

# Deer Valley Unified School District Mathematics Curriculum



## Second Grade

Incorporating the 2010 Arizona State Mathematics Standards

2011-2012



# Mathematics Curriculum

## The Intent and Design of the Common Core State Standards

### Toward greater focus and coherence

*Mathematics experiences in early childhood settings should concentrate on (1) number (which includes whole number, operations, and relations) and (2) geometry, spatial relations, and measurement, with more mathematics learning time devoted to number than to other topics. Mathematical process goals should be integrated in these content areas.*

—Mathematics Learning in Early Childhood, National Research Council, 2009

*There are many ways to organize curricula. The challenge, now rarely met, is to avoid those that distort mathematics and turn off students.*

— Steen, 2007

Assessing the coherence of a set of standards is more difficult than assessing their focus. William Schmidt and Richard Houang (2002) have said that content standards and curricula are coherent if they are:

*articulated over time as a sequence of topics and performances that are logical and reflect, where appropriate, the sequential or hierarchical nature of the disciplinary content from which the subject matter derives. That is, what and how students are taught should reflect not only the topics that fall within a certain academic discipline, but also the key ideas that determine how knowledge is organized and generated within that discipline. This implies that to be coherent, a set of content standards must evolve from particulars (e.g., the meaning and operations of whole numbers, including simple math facts and routine computational procedures associated with whole numbers and fractions) to deeper structures inherent in the discipline. These deeper structures then serve as a means for connecting the particulars (such as an understanding of the rational number system and its properties). (emphasis added)*

These Standards endeavor to follow such a design, not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the properties of operations to structure those ideas.

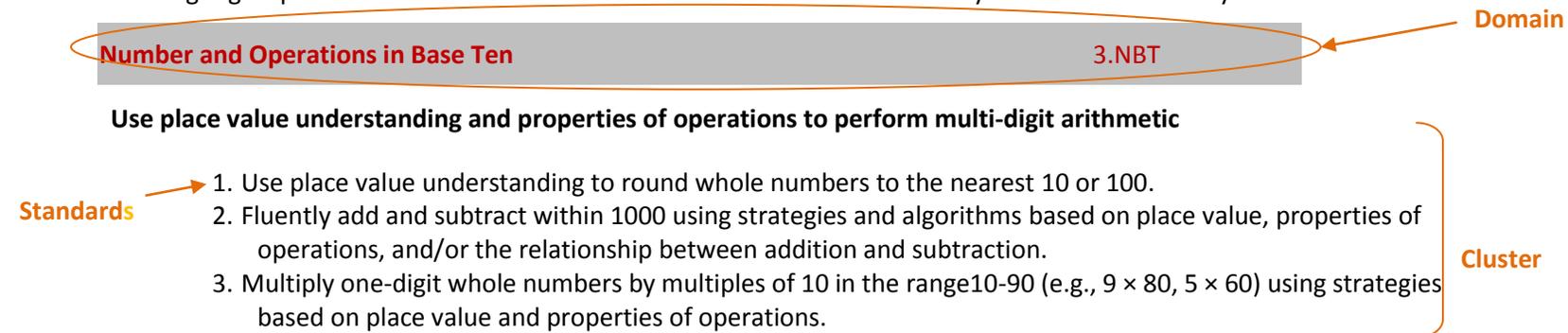
In addition, the “sequence of topics and performances” that is outlined in a body of mathematics standards must also respect what is known about how students learn. As Confrey (2007) points out, developing “sequenced obstacles and challenges for students...absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise.” In recognition of this, the development of these Standards began with research-based learning progressions detailing what is known today about how students’ mathematical knowledge, skill, and understanding develop over time.

## How to read the grade level standards

**Standards** define what students should understand and be able to do.

**Clusters** are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

**Domains** are larger groups of related standards. Standards from different domains may sometimes be closely related.



These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.

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**Operations and Algebraic Thinking (OA)**

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

**Number and Operations in Base Ten (NBT)**

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

**Measurement and Data (MD)**

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

**Geometry (G)**

- Reason with shapes and their attributes.

**Mathematical Practices (MP)**

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.

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Addition			
Qtr	Cluster	2010 Standard	Correlation (Resources)
1, 3	Represent and solve problems involving addition and subtraction.	<b>OA.1</b> Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	<b>enVision Topics:</b> 1-1 to 1-7, 2-1 to 2-8, 6-1 to 6-5a, 6-5, 8-1 to 8-6a, 8-6, 8-7, 10-1, 10-3, 10-4, 10-6, 10-7, 15-6, 17-4, 18-1, 18-3 to 18.5, 18.7, 18.8  <b>Investigations Unit 1:</b> S2.1 to S2.3, S2.6, S2.7, S4.1, S4.3 to S4.7 <b>Unit 3:</b> S2.1 to S2.6 <b>Unit 6:</b> S1.1 to S1.4, S2.2, S2.4 to S2.6 <b>Unit 8:</b> S1.1 to S1.4, S3.1 to S3.5, S4.1 to S4.4 Pocket Day-Investigations 2.5-do multiple times throughout the year (i.e. every 10th day of school)  <b>*Literature Connections:</b> "The 512 Ants on Sullivan Street" by Carol Losi, "The King's Commissioners" by Aileen Friedman, "Night Noises" by Mem Fox, "One Gorilla and One Duck Stuck" by Phyllis Root, "One Hundred Hungry Ants" by Elinor J. Pinczes, "P. Bear's New Year's Party" by Paul Owen Lewis, "Ten Friends" by Bruce Goldstone, "Two of Everything" by Lily Toy Hong, "Two Ways to Count to Ten: A Liberian Folktale" by Ruby Dee <b>*Literature titles source</b> is "Math and Literature" or "Math and Non-Fiction" grades 2-3 from Math Solutions  <b>Investigation Games- Unit 1-</b> Enough For the Class 2.1; Plus One or Two Bingo 2.6; Make 10 and Quick Images 3.1; Tens Go Fish 3.2; Double It 4.7; Double Arrays 4.7; <b>Unit 2-</b> Beat the Calculator 1.3; Close to 20 1.4; Cover-Up 2.5; <b>Unit 6-</b> Guess My Number on the 100 Chart 2.1; Roll a Square 2.2; Get to 100 3.1; Unroll a Square 3.4; <b>Unit 8-</b> Plus 9 or 10 Bingo 2.1
	Use place value understanding and properties of operations to add and subtract.	<b>NBT.5</b> Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction  <b>NBT.9</b> Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)	
1	Add and subtract within 20.	<b>OA.2</b> Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	Supplemental Resources can be found in <i>Second-Grade Math (A Month-to-Month Guide)</i> , Litton, Nancy from Math Solutions The Adding and Subtracting Game P. 39, Sweet Thirteen (master p 205), Odd or Even? (master p 206) P. 42, Pyramid 10 (master p 207) P. 43, 1 to 10 (master p 208) P. 45.
2	Relate addition and subtraction to length.	<b>MD.5</b> Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	<b>enVision Topics:</b> Supplement
2		<b>MD.6</b> Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	<b>enVision Topics:</b> Supplement  <b>Investigations: Unit 1:</b> S1.3 to S1.5, S2.1, S2.4, S3.2; <b>Unit 3:</b> S1.4, S2.4, S4.3 <b>Unit 6:</b> S1.4, S2.2, S2.4, S2.6, S3.2, S4.2 <b>Unit 8:</b> S2.1, S3.1 to S3.4, S4.1 to S4.2, S4.4
3	Use place value understanding and properties of operations to add and subtract.	<b>NBT.6</b> Add up to four two-digit numbers using strategies based on place value and properties of operations.	<b>enVision Topics:</b> 8-1 to 8-6a, 8-6, 9-6a
		<b>NBT.8</b> Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	<b>envisions Topics:</b> 6-5a, 7-3a,17-5, 18-1a, 18-1, 18-5a, 18-5
4	Use place value understanding and properties of operations to add and subtract.	<b>NBT.7</b> Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	<b>enVision Topics:</b> 18-1a, 18-1 to 18-5a, 18-5 to 18-8
<b>Enduring Understanding</b>			<b>Essential Questions</b>
Numbers and addition can be used to model real life situations.			What is addition? Why is addition important? How can we represent addition?
			What are some ways that we can add numbers? How can you use models to add a one-digit number to a two-digit number?

Addition STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
doubles, near doubles, number sentences, related, addition sentence, part, whole, add, sum, plus, equals, join, addend, mental math, tens digit, next ten, ten frame, regroup, estimate, three-digit number, hundreds digit	Compose and decompose numbers.	Pick some objects that you would like to buy. Add them together to see if you have enough money to buy them.	Create a class store in which students earn money to spend on a weekly or bi-monthly basis. Allow them to earn money for good behavior and price items that they can purchase with the classroom currency.
Number facts to 10; ten frames and double ten frames, 100 number chart, part-part-whole bar chart	Use models to add double-digit and triple digit numbers.	Solve the same addition problem at least three different ways.	Write 3 number sentences about the part-part whole map. Solve and show your thinking. Reference Quick Check 1-6.
	Can find an unknown in a problem.		Teacher reads "Two of Everything" and students create their own Magic Pot Stories. (Reference Investigations Unit 1 Lesson 4.6.)
	Can identify problems in a fact family.		
	Mentally add 10 or 100 to a number.	Choose a one or two-digit number and add 10. Check with models (number charts). Choose a two-digit number and add 100. Check with models (number charts).	Use a workmat that contains hundreds, tens, and ones frames to show base ten models for two and three digit addition and subtraction.
Rubric			
Developing	Proficient		Advancing
Does not consistently add two-digit numbers with or without regrouping using concrete models.	Adds two-digit numbers with or without regrouping and provides a <i>strategy</i> to explain their thinking.		Adds two-digit numbers with or without regrouping and provides <i>multiple strategies</i> to explain their thinking.
Adds two-digit numbers with or without regrouping using concrete models but is <i>unable</i> to explain their thinking and/or strategy.	Adds three-digit numbers with or without regrouping and provides a <i>model</i> to explain their thinking.		Adds three-digit numbers with or without regrouping and provides a strategy to explain their thinking.
Assessment			
Developing	Proficient		Advancing
Student uses connecting cubes, workmat and two-digit addition frame with box for regrouping to solve addition problem (ex: $29+18=$ ___).	Student accurately solves two-digit addition problems with regrouping both with a model and with an algorithm.		Student solves two-digit addition problems with regrouping with both multiple models and algorithms.
Student struggles to solve addition problems in a context.	Student uses a model that demonstrates their thinking to accurately solve a three-digit addition problem with regrouping.		Student solves three-digit addition problems with regrouping both with a model and with an algorithm.
How many different ways can you make ten?	Student accurately solves addition problems in a context with a model and can explain their <i>strategy</i> or thinking.		Student accurately solves multi-step addition problems in a context with a model and can explain their <i>strategy</i> or thinking.
What is 34 plus 10?	Students pose contextual addition problems and can solve them.		Students pose multi-step contextual addition problems and can solve them.
	How can you make a ten as a strategy to add $6+7$ ?		What is 1,923 plus hundred?
	What is 234 plus 10?		What are some different ways that you add the numbers $234 + 496$ ?

Subtraction			
Qtr	Cluster	2010 Standard	Correlation (Resources)
1, 3	Represent and solve problems involving addition and subtraction.	<b>OA.1</b> Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	<b>enVision Topics:</b> 1-1 to 1-7, 3-1 to 3-6, 7-1 to 7-5, 9.1 to 9.6a, 9.6 to 9-8, 10-1, 10-3, 10-4, 10-6, 10-7, 15-6,17-4 18-1, 18-3 to 18-5, 18-7, 18-8  <b>Investigations:</b> <b>Unit 1:</b> S2.1 to S2.3, S2.6, S2.7, S4.1, S4.3 to S4.7 <b>Unit 3:</b> S2.1 to S2.6 <b>Unit 6:</b> S1.1 to S1.4, S2.2, S2.4 to S2.6 <b>Unit 8:</b> S1.1 to 1.4, S3.1 to S3.5, S4.1 to S4.4  <b>*Literature Connections:</b> MathStart Books-“Shark Swimathon” & “Elevator Magic”  <b>Investigation Games-</b> <b>Unit 1-</b> Enough For the Class 2.1; <b>Unit 6</b> -Guess My Number on the 100 Chart 2.1, Unroll a Square 3.4, Spend \$1.00 3.5
	Use place value understanding and properties of operations to add and subtract.	<b>NBT.5</b> Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction  <b>NBT.9</b> Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)	
1	Add and subtract within 20.	<b>OA.2</b> Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	<b>enVision Topics:</b> 2-1 to 2-3; 3-1 to 3-4  <b>Investigations:</b> <b>Unit 1:</b> S1.4, S1.5, S2.6, S2.7, S 3.1 to S3.5, S4.2, S4.3, S4.6, S4.7 <b>Unit 3:</b> S1.1 to S1.6, S2.2, S2.4, S4.3 <b>Unit 8:</b> S1.4, S2.1, S2.2, S3.4, S3.5
2	Relate addition and subtraction to length.	<b>MD.5</b> Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	<b>enVision Topics:</b> Supplement
2		<b>MD.6</b> Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,...., and represent whole-number sums and differences within 100 on a number line diagram.	<b>enVision Topics:</b> Supplement  <b>Investigations:</b> <b>Unit 1:</b> S1.3 to S1.5, S2.1, S2.4, S3.2; <b>Unit 3:</b> S1.4, S2.4, S4.3 <b>Unit 6:</b> S1.4, S2.2, S2.4, S2.6, S3.2, S4.2 <b>Unit 8:</b> S2.1, S3.1 to S3.4, S4.1 to S4.2, S4.4
3	Use place value understanding and properties of operations to add and subtract.	<b>NBT.8</b> Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	<b>envisions Topics:</b> 6-5a, 7-3a,17-5, 18-1a, 18-1, 18-5a, 18-5
4	Use place value understanding and properties of operations to add and subtract.	<b>NBT.7</b> Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	<b>enVision Topics:</b> 18-1a, 18-1 to 18-5a, 18-5 to 18-8
<b>Enduring Understanding</b>			<b>Essential Questions</b>
Numbers and subtraction can be used to model real life situations.			When is subtraction used?
			How is subtraction related to addition?
			Why is subtraction important?
			What are some ways to subtract numbers?

Subtraction STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
doubles, near doubles, sentences, related, subtraction sentence, part, subtraction, difference, subtract, minus, separate, fewer, more, minuend	Well developed number sense	You have one dollar and fifty cents to spend. Pick two different objects that you would like to buy. Determine if you have enough money to buy them. Show your thinking.	Use workmats for hundreds, tens, and ones to model (base ten blocks) three digit addition and subtraction by exchanging to show the process of composition or decomposition. Follow with the written expression of the problem.
	Connecting addition to subtraction (i.e. fact families)	Solve one subtraction problem at least three different ways.	Use a workmat that contains hundreds, tens, and ones frames to show base ten models for two and three digit addition and subtraction.
	Recognize there is more than one way to subtract.	Create a class store in which students earn money to spend on a weekly or bi-monthly basis. Allow them to earn money for good behavior and price items that they can purchase with the classroom currency. Train students as cashiers and have them learn to make change for the purchases.	Explain how subtracting 10 or 100 to a given number changes that number.
	Develop multiple strategies to subtract.	Write 3 number sentences about the part-part whole map. Solve and show your thinking.	
	Mentally subtract 10 or 100 from a number.	Choose a one or two-digit number and subtract 10. Check with models (number charts). Choose a two-digit number and add 100. Check with models (number charts).	
	Add and subtract within 1000 using concrete models and drawings.	Add and subtract two and three-digit numbers with or without regrouping	
Rubric			
Developing		Proficient	Advancing
Does not consistently subtract two-digit numbers with or without regrouping using concrete models		Subtracts two-digit numbers with or without regrouping and provides a strategy to explain their thinking.	Subtracts two-digit numbers with or without regrouping and supplies <i>multiple strategies</i> to explain their thinking.
Subtracts two-digit numbers with or without regrouping using concrete models but is <i>unable</i> to explain their thinking and/or strategy.		Subtracts three-digit numbers with or without regrouping and provides a <i>model</i> to explain their thinking.	Subtracts three-digit numbers with or without regrouping and supplies a strategy to explain their thinking.
Assessment			
Developing		Proficient	Advancing
Student uses connecting cubes, workmat and two-digit subtraction frame with boxes for regrouping to solve subtraction problem (ex: 47-18= ).		Student solves two-digit subtraction problems with regrouping both with a model and with an algorithm.	Student solves two-digit subtraction problems with regrouping using multiple models and algorithms.
Student struggles to solve subtraction problems in a context.		Student uses a model that demonstrates their thinking to accurately solve a three-digit subtraction problem with regrouping.	Student solves three-digit subtraction problems with regrouping both with a model and with an algorithm.
Student struggles to solve contextual subtraction problems.		Student accurately solves subtraction problems in a context with a model and can explain their strategy or thinking.	Student accurately solves problems in a context that use more than one operation with a model and can explain their strategy or thinking.
Students are unable to pose a grade level appropriate subtraction contextual problem.		Students pose contextual subtraction problems and can solve them.	Students pose contextual problems that use more than one operations and can solve them.
How much is 245-123? Use place value blocks, and draw a picture to show your thinking.		How much is 345-197? Draw a picture and show your thinking.	How much is 1,545 - 197? Draw a picture and show your thinking.

Place Value			
Qtr	Cluster	2010 Standard	Correlation (Resources)
1, 4	Understand place value.	<p><b>NBT.1</b> Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens and 6 ones; Understand the following as special cases:</p> <ul style="list-style-type: none"> <li>a. 100 can be thought of as a bundle of ten tens — called a “hundred.”</li> <li>b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).</li> </ul>	<p><b>enVision Topics:</b> 4-2, 4-3, 17-1 to 17-3</p> <p><b>Investigations:</b> <b>Unit 6:</b> S3.6</p> <p><b>Literature Connection:</b> "Can You Count To A Google?" by: Robert Wells</p> <p><b>Investigation Games:</b> <b>Unit 6</b> Roll a Square 2.2</p>
		<p><b>NBT.2</b> Count within 1000; skip-count by 5s, 10s, and 100s.</p>	<p><b>enVision Topics:</b> 4-8, 17-1, 17-5, 17-6a</p> <p><b>Investigations:</b> <b>Unit 1:</b> S1.2 to S1.4, S2 to S2.3, S2.5 to S2.7; <b>Unit 3:</b> S3.3, S3.4, S3.6, S3.7, S4.1, S4.2; <b>Unit 5:</b> S2.4; <b>Unit 6:</b> S4.1, S4.2</p>
		<p><b>NBT.3</b> Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p>	<p><b>enVision Topics:</b> 4-2, 4-3, 17-2, 17-3</p> <p><b>Investigations:</b> <b>Unit 1:</b> S2.3, S2.6, S2.7</p>
4	Understand place value.	<p><b>NBT.4</b> Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using &gt;, =, and &lt; symbols to record the results of comparisons.</p>	<p><b>enVision Topics:</b> 17-6, 17-8</p>
		<b>Enduring Understanding</b>	<b>Essential Questions</b>
		Digits in a number have different values depending on their placement in the number.	How can we represent a number in more than one form?
		Expanded notation can be extended to regrouping. (472 = 400 + 70 + 2 AND 472 = 300 + 170 + 2 AND 472 = 300 + 160 + 12)	What are the values of each digit in the number? And how can we regroup from one place value to another so we can add and subtract numbers?
			How many ones make a ten; how many tens make a hundred; how many hundreds make a thousand?
			How does understanding place value help you add and subtract numbers?

Place Value STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
ones, tens, digits, number word, greater than, less than, equal to, before, after, between, least, greatest, pattern, skip count, expanded notation, regrouping, place value	Read, write, and represent numbers to 1000.	Represent numbers as groups of ones, tens, hundreds using place value models. Read and write number words for numbers 0-100. Count by hundreds to 1,000.	Match two- or three-digit numbers with their corresponding concrete or written models. Read and write number words using a concrete (base ten blocks) or written model.
	Identify the place value of a digit.	Use place value models to show hundreds, tens, and ones in a written three-digit number.	Show the place value of a three-digit number, use a mixed arrangement of models showing hundreds flats, tens rods, and unit cubes, and indicate the correct number value on a hundreds, tens, and ones frame.
<, >, =	Use expanded notation.	Identify three-digit numbers in expanded form, standard form, and number word form.	Roll a number cube three times to make a three-digit number (1st roll - hundreds, 2nd - tens, and 3rd - ones). Represent with place value manipulatives. Student names and writes the number, number word, and expanded form,
	Compare numbers with greater than, less than, and equal to symbols.	Use <, =, > symbols to compare two and three-digit numbers in standard, written, and expanded form	Use workmats for hundreds, tens, and ones to model (place value manipulatives) three-digit addition and subtraction by exchanging to show the process of composition or decomposition. Follow with the written expression of the problem. $472 \rightarrow 400 + 70 + 2 \rightarrow 300 + 160 + 12$ $\begin{array}{r} -185 \\ \underline{\phantom{000}} \end{array} \rightarrow \begin{array}{r} -100 + 80 + 5 \\ \phantom{000} \end{array} \rightarrow \begin{array}{r} -100 + 80 + 5 \\ \phantom{000} \end{array}$ $287 \quad 200 + 80 + 7 \quad 200 + 80 + 7$
	Compose and decompose numbers when adding and subtracting.	Use models (place value manipulatives) to exchange tens for hundreds, and ones for tens, when regrouping in addition and subtraction.	Explain how adding 10 or 100 to a given number changes that number.
	Mentally add 10 or 100 to a number.	Choose a one or two-digit number and add 10. Check with models (number charts). Choose a two-digit number and add 100. Check with models (number charts).	Use a workmat that contains hundreds, tens, and ones frames to show base ten models for two and three digit addition and subtraction.
Rubric			
Developing	Proficient		Advancing
Inconsistently reads, writes, represents, and orders numbers correctly up to 1000.	Consistently reads, writes, represents, and orders numbers correctly up to 1,000.		Reads, writes, represents, and orders numbers beyond 1,000, and up to 10,000.
Has difficulty connecting digits with their place value.	Correctly identifies place value of the digits for hundreds, tens, and ones up to 999.		Can identify place value for numbers with four digits.
Has difficulty writing numbers in expanded notation.	Consistently reads, writes, represents, and orders numbers to 999 in standard, written word, and expanded notation.		Can reads, writes, represents, and orders numbers to one thousand in standard, written word, and expanded notation.
Assessment			
Developing	Proficient		Advancing
How many tens are in one hundred?	How many hundreds in one thousand?		How many thousands in ten thousand?
Skip count by 10's and 100's from any number (20, 30, 40... or 300, 400, 500...).	Skip count by 10's and 100's from any number (23, 33, 43... or 456, 556, 656,...).		Pick any three digit number and skip count by 10's. (476, 486, 496, 506, 516...)
Write the number 243 in expanded form.	Write the number 504 in expanded form and extend that to rewriting a number for the purpose of regrouping for addition or subtraction.		Write the number 1,023 in expanded form and extend that to rewriting a number for the purpose of regrouping for addition or subtraction.
Compare the numbers 34 and 86 or 156 and 321 or 145 and 72 using greater than, less than or equal to symbols.	Compare the numbers 234 and 284 or 561 and 1,342 using greater than, less than or equal to symbols		Compare the numbers 1,234 and 1,136 or 4,321 and 13,245 using greater than, less than or equal to symbols
Order the numbers: 45, 321, 76, 191, 34	Order the numbers: 645, 321, 376, 191, 534		Order the numbers: 1,645, 321, 2,376, 1,191, 334

Money			
Qtr	Cluster	2010 Standard	Correlation (Resources)
2	Work with time and money.	<p><b>MD.8</b> Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: <i>If you have 2 dimes and 3 pennies, how many cents do you have?</i></p> <p><i>Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context. They should also experience making equivalent amounts using both coins and bills.</i></p>	<p><b>enVision Topics:</b> 5-1 to 5-6, 10.1 to 10-7</p> <p><b>Investigations:</b> <b>Unit 1:</b> S2.4; <b>Unit 3:</b> S3.5, S3.6, S3.7; <b>Unit 6:</b> S3.2, S3.3, S3.4, S3.5, S3.6, S4.1, S4.2</p> <p><b>*Literature Connections:</b> "The Coin Counting Book" by: Rozanne L. Williams, "Pigs Will Be Pigs" by: Amy Axelrod *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p> <p><b>Investigations Games:</b> <b>Unit 1</b>-Collect 25 cents 2.4, <b>Unit 3</b>-Collect 50 cents 3.5, <b>Unit 6</b>-Collect \$1.00 3.2</p>
Enduring Understanding		Essential Questions	
Specific coins each have a unique value and the size of the coin is not related to the value of the coin.		How can we represent the same amount of money in different ways?	
The same amount of money can often be represented using different combinations of coins and bills.		What is the value of coins and bills?	
Estimating total amounts of purchases helps budget.		How can you sort money to help count?	
Money STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
dime, nickel, penny, coins, cents, quarter, half dollar, greatest value, least value, dollar bill, dollar coin, dollar sign, decimal point, tally mark value of pennies, nickels, dimes, quarters, and various bills	Identify the value of coins and dollars to count a collection.	Sandra went to the store and got \$ 0.76 in change. Name three different sets of coins she could have gotten.	Write a math story about earning a dollar. Draw a set of coins that equal a dollar. (see enVisions Quick Check 5-4)
	Add and subtract money in context.	If you buy 4 items that cost 31¢, 28¢, 39¢, 36¢, approximately how much money do you need? What bills and coins will be enough? If you have 6 dimes, which combination of items could you buy?	Write a story about finding 5 coins. Draw the coins and tell the amount. (see enVisions Quick Check 5-3)
\$, ¢	Solve problems involving money.		Write a story about using coins to buy a toy for 55¢ . Draw the coins you use. (see enVisions Quick Check 5-2)
	Write money amount correctly using \$, ¢ and decimals.		Draw 2 different groups of coins that show 32¢ . (see enVisions Quick Check 5-1)
Rubric			
Developing		Proficient	Advancing
Count a mixed set of coins including pennies, nickels and dimes and identify the value of the collection of coins.		Solves one-step problem involving a mixed set of coins and bills and can identify the value of the collection of money.	Solves multi-step problem involving a mixed set of coins and bills and can identify the value of the collection of money.
		Add, subtract and write money amounts correctly and explain strategy.	Uses multiple strategies and provides an explanation of their thinking.
		Uses estimation to make sense of a problem before solving it.	Uses estimation to make sense of a problem before solving it.
Assessment			
Developing		Proficient	Advancing
Given 4 pennies and 5 dimes. How much money do you have? Can you exchange any of the coins for different coins and still have the same amount of money? Write the amount in cents.		Given 4 pennies, 5 dimes, and 2 quarters. How much money do you have? Show another way you can have the same amount with different coins and bills. Write the amount in cents and in dollars. Explain your thinking.	Given some coins and bills. How much money do you have? Show as many different ways as you can to have the same amount with different coins and bills. Write the amount in cents and in dollars. Explain the strategy you used.
Given \$2, 3 quarters, and 5 pennies. Given 5 items with prices. What combination of items can be purchased?		Given \$2, 3 quarters, and 5 pennies. Given 5 items with prices. What combination of items can be purchased? How much money is left?	Items cost \$1.32, 34¢, \$0.89, and 12¢. You have \$5. Buy as many items as you can without going over. Come as close to \$5 as possible. Explain the strategy you used.

Time			
Qtr	Cluster	2010 Standard	Correlation (Resources)
2	Work with time and money.	MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	<p><b>enVision Topics:</b> 15-1 to 15-2</p> <p><b>Investigations: Unit 9:</b> S4.2 to S4.4;</p> <p><b>*Literature Connections:</b> "Before and After" by Thornhill and "Telling Time: How to Tell Time on Digital and Analog Clocks" by J. Older *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p> <p><b>Mathstart Book:</b> "Game Time"</p>
Enduring Understanding		Essential Questions	
Time can be expressed using different units that are related to each other.		How can the hands on an analog clock be arranged to show time?	
		How can you verbally express the same amount of time in different ways?	
Time STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
minute hand, minute, hour hand, hour, half hour, half past, quarter past, quarter to, second, a.m., p.m.	Tell and write time to the five minutes using analog and digital clocks.	Draw and show time on a clock in two different ways.	Students should understand that there are 2 cycles of 12 hours in a day - a.m. and p.m. Recording their daily actions in a journal would be helpful for making real-world connections and understanding the difference between these two cycles.
Rubric			
Developing		Proficient	
Tell time to the hour and half hour with consistency.		Tell and write time in five minute increments with accuracy.	
Advancing			
Tell and write to the minute with consistency.			
Assessment			
Developing		Proficient	
Student will show time to the hour, half hour, and quarter hour on analog and digital clocks using am and pm.		Student will show and write time in five minute increments on analog and digital clocks using am and pm.	
Advancing			
Student will show and write time to the minute on analog and digital clocks using am and pm.			

Geometry			
Qtr	Cluster	2010 Standard	Correlation (Resources)
2	Reason with shapes and their attributes.	G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	<p><b>enVision Topics:</b> 11-1 to 11-3, 11-8</p> <p><b>Investigations:</b> <b>Unit 2:</b> S1.1 to S1.3, S2.1 to S2.3, S2.5</p> <p><b>*Literature Connections:</b> "A Cloak for the Dreamer" by Aileen Friedman, "The Greedy Triangle" by Marilyn Burns, "Cubes, Cones, Cylinders, and Spheres" by: Tana Hoban, "A Star in My Orange: Looking for Nature's Shapes" by: Dana Meachen Rau, "The Wing on A Flea: A Book About Shapes" by: Ed Emberley *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p>
2		G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	<p><b>enVision Topics:</b> 19-5 , 13-7 to 13-8 (Note: These two lessons divide composite shapes into equal squares and begin area and perimeter understandings – these lessons should be modified to meet the proficient level, and are more appropriate for the advanced level)</p> <p><b>Investigations:</b> <b>Unit 2:</b> S2.3 to S2.4, S2.6</p>
2		G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	<p><b>enVision Topics:</b> 11.4, 12-1 to 12-3</p> <p><b>Investigations:</b> <b>Unit 7:</b> S1.1 to S1.4, S2.1 to S2.4</p> <p><b>*Literature Links:</b> "Little House in the Big Woods" (Chapter 10) by Laura Ingalls Wilder *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p>
		<b>Enduring Understanding</b>	<b>Essential Questions</b>
		Two- and Three- dimensional objects with or without curved surfaces can be described, classified and analyzed by their attributes.	How can we classify and describe shapes? How are shapes similar and different? How are attributes, such as the number of faces, vertices, and angles used to describe and classify?
		Shapes can be partitioned into equal parts in more than one way. (Area determines when fractional parts are equal – not shape.)	How can the dimensions on a rectangle help you divide it into equal sized squares?
			How many different ways can you cut the same rectangle into equal halves? Thirds? Fourths?

Geometry STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
angle, sphere, pyramid, cylinder, cone, cube, rectangular prism, solid figure, flat surface, face, edge, vertex, vertices, plane shapes, circle, quadrilaterals, pentagon square, polygon, triangle, rectangle, trapezoid, parallelogram, hexagon, side, congruent, partition, divide, equal, unequal, halves, thirds, fourths, fraction, set	Identify names of shapes and identify how many angles, vertices and faces they have.	Students will choose a shape and describe how many faces, vertices and angles it has. They will then pick a second shape and create a double bubble to compare and contrast the attributes of the two shapes.	Create a tree-diagram and draw as many different shapes on each branch of the tree as possible. Alternatively, bring in photos and have students find the shapes in the photos and put them on the tree diagram. What else could the branches on the tree diagram have been called and leave all the pictures where they are?
	Compare the different attributes of two shapes.		
	Divide a rectangle into rows and columns of equal size to find the area.		
	Divide circles and rectangles into two, three, and four equal parts in more than one way.		
	Identify fractions by using words such as halves, thirds, and fourths.		
	Understand that equal shares of identical wholes do not need to have the same shape.		
Rubric			
Developing		Proficient	
Is able to identify most two-dimensional shapes (plane figures) and most three-dimensional shapes (solid figures) and can find the number of angles, vertices, and faces.		Correctly identifies the names of both two- and three- dimensional shapes and can find the number of angles, vertices, and faces when looking at the figure.	
Given an array, students can determine the number of equal squares, rows, and columns. May or may not be able to label the dimensions of the array.		Given a rectangle, student uses the dimensions to create an array with equal squares, rows, and columns and can find the area.	
Can divide rectangles and circles in half, thirds and fourths in only one way. Parts may be equal or unequal depending on the number of parts asked for.		Divides a rectangle or circle into two, three, or four equal parts and describes it as halves, thirds, or fourths. Can explain that two-halves is a whole, three-thirds is a whole, four-fourths is a whole.	
Developing		Proficient	
Given a variety of plane and solid figures, categorize them in a variety of ways.		Given a variety of plane and solid figures, categorize them in a variety of ways including grouping all quadrilaterals together, or by number of faces, sides, vertices, etc.	
Student will divide a rectangle into equal size pieces and explain how many parts make the whole.		Student will divide a rectangle into equal sized pieces and describe those using fractional parts. How many equal sized pieces does it have?	
Student will divide a rectangle in halves and fourths at least two different ways.		Student will divide a rectangle into halves, thirds, and fourths at least two different ways and tell what is the fractional part.	

Measurement			
Qtr	Cluster	2010 Standard	Correlation (Resources)
2	Measure and estimate lengths in standard units.	<b>MD.1</b> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	<b>enVision Topics:</b> 13-4, 13-5 Supplement; 13-4a, 13-5a <b>Investigations:</b> <b>Unit 9:</b> S2.1 to S2.3, S3.2 to S3.5  <b>*Literature Connections:</b> "Inch by Inch" by Leo Lionni *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3
2		<b>MD.2</b> Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	<b>enVision Topics:</b> 13-3, Supplement;13-6a <b>Investigations:</b> <b>Unit 9:</b> S3.3, S3.5
2		<b>MD.3</b> Estimate lengths using units of inches, feet, centimeters, and meters.	<b>enVision Topics:</b> 13-4, 13-5 Supplement; 13-4a, 13-5a <b>Investigations:</b> <b>Unit 9:</b> S3.2 to S3.5, S2.1 to S2.3, S2.5  <b>*Literature Connections:</b> "How Big is a Foot?" by Rolf Myller *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3
2		<b>MD.4</b> Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	<b>enVision Topics:</b> Supplement; 13-6c <b>Investigations:</b> <b>Unit 9:</b> S2.2, S3.2, S3.4
Enduring Understanding		Essential Questions	
The length of any object can be measured in customary and metric units.		What tools can we use to measure objects?	
Objects can be compared using lengths.		Why do we measure things?	
Standard units of measure are used so we can communicate to others about our measurement.		How do measurements help us?	
Repeated iterations can cause errors in measurement.		How can you compare lengths of objects?	
The tool used to measure should be appropriate for the object – use as few iterations as possible to measure.			

Measurement STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
attribute, length, unit, inch, yard, foot, centimeter, meter, area, square units, ruler, yard stick, meter stick	Use standard units of measure and the appropriate measurement tool.	Measure common objects in inches, feet, centimeters and meters.	Students measure and record the dimensions of their own body parts: the length of their thumb, arm, foot, hand, etc.; the distance from one's waist to the floor; and so on. Partners can compare their dimensions (always comparing inches to inches, centimeters to centimeters). reference Second-Grade Math: A Month-to-Month Guide by Nancy Litton page 188-189
	State equivalent measurement relationships (12in = 1 foot, etc.)	Make direct comparisons by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure. Students should use comparative phrases such as "It is longer by 2 inches" or "It is shorter by 5 centimeters" to describe the difference between two objects.	Write about two different objects in the classroom that have different lengths. Measure using the same standard unit and compare the lengths using comparative phrases.
	Estimate a measurement and compare it to the actual measurement and determine if an estimate is reasonable.		
	Compare lengths of standard measurement.		
Rubric			
Developing	Proficient		Advancing
Measures are inaccurate or the appropriate tool wasn't selected for the measurement or they are unsure where the ruler begins and how to use it to measure.	Measure objects in inches, feet, centimeters, and meters consistently and select the appropriate tool.		Measure and compare objects length using inches, feet, centimeters, and meters and selects the appropriate tool. Measurement is accurate to the quarter inch. Makes connections between inches and feet (ex. 6 inches is half a foot).
Makes inaccurate estimates of length.	Estimate length with reasonableness.		Estimate length with reasonableness.
Compare units of length of two objects consistently. Compare lengths of two different objects using phrases such as "This one is longer/shorter" to describe the difference between two objects.	Compare units of length of two objects consistently. Compare lengths of two different objects using phrases such as "It is longer by 2 inches" or "It is shorter by 5 centimeters" to describe the difference between two objects.		Compare units of length of two objects consistently. Compare lengths of two different objects using phrases such as "It is longer by 2 inches" or "It is shorter by 5 centimeters" to describe the difference between two objects.
Assessment			
Developing	Proficient		Advancing
Student will estimate, measure, and compare lengths of classroom objects using inches, feet, centimeters and meters.	Student will estimate, measure, and compare lengths of classroom objects using inches, feet, centimeters and meters.		Student will estimate, measure, and compare lengths of classroom objects using inches, feet, centimeters and meters..

Graphing & Data			
Qtr	Cluster	2010 Standard	Correlation (Resources)
1,2	<b>Represent and interpret data.</b>	<b>MD.9</b> Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	<b>enVision Topics:</b> 13-4 to 13-6  <a href="http://www.fuelthebrain.com">www.fuelthebrain.com</a> (great for creating line plot graphs, enter "line plot" in the search window)
1,3		<b>MD.10</b> Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.	<b>enVision Topics:</b> 16-1 to 16-3, 16-7, 18-9
Enduring Understanding			Essential Questions
Information can be represented and organized in different ways.			How do you read the information on a chart or graph?
Different graphs display and communicate different information.			Why is data represented in graphs and charts?

**Graphing and Data STUDENT LEARNING**

Knowledge/Vocabulary	Cognitive Demand	Performance	Product
bar graph, data, symbol, picture graph, predict, line plot, axis, graph title, labels	Make and interpret picture graphs, bar graphs, and line plots.	You are making a bead necklace with red, blue, and yellow beads. Draw the beads on your necklace. Create a picture graph to show the beads used by everyone in the class.	Engineer a beaded necklace following the guidelines of the performance tasks in the alternative assessments page 507C in Topic 16 of enVision.
	Solve problems using data from graphs.		
	Represent measurements in a line plot.		
Rubric			
Developing	Proficient		Advancing
Answers basic questions about a graph.	Answers questions and make inferences about a graph.		Answers questions and make inferences about a graph and can generate questions from a graph.
Graph may be missing labels, titles, or scale is inaccurate. Students need guidance about which graph to make and how to make it.	Represents a set of data as a picture and bar graph, including labels, titles, and accurate scale. Students are able to determine which graph to use and can generate it independently.		Organizes data and then creates a picture and bar graph including labels, titles, accurate scale and a key independently.
Uses graphs to solve problems with teacher prompts.	Uses graphs to solve problems.		Uses graphs to solve problems and makes predictions from the graph.
Is able to create a line plot, but measures inaccurately.	Is able to create a line plot with accurate measurements.		
Assessment			
Developing	Proficient		Advancing
Given a graph from a lunch count (buy vs. bring), students can determine which is more – number buying or number bringing.	Given a graph from a lunch count (buy vs. bring), students can determine how many more/less bought their lunch.		Given a graph from a lunch count (buy vs. bring), students write questions about the graph.
Students collect data and represent it in a picture graph, bar graph or line plot. (ex. Birth months from class)	Students collect data and represent it in a picture graph, bar graph or line plot. (ex. Birth months from the year graphed by quarter or seasons.)		Students collect data and represent it in a picture graph and bar graph. Must use key for picture graph with symbol representing multiple items. (ex. Birth months from the year graphed by quarter or seasons. Symbol represents 2 people; ½ symbol represents 1)
Given a graph from a lunch count (buy vs. bring), students can determine how many students are absent. (ex. Teachers gives students total number of students in class.)	Given a graph from a lunch count (buy vs. bring), students can determine how many students are absent.		Given graphs from two previous months' lunch counts, students can predict how many will buy or bring based on the current lunch choices.
Student will create a line plot graph after lengths of pencils. (Student is able to create line plot, but measures inaccurately.)	Student will create a line plot graph after lengths of pencils. (Student is able to create line plot, but measures accurately.)		

Multiplication			
Qtr	Cluster	2010 Standard	Correlation (Resources)
4	Work with equal groups of objects to gain foundations for multiplication.	<b>OA.3</b> Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	<p><b>enVision Topics:</b> 4-9</p> <p><b>Investigations:</b> <b>Unit 3:</b> S3.1 to S3.3; <b>Unit 5:</b> S2.2; <b>Unit 8:</b> S1.1</p> <p><b>Mathstart Book:</b> "Missing Mittens" (odd and even)</p> <p><b>*Literature Connections:</b> "Six-Dinner Sid" by Inga Moore *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p>
4		<b>OA.4</b> Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	<p><b>enVision Topics:</b> 19-2 to 19-3, 19-5 to 19-6</p> <p><b>Investigations:</b> <b>Unit 1:</b> S4.7 <b>Unit 2:</b> S1.2 to S1.3, S2.4 to S2.5</p> <p><b>*Literature Connections:</b> "Centipede's 100 Shoes" by Tony Ross, "One Hundred Hungry Ants" by Elinor J. Pinczes, "Stay in Line" by Teddy Slater *Literature titles source is "Math and Literature" or "Math and Non-Fiction" grades 2-3</p>
		<b>Enduring Understanding</b>	<b>Essential Questions</b>
		Repeated addition involves joining equal groups.	How can repeated addition be written as a math equation?
		An array is one way to show adding the same number over and over again.	How can repeated addition be modeled in an array?

Multiplication STUDENT LEARNING			
Knowledge/Vocabulary	Cognitive Demand	Performance	Product
repeated addition, sum, addend, array, horizontal, vertical, rows, columns, groups of, equal, equation, odd, even	Write equations representing sums of two or more equal addends (repeated addition).	Use objects to demonstrate various strategies to determine even and odd numbers.	Students may investigate if a number is odd or even by determining if the number of objects can be divided into two equal sets, arranged into pairs or counted by two's.
	Arrange any set of objects into a rectangular array and write the associated math equation.	Create rectangular arrays for any given number and write equations that represent the total as the sum of equal addends.	Write a story about the array and include groups or repeated addition in the story. (reference enVisions Quick Check 19-2.)
Rubric			
Developing		Proficient	Advancing
Can write an addition sentence when given an array. Can create an array for some numbers.		Creates one or more array and writes a repeated addition sentence for any given number. $4+4+4=12$ $3+3+3+3=12$	Creates all possible arrays and writes a repeated addition sentence for any given number. $4+4+4=12$ $3+3+3+3=12$ $2+2+2+2+2=12$ $6+6=12$ May connects repeated addition and arrays to multiplication sentences. $3 \times 4=12$ $4 \times 3=12$
Assessment			
Developing		Proficient	Advancing
Student will select a given repeated addition sentence to match a given array.		Given a number, student draw one or more arrays and will write a repeated addition sentence.	Given a number, student draws all possible arrays and will write the repeated addition sentences. Student may write multiplication sentences.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
<b>Introduce</b>	<p><i>Represent and solve problems involving addition and subtraction.</i> <b>2.OA.1.</b> Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See Table 1.)</p>	<p><i>Measure and estimate lengths in standard units.</i> <b>2.MD.1.</b> Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</p>	<p><i>Use place value understanding and properties of operations to add and subtract.</i> <b>2.NBT.6.</b> Add up to four two-digit numbers using strategies based on place value and properties of operations.</p>	<p><i>Use place value understanding and properties of operations to add and subtract.</i> <b>2.NBT.7.</b> Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.</p>	<b>Introduce</b>
	<p><i>Add and subtract within 20.</i> <b>2.OA.2.</b> Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers. (See standard 1.OA.6 for a list of mental strategies.)</p>	<p><i>Measure and estimate lengths in standard units.</i> <b>2.MD.2.</b> Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.</p>	<p><i>Relate addition and subtraction to length.</i> <b>2.MD.5.</b> Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.</p>	<p><i>Understand place value.</i> <b>2.NBT.2.</b> Count within 1000; skip-count by 5s, 10s, and 100s.</p>	
	<p><i>Work with equal groups of objects to gain foundations for multiplication.</i> <b>2.OA.3.</b> Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.</p>	<p><i>Measure and estimate lengths in standard units.</i> <b>2.MD.3.</b> Estimate lengths using units of inches, feet, centimeters, and meters.</p>	<p><i>Use place value understanding and properties of operations to add and subtract.</i> <b>2.NBT.8.</b> Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.</p>	<p><i>Understand place value.</i> <b>2.NBT.3.</b> Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p>	

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
<b>Introduce</b>	<p><i>Understand place value.</i>  <b>2.NBT.1.</b> Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens—called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).</p>	<p><i>Measure and estimate lengths in standard units.</i>  <b>2.MD.4.</b> Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p>	<p><i>Understand place value.</i>  <b>2.NBT.4.</b> Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>		<b>Introduce</b>
	<p><i>Use place value understanding and properties of operations to add and subtract.</i>  <b>2.NBT.5.</b> Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</p>	<p><i>Work with time and money</i>  <b>2.MD.7.</b> Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p>			
	<p><i>Use place value understanding and properties of operations to add and subtract.</i>  <b>2.NBT.9.</b> Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)</p>	<p><i>Work with time and money.</i>  <b>2.MD.8.</b> Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?</p>			

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
<b>Introduce</b>	<p><i>Relate addition and subtraction to length.</i>  <b>2.MD.6.</b> Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.</p>	<p><i>Represent and interpret data.</i>  <b>2.MD.9.</b> Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.</p>			<b>Introduce</b>
	<p><i>Represent and interpret data.</i>  <b>2.MD.10.</b> Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (See Table 1.)</p>	<p><i>Reason with shapes and their attributes.</i> <b>2.G.1.</b>                      Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)</p>			
		<p><i>Reason with shapes and their attributes.</i> <b>2.G.2.</b>                      Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</p>			

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter		
<b>Introduce</b>		<p><i>Reason with shapes and their attributes.</i>  <b>2.G.3.</b> Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.</p>			<b>Introduce</b>	
	<b>Indicates Mastery in 1st semester</b>					
				<b>Indicates Mastery in 2nd Semester</b>		

### Standards for Mathematical Practice

<b><i>Standards</i></b>	<b><i>Explanations and Examples</i></b>
<b>2.MP.1.</b> Make sense of problems and persevere in solving them.	In second grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They make conjectures about the solution and plan out a problem-solving approach.
<b>2.MP.2.</b> Reason abstractly and quantitatively.	Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations and objects.
<b>2.MP.3.</b> Construct viable arguments and critique the reasoning of others.	Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?”, “Explain your thinking,” and “Why is that true?” They not only explain their own thinking, but listen to others’ explanations. They decide if the explanations make sense and ask appropriate questions.
<b>2.MP.4.</b> Model with mathematics.	In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.
<b>2.MP.5.</b> Use appropriate tools strategically.	In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation.
<b>2.MP.6.</b> Attend to precision.	As children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning.
<b>2.MP.7.</b> Look for and make use of structure.	Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles).
<b>2.MP.8.</b> Look for and express regularity in repeated reasoning.	Students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract, they look for shortcuts, such as rounding up and then adjusting the answer to compensate for the rounding. Students continually check their work by asking themselves, “Does this make sense?”

Table 1. Common addition and subtraction situations.<sup>6</sup>

	Result Unknown	Change Unknown	Start Unknown
<b>Add to</b>	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
<b>Take from</b>	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$
	Total Unknown	Addend Unknown	Both Addends Unknown <sup>1</sup>
<b>Put Together / Take Apart<sup>2</sup></b>	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
<b>Compare<sup>3</sup></b>	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$