POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 3	STATE STANDARD AREA/UNIT:	Numbers and Operations: Numbers and Operations in Base Ten	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Use place value understanding and properties of operations to perform multi-digit arithmetic.

- **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 × 80, 5 × 60) using strategies based on place value and properties of operations.

MATHEMATICAL PRACTICES:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

ESSENTIAL QUESTIONS	VOCABULARY	ASSESSMENT	
		Formative:	**Summative:**

• **How can we use equal groups to find how many in all?**
• **How is multiplication like addition?**
• **How can basic facts help us when we multiply a single digit number by a multiple of ten?**
• **How can arithmetic patterns help us when using properties of multiplication?**
• **How can we use the properties of multiplication to find products?**
	Digit
	Base ten
	Whole numbers
	Ones place
	Tens place
	Hundreds place
	Thousands place
	Ones period
	Thousands period
	Comma
	Greatest
	Least
	Order
	Decomposing
	Rounding
	Estimating
		• Journals/logs
		• KWL chart
		• At the bell activities
		• Question and answer
		• Thumbs up/thumbs down
		• Individual white boards
		• Homework
		• Quizzes
		• Constructed response/open ended problem solving
		• Performance tasks
		• Exit slips
		• Teacher Observation
		• Daily Practice Problems
			• Benchmark assessments
			• Performance based assessments
			  o Quizzes
			  o Topic/Unit Tests
			  o Constructed response/open-ended problem solving
			  o Performance tasks
			  o Projects
			• Spiral Review Checkpoints
			• Study Island Practice

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: NUMBERS AND OPERATIONS IN BASE 10

PA COMMON CORE STANDARDS	ELIGBLE CONTENT STANDARDS/LEARNING ACTIVITIES
CC.2.1.3.B.1: **Apply place-value understanding and properties of operations to perform multi-digit arithmetic.** **Essential Skills and Understanding** • Knowledge of place value through 1,000 to provide the foundation for rounding whole numbers. • Knowledge that place value refers to what a digit is worth in a number. • Knowledge that each place in a number is worth 10 times more than the place to the right of it (The tens column is worth 10 ones, the hundreds column is worth 10 tens). • Ability to use a variety of strategies when rounding (e.g., number line, proximity, and hundreds chart.) • Ability to round a three-digit number to the nearest 10 or 100. • Knowledge of and ability to apply strategies of decomposing and composing numbers, partial sums, counting up, and counting back by ones, tens, and hundreds. • Ability to apply alternative algorithms as appropriate. • Ability to use addition and subtraction interchangeably in computation based on the relationship between the operations. • Ability to apply knowledge of place value (e.g., 9 x 80 is 9 times 8 tens = 72 tens). • Ability to apply the Properties of Operations.	**M05.A.T.1: Understand the place value system.** **M03.A-T.1.1. Place Value** **M03.A-T.1.1.1** • Round two- and three-digit whole numbers to the nearest ten or hundred, respectively. Master rounding numbers to the nearest ten and hundred. **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.** • Multiply one-digit whole numbers by two-digit multiples of 10. **M03.A-T.1.1.4** • Order a set of whole numbers from least to greatest or greatest to least (up through 9,999; limit sets to no more than four numbers).

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

DIFFERENTIATION ACTIVITIES:
Teacher directed differentiated instructional projects and activities are ongoing and based on student need.

ENRICHMENT:

- Pearson SuccessNet On-Line Teacher's Edition
- First In Math
- StudyIsland
- Web-based Math Resources/tutorials
- Small group instruction
- Investigation Workshops
- Math Centers
- Teacher generated/differentiated instruction enrichment and activities
- Supporting the range of learners as per teacher manual
- Encourage and support learners in explaining how they applied their skills during mathematical tasks
- Enrichment based on student GIEP or need of student
- Math Rules!
- Enrichment Units in Math, Book 2
- Math Extenstion Units, Book 2
- Differentiating Instruction with Menus: grades 3-5
- Hands-On Equations
- Groundworks
- The Mathmaker (Cooperative Math Activities)
- MathArt Projects and Activities
- How to Count Like the Greeks (Grade 3)

REMEDIATION:

- Pearson Successnet On-Line Teacher's Edition
- Investigations Workshops
- Web-based Math Resources/tutorials
- First In Math
- Math Centers
- Supporting the range of learners as per teacher manual
- Teacher generated/differentiated instruction activities
- Math connections/activities with English Language Arts books, writing, activities
- Small group instruction
- Adapted assignments
- Additional time
- Alternative Assessments
- Chunking of content, assignment and/or assessments
- One-on-one re-teaching
- Volunteer/peer tutoring
- Accommodations based on IEP and/or need
- ELL student(or based on student need) additional support
    - Provide specific examples
    - Use of Manipulatives
    - Simplified language in word problems
    - Visuals
    - Flashcards
    - Multiple-meaning words
    - Bilingual dictionary/picture dictionary
- Math Support, Learning Support, or ELL Teachers as appropriate and based on need

RESOURCES:

- **enVisionMATH Numeration/Number Sense: Addition/Subtraction (Includes Assessments/Printable Resources/Center Activities)** (Topics 1,2,3)
- **SFAW** (Chapters 1-3)
- PDE SAS portal: http://www.pdesas.org
- Thinking Maps
- KWL Charts
- Versatiles
- Partner Games
- Calculators
- Exit Tickets
- Adaptions checklist
- ELL Instructional Strategies for Math
  - ESL Handbook
  - Click on "Academic Resources" from PMSD website
  - Click on "ESL" on left side of tool bar.
  - Click on the link to the PMSD ESEL Handbook
    - Scroll through to page 44 in the appendices.
- Teacher generated/differentiated instruction resources and activities
- Promethean Flipcharts/ActiveVotes
- Student math handbook flipchart
- Math Internet Resources from PMSD Resource Page
- BrainPOP Junior/BrainPOP
- First In Math
- StudyIsland
- http://www.khanacademy.org/
- Thinkfinity website: http://www.thinkfinity.org/home
- IXL Website: http://www.IXL.com/math/\
- United Streaming: http://streaming.discoveryeducation.com/index.cfm
- www.sumdog.com
- http://edhelper.com/place_value.html
- http://illuminations.nctm.org
- http://insidemathematics.org
- www.teachingchannel.org
- http://illustrativemathematics.org/standards/k8
- http://wiki.warren.kyschools.us/groups/wcpscommoncorestandards/
- www.teachingchannel.org
- http://www.learnzillion.com
- http://www.commoncoresheets.com
- http://www.kidsknowit.com
- http://www.teacherspayteachers.com

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 3	STATE STANDARD AREA/UNIT:	Numbers and Operations: Numbers and Operations - Fractions	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Develop understanding of fractions as numbers.

- **3.NF.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.
- **3.NF.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.
- **3.NF.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.

MATHEMATICAL PRACTICES:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
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POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

ESSENTIAL QUESTIONS	VOCABULARY	ASSESSMENT	
• **What are equal parts of a whole?** • **What do the top and bottom numbers of a fraction tell?** • **How does a fraction name part of a whole?** • **How can a fraction tell how many are in part of a group?** • **How can you represent and locate fractions on a number line?** • **How can you use the strategy *draw a line* to solve fraction problems?** • **How can we compare fractions with the same denominator?** • **What other strategies can we use to compare fractions?**	Fraction Unit Fraction Numerator Denominator Part of a Whole Part of a Set Equivalent Interval Compare Order Partition Halves Thirds Fourths Sixths Eighths Greater than Less than Equal to	**Formative:** • Journals/logs • KWL chart • At the bell activities • Question and answer • Thumbs up/thumbs down • Individual white boards • Homework • Quizzes • Constructed response/open ended problem solving • Performance tasks • Exit slips • Teacher Observation • Daily Practice Problems	**Summative:** • Benchmark assessments • Performance based assessments o Quizzes o Topic/Unit Tests o Constructed response/open-ended problem solving o Performance tasks o Projects • Spiral Review Checkpoints • Study Island Practice

UNIT OF INSTRUCTION: NUMBERS AND OPERATIONS - FRACTIONS	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.1.3.C.1Explore and develop an understanding of fractions as numbers. **Essential Skills and Understanding** Knowledge of the relationship between the number of equal shares and the size of the share. • Knowledge of equal shares of circles and rectangles divided into or partitioned into halves, thirds, and fourths. • Knowledge that, for example, the fraction ¼ is formed by 1 part of a whole which is divided into 4 equal parts. • Knowledge that, for example, the fraction ¾ is the same as ¼ + ¼ + ¼ (3 parts of the whole when divided into fourths). • Knowledge of the terms numerator (the number of parts being counted) and denominator (the total number of equal parts in the whole). • Knowledge of and ability to explain and write fractions that represent one whole (e.g., 4/4, 3/3).	**M03.A-F.1: Develop an understanding of fractions as numbers.** **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 the denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; no simplification necessary). **M03.A-F.1.1.2** • Represent fractions on a number line (limit the denominators to 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator; no simplification necessary). **M03.A-F.1.1.3** • Recognize and generate simple equivalent fractions (limit the denominators to 1, 2, 3, 4, 6, and 8; limit numerators to whole numbers less than the denominator). o *Example 1: 1/2 = 2/4* o *Example 2: 4/6 = 2/3*

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: NUMBERS AND OPERATIONS - FRACTIONS	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	• Ability to identify and create fractions of a region and of a set, including the use of concrete materials. • Knowledge of the size or quantity of the original whole when working with fractional parts. • Ability to apply knowledge of whole numbers on a number line to the understanding of fractions on a number line. • Ability to apply knowledge of unit fractions to represent and compute fractions on a number line. • Knowledge of the relationship between fractions and division. (Division separates a quantity into equal parts. Fractions divide a region or a set into equal parts). • Ability to use linear models (e.g., equivalency table and manipulatives such as fraction strips, fraction towers, Cuisenaire rods) for fraction placement on a number line. • Knowledge of the relationship between the use of a ruler in measurement to the use of a ruler as a number line. • Knowledge that a number line does NOT have to start at zero. • Ability to identify fractions on a number line with tick marks as well as on number lines without tick marks. • Knowledge of the meaning of the parts of a fraction (numerator and denominator). • Knowledge of fraction 1/b as the unit fraction of the whole. • Knowledge that when the denominator is 4, each space between the tick marks on a number line is ¼. • Knowledge that when counting parts of a whole, the numerator consecutively changes but the denominator stays the same. (Example: 1/4, 2/4, 3/4, 4/4 or 1) • Ability to explain, for example, that when *a* is 2 and *b* is 4, the fraction 2/4 on a number line would be the second tick mark from zero or when *a* is 3 and *b* is 4, the fraction ¾ on a number line would be the third tick mark from zero. • Ability to use concrete manipulatives and visual models to explain reasoning about fractions. • Knowledge that equivalent fractions are ways of describing the same amount by using different sized fractional parts. (e.g., 1/2 is the same as 2/4 or 3/6 or 4/8)	**M03.A-F.1.1.4** • Express whole numbers as fractions, and/or generate fractions that are equivalent to whole numbers (limit the denominators to 1, 2, 3, 4, 6, and 8). o *Example 1: Express 3 in the form 3 = 3/1.* o *Example 2: Recognize that 6/1 = 6.* **M03.A-F.1.1.5** • Compare two fractions with the same denominator (limit the denominators to 1, 2, 3, 4, 6, and 8), using the symbols >, =, or <, and/or justify the conclusions.

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: NUMBERS AND OPERATIONS - FRACTIONS	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	• Ability to use a variety of models when investigating equivalent fractions (e.g., number line, Cuisenaire rods, fraction towers, fraction circles, equivalence table, fraction strips). • Ability to relate equivalency to fractions of a region or fractions of a set. • Ability to use benchmarks of 0, ½ and 1 comparing fractions. • Knowledge of and experience with fractional number sense to lay foundation for manipulating, comparing, finding equivalent fractions, etc. • Ability to describe the same amount by using different-sized fractional parts. (e.g., ½ is the same as 2/4 or 3/6 or 4/8) • Ability to use number lines as well as fractions of a set or fractions of a region to model equivalent fractions. • Ability to use a variety of models to investigate relationships of equivalency. • Ability to describe the same amount by using different-sized fractional parts. (e.g., ½ is the same as 2/4 or 3/6 or 4/8) • Ability to use fraction models (e.g., fraction towers, fraction strips) to justify understanding of equivalent fractions. • Knowledge of the denominator as the number of parts that a whole is divided into in order to explain why a denominator of 1 indicates whole. • Ability to use benchmarks of 0, ½ and 1 to explain relative value of fractions. • Knowledge that as the denominator increases the size of the part decreases. • Knowledge that when comparing fractions the whole must be the same. • Ability to use a variety of models when comparing fractions (e.g., number line, equivalence table, and manipulatives such as Cuisenaire rods, fraction towers, fraction circles, fraction strips).	

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

DIFFERENTIATION ACTIVITIES:
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ENRICHMENT:

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- Math Extension Units, Book 2
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- Groundworks
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- Additional time
- Alternative Assessments
- Chunking of content, assignment and/or assessments
- One-on-one re-teaching
- Volunteer/peer tutoring
- Accommodations based on IEP and/or need
- ELL student(or based on student need) additional support
    - Provide specific examples
    - Use of Manipulatives
    - Simplified language in word problems
    - Visuals
    - Flashcards
    - Multiple-meaning words
    - Bilingual dictionary/picture dictionary
- Math Support, Learning Support, or ELL Teachers as appropriate and based on need

RESOURCES:

- **enVisionMATH** (Topics 9 and 10)
- **SFAW** (Chapter 9)
- PDE SAS portal: http://www.pdesas.org
- Thinking Maps
- KWL Charts
- Versatiles
- Partner Games
- Calculators
- Exit Tickets
- Adaptions checklist
- ELL Instructional Strategies for Math
    - ESL Handbook
    - Click on "Academic Resources" from PMSD website
    - Click on "ESL" on left side of tool bar.
    - Click on the link to the PMSD ESEL Handbook
        - Scroll through to page 44 in the appendices.
- Teacher generated/differentiated instruction resources and activities
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- Math Internet Resources from PMSD Resource Page
- BrainPOP Junior/BrainPOP
- First In Math
- StudyIsland
- http://www.khanacademy.org/
- Thinkfinity website: http://www.thinkfinity.org/home
- IXL Website: http://www.IXL.com/math/\
- United Streaming: http://streaming.discoveryeducation.com/index.cfm
- www.sumdog.com
- http://edhelper.com/place_value.html
- http://illuminations.nctm.org
- http://insidemathematics.org
- www.teachingchannel.org
- http://illustrativemathematics.org/standards/k8
- http://wiki.warren.kyschools.us/groups/wcpscommoncorestandards/
- www.teachingchannel.org
- http://www.learnzillion.com
- http://www.commoncoresheets.com
- http://www.kidsknowit.com
- http://www.teacherspayteachers.com

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 3	STATE STANDARD AREA/UNIT:	Algebraic Concepts: Operations and Algebraic Thinking	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Represent and solve problems involving multiplication and division.

- **3.OA.1.** Interpret products of whole numbers, e.g., interpret 5 × 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 × 7.
- **3.OA.2**. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 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 ÷ 8.*
- **3.OA.3.** 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.
- **3.OA.4.** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = _ ÷ 3, 6 × 6 = ?*

Understand properties of multiplication and the relationship between multiplication and division.

- **3.OA.5**. Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
- **3.OA.6.** Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

Multiply and divide within 100

- **3.OA.7.** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 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.*

MATHEMATICAL PRACTICES:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

ESSENTIAL QUESTIONS	VOCABULARY		ASSESSMENT	
• **How can we use multiplication to divide?** • **How can we write a set of related multiplication and division facts?** • **How can we use various strategies and the order of operations to solve two-step equations?** • **What strategies can be used to relate multiplication and division?** • **What operations, patterns, and estimation strategies can be used to solve problems?** • **How can we use multiplication and division to solve word problems?** • **What strategies can be used (ex. Act it Out, Draw a Diagram, Find a Pattern, Make a Table, etc.) to solve word problems?**	Product Factor Multiple Multiplication Divide Division Equations Decomposing Quotient Divisor Dividend Patterns Reasonable Inverse Operations Strategies Symbol Quantity Array Property	Algorithm Whole number Greater than Less than Equal to Word problem Story problem Order of Operations Skip counting Order Related facts Patterns Expression Property Commutative Associative Place value Decomposing	**<u>Formative:</u>** • Journals/logs • KWL chart • At the bell activities • Question and answer • Thumbs up/thumbs down • Individual white boards • Homework • Quizzes • Constructed response/open ended problem solving • Performance tasks • Exit slips • Teacher Observation • Daily Practice Problems	**<u>Summative:</u>** • Benchmark assessments • Performance based assessments: o Quizzes o Tests o Topic/Unit Tests o Constructed response/ open-ended problem solving o Performance Tasks Projects o Spiral Review Checkpoints o Study Island Practice

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: OPERATIONS AND ALGEBRAIC THINKING	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.2.3.A.1: Represent and solve problems involving multiplication and division. **Essential Skills and Understanding** • Knowledge that multiplication is the process of repeated addition, arrays, and/or equal groups. • Ability to use concrete objects, pictures, and arrays to represent the product as the total number of objects. • Knowledge that the product represented by the array is equivalent to the total of equal addends. • Ability to apply knowledge of repeated addition up to 5 rows and 5 columns and partitioning, which leads to multiplication. • Knowledge that division is the inverse of multiplication and the process of repeated subtraction. • Ability to use concrete objects to represent the total number and represent how these objects could be shared equally. • Knowledge that the quotient can either represent the amount in each group or the number of groups with which a total is shared. • Knowledge that just as multiplication is related to repeated addition, division is related to of repeated subtraction. **CC.2.2.3.A.1 Represent and solve problems involving multiplication and division.** **Essential Skills and Understanding** • Ability to determine when to use multiplication or division to solve a given word problem situation. • Ability to solve different types of multiplication and division word problems.	**M03.B-O.1 Represent and solve problems involving multiplication and division.** **M03.B-O.1.1.1** • Interpret and/or describe products of whole numbers (up to and including 10 × 10). a. *Example 1: Interpret 35 as the total number of objects in 5 groups, each containing 7 objects.* b. *Example 2: Describe a context in which a total number of objects can be expressed as 5 × 7.* **M03.B-0.1.1.2** • Interpret and/or describe whole-number quotients of whole numbers (limit dividends through 50, and limit divisors and quotients through 10). a. *Example 1: Interpret 48 ÷ 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.* b. *Example 2: Describe a context in which a number of shares or a number of groups can be expressed as 48 ÷ 8.* **M03.B-O.1.2.1** • 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. **M03.B-O.1.2.2** • 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. **M03.B-O.2 Understand properties of multiplication and the relationship between multiplication and division.** **M03.B-O.2.1.1** • Apply the commutative property of multiplication (not identification or definition of the property). **M03.B-O.2.1.2** • Apply the associative property of multiplication (not identification or definition of the property).

UNIT OF INSTRUCTION: OPERATIONS AND ALGEBRAIC THINKING	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	• Ability to solve problems that employ different placements for the unknown and product/quotient. (Examples: 5 x __ = 15, 15 = 3 x __ ,15 ÷ 3 = __ , 15 ÷ __ = 5, 15 = 5 x __ , __ = 15 ÷ 3, 3 = __ ÷ 5) • Ability to use concrete objects to compose and decompose sets of numbers. • Ability to use the inverse operation as it applies to a given equation. • Knowledge of fact families. • Ability to find the unknown in a given multiplication or division equation, where the unknown is represented by a question mark, a box, or a blank line.	**M03.B-O.2.1.2** • Apply the associative property of multiplication (not identification or definition of the property). **M03.B-0.2.2.1** • Interpret and/or model division as a multiplication equation with an unknown factor. a. *Example: Find 32 ÷ 8 by solving 8 × ? = 32.* **M03.B-O.3. Solve problems involving the four operations, and identify and explain patterns in arithmetic** **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 (equation is explicitly stated with no grouping symbols). **M03.B-O.3.1.5** • Identify arithmetic patterns (including patterns in the addition table or multiplication table) and/or explain them using properties of operations. o *Example 1: Observe that 4 times a number is always even.* o *Example 2: Explain why 6 times a number can be decomposed into three equal addends.* **M03.B-O.3.1.6** • Create or match a story to a given combination of symbols (+, –, ×, ÷, <, >, =) and numbers. **M03.B-O.3.1.7** Identify the missing symbol (+, –, ×, ÷, <, >, =) that makes a number sentence true.

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

DIFFERENTIATION ACTIVITIES:
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- Investigation Workshops
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RESOURCES:

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- First In Math
- StudyIsland
- http://www.khanacademy.org/
- Thinkfinity website: http://www.thinkfinity.org/home
- IXL Website: http://www.IXL.com/math/\
- United Streaming: http://streaming.discoveryeducation.com/index.cfm
- www.sumdog.com
- http://edhelper.com/place_value.html
- http://illuminations.nctm.org
- http://insidemathematics.org
- www.teachingchannel.org
- http://illustrativemathematics.org/standards/k8
- http://wiki.warren.kyschools.us/groups/wcpscommoncorestandards/
- www.teachingchannel.org
- http://www.learnzillion.com
- http://www.commoncoresheets.com
- http://www.kidsknowit.com
- http://www.teacherspayteachers.com

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 3	STATE STANDARD AREA/UNIT:	Geometry: Geometry	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

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.

MATHEMATICAL PRACTICES:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

ESSENTIAL QUESTIONS	VOCABULARY	ASSESSMENT	
		Formative:	**Summative:**

• **How can we use characteristics of shapes to identify them?**
• **How can we explain that shapes from different categories share attributes?**
• **How can we use equal areas to partition shapes into unit fractions?**
	Shapes
	Triangle
	Square
	Rectangle
	Rhombus
	Quadrilateral
	Pentagon
	Polygon
	Sides
	Parallel
	Angles
	Partition
	Decomposing
	Congruent
	Plane Figure
	Attributes
		• Journals/logs
		• KWL chart
		• At the bell activities
		• Question and answer
		• Thumbs up/thumbs down
		• Individual white boards
		• Homework
		• Quizzes
		• Constructed response/open-ended problem solving
		• Performance tasks
		• Exit slips
			• Benchmark assessments
			• Performance based assessments
			  o Quizzes
			  o Topic/Unit Tests
			  o Constructed response/open-ended problem solving
			  o Performance tasks
			  o Projects
			• Spiral Review Checkpoints
			• Study Island Practice

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: GEOMETRY	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT /LEARNING ACTIVITIES
	C.C.2.3.4.A.1:Identify, compare, and classify shapes and their attributes. **Essential Skills and Understanding** • Ability to compare and sort polygons based on their attributes, extending beyond the number of sides. • Ability to explain why two polygons are alike or why they are different based on their attributes **CC.2.3.3.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.** **Essential Skills and Understanding** • Knowledge that this is a geometry application of unit fractions and ability to make use of unit fraction understanding. • Ability to use concrete materials to divide shapes into equal areas (e.g., pattern blocks , color tiles, geoboards).	**M03.C-G.1**: **Reason with shapes and their attributes**. **M03.C-G.1.1.1** • Explain that shapes in different categories may share attributes, and that the shared attributes can define a larger category. o *Example 1: A rhombus and a rectangle are both quadrilaterals since they both have exactly four sides.* o *Example 2: A triangle and a pentagon are both polygons since they are both multi-sided plane figures.* **M03.C-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.C-G.1.1.3** • Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. o *Example 1: Partition a shape into 4 parts with equal areas.* o *Example 2: Describe the area of each of 8 equal parts as 1/8 of the area of the shape.*

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

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- http://www.khanacademy.org/
- Thinkfinity website: http://www.thinkfinity.org/home
- IXL Website: http://www.IXL.com/math/\
- United Streaming: http://streaming.discoveryeducation.com/index.cfm
- www.sumdog.com
- http://edhelper.com/place_value.html
- http://illuminations.nctm.org
- http://insidemathematics.org
- www.teachingchannel.org
- http://illustrativemathematics.org/standards/k8
- http://wiki.warren.kyschools.us/groups/wcpscommoncorestandards/
- www.teachingchannel.org
- http://www.learnzillion.com
- http://www.commoncoresheets.com
- http://www.kidsknowit.com
- http://www.teacherspayteachers.com

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 3	STATE STANDARD AREA/UNIT:	Measurement, Data and Probability: Measurement and Data	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

- **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.
- **3.MD.2.** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).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.

Represent and interpret data.

- **3.MD.3.** 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.*
- **3.MD.4.** 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 such as whole numbers, halves, or quarters.

Geometric measurement: understand concopts 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.
- **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 × b and a × 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-

MATHEMATICAL PRACTICES:

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3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

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

- **3.MD.8.** 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 perimeter.

ESSENTIAL QUESTIONS	VOCABULARY			ASSESSMENT
• **How can we measure the area of geometric shapes?** • **How can we use multiplication and addition to find area?** • **How can we measure perimeter of geometric shapes?** • **How can we use perimeter and area as attributes of plane figures?**	Perimeter Area Tiling Square Units Length Width Array Polygon Plane Figure Volume Capacity Mass Weight Units Cups Pints Quarts Gallons Ounces Pounds Tons	Liters Grams Kilograms Inches Feet Yards Miles Centimeter Kilograms Inches Meter Kilometer Estimate Compare Order Dollar Sign Decimal point Coins Bills Currency Making Change Analog Digital Elapsed time Hours	Quarter after Quarter before A.M. P.M. Pictograph Bar Graph Number scale Interval Key Symbol Title Labels Categories Bars Tallies Line plot Data Frequency	**<u>Formative:</u>** • Journals/logs • KWL chart • At the Bell Activities • Question and answer • Thumbs up/thumbs down • Individual white boards • Homework • Quizzes • Constructed response/ open-ended problem solving • Performance tasks • Exit Slips **<u>Summative:</u>** • Benchmark assessments • Performance based assessments o Quizzes o Topic/Unit Tests o Constructed response/open-ended problem solving o Performance tasks o Projects • Spiral Review Checkpoints • Study Island Practice

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: MEASUREMENT AND DATA	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.4.3.A.1 Solve problems involving measurement and estimation of temperatures, liquid, volume, mass, or length **Essential Skills and Understanding** • Ability to apply prior experience with the measurement of lengths being marked and recorded on line plots to the nearest whole unit. **CC 2.4.3.A.2 Tell and write time to the nearest minute and solve problems by calculating time intervals.** **Essential Skills and Understanding** • Ability to tell time to the nearest 5-minute interval. (2.MD.7) • Ability to tell time to the nearest minute in a.m. and p.m. • Ability to measure time intervals in minutes. • Ability to solve time problems by using the number line model as opposed to an algorithm. • Ability to initially add minutes in order to find the end time followed by working backwards to find start time. • Ability to find the elapsed time of an event. • Ability to relate fractions and time (1/4 related to quarter hour, ½ related to half past the hour). • Ability to find start time, end time, or elapsed time. **CC 2.4.3.A.3 Solve problems and make change involving money using a combination of coins and bills.** **Essential Skills and Understanding** • Ability to count a collection of coins and bills to $5.00. • Ability to make change for an amount up to $5.00. **CC 2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs.** **Essential Skills and Understanding** • Ability to apply experience with constructing and analyzing simple, single-unit scaled bar and picture graphs (pictograph) with no more than 4 categories. • Knowledge of increased scale and intervals (moving to graphs representing more than one item and the	**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.1.2.1** • 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], 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. **M03.D-M.1.1.1** • Tell, show, and/or write time (analog) to the nearest minute. **M03.D-M.1.1.2** • Calculate elapsed time to the minute in a given situation (total elapsed time limited to 60 minutes). **M03.D-M.1.3.1** • Compare total values of combinations of coins (penny, nickel, dime, quarter) and/or dollar bills up to $5.00. **M03.D-M.1.3.2** • 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** • Round amounts of money to the nearest dollar. **M03.D-M.2 Represent and interpret data.** **M03.D-M.2.1.1** • 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). **M03.D-M.2.1.2** • 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).

UNIT OF INSTRUCTION: MEASUREMENT AND DATA	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	intervals representing 2, 5, 10 on the graph, etc.) and expanding to one-step and two-step problem solving with given data. • Knowledge of and ability to connect understanding of locating points on a number line with locating points between intervals on a given axis (e.g., if given a scale counting by 5s, students would need to estimate the location of 13 between intervals of 10 and 15). • Ability to apply the information in the Key when interpreting fractions of a symbol on a picture graph. **CC 2.4.3.A.5 Determine the area of a rectangle and apply the concept to multiplication and to addition.** **Essential Skills and Understanding** • Ability to apply experience with partitioning rectangles into rows and columns to count the squares within. • Knowledge that area is the measure of total square units inside a region or how many square units it takes to cover a region. • Ability to use manipulatives and visual models to calculate area. • Ability to explain the relationship of multiplication arrays and area. • Ability to apply the formula for area of a rectangle to solve word problems. **CC 2.4.3.A.6 Solve problems involving perimeter of polygons and distinguish between linear and area measures** **Essential Skills and Understanding** • Ability to use manipulatives and visual models to find the perimeter of a polygon. • Ability to apply a variety of strategies to find the perimeter of a polygon. • Ability to explain and model the relationship between area and perimeter using concrete materials (e.g., color tiles and geoboards).	*Example 1: (One-step) "Which category is the largest?"* *Example 2: (Two-step) "How many more are in category A than in category B?"* **M03.D-M.2.1.3** • 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 such as whole numbers, halves, or quarters. **M03.D-M.2.1.4** • 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.* **M03.D-M.3: Geometric measurement: Understand concepts of area and relate area to multiplication and addition** **M03.D-M.3.1.1** • Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard 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. **M03.D-M.4: Geometric measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures**. **M03.D-M.4.1.1** • 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.

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

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- IXL Website: http://www.IXL.com/math/\
- United Streaming: http://streaming.discoveryeducation.com/index.cfm
- www.sumdog.com
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