Mathematics Curriculum:
Grade One

The following maps outline the Common Core Standards for grade one mathematics determined by the State Standards Initiative. Below is a list of assessment tools that are recommended for tracking student progress in these areas. In addition, resources that can be used in conjunction with instruction of these standards are provided but not limited to the list below.

Assessment:

Formative Assessment	Class-Work Review
Open-Ended Problems	Project-Based Assessment
Self-Assessment	Timed Drills
Teacher Observation	End of Year Assessment
Benchmark Assessment	Math Software (ex. Study Island)
Homework Review	Group & Cooperative Work

Resources:

Counters (variety)	Center Games	Tangrams
Flashcards	Ten Frame	Geometric Shapes(1W)
Math Word Wall	Blocks	Geo-Board
Connecting Cubes	Calendar	Textbooks
Number Line	100 Chart	Attribute Blocks
Work Mats	Math Songs/Poems	Craft Sticks
Computer Software	Calculators	Wiki-Sticks
SmartBoard	Money/Coins	Pattern Blocks(1W)
Flannel Board	Measurement Tools	Three Dimensional Shapes
Center Games	Judy Clock	Fraction Tiles
Concrete Objects	Small Student Clocks	Bar Models
Mini White Boards	Time Bingo	1's, 10's, 100's Bars/Cubes
Manipulatives	Digital Clock	Math Journals
Math/Pocket Charts	Analog Clock	

Websites:

http://www.aplusmath.com
http://www.studyisland.com
http://www.funbrain.com
http://www.songsforteaching.com

References: http://www.ade.az.gov/standards/math/2010MathStandards

Math Curriculum
Grade One

Essential Question(s): How do we use addition and subtraction sentences to solve real world problems with and without concrete objects?

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

Content: Operations & Algebraic Thinking

Standards: 1. OA

A. Represent and solve problems involving addition and subtraction.

Vocabulary: Vertical subtraction & addition, horizontal addition & subtraction, fact families, plus, sum, equal, in all addends, difference, minus, subtract, zero, add symbols, how many, all together, double facts, doubles plus, one facts, digits, count on, addends, sum, equations, missing number, sets, group, count.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	* Solve for results unknown: 6-2 = __ or 3+__ = 8 *Concrete models to introduce & solve addition & subtraction problems. *Picture drawings to solve word problems/and other addition and subtraction problems. *Creation of art projects to depict addition & subtraction sentences.	Contextual problems that are closely connected to students' lives should be used to develop fluency with addition and subtraction. Table 1 describes the four different addition and subtraction situations and their relationship to the position of the unknown. Students use objects or drawings to represent the different situations. • *Take-from* example: Abel has 9 balls. He gave 3 to Susan. How many balls does Abel have now? • *Compare* example: Abel has 9 balls. Susan has 3 balls. How many more balls does Abel have than Susan? A student will use 9 objects to represent Abel's 9 balls and 3 objects to represent Susan's 3 balls. Then they will compare the 2 sets of objects. Note that even though the modeling of the two problems above is different, the equation, 9 - 3 =?, can represent both situations yet the compare example can also be represented by 3 + ? = 9 (How many more do I need to make 9?) It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown. • *Result Unknown* problems are the least complex for students followed by *Total Unknown* and *Difference Unknown*. • The next level of difficulty includes *Change Unknown*, *Addend* • *Unknown*, followed by *Bigger Unknown*. • The most difficult are *Start Unknown, Both Addends Unknown,* and *Smaller Unknown.* Students may use document cameras to display their combining or separating strategies. This gives them the opportunity to communicate and justify their thinking.	Art: Creating Pictures depicting addition & subtracting. Writing: Create addition & subtraction word problems.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	*Concrete models to solve word problems. *Picture drawings to solve 3 digit addition problems. (ex. 3+2+1=)	To further students' understanding of the concept of addition, students create word problems with three addends. They can also increase their estimation skills by creating problems in which the sum is less than 5, 10 or 20. They use properties of operations and different strategies to find the sum of three whole numbers such as: - Counting on and counting on again (e.g., to add 3 + 2 + 4 a student writes 3 + 2 + 4 = ? and thinks, "3, 4, 5, that's 2 more, 6, 7, 8, 9 that's 4 more so 3 + 2 + 4 = 9." - Add largest numbers first and then add the last numbers to find the sum. - Find doubles facts then add the third number to find the sum. - Find combinations to make 10 and then add the third number to find the sum.	Art: Draw related picture for given word problem. Music: addition or subtraction songs

Essential Question(s): How do we apply properties of operations to addition and subtraction?
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy
21st Century Skills: Critical Thinking
Content: Operations & Algebraic Thinking
Standards: 1. OA
B. Understand and apply properties of operations and the relationship between addition and subtraction.
Vocabulary: Vertical subtraction & addition, horizontal addition & subtraction, fact families, plus, sum, equal, in all addends, difference, minus, subtract, zero, add symbols, how many, all together, double facts, doubles plus, one facts, digits, count on, addends, sum, equations, missing number, sets, group, count, fact families.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
3. Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*	*Concrete models to introduce and solve addition and subtraction sentences. *Picture drawing to solve various addition and subtraction sentences.	Students should understand the important ideas of the following properties: • Identity property of addition (e.g., 6 = 6 + 0) • Identity property of subtraction (e.g., 9 – 0 = 9) • Commutative property of addition (e.g., 4 + 5 = 5 + 4) • Associative property of addition (e.g., 3 + 9 + 1 = 3 + 10 = 13) Students need several experiences investigating whether the commutative property works with subtraction. The intent is not for students to experiment with negative numbers but only to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should recognize that they will be working with numbers later on that will allow them to subtract larger numbers from smaller numbers. However, in first grade we do not work with negative numbers.	Literature: Mission Addition By: Loreen Leedy Subtraction Action By: Loreen Leedy Elevator Magic By: Stuart J. Murphy Science: Using science related items to count (ex. acorns, shells, etc.)
4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20.*	*Use concrete objects to teach concept. *Teach students to count up on the number line. 10-8=___ . Have students start at 8 and count how many numbers to 10.	When determining the answer to a subtraction problem, 12 - 5, students think, "If I have 5, how many more do I need to make 12?" Encouraging students to record this symbolically, 5 + ? = 12, will develop their understanding of the relationship between addition and subtraction. Some strategies they may use are counting objects, creating drawings, counting up, using number lines or 10 frames to determine an answer.	Literature: Create a subtraction number story book.

Essential Question(s): How are addition and subtraction related?			
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy			
21st Century Skills: Critical Thinking and Problem Solving			
Content: Operations & Algebraic Thinking			
Standards: 1. OA			
C. Add and subtract within 20.			
Vocabulary: Counting on, counting back.			
5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	*Use drawings to solve addition and subtraction problems. *Use models to introduce and practice addition & subtraction problems. *Use number line.	Students' multiple experiences with counting may hinder their understanding of counting on and counting back as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count back (3) from 7, they should connect this to 7 – 3 = 4. Students often have difficulty knowing where to begin their count when counting backward.	Literature: A Bag Full of Pups By: Dick Gackenbach
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	*Use songs, chants, rhymes related to addition/ subtraction to enhance fluency. *Continue to use concrete models, picture drawings to solve addition & subtraction problems.	This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 10 and having experiences adding and subtracting within 20. By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. The use of objects, diagrams, or interactive whiteboards and various strategies will help students develop fluency.	Literature: Have students write their own addition/ subtraction rap.

Essential Question(s): How do we determine the unknown in a number sentence?
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy
21st Century Skills: Critical Thinking and Problem Solving
Content: Operations & Algebraic Thinking
Standards: 1. OA
D. Work with addition and subtraction equations.
Vocabulary: Equal signs, true, false, correct, incorrect, equals, equal sets, unequal sets, missing addends, vertical addition/subtraction, unknown number.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*	*Concrete modeling to introduce equal/not equal concepts. *Picture drawings to show equal and not equal sets.	Interchanging the language of "equal to" and "the same as" as well as "not equal to" and "not the same as" will help students grasp the meaning of the equal sign. Students should understand that *"equality"* means "the same quantity as". In order for students to avoid the common pitfall that the equal sign means "to do something" or that the equal sign means "the answer is," they need to be able to: • Express their understanding of the meaning of the equal sign • Accept sentences other than a + b = c as true (a = a, c = a + b, a = a + 0, a + b = b + a) • Know that the equal sign represents a relationship between two equal quantities • Compare expressions without calculating These key skills are hierarchical in nature and need to be developed over time. Experiences determining if equations are true or false help student develop these skills. Initially, students develop an understanding of the meaning of equality using models. However, the goal is for students to reason at a more abstract level. At all times students should justify their answers, make conjectures (e.g., if you add a number and then subtract that same number, you always get zero), and make estimations. Once students have a solid foundation of the key skills listed above, they can begin to rewrite true/false statements using the symbols, < and >. Examples of true and false statements: • 7 = 8 – 1 6 – 1 = 1 – 6 8 = 8 1 + 1 + 3 =7 • 4 + 3 = 3 + 4 12 + 2 – 2 = 12 9 + 3 = 10 5 + 3 = 10 – 2 • 3 + 4 + 5 = 3 + 5 + 4 13 = 10 + 4 10 + 9 + 1 = 19 Students can use a clicker (electronic response system) or interactive whiteboard to display their responses to the equations. This gives them the opportunity to communicate and justify their thinking.	Language Arts: Have students create their own problems for center time.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + __ = 11, 5 = __ − 3, 6 + 6 = __.*	Use concrete models, pictures or drawings to solve addition and subtraction problems.	Students need to understand the meaning of the equal sign and know that the quantity on one side of the equal sign must be the same quantity on the other side of the equal sign. They should be exposed to problems with the unknown in different positions. Having students create word problems for given equations will help them make sense of the equation and develop strategic thinking. Examples of possible student "think-throughs": • *8 + ? = 11*: "8 and some number is the same as 11. 8 and 2 is 10 and 1 more makes 11. So the answer is 3." • *5 = □ − 3*: "This equation means I had some cookies and I ate 3 of them. Now I have 5. How many cookies did I have to start with? Since I have 5 left and I ate 3, I know I started with 8 because I count on from 5. . . 6, 7, 8." Students may use a document camera or interactive whiteboard to display their combining or separating strategies for solving the equations. This gives them the opportunity to communicate and justify their thinking.	Have students write addition and subtraction equations related to problems in the classroom. *Ex. "I have 3 pieces of paper and 6 students, how many more do I need? 3+__=6"*

Essential Question(s): How does place value help us solve problems using addition and subtraction?	
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy	
21st Century Skills: Critical Thinking and Problem Solving	
Content: Number and Operations in Base Ten	
Standards: 1. NBT	
A. Extend the counting sequence.	
Vocabulary: Ones, tens, grouping, fact families, facts, doubles, counting on, left/right.	

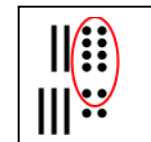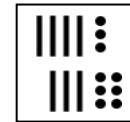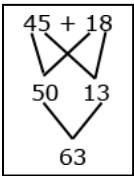| Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	Model ways to make numbers up to 120 using ten frames, counting on, doubles, grouping, money, etc.	Students use objects, words, and/or symbols to express their understanding of numbers. They extend their counting beyond 100 to count up to 120 by counting by 1s. Some students may begin to count in groups of 10 (while other students may use groups of 2s or 5s to count). Counting in groups of 10 as well as grouping objects into 10 groups of 10 will develop students understanding of place value concepts.
		
		Students extend reading and writing numerals beyond 20 to 120. After counting objects, students write the numeral or use numeral cards to represent the number. Given a numeral, students read the numeral, identify the quantity that each digit represents using numeral cards, and count out the given number of objects.
		
		Students should experience counting from different starting points (e.g., start at 83; count to 120). To extend students' understanding of counting, they should be given opportunities to count backwards by ones and tens. They should also investigate patterns in the base 10 system.
			Literature:
			   Monster Math
			   By: Anne Miranda
			
			   A Dozen Dogs
			   By: Harriet Ziefert

Math Curriculum
Grade One

Essential Question(s): How can we use place value to understand the digits of a two digit number?
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy
21st Century Skills: Critical Thinking and Problem Solving
Content: Number and Operations in Base Ten
Standards: 1. NBT
B. Understand place value.
Vocabulary: Ones, tens, grouping, fact families, facts, doubles, counting on, left/right, vertical, horizontal, columns, alignment, more, greater than, less than, equal, estimate.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: A. 10 can be thought of as a bundle of ten ones — called a "ten." B. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. C. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	*Understand that the two digits of a two digit number represent amounts of tens and ones. *Write number sentences to represent the place value. *Use money to represent place value.	Understanding the concept of 10 is fundamental to children's mathematical development. Students need multiple opportunities counting 10 objects and "bundling" them into one group of ten. They count between 10 and 20 objects and make a bundle of 10 with or without some left over (this will help students who find it difficult to write teen numbers). Finally, students count any number of objects up to 99, making bundles of 10s with or without leftovers. As students are representing the various amounts, it is important that an emphasis is placed on the language associated with the quantity. For example, 53 should be expressed in multiple ways such as 53 ones or 5 groups of ten with 3 ones leftover. When students read numbers, they read them in standard form as well as using place value concepts. For example, 53 should be read as "fifty-three" as well as five tens, 3 ones. Reading 10, 20, 30, 40, 50 as "one ten, 2 tens, 3 tens, etc." helps students see the patterns in the number system. Students may use the document camera or interactive whiteboard to demonstrate their "bundling" of objects. This gives them the opportunity to communicate their counting and thinking.	Literature: <u>Monster Math</u> By: Anne Miranda <u>A Dozen Dogs</u> By: Harriet Ziefert

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
3. Compare two -digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	*Compare and order whole numbers to 100. *Use <, >, = to compare whole numbers.	Students use models that represent two sets of numbers. To compare, students first attend to the number of tens, then, if necessary, to the number of ones. Students may also use pictures, number lines, and spoken or written words to compare two numbers. Comparative language includes but is not limited to more than, less than, greater than, most, greatest, least, same as, equal to and not equal to.	Literature: Just Enough Carrots By: Stuart J. Murphy

Essential Question(s): How do we understand place value & use properties of operations to add and subtract?
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy
21st Century Skills: Critical Thinking and Problem Solving
Content: Number and Operations in Base Ten
Standards: 1. NBT
C. Use place value understanding and properties to add and subtract?
Vocabulary: Sum, difference, carry on (move it over), math fact, flip, digits, fact families, selected families.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	*Solve multi-digit addition and subtraction problems using models and number sentences.

*Use fact families and related facts to illustrate the properties.

*Teach the relationship between number sentences through ordinary objects. | Students extend their number fact and place value strategies to add within 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. It is important for students to understand if they are adding a number that has 10s to a number with 10s, they will have more tens than they started with; the same applies to the ones. Also, students should be able to apply their place value skills to decompose numbers. For example, 17 + 12 can be thought of 1 ten and 7 ones plus 1 ten and 2 ones. Numeral cards may help students decompose the numbers into 10s and 1s.

Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms. As students are solving problems, it is important that they use language associated with proper place value (see example). They should always explain and justify their mathematical thinking both verbally and in a written format. Estimating the solution prior to finding the answer focuses students on the meaning of the operation and helps them attend to the actual quantities. This standard focuses on developing addition - the intent is not to introduce traditional algorithms or rules.

Examples:
- 43 + 36
  Student counts the 10s
  (10, 20, 30…70 or 1, 2, 3…7 tens) and then the 1s.

- 28 + 34
  Student thinks: 2 tens plus 3 tens is 5 tens or 50. S/he counts the ones and notices there is another 10 plus 2 more. 50 and 10 is 60 plus 2 more or 62. | Social Studies: Relate fact families to students' families |

- 45 + 18

  Student thinks: Four 10s and one 10 are 5 tens or 50.
  Then 5 and 8 is 5 + 5 + 3 (or 8 + 2 + 3) or 13. 50 and
  13 is 6 tens plus 3 more or 63.

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  45 + 18
    \ /
    50  13
     \ /
     63
  ```

- 29 + 14

  Student thinks: "29 is almost 30. I added one to 29 to
  get to 30. 30 and 14 is 44. Since I added one to 29,
  I have to subtract one so the answer is 43."

5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	Use mental strategies to add and subtract.	This standard requires students to understand and apply the concept of 10 which leads to future place value concepts. It is critical for students to do this without counting. Prior use of models such as base ten blocks, number lines, and 100s charts helps facilitate this understanding. It also helps students see the pattern involved when adding or subtracting 10. Examples: • 10 more than 43 is 53 because 53 is one more 10 than 43 • 10 less than 43 is 33 because 33 is one 10 less than 43 Students may use interactive versions of models (base ten blocks,100s charts, number lines, etc) to develop prior understanding.	
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.	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 and explain the reasoning used.	This standard is foundational for future work in subtraction with more complex numbers. Students should have multiple experiences representing numbers that are multiples of 10 (e.g. 90) with models or drawings. Then they subtract multiples of 10 (e.g. 20) using these representations or strategies based on place value. These opportunities develop fluency of addition and subtraction facts and reinforce counting up and back by 10s. Examples: • 70 - 30: Seven 10s take away three 10s is four 10s • 80 - 50: 80, 70 (one 10), 60 (two 10s), 50 (three 10s), 40 (four 10s), 30 (five 10s) • 60 - 40: I know that 4 + 2 is 6 so four 10s + two 10s is six 10s so 60 - 40 is 20 Students may use interactive versions of models (base ten blocks,100s charts, number lines, etc.) to demonstrate and justify their thinking.	

Math Curriculum
Grade One

Essential Question(s): How is measurement used in the real world?			
21st Century Theme: Global Awareness			
21st Century Skills: Critical Thinking and Problem Solving			
Content: Measurement and Data			
Standards: 1. MD			
A. Measure lengths indirectly and by iterating length units.			
Vocabulary: Length, inch, foot, yard, meter, centimeter, short -er -est, long -er -est. measure, end to end.			
Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.	*Using SmartBoard or models students will order objects from short to shortest and long to longest.
	
	*Understand the inverse relationship between the size of an unit and the number of units.
	
	*Students will organize classroom objects.
		In order for students to be able to compare objects, students need to understand that length is measured from one end point to another end point. They determine which of two objects is longer, by physically aligning the objects. Typical language of length includes taller, shorter, longer, and higher. When students use bigger or smaller as a comparison, they should explain what they mean by the word. Some objects may have more than one measurement of length, so students identify the length they are measuring. Both the length and the width of an object are measurements of length.
		
		Examples for ordering:
		• Order three students by their height
		• Order pencils, crayons, and/or markers by length
		• Build three towers (with cubes) and order them from shortest to tallest
		• Three students each draw one line, then order the lines from longest to shortest
		
		Example for comparing indirectly:
		• Two students each make a dough "snake." Given a tower of cubes, each student compares his/her snake to the tower. Then students make statements such as, "My snake is longer than the cube tower and your snake is shorter than the cube tower. So, my snake is longer than your snake."
		
		Students may use interactive whiteboard or document camera to demonstrate and justify comparisons.
			Literature:
			   How Big is a Foot?
			   By: Rolf Myller
			
			 Language Arts: Grammar lesson on the use or er and est endings. Students can write stories using words with these endings.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.

Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. | *Model measuring a desk with a pencil or other available nonstandard use of measurement.

*Demonstrate the need for exactness.

*Discuss how and why measurements differ.

*Introduce standard units of measurement.

*If students are ready introduce rulers. | Students use their counting skills while measuring with non-standard units. While this standard limits measurement to whole numbers of length, in a natural environment, not all objects will measure to an exact whole unit. When students determine that the length of a pencil is six to seven paperclips long, they can state that it is about six paperclips long.

Example:
  • Ask students to use multiple units of the same object to measure the length of a pencil.
    (How many paper clips will it take to measure how long the pencil is?)

Students may use the document camera or interactive whiteboard to demonstrate their counting and measuring skills. | Literature:
The Biggest Fish
By: Shelia Keenan |

Essential Question(s): How do we use time in our daily lives?
21st Century Theme: Health Literacy
21st Century Skills: Life and Career Skills
Content: Measurement and Data
Standards: 1. MD
B. Tell and write time.
Vocabulary: Hour, minute, second, half hour, clock face, minute hand, hour hand, second hand, analog, digital.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
3. Tell and write time in hours and half-hours using analog and digital clocks.	*Use the Judy Clock or SmartBoard to demonstrate telling time to the hour and half hour. Model how to write time properly using both analog and digital units. *Play bingo game match analog to digital time. *Have children practice telling time in small groups using small clocks. *Survey class to gather data about times they eat dinner, go to sleep, wake up, etc.	Ideas to support telling time: • within a day, the hour hand goes around a clock twice (the hand moves only in one direction) • when the hour hand points exactly to a number, the time is exactly on the hour • time on the hour is written in the same manner as it appears on a digital clock • the hour hand moves as time passes, so when it is half way between two numbers it is at the half hour • there are 60 minutes in one hour; so halfway between an hour, 30 minutes have passed • half hour is written with "30" after the colon "It is 4 o'clock" "It is halfway between 8 o'clock and 9 o'clock. It is 8:30." The idea of 30 being "halfway" is difficult for students to grasp. Students can write the numbers from 0 - 60 counting by tens on a sentence strip. Fold the paper in half and determine that halfway between 0 and 60 is 30. A number line on an interactive whiteboard may also be used to demonstrate this.	Literature: The Grouchy Ladybug By: Eric Carle Social Studies: Create a time line of the students day. Science: Sun rise and sun set. Health: How much sleep is needed? Physical Education: Use of the stopwatch.

Essential Question(s): How can the collection, organization, interpretation, and display of data be used to answer questions?
21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy
21st Century Skills: Critical Thinking and Problem Solving, Information Literacy
Content: Measurement and Data
Standards: 1. MD
C. Represent and interpret data.
Vocabulary: Graphs- bar/picture, most, greatest, least, more, less.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	*Guide students to collect data and discuss how to represent as a graph. Crate class graph. In journal, write a sentence that describes the data.

*Ask students questions about data, or have students formulate their own questions in their journals to ask their classmates. | Students create object graphs and tally charts using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students.

Counting objects should be reinforced when collecting, representing, and interpreting data. Students describe the object graphs and tally charts they create. They should also ask and answer questions based on these charts or graphs that reinforce other mathematics concepts such as sorting and comparing. The data chosen or questions asked give students opportunities to reinforce their understanding of place value, identifying ten more and ten less, relating counting to addition and subtraction and using comparative language and symbols.

Students may use an interactive whiteboard to place objects onto a graph. This gives them the opportunity to communicate and justify their thinking. | Science: Graph the weather

Language Arts: Journal results into sentences

Health: Graph Healthy Foods

Physical Education: Graph number of jumping jack, how far can everyone kick a ball, etc. |

Essential Question(s): How do we use shapes and their attributes in the real world?
21st Century Theme: Global Awareness
21st Century Skills: Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation
Content: Geometry
Standards: 1.G
A. Reason with shapes and their attributes.
Vocabulary: Graphs- bar/picture, most, greatest, least, more, less.

Skills	Instructional Procedures	Explanations and Examples	Interdisciplinary Connections
1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) ; build and draw shapes to possess defining attributes.	*Identify real world two dimensional shapes. *Identify and describe attributes and properties of two dimensional shapes *Sort and classify two dimensional shapes *Identify real world three dimensional shapes *Sort and classify three dimensional shapes *Recognize shapes from different perspectives *Tally shapes in the neighborhood	Attributes refer to any characteristic of a shape. Students use attribute language to describe a given two-dimensional shape: number of sides, number of vertices/points, straight sides, closed. A child might describe a triangle as "right side up" or "red." These attributes are not defining because they are not relevant to whether a shape is a triangle or not. Students should articulate ideas such as, "A triangle is a triangle because it has three straight sides and is closed." It is important that students are exposed to both regular and irregular shapes so that they can communicate defining attributes. Students should use attribute language to describe why these shapes are not triangles. Students should also use appropriate language to describe a given three-dimensional shape: number of faces, number of vertices/points, number of edges. Example: A cylinder would be described as a solid that has two circular faces connected by a curved surface (which is not considered a face). Students may say, "It looks like a can." Students should compare and contrast two-and three-dimensional figures using defining attributes. Examples: • List two things that are the same and two things that are different between a triangle and a cube. • Given a circle and a sphere, students identify the sphere as being three-dimensional but both are round. • Given a trapezoid, find another two-dimensional shape that has two things	Literature & Engineering: Read the Three Little Pigs then have students build houses in small groups, using different shapes. They are building houses for the little pigs that the wolf can't blow down. (Teachers can use the blow dryer to simulate the wolf blowing.)

		that are the same. Students may use interactive whiteboards or computer environments to move shapes into different orientations and to enlarge or decrease the size of a shape still keeping the same shape. They can also move a point/vertex of a triangle and identify that the new shape is still a triangle. When they move one point/vertex of a rectangle they should recognize that the resulting shape is no longer a rectangle.	
2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.	*Look at incomplete shapes and identify what they should be. *Compose and decompose two dimensional shapes. *Understand that three dimensional shapes are made up off two dimensional shapes. *Compose and decompose three dimensional shapes. *Identify two dimensional in three dimensional shapes.	The ability to describe, use and visualize the effect of composing and decomposing shapes is an important mathematical skill. It is not only relevant to geometry, but is related to children's ability to compose and decompose numbers. Students may use pattern blocks, plastic shapes, tangrams, or computer environments to make new shapes. The teacher can provide students with cutouts of shapes and ask them to combine them to make a particular shape. Example: • What shapes can be made from four squares? Students can make three-dimensional shapes with clay or dough, slice into two pieces (not necessarily congruent) and describe the two resulting shapes. For example, slicing a cylinder will result in two smaller cylinders.	Art/Engineering: Have students create three-dimensional transportation using recyclable materials in small groups. Have students present their creation to the class.
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	*Develop initial understanding of congruence and symmetry. *Using paper create two shapes that are equal size. *Have children use the SmartBoard to "cut" real world items in halves and quarters. *Walk around the school and identify fractions in the school environment.	Students need experiences with different sized circles and rectangles to recognize that when they cut something into two equal pieces, each piece will equal one half of its original whole. Children should recognize that halves of two different wholes are not necessarily the same size. Examples: 1. Student partitions a rectangular candy bar to share equally with one friend and thinks "I cut the rectangle into two equal parts. When I put the two parts back together they equal the whole candy bar. One half of the candy bar is smaller than the whole candy bar." 2. Student partitions an identical rectangular candy bar to share equally with 3 friends and thinks "I cut the rectangle into four equal parts. Each piece is one fourth of or one quarter of the whole candy bar. When I put the four parts back together, they equal the whole candy bar. I can compare the pieces (one half and one fourth) by placing them side-by-side. One fourth of the candy bar is smaller than one half of the candy bar. 3. Students partition a pizza to share equally with three friends. They recognize that they now have four equal pieces and each will receive a fourth or quarter of the whole pizza.	Art: Lines of Symmetry Science: Explore Butterflies and the explore the symmetry