Grade Level	Content Area	Course Title *(9-12 Samples Only)*	Unit Title
3rd	Math		Our Path to AZ

Length of Unit	Time of Year Taught	Expected Prior Knowledge
Two weeks	October	Beginning familiarity with six digit numbers. Practice making predictions. Understanding of number representation.

Unit Description

After two weeks of focus around this unit, students will have found connections through multiple subject areas. In math, pattern making, using representations, and considering basic formulas will fill the curriculum. Students will look at population data both locally and throughout the state, working to understand six digit whole numbers. A variety of activities, a focus on skills, the use of manipulatives, and making daily connections outside the classroom will enrich and engage all students. The teacher will use workshops, direct instruction, centers, and play to lead learning and excite students about math.

Strand(s), Concept(s), and PO(s) *List and define the required Strand(s), Concept(s), and PO(s) for each lesson included in this sample.*	**Strand 3:** Patterns, Algebra, and Functions **Concept 3:** Algebraic Representations: Represent and analyze mathematical situations and structures using algebraic representations **Performance Objective 1:** Record equivalent forms of whole numbers to six digits by constructing models and using numbers.
Summative Assessment *Describe a cumulative and comprehensive activity that allows students to demonstrate mastery of stated POs. A copy of the summative assessment must be included in the application package.*	As summative assessments, students will consider a variety of ways to come up with a similar whole numbers. Each student will be using both addition and subtraction to represent their understanding. The first summative assessment will be a matching of equivalent numbers—done in a short-answer quiz format. The second summative assessment will look at two distinctly related numbers that students will be asked to come up with five ways to total each number.
Assessment Scoring *Explain how each assessment is scored, to include points per question, total points possible, criteria, and grading scale. Describe rubric, if applicable, to include components being evaluated and the scoring criteria for each. A copy of the answer key and/or scoring rubric must be included in the application package.*	The first summative assessment will have ten problems. Students must get at least eight of ten correct to reach mastery. The second summative assessment will have ten total tasks. Each student must come up with eight of ten correct equivalents for mastery to be reached.
Materials/Resources Needed *(Include all items for the entire unit.)*	**Website: http://www.azcommerce.com/doclib/econinfo/files/census_decennial.pdf -- Census data on AZ cities from 1860 to 2000** Math data notebooks Math counting blocks (ones, fives, tens, hundreds, thousands) **Book:** *Historic Photos of Phoenix* by Eduardo Obregon Pagan

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Instruction	**Guiding Question:** How many people live in Prescott? ***Learning Target:*** I can explain how different number representations equal the population of Prescott in 1950. The teacher will ask the students to write the learning target in their math notebook. The teacher will review the learning target with the students and also ask them to reflect on the guiding question. The teacher may ask---"What might be your guess?" or "How many people lived in Prescott in 1950?" and / or "How many years ago is 1950?" At their table groups, students will be given	**Guiding Question:** How many people live in Prescott? ***Learning Target:*** I can explain how different number representations equal the population of Prescott in 2000. The teacher will ask the students to write the learning target in their math notebook. The teacher will put on the board several "exit ticket" results that were collected the previous day, depicting four numbers that equal the population of Prescott in 1950. Most will be done correctly, but a couple that were not correct will also be displayed to see if the students can identify the mistakes.	**Guiding Question:** How many people live in Phoenix? ***Learning Target:*** I can explain how different number representations equal the population of Phoenix in 1950. The teacher will ask the students to write the learning target in their math notebook. Class will begin with a review of the work done the previous day. Exit tickets that represent Prescott in 2000 will be shared and discussed. Students will once again work with a partner to analyze their equation done the previous day and recorded in their math	**Guiding Question:** How many people live in Phoenix? ***Learning Target:*** I can explain how different number representations equal the population of Phoenix in 1950. The teacher will ask the students to review the learning target in their math notebook that they entered the previous day. Review the quizzes from the previous day. Students correct any answers they may have missed. This will be done with a partner. Next, the teacher will ask students to take out their math notebooks and look at the population of Phoenix in	**Guiding Question:** How do numbers tell stories? ***Learning Target:*** I can explain how different number representations equal the population of Phoenix in 1990. The teacher will ask the students to write the learning target in their math notebook. Students will review the end of the previous' day exit ticket (their two term equation...men and women in Phoenix in 1990). Several examples will be shared at the white board and students will determine if they

	math counting blocks. They will have blocks that represent ones, fives, tens, hundreds, and thousands. To review numerical representation, students will be asked to use the blocks to depict two digit numbers. Within their table groups (four students) they will be asked to come up with four different ways to represent the two digit number. The teacher will move throughout the classroom to evaluate understanding. Students will be asked to share their method of representing the two digit number. Next, students will be given a three digit number and told to do the same thing---at their tables come up with four different ways to	Students will individually be working out whether the examples are correct or not....i.e. 2,300 women + 2,500 men, 1,064 boys + 900 girls = 6,764 people in Prescott in 1950 would be a correct representation. After the review work on the board, students will again look at their own equation and determine if it is correct. They will share their results with a partner and help each other create a correct mathematical statement. Students will then be given the math blocks and experiment with subtraction---first given a two-digit number and then building up to three and four digit numbers. For example students could be given the	notebooks. Each student will conclude with an equation that represents the population of Prescott in 2000. There will be a transition with students to now consider the history and population of Phoenix. Students will be asked to come to the community reading place with their math notebooks to look at photos from a book about Phoenix. In this book, *Historic Photos of Phoenix*, there are a variety of great photos depicting life in Phoenix through the ages. Also, this book will have been used during social studies class. Students are asked to use numbers and	1950. Several students will share their equations with the rest of the class. Sharing some photos from the book *Historic Photos of Phoenix* with the students, the class will make a brainstormed list of the possible jobs a person might have in Phoenix in 1950. Using this list, students will be asked to pick out four or five jobs and assume that all people in Phoenix (in 1950) have one of these jobs. Each student will create an equation (with the job descriptor) equalling the total population in 1950 (106,818.) *Students may use blocks if that is helpful to create their equations. These should be recorded in their math notebooks.	are accurate or not. Five examples will be placed on the white board and partners will work together to figure out which are correct and which ones are not. Students will then be given a summative assessment that asks them to consider the population of Phoenix and different ways to represent the population (with descriptors.) Those that finish early will be challenged to consider the population of Phoenix in 2000 (1,321,045) and come up with multiple term equations that equal

	represent the number. In their math notebooks they will be asked to write down their equations. A couple of students will be asked to write their equations for the three-digit number on the white board. The teacher points out that all our equations equal the three-digit number---and that we can create a variety of ways. (using words, numbers, and models) to represent the final number. Students then will direct their attention to the AZ census data projected for the class. Looking at the city data, students will list the population of Prescott from 1870 to 1950. A short discussion will be about	number 35 and asked to create an equation using subraction that equals 35 (i.e. 50 – 15 = 35) Students will be asked to share their method of representing the subtraction equation. In their math notebooks they will be asked to write down their correct equations. A couple of students will be asked to write their equations for the three-digit number on the white board. The teacher asks that if in 1949 Prescott had 500 people move away before the 1950 census, how many people lived in Prescott in 1949? Students will write their answers in their math notebooks and then share them with a partner. Some students	symbols to represent things they see in the photos. These ideas will be shared with the class. Next, the teacher will ask students to return to their tables and look at the population of Phoenix in 1950 (106,818) Using the math blocks students will be asked to represent this population (done in pairs) *note—students can use the hundred block in front of thousands to represent "100,000." Some examples of different equations are shared with the class. Students are then given a summative assessment quiz on number representation to conclude the class.	Teacher moves around tables and checks to see if students are on track. Lastly, students will look at the population of Phoenix in 1990 (983,392) and estimate how many men and how many women live in Phoenix. These two numbers should add up to the 1990 population. The two-term equation should also be written on an exit ticket for the teacher to analyze at the end of the class period.	the 2000 population. After everyone finishes their assessment, students will be asked to reflect on the question: "How do numbers tell stories?" in their math notebooks. After five or so minutes of writing, students should share their ruminations with a partner and then ask to hear a couple that could be shared with the entire class.

	what led to the city's growth (talked about in Social Studies class.) Using the math blocks, students are asked to represent the population of Prescott in 1950. Offer a chance to students to share out some of their representations. Lastly, ask students to make guesses as to how many men, women, boys and girls lived in Prescott in 1950. In other words, students should have four numbers that equal 6,764 (the population of Prescott in 1950.) All students will write their equation both in their math notebook and on an exit ticket that the teacher will be evaluate as a piece of formative assessment.	will be asked to display their answers on the white board. Lastly, students will make guesses as to how many men, women, boys and girls lived in Prescott in 2000. This will require looking at the census data page and getting the total number of people in Prescott at that year (33,938.) In other words, students should have four numbers that equal 33,938 (the population of Prescott in 2000.) All students will write their equation both in their math notebook and on an exit ticket that the teacher will be evaluate as a piece of formative assessment.			

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Student Activities	1. Students will take out their math notebooks and write the learning target, along with the date. 2. Students consider guiding question and offer input as to the direction the class is going. 3. At their table groups, students will use math counting blocks to depict two digit numbers. 4. Each table group will come up with four different equations to represent the same two-digit number. 5. Next, students will be given a three digit number and told to do the same thing---at their tables come up with four different ways to express the number.	1. Students will take out their math notebooks and write the learning target, along with the date. 2. Students will look at the five equations on the board that represent different students' thinking on the number of men, women, boys, and girls in Prescott in 1950. 3. Doing there own calculations, students will determine which of the five are mathematically correct. 4. Students get together with a partner to analyze their entries at the end of the previous day. Partners work together to make each others' statement correct. 5. Students will use the	1. Students will take out their math notebooks and write the learning target, along with the date. 2. Students will begin by sharing their 2000 demographic equations with a partner. Partners will assess each others' work and determine if the equation is correct. Several of the students then share out their correct equations. 3. Students will be asked to come to the community reading place with their math notebooks to look at photos from a book about Phoenix. 4. Looking at one photo, students will use numbers and symbols to represent things they see in the	1. Students will take out their math notebooks and review the learning target that they entered the previous day. 2. Students will be given their quiz from the previous day. With a partner, or other members at their tables, students will correct any answers they may have missed. Quizzes will be stored in their math portfolio section. 3. Students will take out their math notebooks and look at the population of Phoenix in 1950. Several students will share their equations with the rest of the class. All students will analyze the accuracy. 4. Using a list of possible jobs that people	1. Students will take out their math notebooks and write the learning target, along with the date. 2. Students will review the end of the previous' day exit ticket (their two term equation...men and women in Phoenix in 1990). Several examples will be shared at the white board and students will determine if they are accurate or not—done individually. 3. Students will then be given a summative assessment that asks them to consider the population of Phoenix and different ways to

	6. In their math notebooks, students will be asked to write down their equations. 7. A couple of students will be asked to write their equations for the three- digit number on the white board. 8. Students will analyze the AZ census data projected for the class. Looking at the city data, students will **list** the population of Prescott from 1870 to 1950. Student will offer comments that describe why this growth happened. 9. Using the math blocks, students will represent the population of Prescott in 1950. 10. Lastly, students will make guesses as to how many men, women, boys	math blocks and experiment with subtraction---first given a two-digit number and then building up to three and four digit numbers. 6. Students will be asked to share their method of representing the subtraction equation. 7. In their math notebooks, students will write down their correct equations. 8. A couple of students will write their equations for the three-digit number on the white board. 9. All students will then work out a word problem, using the Prescott 1950 data. Knowing that 500 Chinese people, that lived in Prescott, moved away in 1949, how many people might the 1950	photo. After students record their numbers (and possibly equations) in their notebooks siltently, the ideas will be shared with the class. 5. At their tables, students will use the math blocks to represent the population of Phoenix- 106,818 in 1950 (done in pairs) *note—students can use the hundred block in front of thousands to represent "100,000." 6. Students share different equations with the class. 7. All students will then take a summative assessment quiz on number representation to conclude the class.	had in 1950, students will be asked to pick out four or five jobs and assume that all people in Phoenix (in 1950) have one of these jobs. 5. Each student will create an equation (with the job descriptor) equalling the total population in 1950 (106,818.) *Students may use blocks if that is helpful to create their equations. These should be recorded in their math notebooks. 6. Students will look at the population of Phoenix in 1990 (983,392) and estimate how many men and how many women live in Phoenix. These two numbers should add up to the 1990 population. 7. Students will write the two term equation both in their notebook and on an exit ticket to give to the teacher to	represent the population (with descriptors.) 4. After everyone finishes their assessment, students will be asked to reflect on the question: "How do numbers tell stories?" in their math notebooks. 5. Students should share their ruminations with a partner and then will be asked share with the entire class.

	and girls lived in Prescott in 1950. In other words, students should have four numbers that equal 6,764 (the population of Prescott in 1950.) 11. All students will write their equation both in their math notebook and on an exit ticket that the teacher will collect.	census have had if they would have stayed? 10. Students will write their answers in their math notebooks and then share them with a partner. Some students will be asked to display their answers on the white board. 11. Lastly, students will make guesses as to how many men, women, boys and girls lived in Prescott in 2000. This will require looking at the census data page and getting the total number of people in Prescott at that year (33,938.) 12. All students will write their equation both in their math notebook and on an exit ticket.		use as a formative assessment.	

3rd Grade Math

Summative Assessment #1--Quiz

S3; C3; PO1 --- Record equivalent forms of whole numbers to six digits by constructing models and using numbers.

Name _____ Date _____

Learning Target: I can record equivalent forms of whole numbers.

Match the following:

1. ____ 255	A. 10,000 + 4000 + 250 + 8
2. ____ 26	B. 1000 – 60
3. ____ 573	C. One hundred thousand + 20,000 + 8
4. ____ 14,258	D. Five hundred + seventy + three
5. ____ 120,008	E. 300 – 40 - 5
6. ____ 940	F. Twenty + six
7. ____ 14,258	G. 500 + 69 + 4
8. ____ 26	H. Nine hundred eighty thousand + Six thousand two hundred
9. ____ 573	I. Ten thousand + Four thousand two hundred + Fifty + Eight
10. ____ 986,200	J. 20 + 3 + 3

Answer Key:

1. E 2. F or J 3. D or G 4. A or I 5. C 6. B 7. A or I 8. F or J 9. D or G 10. H

<u>Rubric for assessment:</u>

Mastery	**Approaching**	**Not Yet**
8-10 correct	6 or 7 correct	Less than 6 correct

3rd Grade Math

Final Unit Summative Assessment

S3; C3; PO1 --- Record equivalent forms of whole numbers to six digits by constructing models and using numbers.

Name _____ Date _____

Learning Target: I can record equivalent forms of whole numbers.

1. If everyone **in Phoenix, in 1990, either worked as a policeman, fireman, airplane pilot, or taxi driver how many do you think would be doing each of those jobs? (*Remember there were 983,392 people in Phoenix in 1990.)**

2. If everyone **in Phoenix, in 1990, either worked as a policeman, fireman, airplane pilot, taxi driver, or teacher how many do you think would be doing each of those jobs? (*Remember there were 983,392 people in Phoenix in 1990.)**

3. If everyone **in Phoenix, in 1990, either worked as a policeman, fireman, airplane pilot, taxi driver, teacher or carpenter how many do you think would be doing each of those jobs? (*Remember there were 983,392 people in Phoenix in 1990.)**

4. If everyone **in Phoenix, in 1990, either worked as a policeman, fireman, airplane pilot, taxi driver, teacher, carpenter, or cook how many do you think would be doing each of those jobs? (*Remember there were 983,392 people in Phoenix in 1990.)**

5. If you started with the number 53,000 people used to live in Prescott but now there are only 33,000, how many left the city? (Show your thinking)

53,000 - _____ = 33,000

Rubric for Assessment:

Mastery	**Approaching**	**Not Yet**
4 or 5 correct	3 correct	Less than 3 correct