



Rigorous Curriculum Design

Unit Planning Organizer



Subject:	Grade 6 Math		Grade:	6
Unit Number:	4	Unit Name:	Expressions, Equations, and Inequalities	
Unit Length	Days: 5 weeks + 1 buffer week		Mins / Day: 45-60	
Unit Synopsis	<p>Students will write, read, and evaluate expressions using the order of operations. They will generate equivalent expressions using the properties of operations. They will solve various forms of equations and inequalities using substitution from a given set of values, and solve addition and multiplication equations by applying the properties of equality. They will write inequalities representing real world situations, represent these on a number line, and understand that a variable in an inequality can represent infinitely many solutions. Students will use variables to represent two quantities in real-world problems that change in relationship to one another, and use both tables and graphs to represent this relationship.</p>			

Math CCSS	
Priority Standards	<p>CCSS.Math.Content.6.EE.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.</i></p>
	<p>CCSS.Math.Content.6.EE.3 Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.</i></p>
	<p>CCSS.Math.Content.6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p>
	<p>CCSS.Math.Content.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.</p>
	<p>CCSS.Math.Content.6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p>
<p>CCSS.Math.Content.6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.</p>	
Standards for Mathematical Practice	
SMP	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Make sense of problems and persevere in solving them <input checked="" type="checkbox"/> Reason abstractly and quantitatively <input checked="" type="checkbox"/> Construct viable arguments and critique the reasoning of others <input checked="" type="checkbox"/> Model with mathematics <input checked="" type="checkbox"/> Use appropriate tools strategically <input checked="" type="checkbox"/> Attend to precision <input checked="" type="checkbox"/> Look for and make use of structure <input checked="" type="checkbox"/> Look for and express regularity in repeated reasoning

Math CCSS		
Supporting Standards	<p>CCSS.Math.Content.6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.</p> <p>CCSS.Math.Content.6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p>CCSS.Math.Content.6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C.</i></p> <p>CCSS.Math.Content.6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.</p> <p>CCSS.Math.Content.6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.</p> <p>CCSS.Math.Content.6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation “Subtract y from 5” as $5 - y$.</i></p> <p>CCSS.Math.Content.6.EE.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. <i>For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.</i></p> <p>CCSS.Math.Content.6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <i>For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for..</i></p> <p>CCSS.Math.Content.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p>	
	Literacy/Science/ History/Other	NG ELD Standards
	<p>Writing 1B: Support claims with clear reasons and relevant evidence.</p> <p>Reading 8: Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.</p> <p>History: Pyramids of Giza</p>	<p>A.1. Exchanging information and ideas with others through oral collaborative discussions on a range of social and academic topics</p> <p>A.3. Offering and justifying opinions, negotiating with and persuading others in communicative exchanges</p> <p>B.6. Reading closely literary and informational texts.</p> <p>C.11. Justifying own arguments</p>

Priority Standards

Standard:	6.EE.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.			
Skills	Concepts	Bloom's	DOK	Language Demand
Evaluate	expressions at specific values of their variables.	Understand	1	Interpretive
Include	expressions that arise from formulas			Interpretive
used	in real-world problems	Analyze	2	
Perform	arithmetic operations including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	Apply	1	Productive
Essential Question(s)		Big Idea(s)		
How can you apply formulas to solve similar problems with different values?		Using a formula allows you to substitute any value for a specific variable.		
How do you evaluate expressions with more than one operation?		You can solve expressions with more than one operation including exponents using the order of operations.		

Standard:	6.EE.3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.			
Skills	Concepts	Bloom's	DOK	Language Demand
Apply	the properties of operations	Apply	2	Interpretive
to generate	equivalent expressions	Create	3	Productive
Essential Question(s)		Big Idea(s)		
How can you generate equivalent expressions?		Math properties can be used to write equivalent expressions in different ways without changing the value of the expression.		
How can you tell if two expressions are equivalent?		If you substitute the same value for the variable in both expressions and you get the same answer, the expressions are equivalent.		

Standard:	6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.			
Skills	Concepts	Bloom's	DOK	Language Demand
UNDERSTAND	Solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation true?	Understand	2	Interpretive
USE TO DETERMINE	Substitution Whether a given number in a specified set makes an equation or inequality true.	Apply Understand	1 3	Interpretive Interpretive
Essential Question(s)		Big Idea(s)		
How do you know which values from a given set make an equation true?		You can substitute numbers for the variable in the equation or inequality to check if the statement is true.		
How do you know which values from a given set make an inequality true?				

Standard:	6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.			
Skills	Concepts	Bloom's	DOK	Language Demand
SOLVE	Real world and mathematical problems.	Apply	2	
BY WRITING BY SOLVING	Equations of the form $x + p = q$ and $px = q$ for cases in which p , q , and x are all nonnegative rational numbers	Create Apply	3 2	
Essential Question(s)		Big Idea(s)		
How do you solve an addition equation?		You can subtract the same number from both sides of an equation to isolate the variable, and the two sides will remain equal.		
How do you solve a multiplication equation?				
		You can divide the same number from both sides of an equation to isolate the variable, and the two sides will remain equal.		

Standard:	6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that the inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.			
Skills	Concepts	Bloom's	DOK	Language Demand
WRITE	An inequality of the form $x > c$ or $x < c$	Apply	2	Interpretive
TO REPRESENT	a constraint or condition in a real-world or mathematical problem.	Understand	3	Interpretive
RECOGNIZE	that the inequalities of the form $x > c$ or $x < c$ have infinitely many solutions;	Understand	2	Interpretive
REPRESENT	solutions of such inequalities on number line	Apply	2	Productive

	diagrams.			
Essential Question(s)		Big Idea(s)		
How is the meaning of a variable different in an equation vs an inequality?		A variable in an equation has a specified set of solutions, but a variable in an inequality can have infinitely many solutions.		
How can you represent solutions of inequalities?		You can represent solutions of inequalities on a number line. An empty circle means the number is not included in the solution, and a solid circle means the number is included in the solution. Shade the number line to the left or right depending on the inequality, and use an arrowhead to indicate the solution extends infinitely.		

Standard:	6.EE.9			
Skills	Concepts	Bloom's	DOK	Language Demand
Use	Variables	Apply	2	productive
To represent	Two quantities in a real-world problem that change in relationship to one another	Apply	3	interpretive
Write	An equation	Create	3	productive
To express	One quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable	Create	3	interpretive
Analyze	The relationship between the dependent and independent variables	Analyze	3	collaborative
Using	Graphs and tables	Apply	2	productive
Relate	These (graphs and tables) to the equation	Analyze	3	interpretive
Essential Question(s)		Big Idea(s)		
How does increasing or decreasing the speed of a runner in a race affect his or her time?		When the speed of an object increases or decreases, the amount of time that goes by will change.		
How does a graph help you understand the relationship between the independent and dependent variable?		A graph or a table can help you visualize how the independent variable affects the dependent variable.		

Learning Progressions

Standard:		6.EE.2C			
		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
5.OA.1				7.NS.2c	
USE	parentheses, brackets, or braces in numerical expressions	EVALUATE	expressions	APPLY	properties of operations to multiply and divide rational numbers
		PERFORM	arithmetic operations		
EVALUATE	expressions				

Standard:		6.EE.3			
Previous Grade		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
5.OA.2				7.EE.2	
WRITE	Simple expressions	APPLY	the properties of operations	UNDERSTAND	rewriting an expression in different forms
RECORD	Calculations with numbers	GENERATE	equivalent expressions		
INTERPRET	Numerical expressions without evaluating them				

Standard:		6.EE.5			
Previous Grade		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
				7.EE.4	
		UNDERSTAND	solving an equation or inequality as a process of	USE	variables
			a question	REPRESENT	quantities
		ANSWERING	to determine	CONSTRUCT	simple equations and inequalities

		USE SUBSTITUTION	whether a given number in a specified set makes an equation or inequality true	SOLVE BY REASONING	problems about the quantities
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Standard:		6.EE.7			
Previous Grade		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
		SOLVE BY WRITING AND SOLVING	Real-world and mathematical problems equations of the form $x + p = q$ for which cases in which p , q , and r are all nonnegative rational numbers	7.EE.4a SOLVE SOLVE COMPARE IDENTIFYING	word problems leading to equations of the form $px + q = r$ and $p(x + q)$ are specified rational numbers these equations an algebraic arithmetic the sequence of the operations

Standard:		6.EE.8			
Previous Grade		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
		WRITE TO REPRESENT RECOGNIZE REPRESENT	an equality of the form $x > c$ or $x < c$ a constraint or condition in a real-world math problem that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions solutions of such	7.EE.4b SOLVE GRAPH INTERPRET	word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r and specified rational numbers the solution set of the inequality in the context of the problem

			inequalities on number line diagrams		
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Standard:		6.EE.9			
Previous Grade		Current Grade		Next Grade	
Skills	Concepts	Skills	Concepts	Skills	Concepts
		USE	Variables	7.EE.4 USE	Variables to represent quantities in a real world or mathematical problem
		TO REPRESENT	Two quantities in a real world problem that change in relationship to one another		
		WRITE	An equation	7.RP.2c REPRESENT	Proportional relationships by equations
		TO EXPRESS	One equation thought of as the dependent variable in terms of the other quantity, thought of as the independent variable		
		ANALYZE	The relationship between the dependent and independent variable	7.RP.2a DECIDE	Whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin
5.G.1 USE	a pair of	USING	Graphs and tables		

<p>UNDERSTAND</p>	<p>perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin)</p> <p>that the first number indicates how far to travel in the direction of the second axis</p>				
		<p>RELATE</p>	<p>These (graphs and tables) to the equation</p>		

Unit Vocabulary Words	
Academic Cross-Curricular Vocabulary (Tier 2)	Content/Domain Specific Vocabulary (Tier 3)
<p>conventional specified purpose at hand entity identify single entity process generate apply regardless represent constraint motion express analyze relationship approximate allowance budget reserve compact midsize SUV GPS car seat XM radio</p>	<p>Addition Property of Equality Algebraic Expression Coefficient Constant Distribution Division Property of Equality Formula Inequality Inverse Operations Is Not Equal to Linear Equation Numerical Expression Pattern Properties of Operations Solution of an Equation Solution of an Inequality Statement of Order Substitution Dependent Variable Equation Independent Variable Percent Standard Algorithm Variable</p>

baggage domestic international	
Resources for Vocabulary Development (Strategies, Routines and Activities) http://learningtasks.weebly.com/vocabulary-strategies.html http://et.nwresd.org/node/263 http://esu4vocabularystrategies.wikispaces.com/	

21 st Century Skills	
<input type="checkbox"/> Creativity and Innovation <input checked="" type="checkbox"/> Critical Thinking and Problem Solving <input checked="" type="checkbox"/> Communication and Collaboration <input type="checkbox"/> Flexibility and Adaptability <input checked="" type="checkbox"/> Globally and Financially Literate	<input checked="" type="checkbox"/> Initiative and Self-Direction <input checked="" type="checkbox"/> Social and Cross-Cultural Skills <input checked="" type="checkbox"/> Productivity and Accountability <input checked="" type="checkbox"/> Leadership and Responsibility <input type="checkbox"/> _____ <input type="checkbox"/> _____
<p>Connections between 21st Century Skills, CCCSS, and Unit Overview:</p> <p>Students will work collaboratively and independently on real world tasks that require mathematical application and global awareness. Students will become familiar with applying formulas using the dimensions of the Pyramids of Giza. They will use expressions and inequalities to stay within the constraints of a cell phone budget. They will use equations to solve problems involving travel such as determining the cost of a rental car, baggage fees, and parking fees.</p>	

Costa & Kallick, 2008

Unit Assessments	
Pre-Assessment	Post-Assessment
EADMS Please go to www.alvordschools.org/cfa for the most current ID numbers.	EADMS Please go to www.alvordschools.org/cfa for the most current ID numbers.
Scoring Guides and Answer Keys	
See EADMS Answer Key and Rubric	See EADMS Answer Key and Rubric

Assessment Differentiation

Students with Disabilities	<p>Accommodations Reference IEP to ensure appropriate testing environment</p>	English Language Learners	<p>Emerging Directions read to students and clarify vocabulary as needed. See instructional strategies.</p>
	<p>Modifications Test may be read aloud to students. Use of calculators. Extra time.</p>		<p>Expanding Directions read to students and clarify vocabulary as needed. See instructional strategies.</p>

Engaging Learning Experiences
Synopsis of Authentic Performance Tasks

Authentic Performance Tasks	Description	Suggested Length of Time
Task 1: Math in Egypt	Students will determine the perimeter, area, and volume of the Great Pyramid of Giza given the formulas. They will write equivalent algebraic expressions, and substitute specific values for the variables. They will then determine the total cost of a Pyramids of Giza tour using a pricing chart. They will generate equivalent expressions, and substitute the prices to determine the total cost of the tour. *If calculators used, students should show what they calculated on paper.	Days: 1-2 Mins/Day: 45-60
Task 2: Cell Phone Allowance	Students will write an expression to represent a cell phone plan. They will then write an inequality to determine the amount of text messages they can make to stay within their allowance, and graph this inequality on a number line. Students will justify if 150 text messages is the maximum number of text messages allowed to stay within a \$60 allowance. Finally, students will determine how many text messages they can make on a trip outside the country when the text message cost goes up to \$0.50.	Days: 1 Mins/Day: 45-60
Task 3: Travel Plans	Students will write expressions and solve equations to determine the cost of renting a car, paying for baggage fees, and paying for parking at the airport. They will use tables and graphs to illustrate the relationship between the independent and dependent variable in this real life situation. They will apply these skills to stay within a budget.	Days: 1-2 Mins/Day: 45-60

Authentic Performance Task 1

Name:	Math in Egypt	Suggested Length	Days: 1-2 Mins/Day: 45-60	
Standards Addressed	Priority Standards			
	CCCSS Math			
	<p><u>CCSS.Math.Content.6.EE.2c</u> Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.</i></p> <p><u>CCSS.Math.Content.6.EE.3</u> Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.</i></p>			
	Standards for Mathematical Practice			
	<input checked="" type="checkbox"/> Make sense of problems and persevere in solving them <input type="checkbox"/> Reason abstractly and quantitatively <input checked="" type="checkbox"/> Construct viable arguments and critique the reasoning of others <input type="checkbox"/> Model with mathematics <input checked="" type="checkbox"/> Use appropriate tools strategically <input checked="" type="checkbox"/> Attend to precision <input type="checkbox"/> Look for and make use of structure <input checked="" type="checkbox"/> Look for and express regularity in repeated reasoning			
	Supporting Standards			
	<p><u>CCSS.Math.Content.6.EE.1</u> Write and evaluate numerical expressions involving whole-number exponents.</p> <p><u>CCSS.Math.Content.6.EE.2</u> Write, read, and evaluate expressions in which letters stand for numbers.</p> <p><u>CCSS.Math.Content.6.EE.6</u> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p>			
Interdisciplinary Connections	Literacy/Science/ History/Other		NG ELD Standards	
	History: Pyramids of Giza		A.1. Exchanging information and ideas with others through oral collaborative discussions on a range of social and academic topics	
Teaching and	Write and evaluate numerical expressions		Bloom's	DOK

Learning Progression	-Include whole number exponents -Order of Operations Write, read, and evaluate algebraic expressions -Include real world formulas such as volume, perimeter, area, surface area, etc.	Understand, Apply, and Analyze	1
	Generate equivalent expressions -Include both numerical and algebraic expressions -Identify equivalent expressions by substituting for the same value -Use properties such as distributive property to write equivalent expressions *Include positive rational numbers in lessons.	Scoring Rubric See Answer Key on Task 1	

Authentic Performance Task 2

Name:	Cell Phone Allowance	Suggested Length	Days: 1 Mins/Day: 45-60
Standards Addressed	Priority Standards		
	CCCSS Math		
	<p><u>CCSS.Math.Content.6.EE.5</u> Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p>		
	<p><u>CCSS.Math.Content.6.EE.8</u> Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams</p>		
	Standards for Mathematical Practice		
<input checked="" type="checkbox"/> Make sense of problems and persevere in solving them <input checked="" type="checkbox"/> Reason abstractly and quantitatively <input checked="" type="checkbox"/> Construct viable arguments and critique the reasoning of others <input checked="" type="checkbox"/> Model with mathematics <input checked="" type="checkbox"/> Use appropriate tools strategically <input checked="" type="checkbox"/> Attend to precision <input checked="" type="checkbox"/> Look for and make use of structure <input checked="" type="checkbox"/> Look for and express regularity in repeated reasoning			
Supporting Standards			
CCCSS Math			

	<p><u>CCSS.Math.Content.6.NS.3</u> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p> <p><u>CCSS.Math.Content.6.EE.2</u> Write, read, and evaluate expressions in which letters stand for numbers.</p> <p><u>CCSS.Math.Content.6.EE.2a</u> Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation “Subtract y from 5” as $5 - y$.</i></p> <p><u>CCSS.Math.Content.6.EE.6</u> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p>		
Interdisciplinary Connections	Literacy/Science/ History/Other	NG ELD Standards	
	<p>Writing 1B: Support claims with clear reasons and relevant evidence.</p> <p>Reading 8: Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	<p>A.3. Offering and justifying opinions, negotiating with and persuading others in communicative exchanges</p>	
Teaching and Learning Progression	<p>Solving Equations and Inequalities through substitution given a specified set</p> <p>Write and solve equations and inequalities in the form $x + p = q$ and $px = q$ -only positive rational numbers</p> <p>Graph inequalities on a number line</p>	Bloom’s	DOK
		<p>Understand</p> <p>Evaluate</p>	<p>1</p> <p>4</p>
		Scoring Rubric	
		<p>See Answer Key on Task 2</p>	

Authentic Performance Task 3

Name:	Travel Plans	Suggested Length	Days: 1-2 Mins/Day: 45-60
Standards	Priority Standards		

Addressed	CCSS Math	
	<p><u>CCSS.Math.Content.6.EE.5</u> Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p><u>CCSS.Math.Content.6.EE.7</u> Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.</p> <p><u>CCSS.Math.Content.6.EE.8</u> Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p> <p><u>CCSS.Math.Content.6.EE.9</u> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.</p>	
	Standards for Mathematical Practice	
	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Make sense of problems and persevere in solving them <input checked="" type="checkbox"/> Reason abstractly and quantitatively <input checked="" type="checkbox"/> Construct viable arguments and critique the reasoning of others <input checked="" type="checkbox"/> Model with mathematics <input checked="" type="checkbox"/> Use appropriate tools strategically <input checked="" type="checkbox"/> Attend to precision <input checked="" type="checkbox"/> Look for and make use of structure <input checked="" type="checkbox"/> Look for and express regularity in repeated reasoning 	
	Supporting Standards	
	CCSS Math	
<p><u>CCSS.Math.Content.6.EE.6</u> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p>		
Interdisciplinary Connections	Literacy/Science/ History/Other	NG ELD Standards
	<p>Writing 1B: Support claims with clear reasons and relevant evidence.</p> <p>Reading 8: Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	<p>A.1. Exchanging information and ideas with others through oral collaborative discussions on a range of social and academic topics</p> <p>A.3. Offering and justifying opinions, negotiating with and persuading others in communicative exchanges</p> <p>B.6. Reading closely literary and informational</p>

		texts. C.11. Justifying own arguments	
Teaching and Learning Progression	Use variables to represent two quantities in a real-world problem that change in relationship to one another	Bloom's	DOK
		Analyze	3
	Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.	Scoring Rubric	
		See Answer Key on Task 3	
Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.			

Engaging Scenario

Detailed Description (situation, challenge, role, audience, product or performance)			
<p>Students will determine the perimeter, area, and volume of the Great Pyramid of Giza given the formulas. They will write equivalent algebraic expressions, and substitute specific values for the variables. They will then determine the total cost of a Pyramids of Giza tour using a pricing chart. They will generate equivalent expressions, and substitute the prices to determine the total cost of the tour.</p> <p>Students will write an expression to represent a cell phone plan. They will then write an inequality to determine the amount of text messages they can make to stay within their allowance, and graph this inequality on a number line. Students will justify if 150 text messages is the maximum number of text messages allowed to stay within a \$60 allowance. Finally, students will determine how many text messages they can make on a trip outside the country when the text message cost goes up to \$0.50.</p> <p>Students will write expressions and solve equations to determine the cost of renting a car, paying for baggage fees, and paying for parking at the airport. They will use tables and graphs to illustrate the relationship between the independent and dependent variable in this real life situation. They will apply these skills to stay within a budget.</p>			
Instructional Strategies			
All Students	SWD	ELs	Enrichment
Question frames for Bloom's Taxonomy http://et.nwresd.org/files/A_djusting%20Questions.pdf Four levels of questions: http://et.nwresd.org/files/R_obert%20Marzano%20on%20Four%20Levels%20of%20Classroom%20Questioning.pdf	Accommodations Highlight main concepts TPR Supplemental Aids Assist with organization and planning Provide prompts as needed Explain academic vocabulary, as needed Enlarged Texts	Emerging Think, Pair, Share http://www.colorincolorado.org/article/13346/ Question frames for Bloom's Taxonomy http://et.nwresd.org/files/A_djusting%20Questions.pdf	Core Curriculum: Teacher Toolkit CAMS Activities Pre-AP Activities

<p>Graphic Organizers Core Curriculum Tutoring Toolkit Core Curriculum Re-teaching Book Jigsaw Collaborative groups Vocabulary building http://et.nwresd.org/sites/et.nwresd.org/files/KAU%20vocabulary%20strategy.pdf Classzone Animated Math http://www.classzone.com/</p>	<p>Activate Schema Extended time</p>		
	<p>Modifications Collaborative Grouping Checklist of steps Use of manipulatives: http://nlvm.usu.edu/</p>	<p>Expanding</p>	
		<p>Bridging</p>	

Feedback to Curriculum Team		
Reflect on the teaching and learning process within this unit of study. What were some successes and challenges that might be helpful when refining this unit of study?		
	Successes	Challenges
Student Perspective		
Teacher Perspective		