Unit A - *Tools for Algebra*

Overview

The unit starts with an investigation of unit analysis and formula application. Then the unit moves on to a review of fraction operations and estimation techniques with instruction on the use of calculators in word problems. Similar practices are applied to decimal operations, estimation and problem solving. Fraction, decimal and percent conversions are reviewed for application in problem solving based on direct variation, similar polygons and percents.

21st Century Capacities: Decision Making

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS		
MP1 Make sense of problems and persevere in solving them **MP2** Reason abstractly and quantitatively **MP5** Use appropriate tools strategically **MP6** Attend to precision	*Transfer:*	
	Students will be able to independently use their learning in new situations to... 1. Model relationships among quantities. (Decision Making) 2. Demonstrate fluency with math facts, computation and concepts.	
	Meaning:	
CCSS.MATH.CONTENT.HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. CCSS.MATH.CONTENT.HSF.LE.A.1.B Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. CCSS.MATH.CONTENT.HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling. CCSS.MATH.CONTENT.HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on	UNDERSTANDINGS: *Students will understand that:* 1. Mathematicians apply the mathematics they know to solve problems occurring in everyday life. 2. Mathematicians identify relevant tools, strategies, relationships, and/or information in order to draw conclusions.	ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:* A. How does what we measure affect how we measure? B. How can I use labels to communicate? C. What does the solution tell me?
	Acquisition:	
	Students will know… 1. Units of measure can be translated to useful forms 2. Formulas are useful tools for	*Students will be skilled at…* 1. Using unit analysis to convert units 2. Comparing units or rates given in different units

measurement when reporting quantities.

CCSS.MATH.CONTENT.HSG.MG.A.1
Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).[*]

CCSS.MATH.CONTENT.HSA.SSE.A.1
Interpret expressions that represent a quantity in terms of its context.[*]

CCSS.MATH.CONTENT.HSA.SSE.A.1.A
Interpret parts of an expression, such as terms, factors, and coefficients.

CCSS.MATH.CONTENT.HSA.SSE.A.1.B
Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*

CCSS.MATH.CONTENT.HSA.SSE.A.2
Use the structure of an expression to identify ways to rewrite it.

CCSS.MATH.CONTENT.HSA.SSE.B.3.C
Use the properties of exponents to transform expressions for exponential functions.

CCSS.MATH.CONTENT.HSA.CED.A.4
Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

CCSS.MATH.CONTENT.HSG.SRT.B.5
Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

describing properties
3. Using different units
4. The order of operations (GEMS)
5. How to convert between fraction, decimal, and percent
6. How to calculate tax, tip, and discount
7. The difference between estimation and approximation
8. How to estimate tax or tip without a calculator
9. Corresponding parts of similar polygons are proportionate
10. Vocabulary: Unit Analysis, Distance - Time Function, Unit of Measure, Estimation vs. Approximation, Direct Variation,

3. Writing the units within a formula to ensure a correct answer
4. Choosing an appropriate unit of measure for a given situation
5. Comparing and contrast results of graphing the same scenario with different units
6. Using a formula following the correct order of operations
7. Determining the missing lengths in similar shapes.
8. Determining missing values in a proportional relation.