

Deer Valley Unified School District Mathematics Curriculum



First Grade

2009-2010

DRAFT

Mathematics Curriculum Team Members

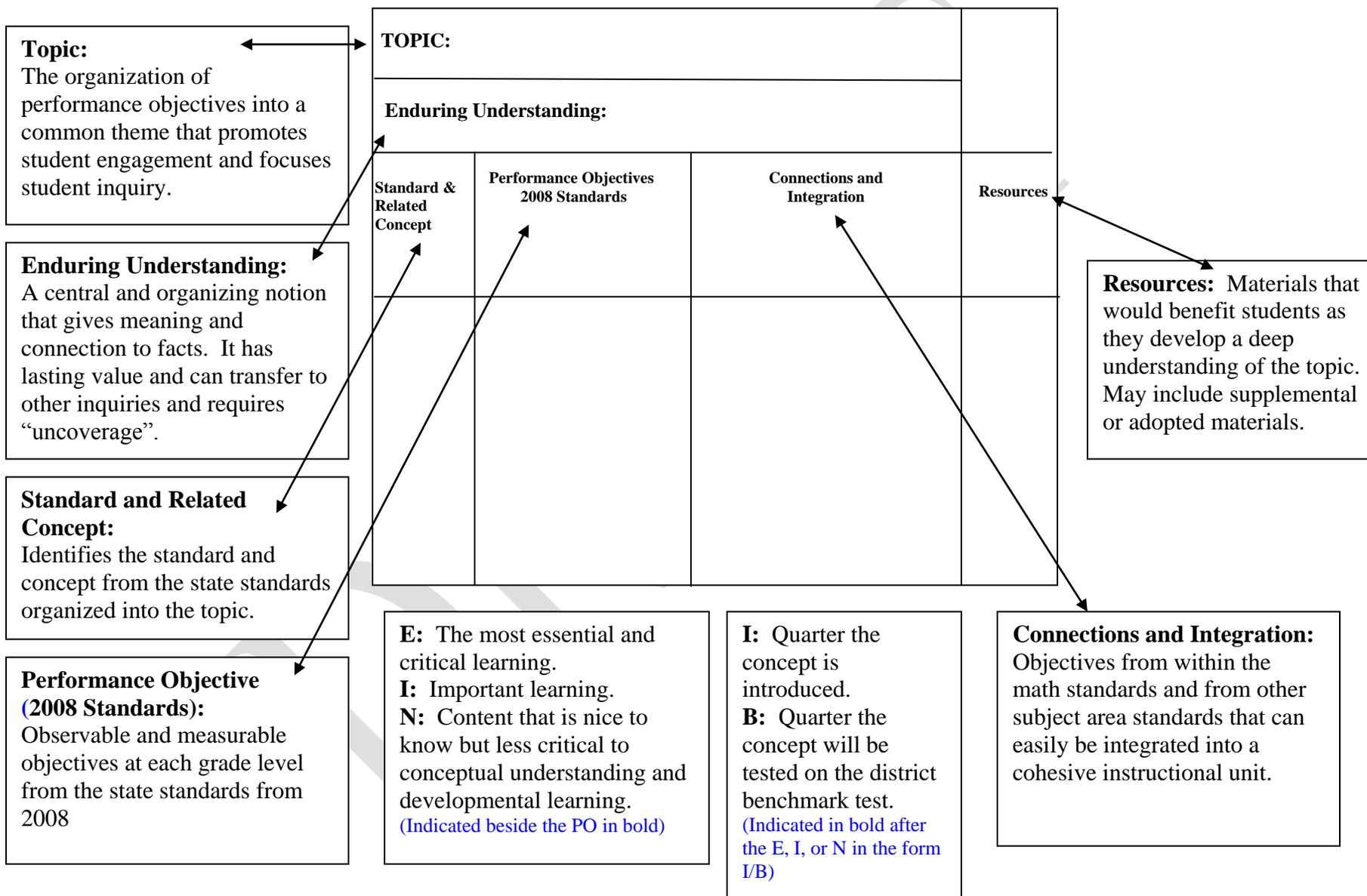
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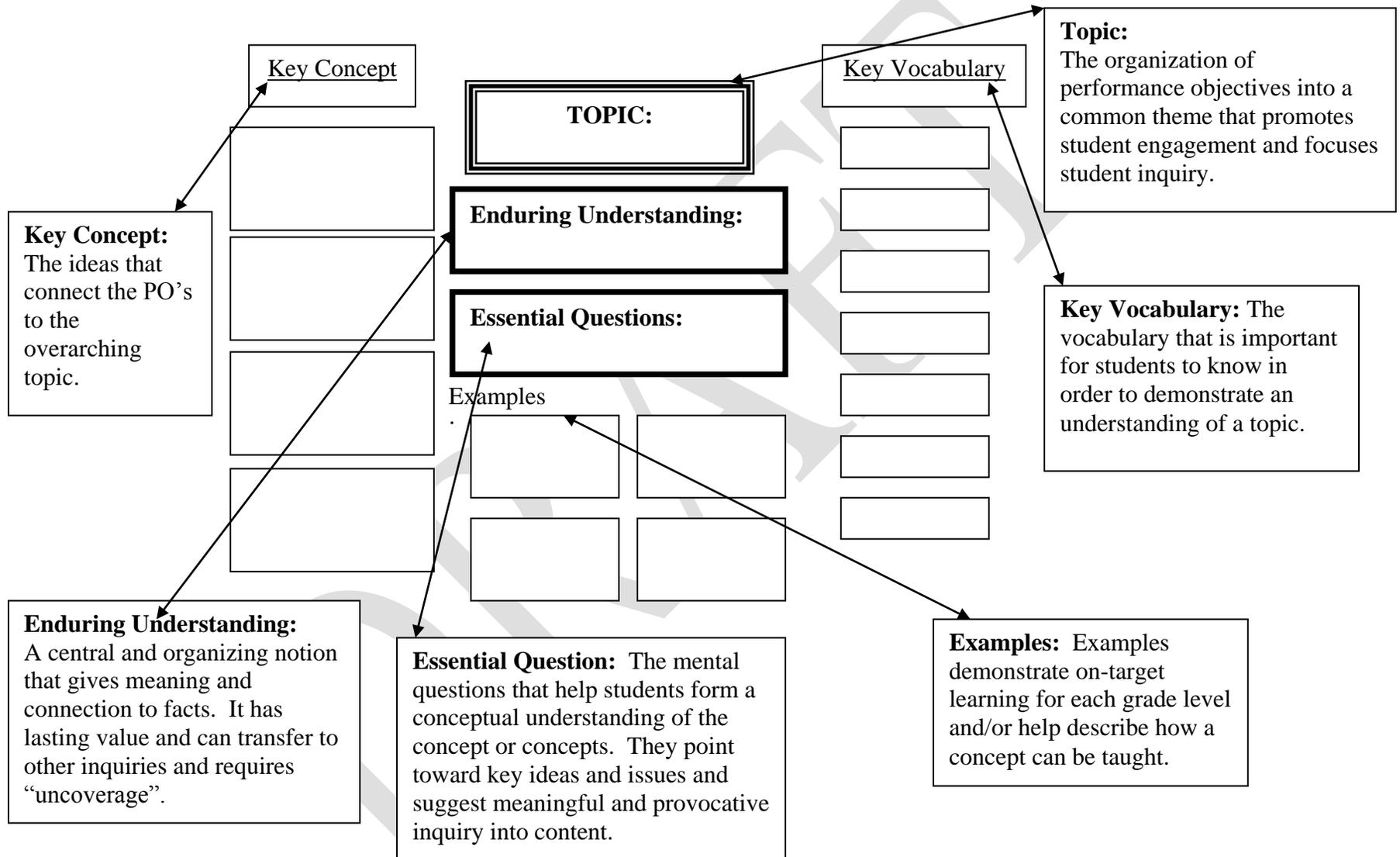
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Curriculum Definition Page



Concept Map Definition Page



ORGANIZATION OF THE DEER VALLEY MATHEMATICS CURRICULUM

The mathematics curriculum team delineated topics within the Arizona Mathematics Standards that are consistent with the way we teach and think about math. The document is designed so that teachers can see the strand, concept and performance objective within the state standards that link to each topic. Some performance objectives appear in more than one topic because the teaching and learning of mathematics should not be fragmented or compartmentalized. The topics within this document should be continuously integrated to allow students to construct meaning and make connections between and within the topics.

The Deer Valley Mathematics Curriculum delineated the following topics under each of the five main strands in the state standards:

- Number Sense and Operations
 - Number Sense (including place value)
 - Addition, Subtraction, Multiplication, Division → Number & Operations
 - Money and Decimals → Decimals
 - Fractions
 - Rational Numbers
 - Integers
 - Estimation
- Data Analysis, Probability and Discrete Mathematics
 - Data Analysis and Graphing
 - Probability
- Patterns, Algebra and Functions
 - Patterns
 - Algebra
 - Ratios and Proportions
- Geometry and Measurement
 - Geometry
 - Measurement
 - Time
- Structure and Logic
 - Problem Solving and Logic

Communication, problem solving, reasoning and proof, connections and representation are the process standards as described in the *Principles and Standards for School Mathematics* from the National Council of Teachers of Mathematics (NCTM). These process standards are interwoven within all the content strands of the Arizona Mathematics Standard. The process standards emphasize ways to acquire and use the content knowledge.

Mathematics education should enable students to fulfill personal ambitions and career goals in an informational age. In the NCTM *Principles and Standards* document it asks us to “*Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction. There are ambitious expectations for all, with accommodations for those who need it*”.¹ The Arizona Mathematics Standard Articulated by Grade Level is intended to facilitate this vision. (Arizona Mathematics Standard, ADE, 2008)

¹ National Council of Teachers of Mathematics, *Principles and Standards for School Mathematics*, NCTM Publications, Reston, VA, 2000, p. 3.

K – 8th Grade Articulated Topic Guide

Note: Topics ending in the graphic must be mastered by the indicated grade level. Those skills are essential for success in the next grade level.

K	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th											
Number Sense (including Place Value)																			
Addition																			
Subtraction																			
Multiplication			Number & Operations																
Division																			
Money and Decimals													Decimals						
Fractions																			
Rational Numbers																			
Integers																			
Estimation																			
Data Analysis and Graphing																			
Probability																			
Patterns																			
Algebra																			
Ratios & Proportions																			
Geometry																			
Measurement																			
Time																			
Problem Solving and Logic																			

TOPIC: Patterns			Quarter this will be taught: _____
Enduring Understanding: Patterns are all around us in the world.			
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
<p>Strand 3: Patterns, Algebra, and Functions</p> <p>Concept 1: Identify patterns and apply pattern recognition to reason mathematically.</p>	<p>PO1. Recognize, describe, extend, create, and record repeating patterns. (I 1/1)</p>	<p>In Grade 1, students will continue to develop their understanding of repeating and growing patterns. Repeating patterns will be more sophisticated than in kindergarten. Students will notice that growing patterns involve addition and subtraction, and they will work with other types of patterns as they learn to make generalizations about what they observe.</p> <p>Growing patterns repeat the same process over and over again. Students use objects, pictures or numbers. Students look for growing patterns in a hundreds chart. Growing patterns can be used to reinforce addition and subtraction facts.</p> <p>Example:</p> <ul style="list-style-type: none"> Adding 5 over and over again results in a number pattern of 5, 10, 15, 20, 25, 30, 35, 40, ... Adding 5 over and over can also be seen when counting the points on multiple stars or fingers on multiple hands. <p>Math: S1C1-01. Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.</p> <p>Math: S1C1-02 Count forward to 100 and backward from 100 by 1s and 10s using different starting points, and count forward to 100 by 2s and 5s.</p> <p>Math: S4C1-01 Identify and draw 2- dimensional geometric figures based on given attributes regardless of size or orientation.</p> <p>Math: S5C2-04. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.</p> <p>Math: S5C2-03. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.</p>	<p>Topic 9.1 through 9.4</p> <p><i>Investigation:</i> Unit 7: Color, Shape and Number Patterns</p> <p>(Topic 10 includes skip counting as a number pattern.)</p> <p><i>Investigaion:</i> Unit 8: Twos, Fives, and Tens)</p>
	<p>PO 2. Recognize, describe, extend, create, and record growing patterns. (I 1/1)</p>		

NOTE: “*” indicates the PO is repeated in other topics within the document.

Key Concepts:

Communicate, repeat, extend, create, and record repeating, growing and reducing patterns.

Represent a pattern using any combination of words, numbers, pictures, physical objects or symbols.

TOPIC:
Patterns

Enduring Understanding:
Patterns are all around us in the world.

Essential Question(s):
-What are patterns?
-How do patterns help us predict?
-What patterns are in our number system?
-What patterns can we find in literature?
-How can patterns be different?

Examples:

Repeat the complete pattern:
♥ ☀ ▶

Make one of the following patterns with symbols:
AABB
ABCABC

Extend this pattern:
♣ ○ ♣ ○ ○ ♣ ○ ○ ○ ♣ _ _ _ _

Extend this pattern:
50, 40, 30, __, __, __, __

Key Vocabulary:

pattern

extend

repeat

symbol

growing pattern

reducing pattern

repeating pattern

TOPIC: Time			Quarter this will be taught: _____
Enduring Understanding: Our world is organized in units of time.			
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
<p>Strand 4: Geometry and Measurement</p> <p>Concept 4: Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.</p>	<p>PO 3. Sequence the days of the week and the months of the year. (E 1/2)</p>		<p>Topic 15.5</p>

Deer Valley Math Curriculum
Key Concepts:

Name the 7 days of the week in order with Sunday

Name 12 months of the year in order starting with January

Name days of the week for yesterday, today, tomorrow.

TOPIC:
Time

Enduring Understanding:

Our world is organized in units of time.

Essential Question(s):

- How does time affect our daily lives?
- What do the numbers on the clock mean?

Examples:

- Name the days of the week.
- Name the months of the year.
- The days of the week are... put them in order starting with Sunday.

Grade: First
Key Vocabulary:

yesterday

today

tomorrow

months

days of the week

year

TOPIC: Place Value			Quarter this will be taught: _____
Enduring Understanding: Digits in numbers have different values.			
Standard and Related Concept	Performance Objectives 2003 Standards	Performance Objectives 2008 Standards	Resources
<p>Strand 1: Number Sense and Operations</p> <p>Concept 1: Understand and apply numbers, ways of representing numbers, the relationships among numbers and different number systems.</p>	<p>*PO 1. Make a model to represent a given whole number 0 through 100. (E 1/3)</p>	<p><i>PO1. Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.</i></p> <p><i>PO4. Compare and order whole numbers through 100 by applying the concepts of place value.</i></p>	
	<p>PO 7. State verbally whole numbers through 100, using correct place value. (e.g., a student will read 84 as eight tens and four ones) (E 1/3)</p>		
	<p>PO 8. Construct models to represent place value concepts for the one's and ten's places. (E 1/3)</p>		
	<p>PO 9. Apply expanded notation to model place value through 99. (e.g., $37 = 3$ groups of ten + 7 units) (E 1/3)</p>		
	<p>Put in Number Sense after Addition and Subtraction</p>		

NOTE: “*” indicates the PO is repeated in other topics within the document.

TOPIC: Addition and Subtraction			Quarter this will be taught:
Enduring Understanding: Numbers, addition, and subtraction can be used to model real life situations.			
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
<p>Strand 1: Number Sense and Operations</p> <p>Concept 2: Understand and apply numerical operations and their relationships to one another.</p>	<p>PO1. Solve contextual problems using multiple representations for addition and subtraction facts.</p>	<p>There is a strong connection between this performance objective and representing word problems requiring addition or subtraction facts in an equation (Math: S3C3-03). Teaching these ideas concurrently is critical.</p> <p>Note that in contextual problems subtraction as “take-away” is less complex for students than subtraction as “comparison.”</p> <ul style="list-style-type: none"> • Take-away example: Abel has 9 balls. He gave 3 to Susan. How many balls does Abel have now? • Comparison example: Abel has 9 balls. Susan has 3 balls. How many more balls does Abel have than Susan? <p>In Grade 1, students learn how to add and subtract using multiple strategies. They learn when to add and subtract and how addition and subtraction relate to each other. Understanding the relationship between addition and subtraction is an important part of learning these operations efficiently and accurately.</p> <p>Math: S1C1-01. Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.</p> <p>Math: S5C2-01. Identify the question(s) asked and any other questions that need to be answered in order to find a solution.</p> <p>Math: S5C2-02. Identify the given information that can be used to find a solution.</p> <p>Math: S5C2-03. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.</p> <p>Math: S5C2-04. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.</p> <p>Math: S5C2-05. Explain and clarify mathematical thinking.</p> <p>Math: S5C2-06. Determine whether a solution is reasonable.</p>	<p>Topic 3.1-3.7</p> <p>Topic 4.4-4.8</p>
	<p>PO2. Demonstrate addition and subtraction of numbers that total less than 100 by using various representations that connect to place value concepts. (Note: The intent of this objective is NOT to introduce traditional algorithms or rules.)</p>		
	<p>PO3. Develop and use multiple strategies for addition facts to 10+10 and their related subtraction facts.</p>		
	<p>PO4. Create word problems based on addition and subtraction facts</p>		
	<p>PO5. Apply properties to solve addition/subtraction problems (identity property of addition/subtraction and commutative property of addition).</p>		
<p>Strand 3: Patterns, Algebra, and Functions</p> <p>Concept 3: Represent and analyze mathematical situations and structures using algebraic representations.</p>	<p>PO3. Represent a word problem requiring addition or subtraction facts using an equation.</p>		

NOTE: “*” indicates the PO is repeated in other topics within the document.

Deer Valley Math Curriculum
Key Concepts:

Grade: First
Key Vocabulary:

Students use the following strategies to understand addition and subtraction facts:

- Acting out the problem
- Using objects
- Drawing pictures
- Using 5 and 10 frames
- Using number lines
- Using 100 charts

The following Grade 1 strategies will prepare students to develop quick recall of addition and subtraction facts in Grade 2:

- 0, 1 or 2 more/less than
- Counting on
- Counting back
- Making tens
- Adding nine using “plus 10, minus 1”
- Using doubles
- Using near doubles (Ex: $5 + 6$ is $5 + 5$ plus 1 more)
- Subtracting by counting up (Ex: $8 - 3$. count up from 3, that is, 4, 5, 6, 7, 8)

Addition Facts 0 – 20 and subtraction facts to 18.

Add and subtract one and two digit numbers without regrouping

Addition and subtraction word problems through 18 without regrouping

Fact families and using properties of addition to convey them (identity, commutative, inverse)

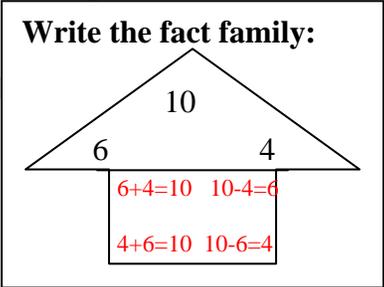
TOPIC:
Addition and Subtraction

Enduring Understanding:
 Numbers, addition, and subtraction can be used to model real life situations.

Essential Question(s):
 -What is addition? What is subtraction
 -How can we represent addition? Subtraction?
 -Why is addition important?
 -What are some ways we add numbers? Subtract numbers?
 -How are addition and subtraction related?

Examples:
Find the sum using more than one strategy:

$$\begin{array}{r} 12 \\ + 34 \\ \hline \end{array}$$
 ex. Add tens, then ones and combine
 ex. Add ten to 34 then count up 2



Act out the problem, draw a picture, or use objects to model it. Nine dogs were at the shelter. Five more joined them. How many dogs are at the shelter now?

Use a bar diagram to model the problem: Jeff had 7 marbles in his pocket and some marbles in his drawer. He had 10 marbles altogether. How many marbles did he have in his drawer?

7	???
---	-----

fact family

altogether

more than less than

addend sum addition

commutative property

subtract difference

< > =

digit

inverse

identity

plus minus equal

number sentence

equation

Deer Valley Math Curriculum

Grade: First

TOPIC: Number Sense (including Place Value)			Quarter this will be taught:
Enduring Understanding: Numbers are related to each other and are a part of everyday life. A digit has different values depending on where it is located in a number.			_____
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
Strand 1: Number Sense and Operations Concept 1: Understand and apply numerical operations and their relationship to one another.	* PO 1. Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations. (E 1/3)	There is a strong connection between this performance objective and recording equivalent forms of whole numbers (<u>Math</u> : S3C3-01).Teaching these ideas concurrently is critical. Use models, pictures, number lines, spoken and written words, and expanded form. Comparative language includes but is not limited to more than, less than, greater than, most, greatest, least, same as, equal to. Students first attend to the tens place when comparing 2-digit numbers. In Grade 1, students continue to work with whole numbers to quantify objects. They consider how numbers relate to one another. As they expand the set of numbers they work with, students start to develop critical concepts of ones and tens that introduce them to place value in our base ten system. An understanding of how ones and tens relate to each other allows students to begin adding and subtracting two-digit numbers.	Properties: Topic 3.6-3.8 Equivalent forms: Topic 1 Count, compare and order: Topic 12 Express numbers in 10's and 1's: Topic 11
	PO 2. Count forward to 100 and backward from 100 by 1s and 10s using different starting points, and count forward to 100 by 2s and 5s. (E 1/2)		
	PO 3. Identify numbers which are 10 more or less than a given number to 90. (E 1/1)		
	PO 4. Compare and order whole numbers through 100 by applying the concepts of place value. (E 1/3)		
	PO5. Recognize and compare ordinal numbers, first through tenth. (E 1/2)		
Concept 2: Understand and apply numerical operations and their relationship to one another.	PO5 Apply properties to solve addition/subtraction problems (identity property of addition/subtraction and commutative property of addition) (E 2/3)		
Strand 3: Patterns, Algebra, and Functions Concept 3. Algebraic Representations	PO1. Record equivalent forms of whole numbers to 100 by constructing models and using numbers.	<u>Math</u> : S5C2-04. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. <u>Math</u> : S5C2-05. Explain and clarify mathematical thinking.	
	PO2. Compare expressions using spoken words and the symbols = and \neq .		

NOTE: “*” indicates the PO is repeated in other topics within the document.

Identify and make models 0 – 100.

Count forward and backward by ones and by tens. Count forward by 2's and 5's.

Read and write numbers 0 – 100 in or out of order.

Make equal forms of numbers more than one way.

Compare and order two or more whole numbers 0 – 100.

TOPIC:
Number Sense (including Place Value)

Enduring Understanding:
 Numbers are related to each other and are a part of everyday life. A digit has different values depending on where it is located in a number.

Essential Question(s):
 -How do numbers work?
 -What rules help us use numbers and number operations?
 -How can a number be represented?
 -What are the relationship between the digits?

Examples:

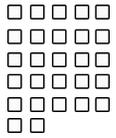
Represent six in more than one way.
 $3 + 3 = 6$ ● ● ● ● ● ●
 And
 $2 + 4 = 6$ ● ● ● ● ● ●

Order the numbers:
 62, 99, 84
 3, 7, 5, 1, 2, 10

- 10 more than 43 is 53
- 10 less than 23 is 13
- Start at 32. Count backward.
- Start at 27. Count by 10's

Draw a box around the 9th shape.
 △ ○ ○ △ ○ ○ △ ○ ○ △ ○ ○ △ ○ ○ △ ○ ○ △ ○ ○

$27 = 10 + 10 + 7$ $27 = 10 + 17$ 27

digit

numbers and numerals

ordinal number

equivalent

least

greatest

order

fewest

most

whole number

ones tens hundreds

TOPIC: Problem Solving and Logic Enduring Understanding: Logic can be used to solve many problems in every day life.			Quarter this will be taught:
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
Strand 1: Number Sense and Operations Concept 2: Understand and apply numerical operations and their relationship to one another. Concept 3: Use estimation strategies reasonably and fluently.	PO1. Solve contextual problems using multiple representations for addition and subtraction facts. *PO 1: Use estimation to determine if sums are more or less than 5, more or less than 10, or more or less than 20.	In Grade 1, students further develop the concept that doing mathematics involves solving problems and discussing what they did to solve them. Students continue to develop their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?”; “Why did you do that?”; and “How do you know that?” Students begin to build their mathematical vocabulary as they use correct mathematical language appropriate to grade 1.	Problem solving is as integral to mathematics as comprehension is to reading. Problem solving is ongoing and is integrated throughout a balanced math program.
Strand 2: Data Analysis, Probability, and Discrete Mathematics Concept 3: Understand and demonstrate the systematic listing and counting of possible outcomes.	PO 1. Use Venn diagrams to sort, classify, and count objects and justify the sorting rule (I 2/3) [Investigation – Unit 4]	Students need opportunities to connect the different representations and explain the connections. Representations should include numbers, words (including mathematical language), pictures, and/or physical objects. Students should be able to use all of these representations as needed.	Problem solving is not taught as an isolated skill nor is it a day out of the week.
Strand 5: Structure and Logic Concept 2: Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.	*PO 1. Identify the question(s) asked and any other questions that need to be answered in order to find a solution. PO2 Identify the given information that can be used to find a solution. PO3 Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution. PO4. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. PO5. Explain and clarify mathematical thinking. PO6. Determine whether a solution is reasonable.	Problem solving strategies may include drawing pictures, using objects, acting out, making a chart or list, etc.	Venn Diagrams: <i>Investigation – Unit 4</i>

NOTE: “*” indicates the PO is repeated in other topics within the document.

Deer Valley Math Curriculum
Key Concepts:

Choose which operation will help solve a problem.

Create problems based on a context.

Underline the important information in a word problem. What is the given information and what is the goal? What is known from the problem and what are you supposed to find?

Grade: First
Key Vocabulary:

operation

sets

variable

graph

TOPIC:
Problem Solving and Logic

Enduring Understanding:

Logic can be used to solve many problems in every day life.

Essential Question(s):

- Can we use a picture to model the problem?
- What seems to help this problem make sense?
- What might happen next in this situation?
- How did you decide to do that?

Examples:

Draw a picture, make a model, act out, or write a number sentence to show the problem. Underline the given information and circle the goal or the question.

Fifteen cookies were on the tray when the party started.
Twelve cookies were eaten.
How many cookies are left?

Write a word problem that can describe the picture.



Deer Valley Math Curriculum

Grade: First

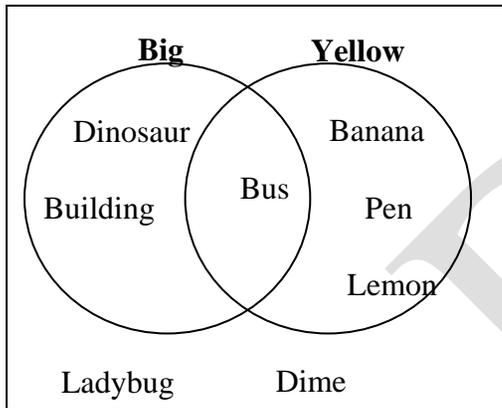
TOPIC: Data Analysis and Graphing			Quarter this will be taught: _____
Enduring Understanding: Information can be represented in different ways.			
Standard and Related Concept	Performance Objectives 2003 Standards	Connections and Integration	Resources
<p>Strand 2: Data Analysis, Probability, and Discrete Mathematics</p> <p>Concept 1: Understand and apply data collection, organization and representation to analyze and sort data.</p>	<p>PO 1. Collect, record, organize, and display data using tally charts or pictographs.</p>	<p>In Grade 1, students are introduced to basic ideas of data analysis by collecting and visually representing data. These ideas reinforce their understanding of whole numbers and addition and subtraction as students ask and answer questions about the data. As they move through the grades, students continue to apply what they learn about data, making mathematics relevant and connecting numbers to applied situations.</p> <p>Science: S1C2-04. Record data from guided investigations in an organized and appropriate format (e.g., lab book, log, notebook, chart paper).</p> <p>Science: S1C3-01 Organize (e.g., compare, classify, and sequence) objects, organisms, and events according to various characteristics.</p> <p>Science: S1C4-01. Communicate the results of an investigation using pictures, graphs, models, and/or words.</p> <p>Science: S5C1-01 Classify objects by the following observable properties: shape, texture, size, color, weight</p> <p>Science: S5C1-02 Classify materials as solids or liquids.</p> <p>Math: S5C2-01. Identify the question(s) asked and any other questions that need to be answered in order to find a solution.</p> <p>Math: S5C2-02. Identify the given information that can be used to find a solution.</p> <p>Math: S5C2-04. Represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols.</p> <p>Math : S5C2-05. Explain and clarify mathematical thinking.</p>	<p>Topic 18</p> <p><i>Investigations:</i> Unit 4</p>
	<p>PO 2. Ask and answer questions by interpreting simple displays of data, including tally charts or pictographs.</p>		
<p>Concept 2: Understand and demonstrate the systematic listing and counting of possible outcomes.</p>	<p>PO1. Use Venn diagrams to sort, classify, and count objects and justify the sorting rule.</p>		

NOTE: “*” indicates the PO is repeated in other topics within the document.

Solve problems using graphs, charts, and tables.

Interpret data from a pictograph using key terms.

Make a pictograph or tally chart with labels.

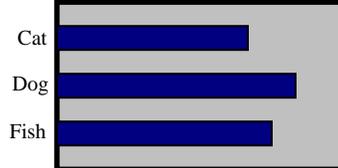


Examples:

Make a pictograph or tally chart of the data.

- 4 like vanilla
- 3 like chocolate
- 1 likes strawberry

Which type of pet is most common?



TOPIC:

Data Analysis and Graphing

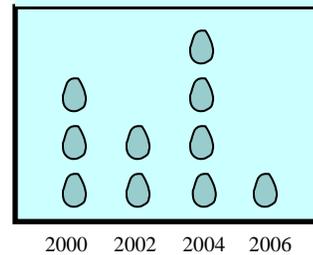
Enduring Understanding:

Information can be represented in different ways.

Essential Question(s):

- What are different ways to show data?
- Why do we use graphs and charts?
- How can pictures help show data?

Rainfall in the Spring



Each rain drop is equal to 1 inch of rain. What year had the most rain? Which had the least? How much more rain fell in the spring of 2004?

bar graph

pie chart

table

data

tally

pictograph

most least greatest

equal more less

sort sorting rule

classify

justify

Venn diagram

Deer Valley Math Curriculum

Grade: First

TOPIC: Geometry Enduring Understanding: Shapes are everywhere in our world and can be used for creating many things.			Quarter this will be taught: _____
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
Strand 4: Geometry and Measurement Concept 1: Analyze the attributes and properties of two and three dimensional shapes and develop mathematical arguments about their relationships.	PO 1. PO1. Identify and draw 2-dimensional geometric figures based on given attributes regardless of size or orientation. (N 2/-)	In Grade 1, students expand their knowledge of two-dimensional geometric figures by sorting, comparing, and contrasting them according to their characteristics. They learn important mathematical vocabulary used to name the figures. Students work with composite shapes made out of basic two-dimensional figures as they continue to develop their spatial sense of shapes, objects, and the world around them. Math: S5C2-02. Identify the given information that can be used to find a solution. Math: S5C2-05. Explain and clarify mathematical thinking. Math: S2C3-01 Use Venn diagrams to sort, classify, and count objects and justify the sorting rule. Math: S3C1-01 Recognize, describe, extend, create, and record repeating patterns.	Topic 8.1-8.4 <i>Investigations:</i> Unit 2
	PO 2. Compare and sort basic 2-dimensional figures (including irregular figures) using attributes and explain the reasoning for the sorting. (E 1/2)		
	*PO 3. Describe the results of composing and decomposing 2-dimensional figures. (E 1/2)		

NOTE: “*” indicates the PO is repeated in other topics within the document.

Identify shapes by attribute (size, shape, number of sides, vertices). Shapes should include circles, triangles, rectangles (including squares) and other quadrilaterals, but students do not need to name them.

Name and draw shapes (square, rectangle, triangle, circle).

Recognize same shapes in different positions.

Triangles should appear in many positions and orientations and should not all be equilateral or isosceles.

By definition, a square is a special kind of rectangle. Although most first graders do not yet understand the hierarchy of shapes, it is good to teach with this idea in mind. In addition, a square turned on a vertex is still a square (not a diamond).

Provide rationale for classifying objects according to attributes

TOPIC:
Geometry

Enduring Understanding:
 Shapes are everywhere in our world and can be used for creating many things.

Essential Question(s):
 -How can we classify and describe shapes?
 -How are shapes different? How are they similar?
 -What does the new picture look like when a shape changes position?

Examples:

Draw a:

Circle
 Triangle
 Square
 Rectangle

Which shapes have the same number of sides?

Use pattern blocks to make new shapes.

What shapes can be made from 4 squares?

What shapes are the figures composed of?

Color the top of the circle on the left.

vertex/vertices

square, rectangle, triangle

circle, oval

inside/outside

left/right

above/below/between

smaller/larger

longer/shorter

geometry

Sort classify

composing figures

decomposing figures

TOPIC: Estimation			Quarter this will be taught: _____
Enduring Understanding: We can determine the reasonableness of answers to problems by estimating.			
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
<p>Strand 1: Number Sense and Operations</p> <p>Concept 3: Use estimation strategies reasonably and fluently.</p>	<p>*PO 1. Use estimation to determine if sums are more or less than 5, more or less than 10, or more or less than 20. (E 1/1-4)</p>	<p>Estimating quantities helps students develop their number sense and their ability to compare and order numbers. Experiences of estimating sums without computing them are important because it requires students to examine the relationships between numbers – a key to number sense, basic facts, and place value concepts. Students should develop an understanding of ideas like $6 + 6$ is a little more than 10 because $5+5 = 10$. And $13+16$ is more than 20 because there are more than 2 tens.</p> <p>In Grade 1, students use five, ten, and twenty as benchmark numbers to develop their sense of quantity as well as to compare numbers.</p> <p>Math: S1C1-01 Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.</p> <p>Math: S1C1-02 Count forward to 100 and backward from 100 by 1s and 10s using different starting points, and count forward to 100 by 2s and 5s.</p> <p>Math: S1C1-04 Compare and order whole numbers through 100 by applying the concepts of place value.</p> <p>Math: S5C2-03. Select from a variety of problem-solving strategies and use one or more strategies to arrive at a solution.</p> <p>Math: S5C2-06. Determine whether a solution is reasonable.</p>	<p><i>Investigations:</i> Unit 3</p> <p>Throughout</p>

NOTE: “*” indicates the PO is repeated in other topics within the document.

Solve problems using estimation

TOPIC:
Estimation

estimate

Estimate the length of an object using standard and non-standard units.

Enduring Understanding:

We can determine the reasonableness of answers to problems by estimating.

reasonable

reason

Essential Question(s):

- What is estimation?
- How can we make reasonable estimates?

standard

non-standard

units

Examples:

Is the sum more or less than 10?

$$4 + 5$$

$$7 + 5$$

Is the sum more or less than 20?

$$15 + 11$$

$$8 + 9$$

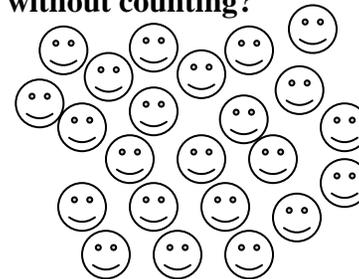
What is a reasonable estimate for the amount shown – 15 or 30?



About how many linking cubes long is the pencil?



Estimate the amount shown. How did you decide on that number? How could you get closer to the actual amount without counting?



Deer Valley Math Curriculum

Grade: First

TOPIC: Measurement			Quarter this will be taught: _____
Enduring Understanding: We can compare objects around us using tools of measurement.			
Standard and Related Concept	Performance Objectives 2008 Standards	Connections and Integration	Resources
Strand 1: Number Sense and Operations Concept 3: Use estimation strategies reasonably and fluently.	PO1. Use estimation to determine if sums are more or less than 5, more or less than 10, or more or less than 20. (E 3/4)	In Grade 1, students begin to understand what it means to measure, and they develop their measuring skills using everyday objects. As they practice using measurement tools to measure objects, they reinforce their sense of number and continue to develop their sense of space and shapes. Science: S1C2-03 Use simple tools such as rulers, thermometers, magnifiers, and balances to collect data (US customary units.) Math: S5C2-05. Explain and clarify mathematical thinking. Math: S5C2-06. Determine whether a solution is reasonable. Math: S1C1-01 Express whole numbers 0 to 100, in groups of tens and ones using and connecting multiple representations.	Topic 14 <i>Investigations:</i> Units 2, 3, 4, 5
	Strand 4: Geometry and Measurement Concept 4: Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.		

NOTE: “*” indicates the PO is repeated in other topics within the document.

TOPIC:
Measurement

Choose the correct measurement for an object: inches, cup, pound, etc.

Measure an object using the appropriate unit of measure.

Estimate a measurement and compare it to the actual measure

Use positional words

Use non-standard units of measure as well as standard units.

Enduring Understanding:

We can compare objects around us using tools of measurement.

Essential Question(s):

- How can we compare objects?
- What tools can we use to measure objects?
- What is the difference between length, volume, and mass?

Examples:

How long is each one?



Which one is shortest?

What units would you use to measure the length of a book, inches, pounds or cups?



What tool would you use to measure each one? A ruler? A scale? A measuring cup?



If Matt is taller than Joe and Joe is taller than Tom, is Matt taller than Tom?



length

weight

size

inches

feet

capacity

volume

cups

measure

measure