POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

MATH: GRADE 4	STATE STANDARD AREA/UNIT:	Numbers and Operations: Numbers and Operations in Base Ten	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARD

Generalize place-value understanding for multi-digit whole numbers.

- **4.NBT.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
- **4.NBT.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
- **4.NBT.3.** Use place value understanding to round multi-digit whole numbers to any place.

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

- **4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- **4.NBT.5.** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area.
- **4.NBT.6.** Find whole-number quotients and remainders up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models

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	
• **What are some ways to represent numbers in the millions?** • **How do digits within a multi-digit whole number relate to each other by their place value?** • **How do you compare numbers through the millions place?** • **How do you compare and order numbers?** • **How do you use place value to round whole numbers?**	Place value Base Ten Word Form Expanded form Digit Estimate Round Compare Greater than Less than Equal to Addition Addends Sum Subtraction Difference Mental Math Breaking Apart	Counting on Compensation Commutative Property of Addition Associate Property of Addition Inverse Operations Multiplication Array Product Multiple factors Common Factor Composite Number Commutative Property of Multiplication Zero Property of Multiplication Identity Property of Multiplication Distributive Property	**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	**Summative:** • Benchmark assessments • Performance based assessments o Quizzes o 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	ESSENTIAL CONTENT/ LEARNING ACTIVITIES
CC.2.1.4.B.1: Generalize place value understanding for multi-digit whole numbers. **Essential Skills and Understandings** • Knowledge of place value from prior grades. • Knowledge of place value with whole numbers less than or equal to one million. • Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. • Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. • Use place value understanding to round multi-digit whole numbers to any place. **CC.2.1.4.B.2: Use place value understanding and properties of operations to perform multi-digit arithmetic.** **Essential Skills and Understandings** • Knowledge of various types of algorithms (Fluently add and subtract multi-digit whole numbers using the standard algorithm.) • Ability to apply a standard algorithm in both addition and subtraction problems. • Knowledge of the use of arrays area models for multiplication. (Multiply a whole number up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.) • Knowledge of and ability to apply the Properties of Operations. (Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.) • Ability to apply knowledge of multiplication and division within 100. • Ability to use arrays and area models for multiplication and division. • Knowledge of and ability to apply the Properties of Operations. (Find whole-number quotients and remainders up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.)	**M04.A-T.1.1** **Generalize place value understanding for multi-digit whole numbers.** **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. *Example: Recognize that in the number 770, the 7 in the hundreds place is ten times the 7 in the tens place.* **M04.A-T.1.1.2** • Read and write whole numbers in expanded, standard, and word form through 1,000,000. **M04.A-T.1.1.3** • Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols. **M04.A-T.1.1.4** • Round multi-digit whole numbers (through 1,000,000) to any place. **M04.A-T.2.1** **Use place value understanding and properties of operations to perform multi-digit arithmetic.** **M04.A-T.2.1.1** • Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000). **M04.A-T.2.1.2** • Multiply a whole number, up to four digits, by a one-digit whole number and multiply 2 two-digit numbers. **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.

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT: BASE TEN	PA COMMON CORE STANDARDS	ESSENTIAL CONTENT/ LEARNING ACTIVITIES
		M04.A-T.2.1.4 • Estimate the answers to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits × 1 digit, excluding powers of 10).

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

ENRICHMENT:	REMEDIATION:

• 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
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• Hands-On Equations
• Groundworks
• The Mathmaker (Cooperative Math Activities)
• MathArt Projects and Activities
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	• Pearson Successnet On-Line Teacher's Edition
	• Investigations Workshops
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	• 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
	  o Provide specific examples
	  o Use of Manipulatives
	  o Simplified language in word problems
	  o Visuals
	  o Flashcards
	  o Multiple-meaning words
	  o Bilingual dictionary/picture dictionary
	• Math Support, Learning Support, or ELL Teachers as appropriate and based on need

RESOURCES:

- EnVISION Math, Grade 4
- Scott Foresman-Addison Wesley (SFAW)
- 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 4	STATE STANDARD AREA/UNIT:	Numbers and Operations: Numbers and Operations - Fractions	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Extend the understanding of fractions to show equivalence and ordering.

- **4.NF.1** Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- **4.NF.2**. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- **4.NF.3**. Understand a fraction a/b with a > 1 as a sum of fractions 1/b.
    a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
    b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8.*
    c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
    d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
- **4.NF.4.** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
    a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*
    b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*
    c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there*

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.

will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).

- **4.NF.5** Express a fraction with a denominator of 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*
- **4.NF.6.** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*
- **4.NF.7.** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

ESSENTIAL QUESTIONS	VOCABULARY		ASSESSMENT

• How can we use addition to represent a fraction in a variety of ways?
• How can you add and subtract fractions with like denominators?
• How can we draw a picture to solve a problem?
• How can you use different ways to add and subtract mixed numbers with/without using models?
• How can you describe a fraction using a unit fraction?
• How can you multiply fractions by a whole number with/without using models?
	digits
	sum
	divide
	value
	subtraction
	remainder
	power
	standard form
	difference
	expanded form
	distributive property
	word form
	multiple
	equivalent
	decimal
	value
	divisor
	decimal
	product
		decimal point
		estimate
		tenths
		hundredths
		exponents
		thousandths
		exponents
		squared
		base
		factor
		dividend
		cubed
		addend
		rounding
		place
		quotient
		base ten
		whole number
		reasonable
			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
			
			Summative:
			• Benchmark assessments
			• Performance based assessments
			  o Quizzes
			  o Tests
			  o Constructed response/ open-ended problem solving
			  o Performance tasks
			  o Projects
			• Spiral Review Checkpoints
			• Study Island Practice

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION
NUMBERS AND OPERATIONS -FRACTIONS

PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
CC.2.1.4.C.1 Extend understanding of fraction equivalence and ordering. **Essential Skills and understanding** • Ability to use concrete materials to model fraction number concepts and values. • Knowledge of and ability to generate simple equivalent fractions. • Ability to apply reasoning, such as 5/20 < ½ because 5 is not half of 20. • Ability to compare unlike fractions lays the foundation for knowledge of strategies such as finding the Least Common Multiple or the Greatest Common Factor . **CC.2.1.4.C.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.** **Essential skills and understanding** • Ability to use concrete and/or pictorial tools to add and subtract fractions with like denominators. • Knowledge that the numerator tells how many parts of the whole we are counting and the denominator tells how many total parts there are in all. • Knowledge that when counting parts of a whole, the numerator consecutively changes while the denominator stays the same (Example, 1/4, 2/4, 3/4, 4/4 or 1). • Ability to use manipulatives to demonstrate that the denominator does not change when adding or subtracting fractions with like denominators. • Ability to represent the addition and subtraction of fractions using concrete materials, pictures, numbers, and words. • Ability to represent a whole number as a fraction (e.g.: 1 = 7/7, 8/8, etc.) • Ability to decompose fractions greater than one into whole numbers and fractional parts. • Ability to change a mixed number into an improper Fraction.	**M04.A-F.1.1** **Find equivalencies and compare fractions** **M04.A-F.1.1.1** • Recognize and generate equivalent fractions. **M04.A-F.1.1.2** • Compare two fractions with different numerator and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, =, or <, and justify the conclusions. **M04.A-F.2.1** **Solve problems involving fractions and whole numbers (straight computation or word problems.** **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). **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, and100), recording the decomposition by an equation. Justify decompositions (for example, by using a visual fraction model). *Example 1: 3/8 = 1/8 + 1/8 + 1/8 OR 3/8 = 1/8 + 2/8 Example 2: 2 1/12 = 1 + 1 + 1/12 = 12/12 + 12/12 + 1/12* **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 simplified; and no improper fractions as the final answers).

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: NUMBERS AND OPERATIONS - FRACTIONS	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	• Ability to add mixed numbers using a strategy such as adding fractions together and then adding the whole numbers together. • Ability to subtract mixed numbers using a strategy such as replacing each mixed number with an equivalent fraction and then subtracting. • Ability to apply the understanding that the numerator tells us how many parts of the whole we are counting and the denominator tells us how many total parts there are. • Ability to use concrete materials to model multiplication of fractions. • Knowledge that when multiplying a whole number by a fraction, you are finding that fractional part of the whole number (e.g.: ¼ x 24 is the same as ¼ of 24. • Ability to connect the multiplication of fractions to the repeated addition of fractions (e.g.: 4 x 2/4 = 2/4 + 2/4 + 2/4 + 2/4.) • Ability to apply the concept of a unit fraction in relationship to a multiple of that fraction (e.g.: 1/4 is the unit fraction of fourths.) • Knowledge that 3 x 2/5 = 3 groups of 2/5 or 2/5 + 2/5 +2/5. • Ability to apply knowledge of multiplication of fractions by a whole number to a variety of real life problem situations. **CC.2.1.4.C.3 Understand decimal notation for fractions, and compare decimal fractions.** **Essential skills and understanding** • Knowledge of this Standard provides a foundation for the relationship between fractions and decimals. • Use decimal notation for fractions with denominators 10 and 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* • Ability to apply knowledge of place value as a strategy to compare decimals.	**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). **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 and final answers do not need to be simplified or written as a mixed number). *Example: 5 × (1/4) = 5/4* **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 and final answers do not need to be simplified or written as a mixed number). *Example: 3 × (5/6) = 15/6* **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). **M04.A-F.3.1** **Use operations to solve problems involving decimals, including converting between fractions and decimals (may include word problems).** **M04.A-F.3.1.1** • Add two fractions with respective denominators 10 and 100. *Example: Express 3/10 as 30/100, and add 3/10 + 4/100 = 30/100 + 4/100 = 34/100.* **M04.A-F.3.1.2** • Use decimal notation for fractions with denominators 10 or 100. *Example: Rewrite 0.62 as 62/100 and vice versa.* **M04.A-F.3.1.3** • Compare two decimals to hundredths using the symbols >, =, or <, and justify the conclusions.

POCONO MOUNTAIN SCHOOL DISTRICT CURRICULUM

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

ENRICHMENT:

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- Differentiating Instruction with Menus: grades 3-5
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- The Mathmaker (Cooperative Math Activities)
- MathArt Projects and Activities
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REMEDIATION:

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- Chunking of content, assignment and/or assessments
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RESOURCES:

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- Partner Games
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- 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
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- Student math handbook flipchart
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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 4	STATE STANDARD AREA/UNIT:	Algebraic Concepts: Operations and Algebraic Thinking	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Use the four operations with whole numbers to solve problems.

- **4.OA.1.** Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- **4.OA.2.** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- **4.OA.3.** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.

Gain familiarity with factors and multiples.

- **4.OA.4** Find all **factor pairs** for a whole number in the range 1-100. Recognize that a whole number is a **multiple** of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range of 1-100 is **prime** or **composite**.

Generate and analyze patterns.

- **4.OA.5** 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. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

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	

• **What is the difference between repeating and changing patterns?**
• **How can you use variables to write an expression?**
• **How can you find a rule and write an expression for addition, subtraction, multiplication and division?**
• **How can you solve equations and make them true?**
• **How is repeated addition of equal groups related to multiplication?**
• **How do you use a pattern to solve a problem?**
• **How do you find products through repeated addition, and use multiplication properties?**
• **How do you determine if one number is a factor or a multiple of another?**
	• Term (of a sequence)
	• Table
	• Rule
	• Function
	• Equation
	• Unknown
	• Odd
	• Even
	• Increase
	• Decrease
	• Variable
	• Algebraic Expression
	• Solution
	• Product
	• Factors
	• Multiples
	• Pattern
	• Repeating pattern
		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
			Summative:
			• Benchmark assessments
			• Performance based assessments:
			  o Quizzes
			  o Tests
			  o Constructed response/ open-ended problem solving
			  o Performance Tasks Projects
			• Spiral Review Checkpoints
			• Study Island Practice

UNIT OF INSTRUCTION: OPERATIONS AND ALGEBRAIC THINKING	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.2.4.A.1 Represent and solve problems involving the four operations. **Essential Skills and Understanding** • Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of **multiplicative comparisons** as multiplication **equations**. • Multiply or divide to solve word problems involving **multiplicative comparison**, e.g., by using drawings and **equations** with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from **additive comparison**. • Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.	**M04.B-O.1.1 Use numbers and symbols to model the concepts of expression and equations.** **M04.B-O.1.1.1** • Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. *Example 1: Interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Example 2: Know that the statement 24 is 3 times as many as 8 can be represented by the equation 24 = 3 × 8 or 24 = 8 × 3.* **M04.B-O.1.1.2** • Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative *that 3 × 4 can be used to represent that Student A has*

UNIT OF INSTRUCTION: OPERATIONS AND ALGEBRAIC THINKING	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	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. **CC.2.2.4.A.2** Develop and/or apply number theory concepts to find factors and multiples. **Essential Skills and Understanding** • Find all **factor pairs** for a whole number in the range 1-100. Recognize that a whole number is a **multiple** of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range of 1-100 is **prime** or **composite**. **CC. 2.2.4.A.4** Generate and analyze patterns using one rule. **Essential Skills and Understanding** • 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. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	*4 objects and Student B has 3 times as many objects, and not just 3 more objects.* **M04.B-O.1.1.3** • Solve multi-step word problems posed with whole numbers using the four operations. Answers will be 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. **M04.B-O.1.1.4** • Identify the missing symbol (+, –, ×, ÷, =, <, >) that makes a number sentence true (single digit divisor only). **M04.B-O.2.1 Develop and apply number theory concepts to represent numbers in various ways.** **M04.B-O.2.1.1** • Find all factor pairs for a whole number in the range 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 one-digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite. **M04.B-O.3.1 Recognize, describe, extend, create, and replicate a variety of patterns.** **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. *Example 1: Given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Example 2: Given the rule "increase the number of sides by 1" and starting with a triangle, observe that the tops of the shapes alternate between*

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	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
		a side and a vertex. **M04.B-O.3.1.2** • Determine the missing elements and the rule in a function table (limit to +, – or x and to whole numbers or money).

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
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	• Groundworks
	• The Mathmaker (Cooperative Math Activities)
	• MathArt Projects and Activities
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			• One-on-one re-teaching
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			• Accommodations based on IEP and/or need
			• ELL student(or based on student need) additional support
			  o Provide specific examples
			  o Use of Manipulatives
			  o Simplified language in word problems
			  o Visuals
			  o Flashcards
			  o Multiple-meaning words
			  o Bilingual dictionary/picture dictionary
			• Math Support, Learning Support, or ELL Teachers as appropriate and based on need

RESOURCES:	• EnVISION Math, Grade 4 (Topics 1 & 2)
	• Scott Foresman-Addison Wesley (SFAW)
	• 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.
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	• 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

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MATH: GRADE 4	STATE STANDARD AREA/UNIT:	Geometry: Geometry	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

- **4.G.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- **4.G.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.
- **4.G.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

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	

• **How do we discuss, analyze, and classify geometric figures?**
• **How do we use area and perimeter to solve real world problems?**
• **How do we measure angles?**
• **How can we use area as a tool to make sense of the world and when is the use of an estimate more appropriate than the actual measurement?**
	Point
	End point
	Line
	Line segment
	Parallel lines
	Perpendicular lines
	Intersecting lines
	Ray
	Angle
	Right angle
	Acute angle
	Obtuse angle
	Straight angle
	Two dimensional figure
	Plane figure
	Polygon
	Side
	Vertex
	Triangle
		Right triangle
		Acute triangle
		Obtuse triangle
		Quadrilateral
		Rhombus
		Trapezoid
		Parallelogram
		Rectangle
		Square
		Pentagon
		Hexagon
		Octagon
		Area
		Perimeter
		Symmetric
		Line of Symmetry
		Degree
		Unit angle
		Angle measure
		Protractor
			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
				Summative:
				• Benchmark assessments
				• Performance based assessments
				  o Quizzes
				  o 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 Draw lines and angles and identify these in two-dimensional figures. **Essential Skills and Understanding** • Ability to apply a deep understanding of this vocabulary will assist with drawing and identifying these shapes within two-dimensional figures. **C.C.2.3.4.A.2** Classify two-dimensional figures by properties of their lines and angles. **Essential Skills and Understanding** • Ability to use concrete materials to model the lines and angles of two-dimensional figures to provide visual evidence of the relationship between various figures **C.C.2.3.4.A.3** Recognize symmetric shapes and draw lines of symmetry. **Essential Skills and Understanding** • Recognize a **line of symmetry** for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	**M04.C-G.1.1 List properties, classify, draw and identify geometric figures in two dimensions.** **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. **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. • Apply the area and perimeter formulas for rectangles in real world and mathematical problems using whole numbers only and formulas provided (may include finding a missing side length). **M04.C-G.1.1.3** • Recognize a line of symmetry for a two-dimensional 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). • Measure angles in whole-number degrees using a protractor. • With the aid of a protractor, sketch angles of specified measure. • 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.)

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DIFFERENTIATION ACTIVITIES:

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

ENRICHMENT:

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- First In Math
- StudyIsland
- Web-based Math Resources/tutorials
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- Groundworks
- The Mathmaker (Cooperative Math Activities)
- MathArt Projects and Activities
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REMEDIATION:

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- 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:

- EnVISION Math, Grade 4 (Topic 16)
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- KWL Charts
- Versatiles
- Partner Games
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- Exit Tickets
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- ELL Instructional Strategies for Math
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- 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

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MATH: GRADE 4	STATE STANDARD AREA/UNIT:	Measurement, Data and Probability: Measurement and Data	TIME FRAME:	Ongoing

NATIONAL COMMON CORE STANDARDS:

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

- **4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*
- **4.MD.2.** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- **4.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

- **4.MD.4** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection

Geometric measurement: understand concepts of angle and measure angles.

- **4.MD.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
  a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
  b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.
- **4.MD.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
- **4.MD.7** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

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.
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POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

ESSENTIAL QUESTIONS	VOCABULARY		ASSESSMENT	
• **How do you estimate and measure customary and metric length?** • **How do you measure capacity with customary and metric units?** • **How do you measure weight/mass?** • **How do you change customary metric units?** • **How do you compare units of time and find elapsed time?** • **How can the relationships between quantities in a measurement problem be represented using a diagram?**	measure measurement standard units metric units distance length inch foot yard mile millimeter centimeter decimeter	meter kilometer capacity fluid ounce cup pint quart gallon milliliter liter	**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	**Summative:** • Benchmark assessments • Performance based assessments: o Quizzes o Tests o Constructed response/ open-ended problem solving o Performance Tasks o Projects • Spiral Review Checkpoints • Study Island Practice

UNIT OF INSTRUCTION: MEASUREMENT AND DATA	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.4.4.A.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. **Essential Skills and Understanding** • Knowledge of capacity units should also include cups, pints, quarts, and gallons. • Knowledge of length units should also include inches, feet, and yards. • Ability to use visual aids with conversion of measurement (Know relative sizes of measurement units within one system of units including km, m, cm, kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), 3, 36), **CC.2.4.4.A.2 Translate information from one type of data display to another.**	**M04.D-M.1.1- Solve problems involving length, weight (mass), liquid volume, time, area, and perimeter.** **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; and c, pt, qt, gal), metric units (cm, m, km; g, kg; and mL, L), and time (sec, min, hr, day, wk, mo, and 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. Example 1: Know that 1 kg is 1,000 times as heavy as 1 g. Example 2: Express the length of a 4-foot snake as 48 in. **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.

POCONO MOUNTIAN SCHOOL DISTRICT CURRICULUM

UNIT OF INSTRUCTION: MEASUREMENT AND DATA	PA COMMON CORE STANDARDS	ELIGIBLE CONTENT/LEARNING ACTIVITIES
	CC.2.4.A.4 Represent and interpret data involving fractions using information provided in a line plot **Essential Skills and Understanding** • Knowledge of systems of measurement, fractions, decimals, and equivalent units of measurement. (Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and 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. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.) • Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. **CC.2.4.4.A.6 Measure angles and use properties of adjacent angles to solve problems.** **Essential Skills and Understanding** • Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. • Ability to apply knowledge of the relationship between area and perimeter through the exploration of rectangles with the same area but different perimeters or rectangles with the same perimeter but different areas. • Ability to apply knowledge of factors, finding an unknown factor in an equation, and the relationship between multiplication and area. (Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formulas as a multiplication equation with an unknown factor.)	**M04.D-M.1.1.3** • Apply the area and perimeter formulas for rectangles in real world and mathematical problems using whole numbers only and providing formulas (may include finding a missing side length). **M04.D-M.1.1.4** • Identify time (analog or digital) as the amount of minutes before or after the hour. o Example 1: 2:50 is the same as 10 minutes before 3:00. o Example 2: Quarter past six is the same as 6:15.

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DIFFERENTIATION ACTIVITIES:
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- Volunteer/peer tutoring
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- ELL student(or based on student need) additional support
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    - Use of Manipulatives
    - Simplified language in word problems
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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