ and that the endpoint of the part based at 0 locates the number $1 / b$ on the number line
b) Represent a fraction $a / b$ on a number line diagram by marking off a lengths $1 / b$ from 0 . Recognize that the resulting interval has size $a / b$ and that its endpoint locates the number $a / b$ on the number line.

3NF. 3
Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size
a) Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
b) Recognize and generate simple equivalent fractions, e.g., $1 / 2=2 / 4,4 / 6=2 / 3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.
c) Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form $3=3 / 1$; recognize that $6 / 1=6$; locate 4/4 and 1 at the same point of a number line diagram.
d) Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>,=$, or <, and justify the conclusions, e.g., by using a visual fraction model.

## PA Core Standards for Mathematics

CC.2.1.3.C. 1

Explore and develop an understanding of fractions as numbers.

## Pennsylvania System of School Assessment (PSSA)

## M03.A-F. 1 Develop an understanding of fractions as numbers.

## M03.A-F.1.1

Develop an understanding of fractions as numbers.

This section continues on the next page...

M03.A-F.1.1.1
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).

## 3.NF - Number \& Operations - Fractions - Continued...

|  | CCSSM | PA Core Standards for Mathematics |
| :---: | :---: | :---: |
| $\begin{array}{\|l} \text { 3NF. } 1 \\ \text { 3NF. } 2 \\ \text { 3NF. } \end{array}$ | 1 Continued... <br> 2 Continued... <br> 3 Continued... | CC.2.1.3.C. 1 Continued... |
|  | Pennsylvania System of School Assessment (PSSA) | M03.A-F Numbers \& Operations - Fractions |
|  | M03.A-F. 1 Develop an understanding of fractions as numbers. Continued... |  |
|  | M03.A-F.1.1 Continued... | M03.A-F.1.1.1 Continued... |
|  |  | M03.A-F.1.1.2 <br> 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). |
|  |  | M03.A-F.1.1.3 <br> 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: $4 / 6=2 / 3$ |
|  |  | M03.A-FT.1.1.4 <br> 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 ). <br> Example 1: Express 3 in the form $3=3 / 1$. <br> Example 2: Recognize that $6 / 1=6$. |
|  |  | M03.A-FT.1.1.5 <br> 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. |

## 3.MD - Measurement \& Data

## CCSSM

## PA Core Standards for Mathematics

Solve problems involving measurement and estimation.

## 3.MD. 1

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

Pennsylvania System of School Assessment (PSSA)
M03.D-M Measurement \& Data
M03.D-M.1 Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects.

M03.D-M.1.1
Determine or calculate time and elapsed time.

## CCSSM

Solve problems involving measurement and estimation. Continued...

## 3.MD. 2

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (1). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
CC.2.4.3.A. 2

Tell and write time to the nearest minute and solve problems by calculating time intervals.

Pennsylvania System of School Assessment (PSSA)
M03.D-M Measurement \& Data
M03.D-M. 1 Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects. Continued...

## M03.D-M.1.2

Use the attributes of liquid volume, mass, and length of objects.

| M03.D-M.1.2.1 |
| :--- |
| 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]). |
| M03.D-M.1.2.2 |
| Add, subtract, multiply, and divide to solve one-step word problems involving masses |
| or liquid volumes that are given in the same units. |
| M03.D-M.1.2.3 |
| Use a ruler to measure lengths to the nearest quarter inch or centimeter. |

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]).

Add, subtract, multiply, and divide to solve one-step word problems involving masses

## M03.D-M.1.2.3

Use a ruler to measure lengths to the nearest quarter inch or centimeter.

## 3.MD - Measurement \& Data - Continued...

| CCSSM | PA Core Standards for Mathematics |
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| Intentionally left blank. | CC.2.4.3.A. 3 <br> Solve problems and make change involving money using a combination of coins and bills. |
| Pennsylvania System of School Assessment (PSSA) | M03.D-M Measurement \& Data |
| M03.D-M. 1 Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects. Continued... |  |
| M03.D-M.1.3 <br> Count, compare, and make change using a collection of coins and one-dollar bills. | M03.D-M.1.3.1 <br> Compare total values of combinations of coins (penny, nickel, dime, and quarter) and/or dollar bills less than $\$ 5.00$. |
|  | M03.D-M.1.3.2 <br> Make change for an amount up to $\$ 5.00$ with no more than $\$ 2.00$ change given (penny, nickel, dime, quarter, and dollar). |
|  | M03.D-M.1.3.3 <br> Round amounts of money to the nearest dollar. |
| CCSSM | PA Core Standards for Mathematics |
| Represent and interpret data. <br> 3.MD. 3 <br> Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. <br> 3.MD. 4 <br> Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters. | CC.2.4.3.A. 5 <br> Determine the area of a rectangle and apply the concept to multiplication and to addition. |
| Pennsylvania System of School Assessment (PSSA) | M03.D-M Measurement \& Data |
| M03.D-M.2 Represent and Interpret data |  |
| M03.D-M.2.1 <br> Organize, display, and answer questions based on data. This section continues on the next page... | M03.D-M.2.1.1 <br> 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 ). |

## 3.MD - Measurement \& Data - Continued...

| CCSSM |  | PA Core Standards for Mathematics |
| :---: | :---: | :---: |
| 3.MD. 3 Continued...3.MD. 4 Continued...Pennsylvania System of School Assessment (PSSA) <br> M03.D-M.2 Represent and Interpret data Continued... <br> M03.D-M.2.1 Continued... |  | CC.2.4.3.A.3 Continued... |
|  |  | M03.D-M Measurement \& Data |
|  |  | M03.D-M. 2 Represent and Interpret data Continued... |
|  |  | M03.D-M.2.1.1 Continued... |
|  |  | M03.D-M.2.1.2 <br> 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 ). <br> Example 1: (One-step) "Which category is the largest?" <br> Example 2: (Two-step) "How many more are in category A than in category B?" |
|  |  | M03.D-M.2.1.3 <br> 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. |
|  |  | M03.D-M.2.1.4 <br> Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, and tables. <br> Example: Convert a tally chart to a bar graph. |
| Pennsylvania System of School Assessment (PSSA) |  | M03.D-M Measurement \& Data |
|  | M03.D-M. 1 Solve problems involving measurement and estimation of intervals of time, money, liquid volumes, masses, and lengths of objects. |  |
|  | M03.D-M.1.2 <br> Use the attributes of liquid volume, mass, and length of objects. | M03.D-M.1.2.1 <br> 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 [1], grams [g], and kilograms [kg]). |
|  |  | M03.D-M.1.2.2 <br> Add, subtract, multiply, and divide to solve onestep word problems involving masses or liquid volumes that are given in the same units. |
|  |  | M03.D-M.1.2.3 <br> Use a ruler to measure lengths to the nearest quarter inch or centimeter. |

## 3.MD - Measurement \& Data - Continued...

## CCSSM

## PA Core Standards for Mathematics

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

## 3.MD. 5

Recognize area as an attribute of plane figures and understand concepts of area measurement.
a) A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area
b) A plane figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.
Geometric measurement: understand concepts of area and relate area to multiplication and to addition. Continued..

## 3.MD. 6

Measure areas by counting unit squares (square cm , square m , square in, square ft ., and improvised units)
3.MD. 7

Relate area to the operations of multiplication and addition.
a) Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
b) Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
c) Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b+c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.
d) Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

## Pennsylvania System of School Assessment (PSSA)

M03.D-M. 3 Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

## M03.D-M.3.1

Find the areas of plane figures.

## M03.D-M.3.1.1

Measure areas by counting unit squares (square cm , square m , square in., square ft., and nonstandard square units).

## M03.D-M.3.1.2

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

## 3.MD - Measurement \& Data - Continued...

## CCSSM

## PA Core Standards for Mathematics

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguished between linear and area measures.

## 3.MD. 8

a) Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

## Pennsylvania System of School Assessment (PSSA)

M03.D-M. 4 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

## M03.D-M.4.1

Find and use the perimeters of plane figures.

## M03.D-M.4.1.1

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.

## 3.G-Geometry

## CCSSM

## PA Core Standards for Mathematics

Reason with shapes and their attributes.

## 3.G. 1

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

## 3.G. 2

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.

## CC.2.4.3.A. 6

Solve problems involving perimeters of polygons and distinguish between linear and area measures.

## CC.2.2.3.A. 2

Use the understanding of fractions to partition shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.

## Pennsylvania System of School Assessment (PSSA)

## M03.G. 1 Reason with shapes and their attributes

## M03.G.1.1

Understand various meanings of multiplication and division

## M03.G.1.1.1

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.

## M03.G.1.1.2

Recognize rhombi, rectangles, and squares as
examples of quadrilaterals and/or draw examples
of quadrilaterals that do not belong to any of these subcategories.

## M03.G.1.1.3

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.

