

MATHEMATICS
EIGHTH GRADE

Qtr-Week	Benchmark/ Indicator	Lesson Makeup	Assessment	Materials/ Technology Component
1 st 1		Pre-test		
1 st 2	<p>Number, Number Sense and Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.</p>	<p>Exponents and powers- Reading, writing, evaluating Order of operations- Left-to-right rule, fraction bar, calculator use</p> <p>Guided Practice/Visual Aides: Continue throughout year</p> <p>A good activity to help students acquire number sense and an understanding of the order of operations is to play the game “Find Me.” In this game, 5 one-digit numbers are selected and each number has to be used just once to get a target number. For example, you may select the numbers 2, 4, 5, 8, and 9 and have a target number of 17. Ask students to create an expression using any operations and/or parentheses they would like, using all the numbers just once, and creating an expression equal to 17. Some examples are given below.</p> $8 + 9 \times (5 - 4) \times 5 - 2 - \frac{9 + 8(4 + - 4)^2}{17} = 17 \quad 9 + 8 = 17 \quad \frac{2 - 5}{17} =$	<p>Board Work: Have each student go to the board and demonstrate and articulate knowledge with a given problem. Continue throughout year.</p> <p>Quiz: Throughout year</p> <p>5x’s each on given Multiplication and Division number/ continue for the duration of the year until the student has mastered facts to twelve One minute test every Friday</p> <p>Vocabulary: <i>Positive numbers, negative numbers, integers, absolute value, opposites, expression simplify, base, exponent, power, revise, broken-line-graph</i></p>	<p>A+ Grade 8 Math: <i>Number Concepts</i></p> <p><i>Properties</i></p> <p>Evaluate exponential expressions using a given variable Demonstrate relationship of volume and cubic units using hands-on materials Evaluate real-life expressions</p>

MATHEMATICS
EIGHTH GRADE

		$2 \times 9 - (4 - (8 - 2) \times 5) - (84 - 8 + 5) = 5 - (4 + 9) \div 2 = 17$		
1 st 3	Number, Number Sense and Operations: Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.	Variables in algebra Evaluating expressions Using formulas Identify and evaluate the variable expression for a given value of the variable The sports pages of most newspapers provide an abundant supply of scores that students can use to create equations and expressions. Students can pose questions such as “How many runs did the National League and the American League score in one day?” Students can work in small groups to generate sentences such as “NL Runs + AL Runs = Total runs per day.” Have students replace one of the values in their sentence with a variable and challenge another group to solve the resulting equation.	Vocabulary: <i>Variable , terms, coefficient, like terms, substitute, Communitive Property, Associative property, Identity Property, Addition property of opposites, Distributive Property</i>	A+ Grade 8 Math: <i>Number Concepts</i> <i>Properties</i>
1 st 4	Number, Number Sense and Operations: Compare order and determine	Finding absolute value Solving absolute value equations Finding velocity and speed Adding real numbers Properties of addition	Explain absolute value orally Demonstrate absolute value on a number line Vocabulary:	A+ Grade 8 Math: <i>Number Concepts</i> <i>Properties</i>



MATHEMATICS
EIGHTH GRADE

	equivalent forms of real numbers.	Instead of having students evaluate expressions you create, have them create an expression using at least four different numbers equal to a given number. For example, have them create an expression using any four different numbers and a set of parentheses which are equal to 7. Solutions might be $^{-}1(8 \times 2 - 9)$ or $2^3 - 8 \times 3 - 1 + 2 \times 5$.	<i>Variable , terms, coefficient, like terms, substitute, Communitive Property, Associative property, Identity Property, Addition property of opposite, Distributive Property, absolute value</i>	
1 st 5	Patterns, Functions and Algebra: Solve and graph linear equations and inequalities.	Equations and inequalities Using mental math Checking solutions Measure the outdoor temperature each hour, starting at 9:00 a.m. and ending at noon. Record each temperature reading in your notebook. Draw a broken line graph to show your data. At what time was the temperature the highest? When was it the lowest?	Vocabulary: <i>Variable equation, solution, check, equivalent equations, properties of equality, inverse operations, solve, discount, sale price</i>	A+ Grade 8 Math: <i>Number Concepts</i> <i>Properties</i>
1 st 6	Patterns, Functions and Algebra: Translate information from one representation (words, table,	Translating words into mathematical symbols-all operations Writing and solving equations Translate and solve real-life problems Make sure students know the three important ideas for solving linear equations: (1) isolate the variable; (2) use the inverse operation to undo what was	In teams, write or translate and solve a variety of problems using a variety of math terms Vocabulary: <i>Variable equation, solution, check, equivalent equations,</i>	A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i>



MATHEMATICS
EIGHTH GRADE

	graph or equation) to another representation of a relation or function.	done to the variable; and (3) make sure the equation is balanced by doing the same thing to both sides of the equation.	<i>properties of equality, inverse operations, solve,</i>	
1 st 7	Data Analysis and Probability: Create, interpret and use graphical displays and statistical measures to describe data; e.g., box –and–whiskers plots, histograms, scatter plots, measures of center and variability.	Solving problems using models Writing algebraic models Tables and graphs- Organizing data Interpreting graphs	Write and illustrate algebraic models Make and interpret bar and line graphs (Themed, based on science or social studies) Vocabulary: <i>Variable equation, solution, check, equivalent equations, properties of equality, inverse operations, solve,</i>	A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i>
1 st 8	Data Analysis and Probability: Create, interpret and use graphical displays and statistical measures to describe data; e.g., box –and–	Introduction to functions using input-output tables Writing and equation to represent a function Have students come to the board and draw an input/output T-chart with five rows. Then have each student write down the five numbers you call out on the input (left) column such as 5, 12, 18, 25, and 40. Remind students that the input is the number to which an operation rule is applied, and	Complete input-output tables Create equations based on the tables to represent functions Unit test Vocabulary: <i>Coordinate plane, coordinate axes, origin,</i>	A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i>



MATHEMATICS
EIGHTH GRADE

	<p>whiskers plots, histograms, scatter plots, measures of center and variability.</p>	<p>that the output number is the result of that operation. Next announce a rule such as “add 15” and have each player write the rule at the top of their chart. On a signal, the students fill in the output column using the rule, then turn and face the class. When both are finished have the class help you check their work. They could score one point for each correct answer and five points for whoever finishes first. Continue playing with different input numbers and different rules. Instructional Procedures</p> <ol style="list-style-type: none">1. Begin by reading Two of Everything. Make a T-chart on the board to show what went into the pot (input value) and what came out (output value).	<p><i>ordered pairs, graph of an ordered pair, function, vertical line test, function notation, bar graph</i></p>	
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MATHEMATICS
EIGHTH GRADE



In	Out	In	Out
		3	6

2. Ask what would happen if you put 3 coins in the pot and write “3” midway down the In column. Students should state that 6 will come out. Continue by asking what would happen if you put in four coins, then five, ..., ten?
3. Ask students to describe to you what patterns they notice in the columns.
4. Ask if anyone sees a different pattern. Continue to record responses and discuss.
5. Lead students to these descriptions: “The Out number is equal to the In number times two,” or “The Out number is equal to the In number added to itself,” or “The In plus In equals Out.”
6. Explain that an easier way to describe these patterns is to use symbols (variables) in



MATHEMATICS EIGHTH GRADE

place of the words. Draw a square above the In column and a triangle above the Out column.

 In	 Out
5	2
6	4
7	6
8	8
9	10
10	12
11	14
12	16
13	18
14	20

7. Use one of the sentence descriptions, such as “The Out number is equal to the In number times two.” Ask which symbol represents the Out number (the triangle) and which symbol represents the In number (the square) and write the symbolic/algebraic



MATHEMATICS
EIGHTH GRADE

equation:

$$\triangle = \square \times 2$$

8. Show the other algebraic equations:


$$\triangle = \square + \square$$

OR

$$\square + \square = \triangle$$

9. Now refer back to the pot and T-chart and ask the students what would happen if the pot did something different or followed a new rule. Again make a T-chart, enter in numbers, and conduct a discussion until students discover the new rule (function). An example could be:

MATHEMATICS
EIGHTH GRADE

		<div style="text-align: center;">  <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 5px;">In</td> <td style="padding: 5px;">Out</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">1</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">2</td> <td style="padding: 5px;">10</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">3</td> <td style="padding: 5px;">15</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">4</td> <td style="padding: 5px;">20</td> </tr> </table> </div>	In	Out	1	5	2	10	3	15	4	20		
In	Out													
1	5													
2	10													
3	15													
4	20													
<p>1st 9</p>	<p>Number, Number Sense and Operations: Compare order and determine equivalent forms of real numbers.</p>	<p>The real number line Comparing integers Graphing real numbers Ordering real numbers</p> <p>To turn graphing into a kinesthetic experience, make a set of axes on the school grounds by laying down two perpendicular axes with some tape. Mark off units from -6 to +6 on both axes. Place students on the points (-6, 0), (-5, 0), ..., (0, 0), ..., (6, 0). Whisper to them an algebraic expression such as, "Double your number and add 1." Then have them walk the appropriate number of steps forward or backward, depending on whether the number they have is positive or negative. Together, the students should form the graph of the equation $y = 2x + 1$ by doing that. Have the rest of the class try to guess</p>	<p>Pencil and paper work with number lines</p> <p>Vocabulary: <i>Coordinate plane, coordinate axes, origin, ordered pairs, graph of an ordered pair, function, vertical line test, function notation, bar graph</i></p>	<p>A+ Grade 8 Math: <i>Integer Concepts</i> <i>Integer Operations</i> <i>Problem Solving 3</i></p>										



MATHEMATICS
EIGHTH GRADE

		the equation that was graphed. After doing this several times, switch roles and have other members of the class graph the equation and the other students guess what it is.		
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MATHEMATICS
EIGHTH GRADE

Qtr- Week	Benchmark/ Indicator	Lesson Makeup	Assessment	Materials/ Technology Component
2 nd 1	<p>Patterns, Functions and Algebra: Solve systems of linear equations involving two variables graphically and symbolically.</p>	<p>The coordinate plane Graphing linear equations Graphing horizontal and vertical lines</p> <p>Place a bean seed on a damp paper towel in a clear plastic cup. Then insert a few toothpicks into a potato and rest it on the top of another cup so half the potato is in water. Place the cup side by side. Draw a coordinate plane, and plot both plants' growth as a function of time (x-axis shows growth, while y-axis shows time in days. Describe the slope of the graph. What does the slope tell you?</p>	<p>Accurate, neat graphing on graph paper and perhaps a graphing calculator</p> <p>Vocabulary: <i>Coordinate axes, coordinate plane, origin, ordered pairs, graph of an ordered pair, function, vertical line test, function notation, bar graph</i></p>	<p>A+ Grade 8 Math:</p> <p><i>Coordinate Graphing 1</i></p> <p><i>Coordinate Graphing 2</i></p>
2 nd 2	<p>Patterns, Functions and Algebra: Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.</p>	<p>Graphing lines using intercepts Choosing appropriate scales The slope of the line Positive, negative, zero, and undefined slopes</p>	<p>Find the slope and define it Evaluate the slope of various sections of an actual roller coaster</p> <p>Vocabulary: <i>Linear equation, slope, rise, run, x-intercept, y-intercept, slope-intercept form, standard form, direct variation</i></p>	<p>A+ Grade 8 Math:</p> <p><i>Coordinate Graphing 1</i></p> <p><i>Coordinate Graphing 2</i></p>



MATHEMATICS
EIGHTH GRADE

2 nd 3	<p>Patterns, Functions and Algebra: Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.</p> <p>Mathematical Processes: Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and x-intercept of the graph of the function, apply proportional thinking and when measuring, describing functions, and</p>	<p>Direct variation Graphing lines using slope-intercept form Using your graphing calculator and slope-intercept formula Finding the y-intercept</p> <p>In the equation $d = 45t$, 45 is a speed limit. Find three speed limits: one on a highway, one in your town, and one in front of your school. Write an equation for each speed limit. Graph the equations. Then find the slope. Explain what happens to the slope of the line as the speed limit increases.</p>	<p>Graphing on paper and calculator</p> <p>Vocabulary: <i>Linear equation, slope, rise, run, x-intercept, y-intercept, slope-intercept form, standard form, direct variation</i></p>	<p>A+ Grade 8 Math: <i>Coordinate Graphing 1</i></p> <p><i>Coordinate Graphing 2</i></p>
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MATHEMATICS
EIGHTH GRADE

	comparing probabilities.			
2 nd 4	Patterns, functions and Algebra: Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.	Identifying functions using the vertical line test Evaluating and graphing linear functions Review unit	Test Vocabulary: <i>Slope-intercept form, horizontal lines, vertical lines, perpendicular lines, parallel lines</i>	A+ Grade 8 Math: <i>Coordinate Graphing 1</i> <i>Coordinate Graphing 2</i>
2 nd 5	Patterns, Functions and Algebra: Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.	Writing equations using slope-intercept form, point-slope form, and standard form First, measure the outdoor temperature at 9:00 a.m. and at 12:00 noon. Graph the two points. Draw a line Assume the rate of the change in temperature stays the same. Calculate what the temperature will be at 3:00 p.m. Write an equation for the line.	Create devices for remembering each form Paper and pencil practice Vocabulary: Slope-intercept form, horizontal lines, vertical lines, perpendicular lines, parallel lines	A+ Grade 8 Math: <i>Coordinate Graphing 1</i> <i>Coordinate Graphing 2</i>
2 nd 6	Patterns, functions and Algebra: Find the square root of perfect squares, and approximates the square root of non- perfect	Writing linear equations using two points Converting from one form to another Using graphs of linear equations to predict Give input to the Positive Linear Function Machine and try to guess what it did from the output it generates. Investigate linear functions	Vocabulary: Slope-intercept form, horizontal lines, vertical lines, perpendicular lines, parallel lines	A+ Grade 8 Math: <i>Coordinate Graphing 1</i> <i>Coordinate Graphing 2</i>



MATHEMATICS
EIGHTH GRADE

	squares.	with positive slopes by trying to guess the slope and intercept. http://www.shodor.org/interactivate/activities/PositiveLinearFunct/		
2 nd 7	Patterns, functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations. Patterns, functions and Algebra: Solve and graph linear equations and inequalities.	Solving inequalities with one variable using addition or subtraction Graphing inequalities on a number line How do operations affect an inequality? Measure, in inches, the height of each of your classmates. Be sure to have someone measure your own height. Then record the measurements in a table. Identify the greatest number written in the table, and write an inequality to show that no one in the class is taller than that measure. Identify the least number written in the table and write an inequality to show that no one in the class is shorter than that measure. Explain in writing what the inequalities mean.	Graph inequalities correctly on a number line Chart operations and how they affect an inequality Vocabulary: Graph a solution, inequality, \leq, \geq	A+ Grade 8 Math: <i>Coordinate Graphing 1</i> <i>Coordinate Graphing 2</i>
2 nd 8	Patterns, functions and Algebra: Use algebraic	Solving inequalities using multiplication and division Using negative numbers Writing inequality equations from sentences	Orally explain and demonstrate on paper how to solve inequalities using negative numbers	A+ Grade 8 Math: <i>Coordinate Graphing 1</i>



MATHEMATICS
EIGHTH GRADE

	representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.		Vocabulary: <i>System of linear equations, eliminating variables, system of linear inequalities, maximum, minimum</i>	<i>Coordinate Graphing 2</i>										
2 nd 9	<p>Patterns, functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.</p> <p>Patterns, functions and Algebra: Solve and graph linear equations and inequalities.</p>	<p>Solving multi-step inequalities Using the distributive property Write and use a linear models Write verbal and algebraic models</p> <p>Train A leaves the station at noon and travels 30 miles per hour. Use the equation $d = 30t$ to make a timetable that shows how far the train has traveled by 1:00 p.m., 2:00 p.m., 3:00 p.m., 4:00 p.m., and 5:00 p.m.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="2" style="text-align: center;">Train A: $d = 30t$</td> </tr> <tr> <td>Time</td> <td>Distance</td> </tr> <tr> <td>noon</td> <td>0 miles</td> </tr> <tr> <td>1:00 p.m.</td> <td>30 miles</td> </tr> <tr> <td>2:00 p.m.</td> <td>60 miles</td> </tr> </table> <p>Train B leaves the station at 1:00 p.m. and travels 40 miles per hour. Use the equation $d = 40t$ to</p>	Train A: $d = 30t$		Time	Distance	noon	0 miles	1:00 p.m.	30 miles	2:00 p.m.	60 miles	<p>Unit test</p> <p>Vocabulary: <i>System of linear equations, eliminating variables, system of linear inequalities, maximum, minimum</i></p>	<p>A+ Grade 8 Math:</p> <p><i>Coordinate Graphing 1</i></p> <p><i>Coordinate Graphing 2</i></p>
Train A: $d = 30t$														
Time	Distance													
noon	0 miles													
1:00 p.m.	30 miles													
2:00 p.m.	60 miles													



MATHEMATICS
EIGHTH GRADE

		<p>make a timetable to show how far the train has traveled by 1:00 p.m., 2:00 p.m., 3:00 p.m., 4:00 p.m., and 5:00 p.m.</p> <p>Graph both equations on the same grid. At what time do trains A and B meet? How do you know?</p>		
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MATHEMATICS
EIGHTH GRADE

Qtr-Week	Benchmark/ Indicator	Lesson Makeup	Assessment	Materials/ Technology Component
3 rd 1	<p>Patterns, functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.</p> <p>Patterns, functions and Algebra: Solve and graph linear equations and inequalities.</p>	<p>Solving and graphing compound inequalities involving “and”</p> <p>Compound inequalities in real life</p> <p>Solving multi-step compound inequalities</p>	<p>In-Class Practice</p> <p>Vocabulary: <i>System of linear equations, eliminating variables, system of linear inequalities, maximum, minimum</i></p>	<p>Practice OATs now through April as needed.</p> <p>A+ Grade 8 Math: <i>Coordinate Graphing 1</i></p> <p><i>Coordinate Graphing 2</i></p>
3 rd 2	<p>Patterns, functions and Algebra: Use</p>	<p>Solving and graphing compound inequalities involving “or”</p> <p>Making a table</p>	<p>Make a table and explain the results orally</p> <p>Clarify and explain the</p>	<p>A+ Grade 8 Math: <i>Statistics 1</i></p>



MATHEMATICS
EIGHTH GRADE

	<p>algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.</p> <p>Patterns, functions and Algebra: Solve and graph linear equations and inequalities.</p>	<p>Real-life situations</p> <p>Record the age, in months, of each student in your class. Find the mean, median, and mode of the data you collect. Which best describes the data? Why? Make a stem-and-leaf plot to display information.</p>	<p>differences between “and” and “or” inequalities</p> <p>Vocabulary: <i>Data, statistics, mean, median, mode, range, frequency table, stem-leaf-plot, scatter plot, positive correlation, negative correlation, quartiles</i></p>	<p><i>Statistics 2</i></p>
3 rd 3	<p>Patterns, functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.</p>	<p>Solving absolute-value equations Writing absolute-value equations Finding midpoints Solving absolute-value inequalities</p> <p>View stem-and-leaf plots of your own data, and then practice finding means, medians and modes. Parameters: Data</p> <p>http://www.shodor.org/interactivate/activities/StemAndLeafPlotter/</p>	<p>Quiz on inequalities</p> <p>Vocabulary: <i>Data, statistics, mean, median, mode, range, frequency table, stem-leaf-plot, scatter plot, positive correlation, negative correlation, quartiles</i></p>	<p>A+ Grade 8 Math: <i>Statistics 1</i></p> <p><i>Statistics 2</i></p>



MATHEMATICS
EIGHTH GRADE

	Patterns, functions and Algebra: Solve and graph linear equations and inequalities.			
3 rd 4	Patterns, functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations. Patterns, functions and Algebra: Solve and graph linear equations and inequalities. Mathematical Processes: Evaluate different graphical	Graphing linear inequalities in two variables Checking solutions Vertical and horizontal lines Using slope-intercept form	Pencil and paper practice Graphing calculator practice	A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i>



MATHEMATICS
EIGHTH GRADE

	representations of the same data to determine which is the most appropriate representation for an identified purpose.			
3 rd 5	<p>Number, Number Sense and Operations: Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.</p>	<p>Real-life addition: profits and losses Subtracting real numbers Evaluating a function Finding the terms of an expression Skill: stock market reports</p> <p>When subtracting x-coordinates or y-coordinates to find distances between points when finding the lengths of line segments on a coordinate graph, some students may get negative values. Be sure to remind them that distance is always positive, so they want the absolute value of that difference.</p>	<p>Examine a company's books Evaluate stock market report</p> <p>Vocabulary: <i>Exponent, power, base, scientific notation, exponential functions, tree diagram, compound interest</i></p>	<p>A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i></p>
3 rd 6	<p>Number, Number Sense and Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.</p>	<p>Multiplying real numbers-rules Products with variable factors Evaluating a variable expression Properties of multiplication Using products in real life</p> <p>Look for very large numbers in newspapers and almanacs. These could be population figures, the federal budget, or space facts. Look for very</p>	<p>Quiz on adding and subtracting real numbers Pencil and paper practice</p> <p>Vocabulary: <i>Exponent, power, base, scientific notation, exponential functions, tree diagram, compound interest</i></p>	<p>A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i></p>



MATHEMATICS
EIGHTH GRADE

		small numbers such as the size of insects, bacteria, or dust. Record your findings in a table. In one column, write the number in standard form. In another column, write the number in scientific notation.		
3 rd 7	Number, Number Sense and Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.	Distributive property- illustrated well with rectangular models Using with addition Using with subtraction Mental math and the distributive property Combining like terms Simplifying expressions with grouping symbols	Oral presentation modeling understanding of distributive property Quiz on multiplying real numbers Vocabulary: <i>Exponent, power, base, scientific notation, exponential functions, tree diagram, compound interest</i>	A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i>
3 rd 8	Patterns, Functions, and Algebra: Solve quadratic equations with real roots by graphing, formula and factoring.	Graph quadratic functions. Find minimum, maximum, or zeros of functions from their graph. Find square roots. Solve quadratic equations/ writing equations. Use a calculator to find square roots. Apply concepts and skills to using the vertical motion formula. Galileo discovered that a falling rock does not fall at a constant speed. The longer an object is in the	Vocabulary: <i>Quadratic function, degree 2, minimum, maximum, zeros, square root, quadratic equation, quadratic formula</i>	A+ Grade 8 Math: <i>Solving equation systems</i>

MATHEMATICS
EIGHTH GRADE

		<p>air, the faster it falls. An object will fall 16ft in the first second. This relationship between distance in feet and time in seconds is $d=16t^2$.</p> <p>Write a report about Galileo and his theory of falling objects. Graph the equation $d = 16t^2$ from $t=0$ to $t=5$</p>		
3 rd 9	<p>Data Analysis and Probability:</p> <p>Design and experiment to test theoretical probability, and record and explain results.</p>	<p>Permutations Combinations Probability</p> <p>Probability measures how likely something is to happen. Conduct a probability experiment. Toss two number cubes. Record the sum of the number that land face up. Toss the two number cubes 10 times. How many times did the sum of 7 occur in 10 tosses? Repeat this experiment. This time count the number of times the sum of 2 occurs in 10 tosses. What do you notice?</p>	<p>Vocabulary: <i>Permutations, combination, at random, outcomes, event, probability, complementary events, independent events, compound event, dependent event, empirical probability</i></p>	<p>A+ Grade 8 Math: Probability</p> <p>Website Activity: http://www.shodor.org/interactivate/activities/DiceTable/</p>

MATHEMATICS
EIGHTH GRADE

Qtr-Week	Benchmark/ Indicator	Lesson Makeup	Assessment	Materials/ Technology Component
4 th 1	<p>Number, Number Sense and Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.</p>	<p>Simplifying a function Dividing real numbers Reciprocals Simplifying complex fractions Finding the domain of a function</p> <p>The graphs of some curves are quadratic functions. These can be seen in parabolic arches in some bridges and buildings. Write a report about Arches. Graph each of the following quadratic equations: $y = -x^2$, $y = -1/2x^2$, $y = -1/4x^2$. To make the table of values, use -4, -2, 0, 2, 4 for x. Use a curved line to connect the ordered pairs. How does changing the equation change the shape of the arch?</p>	<p>Apply new concepts to several formulas Evaluate and simplify several expressions</p> <p>Vocabulary: <i>Polynomial, monomial, binomial, trinomial, factors, factor, greatest common factor, zero product property</i></p>	<p>A+ Grade 8 Math: <i>Basic operations 1</i> <i>Basic operations 2</i></p> <p>Polynomials 1 Polynomials 2</p>
4 th 2	<p>Geometry and Spatial Sense: Establish the validity of conjectures about geometric objects, their properties and relationships by counter example, inductive and</p>	<p>Inductive reasoning and deductive reasoning If-then statements Chapter review Solving Equations- Add to each side Simplify</p>	<p>Create chart comparing deductive, inductive, and if-then type reasoning Chapter test</p>	



MATHEMATICS
EIGHTH GRADE

	deductive reasoning, and critiquing arguments made by others.			
4 th 3	<p>Number, Number Sense and Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.</p> <p>Measurement: Write and solve real world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.</p>	<p>Writing sentences as equations Solving equations using multiplication and division Multiplying each side by a reciprocal Modeling real-life problems</p>	<p>Pencil and paper practice</p> <p>Vocabulary: <i>Polynomial, monomial, binomial, trinomial, factors, factor, greatest common factor, zero product property</i></p>	<p>A+ Grade 8 Math: <i>Basic operations 1</i> <i>Basic operations 2</i></p>
4 th 4		Achievement test		
4 th 5	<p>Number, Number Sense and</p>	<p>Make- up Achievement test Solving multi-step equations</p>	<p>Create “desktop-size reminder cards” showing the</p>	<p>A+ Grade 8 Math: <i>Basic operations 1</i></p>



MATHEMATICS
EIGHTH GRADE

	<p>Operations: Apply properties of operations and the real number system, and justify when they hold for a set of numbers.</p> <p>Measurement: Write and solve real world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.</p>	<p>Using verbal models to make an equation Combining like terms first Using the distributive property Multiplying by a reciprocal first to clear the equation of fractions Practical problem solving</p> <p>Make a kite in the shape of a box like the drawing on the right. You can use crepe paper and straws to make the kite. Four sides are rectangles. Two sides are squares. Measure a side of a square. Then use the Pythagorean theorem to find the length of the diagonal brace. Measure the brace. How close is your measurement to the actual length?</p>	<p>steps for solving multi-steps problems</p> <p>Board, paper, and computer work Test</p> <p>Vocabulary: <i>Rational number, rational expression, unidentified, least common multiple, least common denominator, rational equation, proportion, cross products, inverse variation</i></p>	<p><i>Basic operations 2</i></p>
4 th 6	<p>Patterns, Functions and Algebra: Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.</p>	<p>Solving equations with variables on both sides- collect the variables on one side One solution, no solution, or identity? Solving more complicated equations-use reminder cards</p>	<p>In pairs, solve problems in more than one way Math contest – teams compete for speed and accuracy in solving and illustrating single and multi-step problems (remember: sometimes slow and accurate beats fast and sloppy) Have a GREAT prize</p> <p>Vocabulary:</p>	<p>A+ Grade 8 Math: <i>Algebra 1</i> <i>Algebra 2</i> <i>Algebra 3</i> <i>Algebra 4</i> <i>Algebra 5</i></p>



MATHEMATICS
EIGHTH GRADE

			<i>Rational number, rational expression, unidentified, least common multiple, least common denominator, rational equation, proportion, cross products, inverse variation</i>	
4 th 7	Number, Number Sense and operations: Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	Solving decimal equations Rounding Using a graphing calculator Verbal models		A+ Grade 8 Math: <i>Percent 1</i> <i>Percent 2</i>
4 th 8	Number, Number Sense and Operations: Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	Using formulas Ratios, percents, and rates Unit analysis Point out to students the many uses of rates in everyday life, such as the prices in stores and theaters, the speeds of cars and airplanes, and the records of sporting events. Facts about money, time, and distance provide meaningful examples of unit rates and ratios in	Demonstrate understanding by applying knowledge to real-life problems Vocabulary: <i>Rational number, rational expression, unidentified, least common multiple, least common denominator, rational equation, proportion, cross products,</i>	A+ Grade 8 Math: <i>Percent 1</i> <i>Percent 2</i> <i>Ratio and Proportions</i> <i>Problem solving 2</i>



MATHEMATICS
EIGHTH GRADE

		<p>general.</p> <p>A good project for family participation is to have students go to a store and find the unit price for different sizes of the same product. Often, the larger sizes give a better rate, but that is not always the case. It is not uncommon to find larger sizes of a product priced at a higher rate than smaller sizes.</p>	<i>inverse variation</i>	
4 th 9	<p>Geometry and Spatial Sense: Represent and model transformations in a coordinate plane and describe results.</p> <p>Geometry and Spatial Sense: Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.</p>	<p>Triangles and Lines</p> <p>Transformations, Symmetry, and Area</p> <p>Circles</p> <p>Solids and Coordinate Geometry</p> <p>Perpendicular lines</p> <p>Unit review</p> <p>Post-test</p> <p>Survey of concepts learned over the year</p> <p>As much as possible, make geometry a hands-on and “minds-on” learning experience. Give students opportunities to draw various angles, triangles, and quadrilaterals and to use protractors</p>	<p>Vocabulary: Radicals, radical equation, right triangle, hypotenuse, Pythagorean Theorem, 45-45-90, 30-60-90, Pythagorean triples, Center, radius, diameter, circumference, circle, cylinder, cone, cube, rotation, reflection, tessellations, transformation, translation</p>	<p>A+ Grade 8 Math: <i>Square roots and triangles</i> <i>Geometric measurement</i> <i>Plane Figures</i> <i>Space Figures</i></p> <p>Activity Website: http://www.shodor.org/interactivate/activities/PythagoreanExplorer/</p> <p>Study Island: <i>Object</i> <i>Transformations</i></p>



MATHEMATICS
EIGHTH GRADE

<p>Measurement: Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.</p>	<p>and rulers to measure angles and lengths. Also, provide opportunities for students to discuss what they discovered from their work. This will allow you to clarify misconceptions and explain concepts they do not understand.</p>		
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