

**Telluride School District
Middle School
Mathematics**

Course : 7th Grade Pre-Algebra

Process Skills

Standard	Mathematical competency	Product of Learning	How and which process Skill(s) will emphasized within the standard	Resources	Assessment
<p>Critical Thinking and Reasoning: Students will: argue a point; justify reasoning; evaluate for purpose; infer to predict and draw conclusions; problem solve; understand and use logic</p> <p>Self-direction: Students will: understand, control, and manipulate their cognitive process</p> <p>Information Literacy: Students will: Evaluate information critically and competently; accessing appropriate tools to synthesize information distinguish fact/fiction/opinion/ point of view</p> <p>Invention: Students will synthesize information from multiple sources and apply new ways to solve problems their cognitive process.</p> <p>Collaboration: Students will: participate in peer review; respectfully discourse; mediate opposing perspectives; understand and apply knowledge of culture; seek other's ideas</p>					
Number Sense, Properties, and Operations	In the real number system, rational numbers have a unique location on the number line.	Read, write, locate on number line, compare and order integers and positive rational numbers.	Self-Direction	Pre-Algebra 1-4	Number Sense Test & Quizzes Problem Progression: Start with integers, then pi, fractions (improper and mixed), decimals, percents, squares and square roots
		Apply the definition of absolute value with integers, quantifying the distance from zero.	Self-Direction	Pre-Algebra 1-4	
		Express large and small numbers in scientific notation	Self-Direction	Pre-Algebra 4-9	
	Formulate, represent, and use algorithms with integers flexibly,	Simplify numeric expressions using the order of operations	Critical Thinking and Reasoning	Algebra 1 Chapter 1	Number Sense Test & Quizzes Problem Progression: 1. Start with addition/subtraction and multiplication/division, then fraction bar, parentheses (10-

	accurately, and efficiently	Add, subtract, multiply, and divide integers	Critical Thinking and Reasoning	Pre-Algebra 1-5, 1-6, 1-9 Number line, grouping of positives and negatives, tiles	3(4-6)), squares and finally squares of negatives with subtraction
		Use mental math and estimation strategies to solve problems involving percents	Critical Thinking and Reasoning	Pre-Algebra 6-5, 6-6	
		Solve problems involving percent of a number, discounts, taxes, simple interest, percent increase, and percent decrease	Invention	Pre-Algebra 6-7, 6-8	
	Proportional reasoning involves comparisons and multiplicative relationships among ratios	Use ratio relationships to solve for a missing value of a proportion	Collaboration	Pre-Algebra 6-1, 6-2, 6-3	Number Sense Test & Quizzes Problem Progression: 1. Students should demonstrate relationship between an equation and a proportion 2. Write proportions from word problems 3. Write proportions from graphic representations
		Model proportional relationships with bar models, ratio tables, and similar figures	Collaboration	Pre-Algebra 6-1, 6-2, 6-3	
		Explain the difference between a ratio, rate and unit rate	Collaboration	Pre-Algebra 6-1	
		Estimate and compute unit cost of consumables (to include unit conversions if necessary) sold in quantity to make purchase decisions based on cost and practicality	Collaboration	Pre-Algebra 6-1	

<p>Patterns, Functions, and Algebraic Structures</p>	<p>Relationships involving the constant rate of change are modeled and solved using linear functions</p>	<p>Given a linear situation (including direct variation), identify variables and write an equation in slope-intercept form</p>	<p>Invention</p>	<p>Pre-Algebra 8-1, 8-2, 8-3</p>	<p>Algebra Test & Quizzes Problem Progression: 1. Write simple equations, such as from the speed of a car 2. Convert and write simple equation 3. Write equation from a unit rate, then conversions 4. Write equations with a y-int, then conversions 5. Write equations from a chart 7. Write equations from line of best fit (y-int is zero)</p>
		<p>Given a linear equation (including direct variation), substitute input values to create a table and graph coordinate points in all four quadrants</p>	<p>Invention</p>	<p>Pre-Algebra 8-3, 8-6</p>	

Data Analysis, Statistics, and Probability	Visual displays and summary statistics with one-variable data condense the information in data sets into usable knowledge	Distinguish between median as middle number and mean as balance point for an ordered set of data	Information Literacy	Pre-Algebra 3-3	Data Test & Quizzes
		Use Mean Absolute Deviation to analyze the spread of a set of data	Information Literacy	No Book. Web	
		Construct and interpret dot plots, histograms, stem-and-leaf plots, and circle graphs	Information Literacy	Pre-Algebra 12-1, 12-2	

		Construct and interpret a box plot using the five-number summary and identify the interquartile range (IQR) for a set of data	Critical Thinking and Reasoning	Pre-Algebra 12-2	
		Compare sets of data using shape (skewed, normal, uniform), with central tendency (mean, median mode) and appropriate measure of spread (range, IQR, MAD)	Information Literacy	Pre-Algebra 12-3	
		Given a frequency table, calculate relative frequencies	Critical Thinking and Reasoning	Pre-Algebra 12-1	

Shape, Dimension, and Geometric Relationships	Objects in space and their parts and attributes can be measured and analyzed	Develop and apply formulas and procedures for the surface area and volume of right cylinders and right prisms	Collaboration	Pre-Algebra 10-5, 10-7	Geometry Test & Quizzes
		Develop and apply formulas and procedures for area of regular polygons, circumference and area of circles, and area of composite figures	Collaboration	Pre-Algebra 10-1, 10-2, 10-3	
		Identify and construct two dimensional nets of prisms and cylinders	Collaboration	Pre-Algebra 10-8	

	Proportional reasoning is used to make indirect measurements	Describe the relationship between the circumference and diameter of a circle	Critical Thinking and Reasoning	Pre-Algebra 10-3	
		Read and interpret scales on a map	Critical Thinking and Reasoning	Pre-Algebra 6-3	
		Use proportions to convert from one set of units to another within customary and metric systems using standard units of measure for length, weight, capacity and time	Critical Thinking and Reasoning	Pre-Algebra 5-5, 6-1	