

	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 1	<p>Why are signed numbers important in real life?</p> <p>Why is the order of operations so important?</p> <p>How can the properties of real numbers help us organize mathematical ideas?</p> <p>Why does the value of an algebraic expression change as the value of the variables change?</p> <p>How can classifying numbers be useful in mathematics?</p> <p>How can scientific notation help us when dealing with very large or very small numbers?</p> <p>Why do we use exponents?</p> <p>Why is it important to simplify algebraic expressions to solve problems?</p>	<p><b>TOOLS OF ALGEBRA</b></p> <p>Signed Numbers</p> <p>Order of Operations</p> <p>Evaluate Literal Expressions</p> <p>Properties of Real Numbers</p> <p>The Real Number System</p> <p>Scientific Notation</p> <p>Operations with Monomials</p> <p>Exponent Rules</p> <p>The Distributive Property</p> <p><b>VOCABULARY</b></p> <p><i>positive</i></p> <p><i>negative</i></p> <p><i>order of operations</i></p> <p><i>evaluate</i></p> <p><i>substitute</i></p> <p><i>closure</i></p>	<p>Performs given operations with signed numbers</p> <p>Identifies and Computes Order of Operations</p> <p>Identifies and applies the properties of real numbers appropriately: associative, commutative, distributive, closure, inverse, identity</p> <p>Identifies subsets of the real number system: integers, rational, irrational</p> <p>Evaluates algebraic expressions using substitution</p> <p>Changes numbers from standard form to scientific notation</p> <p>Uses scientific notation to compute products and quotients of numbers</p> <p>Adds, subtracts, multiplies, and divides monomial expressions</p> <p>Applies appropriate rules to problems involving exponents</p> <p>Simplifies algebraic expressions using the distributive property</p>		<p>MST3-A.PS.1</p> <p>MST3-A.PS.2</p> <p>MST3-A.PS.3</p> <p>MST3-A.PS.3</p> <p>MST3-A.PS.4</p> <p>MST3-A.PS.5</p> <p>MST3-A.PS.7</p> <p>MST3-A.PS.8</p> <p>MST3-A.A.12</p> <p>MST3-A.RP.6</p> <p>MST3-A.N.1</p> <p>MST3-A.N.4</p>	

		<p><i>commutative</i></p> <p><i>associative</i></p> <p><i>distributive</i></p> <p><i>identity</i></p> <p><i>inverse</i></p> <p><i>natural</i></p> <p><i>whole</i></p> <p><i>integer</i></p> <p><i>real</i></p> <p><i>rational</i></p> <p><i>irrational</i></p> <p><i>scientific notation</i></p> <p><i>standard form</i></p> <p><i>simplify</i></p> <p><i>variables</i></p> <p><i>monomial</i></p> <p><i>exponent</i></p> <p><i>coefficient</i></p>			
Unit 2	<p>Why do we use negative exponents to represent numbers?</p> <p>Why is factoring so important in mathematics?</p> <p>How can we combine more than one factoring method to factor more complicated expressions?</p> <p>Why is it important to simplify algebraic expressions</p>	<p><b><u>TOOLS OF ALGEBRA</u></b></p> <p>Operations with Polynomials</p> <p>Negative Exponents</p> <p><b><u>FACTORING</u></b></p> <p>Greatest Common Factor</p> <p>Difference of Two Squares</p> <p>Trinomials</p> <p>Complex Trinomials</p>	<p>Distinguishes between monomial and polynomial</p> <p>Adds, subtracts, and multiplies monomials/polynomials with polynomials</p> <p>Divides a polynomial by a monomial, where the quotient has no remainder</p> <p>Rearranges and rewrites expressions with negative exponents to use positive exponents</p> <p>Recognizes and factors using greatest common factor</p> <p>Recognizes and factors using the difference of two perfect squares</p> <p>Recognizes and factors trinomial expressions with a coefficient of one or greater</p>	<p>MST3-A.A.13</p> <p>MST3-A.A.14</p> <p>MST3-A.A.19</p> <p>MST3-A.A.20</p> <p>MST3-A.A.21</p> <p>MST3-A.A.22</p> <p>MST3-A.A.23</p> <p>MST3-A.A.3</p> <p>MST3-A.CN.1</p>	

	to solve problems?	<p><b><u>FACTORING COMPLETELY</u></b></p> <p><b><u>SOLVING EQUATIONS</u></b></p> <p>Linear Equations</p> <p>Literal Equations</p> <p><b><u>VOCABULARY</u></b></p> <p><i>binomial</i></p> <p><i>trinomial</i></p> <p><i>polynomial</i></p> <p><i>degree of a polynomial</i></p> <p><i>degree of a term</i></p> <p><i>FOIL method</i></p> <p><i>base</i></p> <p><i>exponent</i></p> <p><i>power</i></p> <p><i>factor</i></p> <p><i>lead coefficient</i></p> <p><i>factoring completely</i></p> <p><i>solve</i></p> <p><i>solution</i></p> <p><i>equivalent</i></p> <p><i>inverse operation</i></p> <p><i>linear</i></p> <p><i>solve in terms of</i></p>	<p>Recognizes and factors algebraic expressions completely, including trinomials with a lead coefficient of one (after doing GCF)</p> <p>Solves linear equations for a given variable with one or more steps, including variables on both sides and using the distributive property</p> <p>Determines whether a given value is a solution to a given linear equation</p> <p>Solves literal equations</p> <p>Distinguishes between an algebraic expression and an algebraic equation</p>		
Unit 3	<p>Why is it important to learn how to solve linear and quadratic equations?</p> <p>How can factoring completely help us solve more</p>	<p><b><u>SOLVING EQUATIONS</u></b></p> <p>Simple Quadratic Equations</p> <p>Complex Quadratic</p>	<p>Understands and applies the multiplication property of zero to solve simple quadratic equations with integral coefficients and integral roots</p> <p>Understands the difference and connection between</p>	<p>MST3-A.A.27</p> <p>MST3-A.A.28</p> <p>MST3-A.A.24</p> <p>MST3-A.A.16</p> <p>MST3-A.A.15</p> <p>MST3-A.PS.9</p>	

	<p>complicated quadratic equations?</p> <p>How can solving inequalities help us represent real-life situations?</p> <p>How can factoring be applied to other problems in mathematics?</p> <p>Why are algebraic fractions important in mathematics?</p>	<p>Equations</p> <p><b><u>SOLVING INEQUALITIES</u></b></p> <p>Linear Inequalities</p> <p>Linear Inequalities on a Number Line</p> <p><b><u>ALGEBRAIC FRACTIONS</u></b></p> <p>Undefined Fractions</p> <p>Simplify Algebraic Fractions</p> <p><b><u>VOCABULARY</u></b></p> <p><i>quadratic equation</i></p> <p><i>standard form</i></p> <p><i>lead coefficient</i></p> <p><i>roots</i></p> <p><i>integral</i></p> <p><i>multiplication property of zero</i></p> <p><i>factors</i></p> <p><i>quadratic expression</i></p> <p><i>inequality</i></p> <p><i>number line</i></p> <p><i>replacement set</i></p> <p><i>undefined</i></p> <p><i>algebraic fraction</i></p> <p><i>lowest terms</i></p> <p><i>simplify</i></p>	<p>roots of a quadratic equation and factors of a quadratic equation</p> <p>Applies the multiplication property of zero to solve more complicated quadratic equations with integral coefficients and integral roots</p> <p>Determines whether a given value is a solution to a given linear inequality in one variable</p> <p>Demonstrates the ability to solve linear inequalities in one variable with one or more steps</p> <p>Verifies solutions to an inequality given a replacement set</p> <p>Graphs solutions to an inequality on a number line</p> <p>Interprets inequalities that are graphed on a number line</p> <p>States what it means for a fraction to be undefined</p> <p>Solves for values of a variable that make an algebraic fraction undefined</p> <p>Simplifies fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms</p>		<p>MST3-A.CN.1</p> <p>MST3-A.A.25</p>	
--	--	---	--	--	---------------------------------------	--

	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 4	<p>How can a proportion be converted into a linear or quadratic equation?</p> <p>How can evaluating radical expressions be used in mathematics?</p> <p>What skills are needed to simplify radical expressions?</p>	<p><b><u>ALGEBRAIC FRACTIONS</u></b></p> <p>Multiplication &amp; Division of Algebraic Fractions</p> <p>Addition &amp; Subtraction of Algebraic Fractions</p> <p>Solving Equations with Algebraic Fractions</p> <p><b><u>SOLVING EQUATIONS</u></b></p> <p>Proportions</p> <p><b><u>RADICALS</u></b></p> <p>Simplify Radicals</p> <p>Multiplication &amp; Division with Radicals</p> <p>Addition &amp; Subtraction with Radicals</p> <p><b><u>VOCABULARY</u></b></p> <p><i>proportion</i></p> <p><i>radical</i></p> <p><i>radicand</i></p> <p><i>simplify</i></p> <p><i>perfect square</i></p> <p><i>factors</i></p> <p><i>expression</i></p>	<p>Multiplies and divides algebraic fractions and expresses the product or quotient in simplest form</p> <p>Adds or subtracts algebraic fractional expressions with like or unlike monomial or binomial denominators</p> <p>Solves equations that entail algebraic fractions</p> <p>Solves algebraic proportions in one variable which result in linear or quadratic equations</p> <p>Simplifies radical terms (no variable in the radicand)</p> <p>Multiplies and divides radical expressions using like and unlike radical terms and expresses the result in simplest form</p> <p>Adds and subtracts radical expressions using like and unlike radical terms and expresses the result in simplest form</p>		<p>MST3-A.A.17</p> <p>MST3-A.A.18</p> <p>MST3-A.A.26</p> <p>MST3-A.N.2</p> <p>MST3-A.N.3</p>	

Unit 5	How can modeling algebraic relationships using variables be essential to me in real-life?	<b><u>SOLVING VERBAL PROBLEMS</u></b>	Lists the words or phrases that describe the four arithmetic operations, including words or phrases that mean 'equal'	MST3-A.A.1
	How can solving verbal problems help us with real-life mathematics?	Translation	Translates a quantitative verbal phrase into an algebraic expression	MST3-A.A.2
	How can proportions, percents, ratios, and variation be used in my daily life?	Linear Equations	Writes a verbal expression that matches a given mathematical expression	MST3-A.A.3
		Quadratic Equations	Distinguishes the difference between an algebraic expression and an algebraic equation	MST3-A.A.4
		Multiple Unknowns	Translates verbal sentences into mathematical equations	MST3-A.A.5
		Consecutive Integers	Writes algebraic equations that represent a situation	MST3-A.A.6
		Proportions	Analyzes and solves verbal problems whose solution requires solving a linear equation in one variable	MST3-A.A.7
		Percents	Analyzes and solves verbal problems whose solution requires solving a quadratic equation	MST3-A.A.8
		Ratios	Analyzes and solves verbal problems in one variable where there are multiple unknowns (ie. setting up a key)	MST3-A.PS.8
		Direct Variation	Analyzes and solves verbal problems involving consecutive integers	MST3-A.PS.9
		Inverse Variation	Analyzes and solves verbal problems involving proportions	MST3-A.CM.11
		<b><u>MIDTERM REVIEW</u></b>	Analyzes and solves verbal problems involving percents	MST3-A.CM.12
		Tools of Algebra		
		Factoring		
		Solving Equations		
		Solving Inequalities		
		Algebraic Fractions		
		Radicals		
		Solving Verbal Problems		
		<b><u>VOCABULARY</u></b>		

		<p><i>equation</i></p> <p><i>more than</i></p> <p><i>increased by</i></p> <p><i>the sum of</i></p> <p><i>less than</i></p> <p><i>decreased by</i></p> <p><i>diminished by</i></p> <p><i>product</i></p> <p><i>twice</i></p> <p><i>quotient</i></p> <p><i>equal</i></p> <p><i>equivalent</i></p> <p><i>result</i></p> <p><i>is the same as</i></p> <p><i>squared</i></p> <p><i>consecutive</i></p> <p><i>integer</i></p> <p><i>proportion</i></p> <p><i>ratio</i></p> <p><i>direct variation</i></p> <p><i>inverse variation</i></p>	inverse variation		
Unit 6	<p>How can we use set notation to abbreviate mathematical ideas?</p> <p>How are all the components of the coordinate plane related to each other?</p> <p>How can the slope and y-intercept of a line help us graph?</p> <p>How can we determine if two lines are parallel/perpendicular?</p> <p>Why are there different ways to write linear equations?</p> <p>How can the graphing calculator be used to help us graph and interpret lines?</p> <p>How can solving</p>	<p><b><u>RELATIONS</u></b></p> <p>Finite Relations</p> <p>Infinite Relations</p> <p><b><u>COORDINATE GEOMETRY</u></b></p> <p>The Coordinate Plane</p> <p>Rate of Change and Slope</p> <p>Parallel &amp; Perpendicular Lines</p>	<p>Defines relation</p> <p>Displays a relation in a variety of ways, a rule, set of ordered pairs, table of values, graph</p> <p>Describes a set using set notation</p> <p>Describes a set without listing elements of the set</p> <p>Identifies the four quadrants of a coordinate plane and labels the x and y axes</p>		<p>MST3-A.A.32</p> <p>MST3-A.A.33</p> <p>MST3-A.A.34</p> <p>MST3-A.A.35</p> <p>MST3-A.A.36</p> <p>MST3-A.A.37</p> <p>MST3-A.A.38</p> <p>MST3-A.A.39</p> <p>MST3-A.G.4</p> <p>MST3-A.G.5</p> <p>MST3-A.CN.3</p> <p>MST3-A.CN.6</p> <p>MST3-A.PS.3</p> <p>MST3-A.PS.4</p> <p>MST3-A.PS.4</p>

<p>systems of linear equations be useful in mathematics?</p> <p>What does the solution to a system of equations tell us?</p> <p>How can real-life situations be represented in the coordinate plane?</p>	Standard Form of a Line	Names the origin as the starting point for all graphing	MST3-A.PS.5
	Point-Slope Formula	Identifies the abscissa and ordinate of a given coordinate	MST3-A.PS.9
	Graph Linear Equations	Explains slope as the rate of change between two variables	MST3-A.R.1
	Graph Systems of Linear Equations	Applies the slope formula to determine the slope of a line, given the coordinates of two points on the line	MST3-A.R.3
	Word Problems & Graphs	Describes the slopes of parallel lines as equal	MST3-A.CM.2
	<b><u>VOCABULARY</u></b>	Describes the slopes of perpendicular lines as negative reciprocals	MST3-A.CM.4
	<i>relation</i>		
	<i>set notation</i>	Verifies if a given point is on a given line	
	<i>origin</i>		
	<i>quadrant</i>	Recalls, recognizes and explains the equation of a line in standard form ( $y = mx + b$ )	
	<i>x-axis</i>		
	<i>y-axis</i>		
	<i>coordinate</i>	Demonstrates the ability to rearrange a linear equation to be in standard form	
<i>abscissa</i>			
<i>ordinate</i>			
<i>slope/rate of change</i>	Determines the slope and y-intercept of a line, given its equation in any form		
<i>y-intercept</i>			
<i>parallel</i>	Writes the equation of a line given the slope and y-intercept		
<i>perpendicular</i>	Writes the equation of a line given its slope and the coordinates of a point on the line (point-slope formula)		
<i>negative reciprocals</i>			
<i>standard form</i>			
<i>system of equations</i>	Determines if two lines are parallel, given their equations in any form		
	Determines if two lines are perpendicular, given their equations in any form		
	Demonstrates the ability to graph linear		

equations using the slope and y-intercept method

Investigates and generalizes how changing the coefficients of a linear equation affects its graph

Writes and graphs the equation of a line parallel to the x or y axis

Examines and interprets a picture/graph of a line and writes a linear equation based on the picture/graph

Demonstrates the ability to use the graphing calculator to graph lines

Graphs and solves systems of linear equations with rational coefficients in two variables

Graphs word problems/real world situations and analyzes their graphs

Uses graphing calculator functions to verify solutions to a system of linear equations

Applies graphic representations to real life situations

	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 7	<p>How does absolute value apply to real-life situations?</p> <p>How can we use our knowledge of graphing linear equations to graph linear inequalities?</p> <p>How can we use our knowledge of graphing linear inequalities to graph a system of linear inequalities?</p> <p>How can we graph quadratic equations?</p> <p>How can quadratic equations be used to model real-life situations?</p> <p>How can the method used to solve systems of linear equations be applied to solving a quadratic/linear pair?</p> <p>What is an exponential function?</p> <p>Why is it important to recognize the different functions?</p> <p>How do we determine which algebraic method of solving a system of linear equations is more appropriate?</p> <p>Why are the techniques for solving word problems useful in everyday life?</p>	<p><b>GRAPHING ABSOLUTE VALUE FUNCTIONS</b></p> <p>Absolute Value: <math>y =  x + a  + b</math></p> <p>Graphing Absolute Value Equations</p> <p><b>GRAPHING INEQUALITIES</b></p> <p>Graphing Linear Inequalities</p> <p>Graphing Systems of Linear Inequalities</p> <p><b>GRAPHING QUADRATIC EQUATIONS</b></p> <p>Graphing Quadratic Equations</p> <p>Applications of Quadratic Equations</p> <p>Solving Linear-Quadratic Systems Graphically</p> <p><b>EXPONENTIAL FUNCTIONS</b></p> <p>Graphing Exponential Functions</p> <p><b>FUNCTIONS</b></p> <p>Recognize Functions</p> <p><b>SOLVING SYSTEMS</b></p>	<p>Expresses absolute value as an equation in two variables</p> <p>Creates a table of values and uses it to graph the absolute value function</p> <p>Investigates how changing the coefficients of the absolute value function affects its graph</p> <p>Identifies if the reference line is dotted or solid on a linear inequality graph</p> <p>Determines which direction to shade</p> <p>Demonstrates the ability to graph an inequality on a set of axes</p> <p>Identifies points either inside the solution set or outside the solution set</p> <p>Sketches two inequalities on the same set of axes and labels the solution "S"</p> <p>Identifies the points that fall in the solution set of both, one, or neither of the inequalities</p>		<p>MST3-A.A.40</p> <p>MST3-A.A.41</p> <p>MST3-A.A.10</p> <p>MST3-A.A.7</p> <p>MST3-A.A.11</p> <p>MST3-A.G.6</p> <p>MST3-A.G.7</p> <p>MST3-A.G.8</p> <p>MST3-A.G.9</p> <p>MST3-A.G.10</p> <p>MST3-A.G.10</p> <p>MST3-A.G.4</p> <p>MST3-A.G.5</p> <p>MST3-A.PS.5</p> <p>MST3-A.PS.9</p> <p>MST3-A.PS.10</p> <p>MST3-A.CM.2</p> <p>MST3-A.R.1</p> <p>MST3-A.CN.6</p> <p>MST3-A.A.9</p>	

**ALGEBRAICALLY**

Solving Linear Systems

Identifies the form of the equation of the parabola

Solving Linear-Quadratic Systems

Explains that the graph of the parabola represents the solution of the quadratic equation  $y = ax^2 + bx + c$

Solving Verbal Simultaneous Equations

**VOCABULARY**

*absolute value*

Creates the graph of the parabola by hand given its equation

*table of values*

*inequality*

Verifies results by investigating with graphing calculator

*solution set*

*parabola*

*standard form of parabola*

Graphs a parabola using a table

*vertex (turning point)*

*axis of symmetry*

*roots (zeros)*

Finds the roots of a parabolic function graphically (integral solutions only)

*minimum*

*maximum*

*domain*

*range*

Recalls what is meant by the axis of symmetry of a parabola

*points of intersection*

*system of equations*

*substitution method*

*quadratic-linear system*

Discovers a pattern that can be used to create the equation of the axis of symmetry of a parabola

*Exponential growth and decay*

Discovers a pattern that can be used to determine the coordinates of the turning point

Determines the vertex, axis of symmetry and zeros of a parabola from its graph (integral values only)

Discovers the ways that a line and a parabola could intersect

Determines the coordinates of the point(s) of intersection, if any, of the two graphs

Verifies results by investigating with graphing calculator and using the intersect function

Defines what it is to be an exponential function

Recalls the equation of an exponential function,  $y = a^x$

Identifies the exponential function as a function, by examining ordered pairs and by inspecting its graph

Identifies domain and range of a function

Identifies whether a relation is a function

Determines whether a

			<p>function is linear, quadratic, exponential or absolute value based on its graph</p> <p>Solves a quadratic/linear pair algebraically by using the substitution method</p> <p>Verifies the solutions by checking</p> <p>Interprets system of simultaneous equations from word problems</p>		
Unit 8	<p>What is the Pythagorean Theorem?</p> <p>How can we use the Pythagorean Theorem to solve problems?</p> <p>Why do we learn to use the Pythagorean Theorem and Trigonometry at the same time? How can we compare and contrast the Pythagorean Theorem and Trigonometry?</p>	<p><b>RIGHT TRIANGLES</b></p> <p>Pythagorean Theorem</p> <p>Trigonometric Functions</p> <p><b><u>VOCABULARY</u></b></p> <p><i>right triangle</i></p> <p><i>right angle</i></p> <p><i>leg</i></p> <p><i>hypotenuse</i></p> <p><i>pythagorean theorem</i></p> <p><i>pythagorean triples</i></p> <p><i>trigonometry</i></p> <p><i>acute angle</i></p> <p><i>ratio</i></p> <p><i>sine</i></p> <p><i>cosine</i></p> <p><i>tangent</i></p> <p><i>trigonometric functions</i></p>	<p>Recalls the Pythagorean Theorem</p> <p>Identifies the legs and the hypotenuse of a right triangle</p> <p>Describes verbal problem situations in their own words</p> <p>Creates a model that can be used to represent the problem situation by using a properly labeled diagram</p> <p>Determines the measure of the third side of a right triangle using the Pythagorean Theorem, given the lengths of any two sides</p>	<p>MST3-A.A.42</p> <p>MST3-A.A.43</p> <p>MST3-A.A.44</p> <p>MST3-A.A.45</p>	

*angle of elevation*

*angle of depression*

Verifies the lengths of the sides can create a right triangles

Expresses the missing side in simplest radical form and to the nearest tenth as indicated in the problem

Defines the sine, cosine, and tangent ratios

Determines the sine, cosine, and tangent ratios of an angle of a right triangle, given the lengths of the sides

Determines the measure of an angle of a right triangle, given the length of any two sides of the triangle

Determines the measure of a side of a right triangle, given an acute angle and the length of another side

Concludes that Pythagorean Theorem and Trigonometry may only be used when working with right triangles

Applies the use of the Pythagorean Theorem and Trigonometry to

			solve word problems involving real-world situations			
Unit 9	<p>How can the use of a Venn diagram display information more clearly and accurately?</p> <p>Why is the sum of all probabilities equal to one?</p> <p>How does bias influence the number of successful outcomes of an event?</p> <p>How does empirical probability differ from theoretical probability?</p> <p>How can we compare and contrast conditional probability with simple probability?</p> <p>How can we explain the similarities and differences between P (event) involving replacement and P(event) involving non-replacement of objects?</p> <p>What is the correlation between real-life activities and probability?</p> <p>How is qualitative data different from quantitative data? How do we categorize the different data?</p> <p>How do we graph frequency distributions?</p> <p>How do we distinguish measures of central tendency?</p>	<p><b><u>VENN DIAGRAMS</u></b></p> <p>Venn Diagrams</p> <p><b><u>PROBABILITY</u></b></p> <p>Probability of a Single Event</p> <p>Empirical vs. Theoretical Probability</p> <p>Sample Space/Tree Diagrams</p> <p>Fundamental Counting Principle</p> <p>Probability of two or more events</p> <p>Complement of an Event</p> <p>Probability of (A and B)</p> <p>Probability of (A or B)</p> <p>Conditional Probability</p> <p>Factorials</p> <p>Permutations and Combinations</p>	<p>Defines the universe, set, and complement of a given set</p> <p>Creates a Venn Diagram for different sets</p> <p>Solves problems using Venn Diagrams</p> <p>Defines the probability of certain and impossible events</p> <p>Explains the meaning of the probability of an event which equals 0 or 1 or a fraction between 0 or 1</p> <p>States and applies the fundamental probability formula <math>P(E) = \frac{n(E)}{n(S)}</math></p> <p>Explains the meaning of bias</p> <p>States the sum of the probabilities of an experiment is always 1</p> <p>Uses tree diagrams to determine the sample space</p> <p>Lists the outcome in a sample space</p>		<p>MST3-A.S.18</p> <p>MST3-A.S.19</p> <p>MST3-A.S.20</p> <p>MST3-A.S.21</p> <p>MST3-A.S.22</p> <p>MST3-A.S.23</p> <p>MST3-A.N.6</p> <p>MST3-A.N.7</p> <p>MST3-A.N.8</p> <p>MST3-A.N.8</p> <p>MST3-A.S.1</p> <p>MST3-A.S.2</p> <p>MST3-A.S.3</p> <p>MST3-A.S.4</p> <p>MST3-A.S.5</p> <p>MST3-A.S.6</p> <p>MST3-A.S.7</p> <p>MST3-A.S.8</p> <p>MST3-A.S.9</p> <p>MST3-A.S.10</p> <p>MST3-A.S.11</p> <p>MST3-A.S.12</p> <p>MST3-A.S.12</p> <p>MST3-A.S.13</p> <p>MST3-A.S.14</p> <p>MST3-A.S.15</p> <p>MST3-A.S.16</p> <p>MST3-A.S.17</p> <p>MST3-A.RP.11</p> <p>MST3-A.RP.10</p> <p>MST3-A.CM.2</p> <p>MST3-A.CN.3</p> <p>MST3-A.CN.5</p> <p>MST3-A.CN.6</p> <p>MST3-A.CN.6</p>	

How do we determine when collected data or displayed data may be biased?

**STATISTICS & REGRESSIONS**

Categorizing Data

Measures of Central Tendency

Histograms

Linear Regressions

**VOCABULARY**

*probability*

*factorial*

*sample space*

*single event*

*complement*

*empirical probability*

*impossible events*

*certain events*

*Fundamental Counting Principle*

*conditional probability*

*independent/dependent events*

*mutually exclusive*

*permutations/combinations*

*qualitative/quantitative*

*univariate/bivariate*

*mean, median, mode, range*

*frequency table*

*frequency histogram*

*cumulative frequency table*

*cumulative frequency histogram*

*percentile*

*first/second/third quartile*

*five-number summary (minimum, maximum, quartiles)*

Applies the counting principle to determine the number of outcomes in a sample space

Uses the counting principle to determine the probability of an event without drawing a tree diagram

Applies counting principle to solve problems with/without repetition

Calculates the probability of an even and its complement

States and applies the multiplication rule to find the probability of compound events connected by "And" for independent events:  $P(A \text{ and } B) = P(A) * P(B)$

Computes  $P(A \text{ or } B)$  by adding  $P(A) + P(B)$  when events A and B are mutually exclusive

Computes  $P(A \text{ or } B)$  using  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , when A and B are not mutually exclusive

Defines conditional

MST3-A.CN.8

<i>box-and-whisker plot</i>	probability
<i>biased data</i>	
<i>scatter plot</i>	Computes conditional probability in real-life situations
<i>independent variable</i>	
<i>dependent variable</i>	
<i>correlation</i>	
<i>causation</i>	Defines, evaluates, and simplifies expressions with factorials
<i>line of best fit</i>	
<i>interpolation</i>	
<i>extrapolation</i>	Defines permutation and computes the number of permutations of $n$ things taken $r$ at a time ( $nPr$ )
	Defines combination and computes the number of permutations of $n$ things taken $r$ at a time ( $nCr$ )
	Defines qualitative and quantitative
	Categorizes data as qualitative and quantitative
	Defines univariate and bivariate
	Determines whether data to be analyzed is univariate or bivariate
	Recalls mean, median, mode, and range
	Compares and contrasts the appropriateness of different measures of central tendency for a given data set
	Recognizes how linear transformations

of one-variable data affect the data's mean, median, mode and range

Calculates the mean, median, mode and range for a specific data set

Generates a frequency table and cumulative frequency table

Constructs frequency histograms and cumulative frequency histograms

Analyzes data from the frequency table, histogram, cumulative frequency table or cumulative frequency histogram

Defines percentiles

Finds the percentile rank of a value in a set of data

Finds the first, second, and third quartiles of a set of data

Demonstrates the ability to use the five statistical summary (min, max, three quartiles) to construct a box-and-whisker plot

Constructs a box-and-whisker plot given a data set

Analyzes data from a box-and-whisker plot

Defines biased sample

Evaluates reports and graphs for accuracy, appropriateness, experimental

design, and soundness of the conclusion

Identifies and describes sources of bias and its effects by drawing conclusions from data

Constructs a scatter plot given a data set

Identifies the independent and dependent variables

Creates a scatter plot of bivariate data

Finds the relationship between the variables (positive, negative, none)

Distinguishes the difference between correlation and causation

Identifies variables that might have a correlation but not a causal relationship

Constructs manually a reasonable line of best fit for a scatter plot

Determines the equation of the line of best fit, using the graphing calculator

Uses a reasonable line of best fit to make a prediction involving interpolation or extrapolation

	Essential Questions	Content	Skills	Assessments	Standards/PIs	Resources/Notes
Unit 10	<p>What is meant by the perimeter of triangles, squares, and rectangles?</p> <p>How is the idea of circumference most closely related to perimeter and not area?</p> <p>How can we use the area formula for certain shapes in our lives?</p> <p>When does subtracting an area help to get the total area?</p> <p>How can we give examples of real life situations that require finding surface area?</p> <p>How many cones filled with sand will be needed to fill a cylinder that is of equal radius and height to the cone?</p>	<p><b>GEOMETRY</b></p> <p>Perimeter and Circumference</p> <p>Area of Polygons and Circles</p> <p>Shaded Area</p> <p>Surface Area</p> <p>Relative Error</p> <p>Volume</p> <p><b>VOCABULARY</b></p> <p><i>polygon</i></p> <p><i>perimeter</i></p> <p><i>circle</i></p> <p><i>diameter</i></p> <p><i>radius</i></p> <p><i>pi</i></p> <p><i>circumference</i></p> <p><i>area</i></p> <p><i>base</i></p> <p><i>altitude</i></p> <p><i>quadrilateral</i></p> <p><i>triangle</i></p> <p><i>trapezoid</i></p> <p><i>parallelogram</i></p> <p><i>rectangle</i></p> <p><i>rhombus</i></p> <p><i>square</i></p> <p><i>face</i></p> <p><i>edge</i></p> <p><i>shaded area</i></p> <p><i>surface area</i></p>	<p>Recalls the definition of perimeter and explains the concept of perimeter</p> <p>Calculates the perimeter of any figure</p> <p>Identifies the diameter and radius of a circle</p> <p>Applies the formula for circumference</p> <p>Expresses answers in terms of pi and to the nearest tenth as indicated in given problem</p> <p>Calculates the area of any given polygon and circle, (includes triangle, square, rectanle, rhombus, trapezoid, parallelogram, circle, semi-circle)</p> <p>Expresses answers in terms of pi and to the nearest tenth as indicated in the given problem</p> <p>Utilizes appropriate formulas for a given diagram or picture</p> <p>Divides a complex figure into simpler figures to compute the area by subtracting the areas of the simpler figures</p> <p>Discovers that the area of a region between two figures can be computed by subtracting the area</p>		<p>MST3-A.G.1</p> <p>MST3-A.G.2</p> <p>MST3-A.M.2</p> <p>MST3-A.M.3</p>	

<i>relative error</i>	of the outer figure and the area of the inner figure
<i>rectangular solid</i>	
<i>cylinder</i>	
<i>volume</i>	Defines the terms: face, edge, vertex, surface area
<i>cone</i>	
<i>pyramid</i>	
<i>sphere</i>	Identifies rectangular solid, cube, cylinder, cone
	Discovers the number of faces, edges and vertices in a figure
	Finds the surface area, including appropriate units of measure, using appropriate formulas
	Solves real-world problems that require finding surface area of a given solid
	Calculates relative error in measuring square and cubic units, when there is an error in the linear measure
	Defines volume and gives examples for the meaning of volume
	Explains why the unit of measure for volume is "cubic"
	Calculates volume using appropriate formula for rectangular prism, cube, pyramid, cylinder, cone and sphere
	Solves real-world problems involving volume

### Key to Standards used in this Map

**MST3-A.PS.1** [1 occurrence] - MST Standard 3 - Problem Solving Strand - Students will build new mathematical knowledge through problem solving. - Performance Indicator A.PS.1 - use a variety of problem solving strategies to understand new mathematical content [Algebra]

**MST3-A.PS.2** [1 occurrence] - MST Standard 3 - Problem Solving Strand - Students will build new mathematical knowledge through problem solving. - Performance Indicator A.PS.2 - recognize and understand equivalent representations of a problem situation or a mathematical concept [Algebra]

**MST3-A.PS.3** [3 occurrences] - MST Standard 3 - Problem Solving Strand - Students will solve problems that arise in mathematics and in other contexts. - Performance Indicator A.PS.3 - observe and explain patterns to formulate generalizations and conjectures [Algebra]

**MST3-A.PS.4** [3 occurrences] - MST Standard 3 - Problem Solving Strand - Students will solve problems that arise in mathematics and in other contexts. - Performance Indicator A.PS.4 - use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, graphically) [Algebra]

**MST3-A.PS.5** [3 occurrences] - MST Standard 3 - Problem Solving Strand - Students will apply and adapt a variety of appropriate strategies to solve problems. - Performance Indicator A.PS.5 - choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic) [Algebra]

**MST3-A.PS.7** [1 occurrence] - MST Standard 3 - Problem Solving Strand - Students will apply and adapt a variety of appropriate strategies to solve problems. - Performance Indicator A.PS.7 - work in collaboration with others to propose, critique, evaluate, and value alternative approaches to problem solving [Algebra]

**MST3-A.PS.8** [2 occurrences] - MST Standard 3 - Problem Solving Strand - Students will monitor and reflect on the process of mathematical problem solving. - Performance Indicator A.PS.8 - determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions [Algebra]

**MST3-A.PS.9** [4 occurrences] - MST Standard 3 - Problem Solving Strand - Students will monitor and reflect on the process of mathematical problem solving. - Performance Indicator A.PS.9 - interpret solutions within the given constraints of a problem [Algebra]

**MST3-A.PS.10** [1 occurrence] - MST Standard 3 - Problem Solving Strand - Students will monitor and reflect on the process of mathematical problem solving. - Performance Indicator A.PS.10 - evaluate the relative efficiency of different representations and solution methods of a problem [Algebra]

**MST3-A.RP.6** [1 occurrence] - MST Standard 3 - Reasoning and Proof Strand - Students will develop and evaluate mathematical arguments and proofs. - Performance Indicator A.RP.6 - present correct mathematical arguments in a variety of forms [Algebra]

**MST3-A.RP.10** [1 occurrence] - MST Standard 3 - Reasoning and Proof Strand - Students will select and use various types of reasoning and methods of proof. - Performance Indicator A.RP.10 - extend specific results to more general cases [Algebra]

**MST3-A.RP.11** [1 occurrence] - MST Standard 3 - Reasoning and Proof Strand - Students will select and use various types of reasoning and methods of proof. - Performance Indicator A.RP.11 - use a venn diagram to support a logical argument [Algebra]

**MST3-A.CM.2** [3 occurrences] - MST Standard 3 - Communication Strand - Students will organize and consolidate their mathematical thinking through communication. - Performance Indicator A.CM.2 - use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, venn diagrams, and other diagrams [Algebra]

**MST3-A.CM.4** [1 occurrence] - MST Standard 3 - Communication Strand - Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others. - Performance Indicator A.CM.4 - explain relationships among different representations of a problem [Algebra]

**MST3-A.CM.11** [1 occurrence] - MST Standard 3 - Communication Strand - Students will use the language of mathematics to express mathematical ideas precisely. - Performance Indicator A.CM.11 - represent word problems using standard mathematical notation [Algebra]

**MST3-A.CM.12** [1 occurrence] - MST Standard 3 - Communication Strand - Students will use the language of mathematics to express mathematical ideas precisely. - Performance Indicator A.CM.12 - understand and use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale [Algebra]

**MST3-A.CN.1** [2 occurrences] - MST Standard 3 - Connections Strand - Students will recognize and use connections among mathematical ideas. - Performance Indicator A.CN.1 - understand and make connections among multiple representations of the same mathematical idea [Algebra]

**MST3-A.CN.3** [2 occurrences] - MST Standard 3 - Connections Strand - Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole. - Performance Indicator A.CN.3 - model situations mathematically, using representations to draw conclusions and formulate new situations [Algebra]

**MST3-A.CN.5** [1 occurrence] - MST Standard 3 - Connections Strand - Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole. - Performance Indicator A.CN.5 - understand how quantitative models connect to various physical models and representations [Algebra]

**MST3-A.CN.6** [4 occurrences] - MST Standard 3 - Connections Strand - Students will recognize and apply mathematics in contexts outside of mathematics. - Performance Indicator A.CN.6 - recognize and apply mathematics to situations in the outside world [Algebra]

**MST3-A.CN.8** [1 occurrence] - MST Standard 3 - Connections Strand - Students will recognize and apply mathematics in contexts outside of mathematics. - Performance Indicator A.CN.8 - develop an appreciation for the historical development of mathematics [Algebra]

**MST3-A.R.1** [2 occurrences] - MST Standard 3 - Representation Strand - Students will create and use representations to organize, record, and communicate mathematical ideas. - Performance Indicator A.R.1 - use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts [Algebra]

**MST3-A.R.3** [1 occurrence] - MST Standard 3 - Representation Strand - Students will create and use representations to organize, record, and communicate mathematical ideas. - Performance Indicator A.R.3 - use representation as a tool for exploring and understanding mathematical ideas [Algebra]

**MST3-A.N.1** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems. [Number Theory] - Performance Indicator A.N.1 - identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, inverse) [Algebra]

**MST3-A.A.1** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Variables and Expressions] - Performance Indicator A.A.1 - translate a quantitative verbal phrase into an algebraic expression [Algebra]

**MST3-A.A.2** [2 occurrences] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Variables and Expressions] - Performance Indicator A.A.2 - write verbal expressions that match given mathematical expressions [Algebra]

**MST3-A.A.3** [2 occurrences] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.3 - distinguish the difference between an algebraic expression and an algebraic equation [Algebra]

**MST3-A.A.4** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.4 - translate verbal sentences into mathematical equations or inequalities [Algebra]

**MST3-A.A.5** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.5 - write algebraic equations or inequalities that represent a situation [Algebra]

**MST3-A.A.6** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.6 - analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable [Algebra]

**MST3-A.A.7** [2 occurrences] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.7 - analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables [Algebra]

**MST3-A.A.8** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.8 - analyze and solve verbal problems that involve quadratic equations [Algebra]

**MST3-A.A.9** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.9 - analyze and solve verbal problems that involve exponential growth and decay [Algebra]

**MST3-A.A.10** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.10 - solve systems of two linear equations in two variables algebraically (see a.g.7) [Algebra]

**MST3-A.A.11** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will represent and analyze algebraically a wide variety of problem solving situations. [Equations and Inequalities] - Performance Indicator A.A.11 - solve a system of one linear and one quadratic equation in two variables, where only factoring is required [Algebra]

**MST3-A.A.12** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.12 - multiply and divide monomial expressions with a common base, using the properties of exponents [Algebra]

**MST3-A.A.13** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.13 - add, subtract, and multiply monomials and polynomials [Algebra]

**MST3-A.A.14** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.14 - divide a polynomial by a monomial or binomial, where the quotient has no remainder [Algebra]

**MST3-A.A.15** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.15 - find values of a variable for which an algebraic fraction is undefined. [Algebra]

**MST3-A.A.16** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.16 - simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms [Algebra]

**MST3-A.A.17** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.17 - add or subtract fractional expressions with monomial or like binomial denominators [Algebra]

**MST3-A.A.18** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.18 - multiply and divide algebraic fractions and express the product or quotient in simplest form [Algebra]

**MST3-A.A.19** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.19 - identify and factor the difference of two perfect squares [Algebra]

**MST3-A.A.20** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Variables and Expressions] - Performance Indicator A.A.20 - factor algebraic expressions completely, including trinomials with a lead coefficient of one (after factoring a gcf) [Algebra]

**MST3-A.A.21** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.21 - determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable [Algebra]

**MST3-A.A.22** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.22 - solve all types of linear equations in one variable [Algebra]

**MST3-A.A.23** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.23 - solve literal equations for a given variable [Algebra]

**MST3-A.A.24** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.24 - solve linear inequalities in one variable [Algebra]

**MST3-A.A.25** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.25 - solve equations involving fractional expressions [Algebra]

**MST3-A.A.26** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.26 - solve algebraic proportions in one variable which result in linear or quadratic equations [Algebra]

**MST3-A.A.27** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.27 - understand and apply the multiplication property of zero to solve quadratic equations with integral coefficients and integral roots [Algebra]

**MST3-A.A.28** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will perform algebraic procedures accurately. [Equations and Inequalities] - Performance Indicator A.A.28 - understand the difference and connection between roots of a quadratic equation and factors of a quadratic expression [Algebra]

**MST3-A.A.32** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.32 - graph the explain slope as a rate of change between dependent and independent variables [Algebra]

**MST3-A.A.33** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.33 - determine the slope of a line, given the coordinates of two points on the line [Algebra]

**MST3-A.A.34** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.34 - write the equation of a line, given its slope and the coordinates of a point on the line [Algebra]

**MST3-A.A.35** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.35 - write the equation of a line, given the coordinates of two points on the line [Algebra]

**MST3-A.A.36** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.36 - write the equation of a line parallel to the x- or y-axis [Algebra]

**MST3-A.A.37** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.37 - determine the slope of a line, given its equation in any form [Algebra]

**MST3-A.A.38** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.38 - determine if two lines are parallel, given their equations in any form [Algebra]

**MST3-A.A.39** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.39 - determine whether a given point is on a line, given the equation of the line [Algebra]

**MST3-A.A.40** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.40 - determine whether a given point is in the solution set of a system of linear inequalities [Algebra]

**MST3-A.A.41** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Coordinate Geometry] - Performance Indicator A.A.41 - determine the vertex and axis of symmetry of a parabola, given its equation (see a.g.10 ) [Algebra]

**MST3-A.G.1** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes. [Shapes] - Performance Indicator A.G.1 - find the area and/or perimeter of figures composed of polygons and circles or sectors of a circle [Algebra]

**MST3-A.G.2** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes. [Shapes] - Performance Indicator A.G.2 - use formulas to calculate volume and surface area of rectangular solids and cylinders [Algebra]

**MST3-A.G.4** [2 occurrences] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.4 - identify and graph linear, quadratic (parabolic), absolute value, and exponential functions [Algebra]

**MST3-A.G.5** [2 occurrences] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.5 - investigate and generalize how changing the coefficients of a function affects its graph [Algebra]

**MST3-A.G.6** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.6 - graph linear inequalities [Algebra]

**MST3-A.G.7** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.7 - graph and solve systems of linear equations and inequalities with rational coefficients in two variables (see a.a.10) [Algebra]

**MST3-A.G.8** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.8 - find the roots of a parabolic function graphically [Algebra]

**MST3-A.G.9** [1 occurrence] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.9 - solve systems of linear and quadratic equations graphically [Algebra]

**MST3-A.G.10** [2 occurrences] - MST Standard 3 - Geometry Strand - Students will apply coordinate geometry to analyze problem solving situations. [Coordinate Geometry] - Performance Indicator A.G.10 - determine the vertex and axis of symmetry of a parabola, given its graph (see a.a.41 ) [Algebra]

**MST3-A.M.2** [1 occurrence] - MST Standard 3 - Measurement Strand - Students will determine what can be measured and how, using appropriate methods and formulas. [Units of Measurement] - Performance Indicator A.M.2 - solve problems involving conversions within measurement systems, given the relationship between the units [Algebra]

**MST3-A.M.3** [1 occurrence] - MST Standard 3 - Measurement Strand - Understand that all measurement contains error and be able to determine its significance. [Error and Magnitude] - Performance Indicator A.M.3 - calculate the relative error in measuring square and cubic units, when there is an error in the linear measure [Algebra]

**MST3-A.S.1** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.1 - categorize data as qualitative or quantitative [Algebra]

**MST3-A.S.2** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.2 - determine whether the data to be analyzed is univariate or bivariate [Algebra]

**MST3-A.S.3** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.3 - determine when collected data or display of data may be biased [Algebra]

**MST3-A.S.4** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.4 - compare and contrast the appropriateness of different measures of central tendency for a given data set [Algebra]

**MST3-A.S.5** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.5 - construct a histogram, cumulative frequency histogram, and a box-and-whisker plot, given a set of data [Algebra]

**MST3-A.S.6** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.6 - understand how the five statistical summary (minimum, maximum, and the three quartiles) is used to construct a box-and-whisker plot [Algebra]

**MST3-A.S.7** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.7 - create a scatter plot of bivariate data [Algebra]

**MST3-A.S.8** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Organization and Display of Data] - Performance Indicator A.S.8 - construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line [Algebra]

**MST3-A.S.9** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.9 - analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot [Algebra]

**MST3-A.S.10** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.10 - evaluate published reports and graphs that are based on data by considering: experimental design, appropriateness of the data analysis, and the soundness of the conclusions [Algebra]

**MST3-A.S.11** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.11 - find the percentile rank of an item in a data set and identify the point values for first, second, and third quartiles [Algebra]

**MST3-A.S.12** [2 occurrences] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.12 - identify the relationship between the independent and dependent variables from a scatter plot (positive, negative, or none) [Algebra]

**MST3-A.S.13** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.13 - understand the difference between correlation and causation [Algebra]

**MST3-A.S.14** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will collect, organize, display, and analyze data. [Analysis of Data] - Performance Indicator A.S.14 - identify variables that might have a correlation but not a causal relationship [Algebra]

**MST3-A.S.15** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will make predictions that are based upon data analysis. [Predictions from Data] - Performance Indicator A.S.15 - identify and describe sources of bias and its effect, drawing conclusions from data [Algebra]

**MST3-A.S.16** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will make predictions that are based upon data analysis. [Predictions from Data] - Performance Indicator A.S.16 - recognize how linear transformations of one-variable data affect the data's mean, median, mode, and range [Algebra]

**MST3-A.S.17** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will make predictions that are based upon data analysis. [Predictions from Data] - Performance Indicator A.S.17 - use a reasonable line of best fit to make a prediction involving interpolation or extrapolation [Algebra]

**MST3-A.S.18** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.18 - know the definition of conditional probability and use it to solve for probabilities in finite sample spaces [Algebra]

**MST3-A.S.19** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.19 - determine the number of elements in a sample space and the number of favorable events [Algebra]

**MST3-A.S.20** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.20 - calculate the probability of an event and its complement [Algebra]

**MST3-A.S.21** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.21 - determine empirical probabilities based on specific sample data [Algebra]

**MST3-A.S.22** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.22 - determine, based on calculated probability of a set of events, if: some or all are equally likely to occur - one is more likely to occur than another - whether or not an event is certain to happen or not to happen [Algebra]

**MST3-A.S.23** [1 occurrence] - MST Standard 3 - Statistics and Probability Strand - Students will understand and apply concepts of probability. [Probability] - Performance Indicator A.S.23 - calculate the probability of: a series of independent events - two mutually exclusive events - two events that are not mutually exclusive [Algebra]

**MST3-A.A.42** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Trigonometric Functions] - Performance Indicator A.A.42 - find the sine, cosine, and tangent ratios of an angle of a right triangle, given the lengths of the sides [Algebra]

**MST3-A.A.43** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Trigonometric Functions] - Performance Indicator A.A.43 - determine the measure of an angle of a right triangle, given the length of any two sides of the triangle [Algebra]

**MST3-A.A.44** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Trigonometric Functions] - Performance Indicator A.A.44 - find the measure of a side of a right triangle, given an acute angle and the length of another side [Algebra]

**MST3-A.A.45** [1 occurrence] - MST Standard 3 - Algebra Strand - Students will recognize, use, and represent algebraically patterns, relations, and functions. [Trigonometric Functions] - Performance Indicator A.A.45 - determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides [Algebra]

**MST3-A.N.2** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.2 - simplify radical terms (no variable in the radicand) [Algebra]

**MST3-A.N.3** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.3 - perform the four arithmetic operations using like and unlike radical terms and express the result in simplest form [Algebra]

**MST3-A.N.4** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.4 - understand and use scientific notation to compute products and quotients of numbers [Algebra]

**MST3-A.N.6** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.6 - evaluate expressions involving factorial(s), absolute value(s), and exponential expression(s) [Algebra]

**MST3-A.N.7** [1 occurrence] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.7 - determine the number of possible events, using counting techniques or the Fundamental Principle of Counting [Algebra]

**MST3-A.N.8** [2 occurrences] - MST Standard 3 - Number Sense and Operations Strand - Students will understand meanings of operations and procedures, and how they relate to one another. [Operations] - Performance Indicator A.N.8 - determine the number of possible arrangements (permutations) of a list of items [Algebra]