UNIT OF STUDY

Title: Unit 7	Subject/Course: Math	Length: 3 weeks
Topic: Order of Operations, Algebra	Grade: 5	Designer: O'Cain, Smith

UNIT GOALS AND EXPECTATIONS

IMPORTANT CONCEPTS:	ESSENTIAL QUESTIONS:
Order of operations were agreed upon to assure that evaluating the same expression would always result in the same solution. An equation can be used to represent a function. The value on the left side of an equation is equal to the value on the right side. The value of the expression on the left side of an equation is equal to the value of the expression on the right side when the equation is true. You can solve an equation that contains a variable by finding a value for the variable that makes the equation true.	What strategies can be used to continue a sequence? How is an equation like a balance scale? Why are variables used? What strategies can be used to solve for unknowns? When are algebraic and numeric expressions used? Where in the real world would I find patterns?
STUDENT LEARNING EXPECTATIONS: NO.2.5.4 Apply rules (conventions) for *order of operations* to *whole number*s where the left to right computations are modified only by the use of parentheses A.4.5.1 Solve problems by finding the next term or missing term in a *pattern* or *function* table using real world situations A.4.5.2 Interpret and write a rule for a one ope*ration* *function table* Ex. adding 3 A.5.5.1 Model and solve simple *equations* by informal methods using manipulatives and appropriate *technology*	A.5.5.2 Write *expressions* containing one *variable* (a letter representing an unknown quantity) using rules for addition and subtraction A.5.5.3 Select, write and evaluate *algebraic expressions* with one *variable* by substitution Ex. Evaluate x+4 if x=7 A.6.5.1 Draw conclusions and make predictions, with and without appropriate *technology*, from models, tables and *line graphs* A.7.5.1 Model and describe quantities that change using real world situations Ex. age and height
SPECIFIC DECLARATIVE KNOWLEDGE – What I know Explain Vocabulary terms: order of operations parenthesis function table term input output equation equality inequality expression variable substitution table line graph prediction T-chart Relationship increase decrease relationship proportional rate rate of change	SPECIFIC PROCEDURAL KNOWLEDGE – What I need to do *identify order of operations *solve inside parentheses first *(optional: exponents next) *solve multiplication and division from left to right *solve addition and subtraction from left to right *identify what a function table is (input and/or output, what's my rule) *use appropriate operation to find the missing term or terms *apply patterns to real-world situations *recognize the relationship of the paired numbers in a function table *determine correct operation *write a rule for a one-operation function table *identify that an equation is balanced on both sides of the equal sign *solve simple equations for unknowns using manipulatives and technology *state the difference between an expression and an equation *identify that a variable represents an unknown value *apply expressions to real-world situations *write expressions containing one variable *select algebraic expressions to match a real-world situation *write algebraic expressions using one variable *solve the unknown variable by replacing with a given value *identify parts of data collection tools Ex. table, chart, graph *interpret meaning of data to make predictions and draw conclusions with and without appropriate technology *identify things that change over time

	*identify relationships of change (increase or decrease)

UNIT ASSESSMENTS (Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)	
Performance Assessment – "Math Game" involving choosing an equation, then writing a word problem to match the equation. HOTS questions involving using number riddles and solving algebraic equations.	
Traditional Assessments: Teacher made quiz using algebra. Teacher made test using algebra.	Other Evidence of Learning: Classwork activities Weekly homework

ACTIVITIES AND LEARNING EXPERIENCES	Resources
1. Use internet site (unitedstreaming) to introduce order of operations. www.unitedstreaming.com	http://player.discoveryeducation.com/index.cfm?guidAssetId=22FAF956-9CC6-44A0-98A7-A918AC53B189&blnFromSearch=1&productcode=US
2. Harcourt text and modeling order of operations. 3. Introduce a mnemonic device to remember order of operations.(PEMDAS) 4. Use order of operations song to reinforce order of operations.	Harcourt text – Ch. 12L2 http://www.songsforteaching.com/mathrocks/orderofoperationsPEMDAS.htm
5. Use unitedstreaming to introduce algebra.	http://player.discoveryeducation.com/index.cfm?guidAssetId=1A68583D-5103-4DED-A0D6-BBDD280CC092&blnFromSearch=1&productcode=US
7. Use Harcourt text to model writing algebraic expressions for situations.	Harcourt text – Ch. 4L1,2
8. Use unitedstreaming to introduce balancing equations.	http://player.discoveryeducation.com/index.cfm?guidAssetId=1A68583D-5103-4DED-A0D6-BBDD280CC092&blnFromSearch=1&productcode=US
9. Use manipulatives and Harcourt text to show how to balance an equation and to find equalities.	Harcourt text – C. 4, L3,4 Equabeam balance

Career Connections
Discuss how research scientists use unknown variables in equations in doing research.