Grade Level	Content Area	Course Title *(9-12 Samples Only)*	Unit Title
2nd	**Math**		**Here Comes the Sun**

Length of Unit	Time of Year Taught	Expected Prior Knowledge
Two weeks	**October**	Beginning counting and pattern making

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. 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 1000 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*	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.

rubric must be included in the application package.	
Materials/Resources Needed *(Include all items for the entire unit.)*	Math notebooks for each student Colored Circles (four different colors—one for each member of a table group) 2 different sizes for different days Scissors Text: On Earth by G. Brian Karas Web site: http://www.gaisma.com/en/location/prescott-arizona.html (sunrise and sunset along with other information) Summative Assessment Forms (see two attached)

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Lesson Instruction	**Guiding Question:** What makes an apple pie? ***Learning Target:*** I can explain how different number representations equal one apple pie (eight slices.) The teacher will review the learning target with the students and also ask them to reflect on the guiding question. The teacher may ask---"How many slices are in a typical pie?" or "How many pieces of pie do you usually eat?" All students will be	**Guiding Question:** What makes a pizza? ***Learning Target:*** I can explain how different number representations equal one pizza (sixteen slices.) The teacher will review the learning target with the students and also ask them to reflect on the guiding question. The teacher may ask---"Who likes pizza?" or "How many pieces of pizza do you usually eat?" Students will be asked if they remember the exercise that they did the	**Guiding Question:** How much sunlight do we enjoy? ***Learning Target:*** I can represent the amount of sunlight a number of different ways. Students are asked to come to the community reading place and look at a book about the earth. In this book, *On Earth*, there is a description about sunlight and the cycles of a day. Also, this book will have been used during science focused time.	**Guiding Question:** How much sunlight do we enjoy? ***Learning Target:*** I can represent the amount of sunlight a number of different ways. The teacher will review the learning target and guiding question and have a handful of students describe how they spent their sunlight hours. Teacher can write the numbers on the board and ask the rest of the class if they add up to 650. Next the quiz taken the	**Guiding Question:** What makes a day? ***Learning Target:*** I can create several numerical representations of a day. The teacher will once again review the guiding question and learning target---highlighting the work that was done during the past week. Students will share strategies on how they figured out the answers to the quiz

	given a colored paper circle. They are told that this is their pie. They are encouraged to draw on their pie to distinguish the type. After a couple of minutes of identifying their type of pie (spelling this on their pie would be an added aspect of literacy) fold their circle in half. They then fold it again (in half) and finally one more time. The teacher should be demonstrating this process. The students will then be asked to unfold their "pies" and notice the folds. Using their scissors, students should cut on the all the folds and create the "pieces" of their pie. They should (with the three folds) end up with eight pieces of pie.	day before with the pie. The teacher will then had out colored circles again (although this time they will be about twice the size as of the previous day.) Still, at the tables, there should be four different colors. They are told that this is their pizza. They are encouraged to draw on their pizza to distinguish the type. After a couple of minutes of identifying their type of pizza (spelling this on their pizza would be an added aspect of literacy) fold their circle in half. They then fold it again (in half); a third and then finally once more. The teacher should be demonstrating this process. The students will then be	Students are asked to make predictions as to how many minutes of sunlight they had the day before. They should record these guesses in their math notebook. The website that shows the actual sunrise and sunset times is then projected via the LCD—displayed in hours and minutes. Students are then asked how you convert hours into minutes. All students make this calculation in their notebooks. The total number should be around 650 minutes (in the month of October.) Students are then asked to make some guesses as to what they were doing during those minutes of sunlight (i.e. eating for	day before will be handed back and students will discuss with a table partner how they did and what might be ways to fix the answers that they did not get correct. Students are asked how many hours are there in a day. Then the class will figure out (together how many minutes that translates to----24 x 60 = 1,440 minutes.) Students will be told that the following day everyone will be coming up with calculations as to how they spent an entire day. Each student will brainstorm all the things they do in a day---and list these in their math journal (i.e. eat, sleep, watch t.v., play computer games, read, do math, etc.)	given on Wednesday. Students will then be handed a summative assessment, relating to the length of a day (in minutes), and asked how they fill their day. Students could use either addition or subtraction problems to come up with an equation that equals 1,440 (minutes.) For those that finish early, challenge them to then figure out how they spend their seconds (1,440 minutes x 60 seconds – 86,400 seconds in a day!) When everyone finishes and papers are collected, share

	At their table groups (three other members), students should then trade some pie. The rule being that they always need to have eight total pieces of pie. In their math journals, they then right down the number of each color they have that equals eight total pieces. (i.e. they may have 3 yellow, 2 blue, 1 green, and 2 red.) Several students are asked to come write their equations on the board. All should add up to eight pieces. The teacher points out that all our equations equal eight---and that we can say that a variety of ways. (using both words and numbers.) Lastly, as an exit ticket, students are asked write	asked to unfold their "pizzas" and notice the folds. Using their scissors, students should cut on the folds and create the "pieces" of their pizza. They should (with the four folds) end up with sixteen pieces of pizza. At their table groups (with three other members), students should then trade some pizza. The rule being that they always need to have sixteen total pieces of pizza. In their math journals, they then right down the number of each color they have that equals sixteen total pieces. (i.e. they may have 5 yellow, 7 blue, 2 green, and 2 red.) Several students are asked to come write their equations on the	45 minutes; reading for 65 minutes; playing for 300 minutes; etc.) There total, though must add up to 650 (if that is the number) minutes. Each student shares (with a partner) what they would be doing during the 650 minutes of sunlight. The teacher moves around the class and listens to the discussion and analyzes who is on track and who is not. At the end of class a short ten question quiz is given (as a summative assessment) helping to understand students' comprehension of equivalent form.	For their exit ticket, each student should have a corrected quiz (with all the right answers) and at least five things that they do during the course of a day. Teacher moves around tables and checks to see if students are on track.	some of the answers (as examples) on the board. Have the entire class analyze them for accuracy.

	down how many pieces each family member would get (in their own families) if they were to eat an entire pie at dinner. The exit tickets are used as a formative assessment to check for understanding.	board. All should add up to sixteen pieces. The teacher points out that all our equations equal sixteen---and that we can say that a variety of ways. (using both words and numbers.) Lastly, as an exit ticket, students are asked write down how many pieces each family member would get (in their own families) if they were to eat a sixteen piece pizza. The exit tickets are used as a formative assessment to check for understanding.			

	Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**	**Lesson 5**
Student Activities	1. Students take-out their math journals and write the learning target. 2. Given pie circle,	1. Students take-out their math journals and write the learning target.—students share (with a fist to five) where they	1. Students take-out their math journals and write the learning target.	1. Students take-out their math journals and write the learning target. 2. Students share first	1. Students take-out their math journals and write the learning target.

	student will first add some decorations (pie filling / type). 3. Student will then fold the pie in half three times. 4. Using scissors, student will cut on the folded lines (ending up with eight pieces of pie.) 5. Students will talk to their table-mates and trade pieces of pie---still retaining eight total pieces. 6. In their math journals, students will then right the numbers down describing their different types of pie pieces (that equal eight.) 7. Students share some of their equations with the rest of the class. 8. Students will then write another equation, describing how many pieces of pie each family member would eat if they ate all the pie in one	are with that target right now. 2. Given pizza circle, student will first add some decorations (pizza type). 3. Student will then fold the pizza in half four times. 4. Using scissors, student will cut on the folded lines (ending up with sixteen pieces of pizza.) 5. Students will talk to their table-mates and trade pieces of pizza---still retaining sixteen total pieces. 6. In their math journals, students will then right the numbers down describing their different types of pizza pieces (that equal sixteen.) 7. Students share some of their equations with the rest of the class. 8. Students will then	2. After writing the target and listening to aspects of the book, students will make predictions as to how many hours of sunlight there are in a day. This number will be written in their journals. 3. After analyzing the web site, students will then calculate how many minutes this translates to. 4. Brainstorming all the things that they might do when the sun is out, students then create an equation that equals the total amount of sunlight minutes in a day. 5. Students share their work with a partner. 6. Students then prepare for and take the quiz on equivalent form.	with a partner and then with the rest of the class, the equation that represented what they did during the sunlight hours. 3. Student quizzes are then handed back and students individually analyze their correct and wrong answers. 4. Each student, with a partner, identifies what they did well and what problems were not correct. Partners help each other understand the correct answers. 5. Students are then asked to calculate the total amount of minutes in a 24 hours time period (one day.) 6. They then brainstorm the many things that they would during the course of one whole day. 7. As an exit ticket, students will share at least five things that	2. Students share strategies they used to figure out the answers to the quiz. A handful of students are called up to share their strategies. 3. Each student is then given the final summative assessment. The five questions represent unit focus. 4. For those that finish before others, looking at the day in seconds will be the charge. 5. Upon everyone's completion, a few quiz answers will be shared with the whole class. 6. Finally, students spend a little time writing about equivalent whole numbers and the lessons they learned.

	sitting. This will be used as an “exit ticket”—a formative assessment by the teacher.	write another equation, describing how many pieces of pizza each family member would eat if they ate all the pizza in one sitting. This will be used as an “exit ticket”—a formative assessment by the teacher.		total 1,440 minutes that they do. Also, students corrected quiz will be shared with the teacher.	