Curriculum Sample Template

Max. 8 Pages

Grade Level	Grade 6 Math	**Content Area**	Mathematics
Course Title (grades 9-12 Only)	N/A		
Length of Unit	3 days + 1 day for the summative assessment	**Time of Year**	3rd quarter
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	Students will do the following: Have a thorough understanding of addition, subtraction, multiplication and division. They will have learned how to solve for unknowns without variables and have understanding of associative and commutative properties.		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	This unit aligns to the Core Knowledge Sequence for Math and to the sequence for Singapore Math. The introduction of Algebra and the ability to solve one variable equations will be introduced in 6th grade. The skill of solving algebraic equations will continue at increasingly higher levels of rigor as set forth in the ADE 2010 Mathematics Standards (CCSS). The content knowledge of solving for unknowns and simple equations is spiraled throughout the Core Knowledge Sequence from Kindergarten to 8th Grade. As described in the Program of Instruction, cooperative learning will take place throughout this unit. Each lesson includes a combination of teacher-led instruction, small group interaction, independent practice, and ongoing assessment. Prior to beginning instruction, the teacher will administer an aligned pre-test to assess student understanding, and use data from this to target individual students' needs throughout the unit. Students will individually graph their results on both the pre- and post-tests, and graph their results in an individual portfolio, which serves as a visual representation of their progress towards their "Big Goal" in Math.		
Standard Number and Description *List the Number* and full description for the required Standard.*	6. EE.7 Reason about and solve one-variable equations and inequalities. Solve real world and mathematical problems by writing and solving equations of the form $x+p=q$ and $px=q$ for which cases x, p and q are all nonnegative, rational numbers.		
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	At the end of this unit, students will be given a summative assessment which will consist of two parts. In each section, students must apply what they've learned about balancing equations and solve for an unknown variable. There are a total of ten items on the assessment. Please see attached.		
Scoring Scale and Mastery Level *Explain how the assessment is scored,*	Each item will be worth one point, for a total of 10 points. Items will be scored according to an answer key (see provided). Grading for the assessment will be based on the following scale: 0-6= Falls Far Below; 7-8=Approaching;		

to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy of the answer key and scoring rubric (whichever applicable) must be attached to the curriculum sample.	9= Meets; 10= Exceeds. According to our program of instruction, 80% will indicate mastery. Thus, a score of 8 or 9 points will indicate mastery of this standard.
Materials/Resources Needed	Singapore Math 6a teacher's guide, 6a student textbook, balance scale, weighted blocks, hundreds charts

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1).*

Lesson (add as needed)	**Instruction** **TW= Teacher will; SW = Student will; TPS= Think, Pair, Share; INM = Introduction to new material; CFU = Check for understanding; GP= Guided practice; IP = Independent practice**	**Student Activities**
1	**Activation of Prior Knowledge:** TW direct students to review and graph their scores of the Math pre-test. TW guide students through creating a KWL chart based on the math test, identifying things they already know about **Objective:** To learn the definition and purpose of an equation and introduce variables. **INM:** Key Points: 1.) Define a variable 2.) Generalize numerical expressions to algebraic expressions. 3.)Principle of substitution **Modeling:** TW define what an equation is. An equation is a numerical statement where the right and left side of the equal sign are equal. An equation is like a scale where weights on both sides must be equal. TW bring out a balance scale. The teacher will place two green triangles on the left side and one green triangle on the right side. TW ask the students what could be added to either side to equal out the scale. When students have figured out how to balance scale ask them how they would write the original problem with the green triangles as an equation on board. Triangle + Triangle = Triangle + unknown. What was the unknown, it was another triangle. That unknown is a variable. Introduce other variables such as squares and rectangles. **Guided Practice:** TW have students use various objects to demonstrate what makes the scale balance.	SW review their homework from last night, and ask questions when necessary. SW use their mental math skills to answer the problems presented. SW repeat today's objective, and discuss how it will help them reach their Big Goal in Math. SW actively listen to today's key points. SW work together to determine that one more green triangle added to the right side would balance out the scale. Students work to figure out how to write it as an equation.

	Independent Practice: Students individually will create 5 equations from objects and a scale. TW provide scaffolding and support as needed. **Assessment:** TW use the Independent Assessment to track student mastery of the objective in a data tracker. The teacher will remediate for any student who does not show mastery. **Closure:** TW review with the class what they learned today. TW review what an equation is and why is it like a scale. (TW assign relevant homework, which will be this lesson's corresponding page in students' Singapore Math workbook.)	SW use the same idea and put together five more examples together and write down the equations. SW complete homework for class tomorrow, practicing writing equations with a variable.
2	**Activation of Prior Knowledge:** TW review and correct homework from the night before. TW have student's complete sprint on solving equations without variables. TW review homework from the night before. **Objective:** To solve equations with one variable using two operations with nonnegative, rational numbers. **INM:** Key Points: 1.) Generalize numerical expressions to algebraic expression 2.)Principle of substitution **Modeling:** TW write equation x + p = q on the board. TW will draw a bar modeling representing the equation, x+ 20=80. . X 20 = 80 **TW** will ask students to find what X or the variable is. Students will answer 60. TW have a student come put the numbers with the right letters. X we don't know, p is 20 and q is 80. In this formula x+p=q, x is the variable and p and q are the constants. When we write the final equation, x + 20=80 we have an algebraic expression. Teacher will display another equation x - 30 = 100. TW draw a bar model to represent the problem. Then teacher will show how to solve algebraically. x-30 (+30) = 100 (+30) x = 130. TW then have the students substitute the answer into the equation to check their answers. 130 -30 = 100.	SW review their homework from last night, and ask questions when necessary. SW repeat today's objective, and discuss how it will help them reach their Big Goal in Math. SW actively listen to today's key points. SW answer 60 for x. Students will put the numbers with the right letters. SW will then substitute answer to check equation. SW will write equation on whiteboards and follow teachers lead. SW substitute the answer into the equation to check their answers. 130 -30 = 100.

	Guided Practice: TW divide students into groups of two. Each group will have a 100's chart. The teacher will provide equations with variables and the teams will have to solve them. The variable answer will be filled in on the 100's chart. If the team gets the right answer it will form a picture. **Independent Practice:** TW assign independent practice of addition and subtraction equations with one variable. The independent practice will practice solving equations to help students attain mastery of balancing the equations. The independent practice will include several word problems to test student's skill level and understanding of concept. TW provide scaffolding and support as needed. **Assessment:** TW use the Independent Assessment to track student mastery of the objective in a data tracker. The teacher will remediate for any student who does not show mastery. **Closure:** TW refer class back to activities done, sharing what they learned today. TW assign homework on equations with variables. (TW assign relevant homework, which will be this lesson's corresponding page in students' Singapore Math workbook.)	SW work in pairs to answer equations teachers give them. SW fill in answer on hundreds chart. The pair of students will know if they got the answers correct if there is a picture on the hundred's chart. SW complete in class assignments with teacher scaffolding and support as needed. SW be practicing solving addition and subtraction one variable equations. SW check their answers on all problems. SW complete homework for class tomorrow. SW be practicing solving addition and subtraction one variable equations. SW check their answers on all problems.
3	**Activation of Prior Knowledge:** TW will have students complete mental math problems in addition and subtraction of one variable equations. Students will work on a timed 3 minute sprint of multiplication and division of whole rational numbers. TW review homework from the night before. **Objective:** To use multiplication in an algebraic equation with one variable. **INM:** Key Points: 1.) Property of Inverse 2) Principle of substitution **Modeling:** TW put the equation px=q on the board. P and q are the constants and x is the variable. A whole number can be written as a fraction. For instance 4 can be written as a fraction 4/1. The inverse of 4/1 is ¼. When you multiply 4/1 x ¼ you will get one. This becomes important when balancing a multiplication or division equation. TW put the following bar model on the board. 3(X) = 12.	SW review their homework from last night, and ask questions when necessary. SW complete mental math problems and sprint. SW repeat today's objective, and discuss how it will help them reach their Big Goal in Math. SW actively listen to today's key points.

	☐☐☐ (X) = ☐☐☐☐☐☐ ☐☐☐☐☐☐ TW show that the equation 3 x X=12 can also be solved the following way. (1/3)3 x X = 12(1/3), X =4. P = 3, X is the variable and Q = 12. **Guided Practice:** TW provide 5 problems on the board for students to complete on their white boards. Have students write a word problem that would use this type of equation. Have other students use the word problems and try to solve them. TW post word problems on whiteboard once completed and check for understanding. **Independent Practice:** TW assign algebraic multiplication problems with one variable. Word problems are included to determine understanding of lesson. TW provide scaffolding and support as needed. **Assessment:** TW use the Independent Assessment to track student mastery of the objective in a data tracker. The teacher will remediate for any student who does not show mastery. **Closure:** TW refer class back to lesson and into a group encouraging student to share what they learned today. Teacher will assign Singapore Math . (TW assign relevant homework, which will be this lesson's corresponding page in students' Singapore Math workbook.)	SW complete problems listed on whiteboard. Students will be working to mastery on one variable equations with multiplication. SW attempt to write a word problem that would use the equation px=q. SW complete independent practice assignment in class. Problems will start out easier and increase in difficulty. SW work on a mix of solving multiplication one variable equations and word problems. SW complete homework for the next class period. SW review addition, subtraction and multiplication single variable equations.

Paste Summative Assessment Here:
Name: _____
ADE 2010 MA Standard CCSS:
6. Expressions and Equations (EE)
Reason about and solve one-variable equations and inequalities.
#7 - Solve real world and mathematical problems by writing and solving equations of the form x+p=q and px=q for which cases x, p and q are all nonnegative, rational numbers.

Solve.
1.) 26= 7 + x x= _____ 2.) 12 + x = 123 x=_____ 3.) x + 9 = 31 x=_____

4.) 35 – x = 14 x= _____ 5.) x - 8 = 45 x= _____ 6.) 28 - x = 12 x= _____

7.) 5(x)=105 x= _____ 8.) 12(x)=144 x=_____ 9.) 7(x) = 56 x=_____

10.) Write an equation for the following problem and solve.
Mary had five times as many pencils as Joan. Joan had 55 pencils . How many pencils did Mary have?

Paste Answer Key/Scoring Rubric Here:

1.) 19 2.) 111 3.) 22 4.) 21 5.) 37 6.) 16 7.) 21 8.) 12 9.) 8

10.) 5x=55 x=11 Mary had 11 pencils.

Score: _____/10 Grading Scale: 0-6 points= Falls Far Below; 7 points= Approaches; 8-9 points= Meets; 10 points= Exceeds