Kindergarten

Kindergarten								
Week	Words	Strategy (used to teach)	Model	Introduced	Mastered	Topic	KS Standard	Extras
Topic 1 One to five	count, number, 1, 2, 3, 4, 5	Counting one to one correspondance	five-frame, number line		X		K.CC.3, K.CC.4, K.CC.4.A, K.CC.4.B, K.CC.5	
Topic 2 Comparing and order 0 to 5	more, fewer, same as, order	Illustrating more and fewer	five-frame, number line		X		K.CC.3, K.CC.4, K.CC.4.B, K.CC.4.C, K.CC.5, K.CC.6	
Topic 3 six to ten	6, 7, 8, 9, 10, ten-frame	Drawing counters, Circle the one with more/fewer	ten-frame, number line		X		K.CC.3, K.CC.4, K.CC.4.A, K.CC.4.B, K.CC.4.C, K.CC.5	
Topic 4 Comparing and ordering numbers 0 to	greater, less	Comparing	ten-frame	X			K.CC.2, K.CC.4.C, K.CC.6, K.CC.7, K.OA.1	
Topic 5 Numbers to 20	11, 12, 13, 14, 15, 16, 17, 18, 1	Counting one to one correspondance	ten-frame, number line	X			K.CC.2, K.CC.3, K.CC.4.B	
Topic 6 Numbers to 100	hundred chart, row, column, count	by 2s, count by 10s	hundreds chart,	X			K.CC.1, K.CC.2, K.CC.4.B, K.CC.4.C, K.CC.5	
Topic 7 Understanding addition	number story, join, plus sign, ad	Counting on, counting how many in all	addition sentences	X			K.OA.1, K.OA.2, K.OA.5	
Topic 8 Understanding subtraction	left, separate, subtraction sente	stories about take away, act it out	subtraction sentences				K.OA.1, K.OA.2, K.OA.5	
Topic 9 Composing and decomposing number	whole, part, graph	illustrating and/or using manipulatives to show multip	ten frames, Part part whole				K.OA.3, K.OA.4, K.MD.3	
Topic 10 Composing numbers 11 to 19	how many more?	acting it out or use drawings	tens frame, part part whole				K.NBT.1	
Topic 11 Decomposing numbers 11 to 19	double ten frame, set	counting objects or drawings	double ten frame				K.NBT.1	
Topic 12 Measurement	longer (than), shorter (than), as	compare length, height, capacity (with objects), and	scale				K.MD.1 K.MD.2	
Topic 13 Sorting, Classifying, counting, and ca	different, does not belong, same	sorting and graphing real objects.	graphs				K.MD.3 K.G.1	
Topic 14 Identifying and describing shapes	square, rectangle, triangle, circl	Drawing, describing, and idetifying shapes using pict	tangram templates				K.G.2 K.G.3	
Topic 15 Position and location of shapes	inside, outside, above, below, o	use objects/shapes and act out					K.G.1	
Topic 16 Analyzing, comparing, and composin	same size, same shape, roll, sta	Building new shapes using standrad 3D shapes and	Examples of other figures/buildings				K.G.2 K.G.3 K.G.4 K.G. 5 K.G. 6	

1st Grade

Week	Words	Strategy (used to teach)	Model	Introduced	Mastered	Topic	KS Standard	Extras
Topic 1 Understanding Addition	join, outside, inside, in all, whole, part, double, sum, addition sentence, plus, equals, add, addend, order	Adding the parts together to find the whole	two part pattern model (domino) Bar Model	x	x	1	1.OA.1, 1.OA.3, 1.OA.7, 1.OA.8	
Topic 2 Understanding Subtraction	missing part, subtract, difference, subtraction sentence, equal sign, minus sign, compare, take away, same amount	Use subtraction or counting on to find the missing pa	subitizing part, part, whole model	x	x	2	1.OA.1, 1.OA.4, 1.OA.6, 1.OA.7, 1.OA.8	
Topic 3 Five and Ten Relationships	Comparison and relationships, addition, subtraction, minus, pluas,	Children will practice adding and subtracting number	ten frame	x	x	3	1.OA.4, 1.OA.5, 1.OA.6, 1.OA.8	
Topic 4 Addition and Subtraction Facts to 12	2 less than, 1 less than, 0 less than, near double	Practice with ten frames and counters. Random nun	Ten-Frame, number line	x	x	4	1.OA.1, 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.7, 1.OA.8	
Topic 5 Addition Facts to 20	doubles plus 1, doubles plus 2	Find sum for double. Use number line to find number	Part part whole, ten frames	x	x	5	1.OA.1, 1.OA.2, 1.OA.3, 1.OA.6, 1.OA.8	
Topic 6 Subtraction Facts to 20	related facts, facts family	Use counters, linking cubes, or other objects to shov	part part whole model	x	x	6	1.OA.1, 1.OA.4, 1.OA.6, 1.OA.8	
Topic 7 Counting and Number Patterns to 120	digit, row, column	Use a hundreds chart to demonstrate finding number	hundreds chart, tens frame	x	x	7	1.NBT.2, 1. NBT.2.a, 1. NTB.2.c	
Topic 8 Tens and Ones	tens, ones, break apart a ten, digits	Teaching the meaning of place value. Where the ten	Tens blocks	x	x	8	1.NBT.2, 1. NBT.2.a, 1. NBT.2.c	
Topic 9 Comparing and Ordering Numbers to 100	1 more, 1 less, 10 more, 10 less, equal to, greater than, less than		hundreds chart	x	x	9	1.NBT.1, 1. NBT.2, 1.NBT. 3, 1.NBT.4, 1. NBT.5	
Topic 10 Adding with Tens and Ones	regroup	Children will use a hundreds chart to add mulitples o	tens blocks, hundreds chart	x		10	1.NBT.4, 1. NBT.5	
Topic 11 Subtracting with Tens and Ones	regroup	Children will subtract 10 from multiples of 10 in range	tens blocks			11	1.NBT.5, 1. NBT.6	
Topic 12 Length	measurement, length, estimate, compare, taller, shorter, longest, shortest	Children will compare and order lengths of objects. (	Connecting Cubes, classroom objects			12	1.MD.1, 1.MD.2	
Topic 13 Time	schedule, half hour, hour hand, hour, minute hand, minute, o'clock	Children will identify the hour and minute hands on a	Clock			13	1.MD.3	
Topic 14 Using Data to Answer Questions	tally mark, data, bar graph, picture graph	Children will use a real-object graph to answer quest	Bar Graph, Tally marks, Picture Graphs			14	1.MD.4	

Topic 15 Geometry	pyramid, flat surface, vertex (vertices), cone, cube, rectangular prism, sphere, cyliner, cone, sort, side, corner, plane shapes, hexagon, trapezoid	Children will practice identifying shapes based on the	List Graph			15	1.G.1, 1.G.2	
Topic 16 Fractions of Shapes	equal parts, halves, fourths, quarters, half of, fourth of, quarter of, two of, four of	Children will learn how to divide shapes into equal pa	Circle Model, Square Model, Rectangle model			16	1.G.3	

2nd Grade

2nd Grade							
Week	Words	Strategy (used to teach)	Model	Introduced	Mastered	KS Standard	Extras
Topic 2 and Topic 3 - Addition and Subtraction Strategies	part, plus, sum, add, doubles, near doubles, addend, number sentence	making a ten, doubles, near doubles	part part whole mat, ten frame		x	2.OA.1, 2.OA.2	
Topic 4 - Working with Equal Group	array, repeated addition	doubles plus one repeated addition	part part whole mat, array	x		2.OA.3, 2.OA.4, 2.OA.1	h t t p
Topic 3 - Subtraction Strategies	doubles, subtraction	doubles facts addition to subtract make a 10	tens frame		x	2.OA.1, 2.OA.4	
Topic 5 - Place Value to 100	digits, number word, greater than, less than, equal to, after, before, even, odd	counting on/back	place value mat, hundreds chart		x	2.NBT.1, 2.NBT.1a, 2. NBT2, 2.NBT.3, 2. NBT.4, 2.NBT.5, 2. NBT.6, 2.NBT.9, 2.OA. 1, 2.OA.3	
Topic 6 - Mental Addition	mental math, tens digit, next ten	make a ten count on a hundreds chart	Hundreds chart, tens frame		x	2.NBT.2, 2.NBT.5, 2.NBT.8, 2.NBT.9, 2.OA.1	
Topic 7 - Mental Subtraction	mental subtraction	count back by 10 count back a hundreds chart	Hundreds chart, tens frame		x	2.NBT.5, 2.NBT.7, 2.NBT.8, 2.NBT.9, 2.OA.1	
Topic 8 - Adding 2 Digit Numbers	regroup, number line	doubles, making a 10	Number line, Base 10 blocks, number line, part part whole mat		x	2.NBT.5, 2.NBT.6, 2.NBT.9, 2.MD.6, 2. OA.1	
Topic 9 - Subtracting 2 Digit Numbers		using addition to check subtraction	Base 10 blocks, number line, part part whole mat		x	2.NBT.5, 2.NBT.6, 2.NBT.9, 2.MD.6, 2. OA.1	
Topic 10 - Place Value to 1,000	hundreds, thousand, expanded form, standard form, number word, compare	skip counting, counting on/back	Base 10 blocks, hundreds chart, number line	x		2.NBT.1, 2.NBT.1.a, 2.NBT.1.b, 2.NBT.2, 2.NBT.3, 2.NBT.4, 2.NBT.8	
Topic 11 - 3 Digit Addition and Subtraction		counting on/back, skip counting	Base 10 blocks, part part whole mat	x		2.NBT.7, 2. NBT.8, 2.NBT.9	
Topic 12 - Geometry	cone, cube, cylinder, edge, face, flat surface, pyramid, rectangular prism, solid figure, sphere, vertex, circle, square, triangle, rectangle, side, angle, quadrilateral, hexagon, pentagon, trapezoid,		2D and 3D shapes	x		2.G.1, 2.G.2, 2. G.3	
Topic 15 - Measuring Length	unit, length, width, height, inch, nearest inch, centimeter, nearest, centimeter, yard, foot, meter		Ruler	x		2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4, 2.MD.5	

Topic 16 - Time, Graphs and Data	minute hand, minute, hour hand, hour, half hour, quarter past, quarter to, half past, bar graph, data, line plot, symbol, pictograph	skip counting, counting on/back	Clock, bar graph, line plot, pictograph, tally chart and marks	x		2.MD.7, 2.MD.9, 2.MD.10, 2.MD.11	
Topic 13 - Counting Money	Dime, cents, nickel, penny, quarter, half-dollar, coins, greatest value, least value, dollar bill, dollar coin, dollar sign, decimal point, tally mark	skip counting, counting on/back	Coins, dollars, tall chart and marks	x		2.MD.8	
Topic 14 - Money	Estimate	estimate	Coins	x			

3rd Grade

Grade	Standards	Vocabulary	Models **DOUBLE CHECK WITH MARIA	Strategies **DOUBLE CHECK WITH MARIA	Resources	Supplimental Resources		
3	3.OA.1. Interpret products of whole numbers, (e.g. interpret 5 x7 as the total number of objects in 5 groups of 7 objects each.)	Array, Array Model, Associative Property of Multiplication, Commutative Property of Multiplicaciton, Comparison Model, Compost, Composite Number, Decompose, Distributative Property, Division, Equation, Estimate, Evaulate, Expression, Fact Family, Factor, Identity Property of Multiplication, Missing Factor, Multiple, Multiplication, Number line, Pattern, Product, Quotient, Round, Strategy, Sum, unknown, Zero Property of multiplication, Equal Groups, Multiply, Number of Groups, Row, Column, Size of Group, Unit, Unknown, Number Bond, Tape Diagram, Bar Model, Repeated Addition, Value, Number Sentence, Multiplication Sentence, Addition Sentence, Skip Couting, Add, Addend, Area Model	Array, Number Bond, Tape Diagram, Bar Model, Times Table, Groups of, Number Line of Repeated Addition, Hundreds Chart, Multiplication Chart, Area Model, Chips/Counters, Cups/Containers (something to respresent groups), Place Value Chart to Hundreds, Square Tiles, Grid Paper, Pattern Blocks, Number Cards, Comparision Model	Repeated Addition, Skip Counting, Equal Groups, Arrays, Number Lines, Groups of, Sets, Fact Family, Doubles, Fives, Zeroes, Ones, Tens, Nines, Double+Double, Double+1, drawings,	Envision	Zearn / EngageNY, SplashMath		
3	3.OA.2. Interpret whole-number quotients of whole numbers, (e.g. interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.)				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, (e.g. by using drawings and equations with a symbol for the unknown number to represent the problem.)				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.4. Determine the unknown whole number in a multiplication or division equation by using related equations. For example, determine the unknown number that makes the equation true in each of the equations 8x? = 48; 5 = _÷ 3; 6x6 = ___				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.5. Apply properties of operations as strategies to multiply and divide. Examples: If 6x4 = 24 is known, then 4x6 = 24 is also known. (Commutative property of multiplication.) 3x5x2 can be found by 3x5 = 15, then 15x2 = 30 , or by 5x2 = 10, then 3x10 = 30 . (Associative property of multiplication.) Knowing that 8x5 = 40 and 8x2 = 16, one can find 8x7 as 8 · (5 + 2) = (8x5) + (8x2) = 40 + 16 = 56. (Distributive property.) Students need not use formal terms for these				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.6. Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.7. Fluently (efficiently, accurately, and flexibly) multiply and divide with single digit multiplications and related divisions using strategies (e.g. relationship between multiplication and division, doubles, double and double again, half and then double, etc.) or properties of operations.				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.8. Solve two-step word problems using any of the four operations. Represent these problems using both situation equations and/or solution equations with a letter or symbol standing for the unknown quantity (refer to Table 1 and Table 2 and standard 3.OA.3). Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and				Envision	Zearn / EngageNY, SplashMath		
3	3.OA.9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations (See Table 5). For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. (3.OA.9)				Envision	Zearn / EngageNY, SplashMath		
3	3.NBT.1. Use place value understanding to round whole numbers to the nearest 10 or 100	About, Addend, Endpoint, Halfway, Plot, Point, Reasonable, Round, Standard Algorithm, Compose, Estimate, Horizontal, Mental Math, Number Line, Rename, Simplify(ing), Unbundle, Vertical, Multiplicatoin, Factor, Product, Equal Groups, Array, Multiple of 10, Place Value, Algorithm, Area Model, Benchmark, Compare, Compatible Numbers, Dividend, Divisor	Place Value Chart, Ten-Frame, Horizontal Number Line, Vertical Number Line, Place Value Disks, Tape Diagram, Objects for coulngs, Digit cards, base-ten blocks, Array, Area Model	Place Value Chart, Ten-Frame, Horizontal Number Line, Vertical Number Line, Place Value Disks, Tape Diagram	Envision	Zearn / EngageNY, SplashMath		
3	3.NBT.2. Fluently (efficiently, accurately, & flexibly) add and subtract within 1000 using strategies (e.g. composing/decomposing by like base-10 units, using friendly or benchmark numbers, using related equations, compensation, number line, etc.) and algorithms (including, but not limited to: traditional, partial-sums, etc.) based on place value, properties of operations, and/or the relationship between addition and subtraction.			hundreds chart, base ten blocks, open number line, physical models, place value charts,	Envision	Zearn / EngageNY, SplashMath		

3	3.NBT.3. Multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 (e.g. 9 · 80, 5 · 60) using strategies based on place value and properties of operations. (3.NBT.3)	Numbers, Dividend, Divisor, Estimate, Expanded Form, Fluency, Multiple, Patterns, Quotient, Round, Strategy		open number lines, hundreds chart, place value chart	Envision	Zearn / EngageNY, SplashMath		
3	3.NF.1. Understand a fraction 1 *bb* as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction *aa bb* as the quantity formed by a parts of size 1 *bb* . (3.NF.1)	halves, thirds, fourths, sixths, eigths, fraction, unit fraction, numerator, denominator, equal parts, whole, part, equal shares, fraction area models (circular), fraction area models (rectangular, Fraction strips/bars, grid paper, place value, area model, benchmark, equivalent fractions, like denominator, like numerator	number line, bar model, fraction models, fraction area models (circular & rectangular), Fraction Strips, area model	fraction pieces, fraction bar comparing, compare to rulers, various shapes, make connections to candy bars, cake, pizza, brownies, fractions of name	Envision	Zearn / EngageNY, SplashMath		
3	3.NF.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.				Envision	Zearn / EngageNY, SplashMath		
3	3.NF.3. Explain equivalence of fractions, and compare fractions by reasoning about their size (It is a mathematical convention that when comparing fractions, the whole is the same size).				Envision	Zearn / EngageNY, SplashMath		
3	3.MD.1. Tell and write time to the nearest minute using a.m. and p.m. and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, (e.g. by representing the problem on a number line diagram.) (See Table 1) (3.MD.1)	a.m., p.m., morning, night, afternoon, analog, digital, stop watch, second, minute, hour, quarter past, half past, quarter til, o'clock, time, about, add, subtract,	Judy Clock, open number line, schedules, clock faces,	real world schedules	Envision	Zearn / EngageNY, SplashMath		
3	3.MD.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l) (Excludes cubed units such as *cccc*3and finding the geometric volume of a container). (3.MD.2)	cm, mm, g, L, mL, kg, balance, scale, number line, unit, weight, mass, capacity, about, halfway, liquid volume, reasonable, round, tape measure, ruler, beaker, bottles, containers, cups, cylinder, dropper, pitchers, ten-frame, vertical number line, spring scale, digital scale, conversion, customary, estimate	various types of scales and lenlar measuring tools, , kinesthetic strategies: using measuring cups to compare, scale to compare weight/mass, record in table, coins and bills for money, get rulers or yard sticks to measure.	compare weights, real world mass and volume, transfer mass and volume between various containers to observe, develope benchmark references	Envision	Zearn / EngageNY, SplashMath		
3	3.MD.3. Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, (e.g. by using drawings (such as a beaker with a measurement scale) to represent the problem.) (Excludes multiplicative comparison problems) (See Table 1 and Table 2). (3.MD.2)				Envision	Zearn / EngageNY, SplashMath		
3	3.MD.4. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. (See Table 1). For example, draw a bar graph in which each square in the bar graph might represent 5 pets. (3.MD.3) (Measurement and Data (data part) Progression K–5 Pg. 7)	line plot, data, length, whole, half, quarter, fourth, inch, tick mark, measurement scale, key, analyze, interpret, attributes, bar graph, classify, data display, intervals, number line, picture graph, scale (graphs)	data tables, surveys (use this information to create data tables, etc), line plot, bar graph, data display, picture graph, scale, key	real word data, class created data, purposeful data, meaningful data, interesting data, line plot, bar graph, data display, picture graph	Envision	Zearn / EngageNY, SplashMath		
3	3.MD.5. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3.MD.4) (Measurement and Data (data part) Progression K–5 Pg. 10)				Envision	Zearn / EngageNY, SplashMath		
3	3.MD.6. Recognize area as an attribute of plane figures and understand concepts of area measurement	area, attribute, plane figure, unit square, gaps, overlaps, side length, width, array, square, square cm, square m, square ft, square in., tiling, product, additive, distributive, decompose, diagram, formula, inches, foot, centimeter, meter, yards, length, perimeter, two-dimentional figures, polygon, linear	area models, tiling models, geoboards, graph paper, array	count, multiply, tile, area of name, area of room, area of robots/character, perimeter of school and various other places around neighborhood, Cheese-its	Envision	Zearn / EngageNY, SplashMath		
3	3.MD.7. Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard square units). (3.MD.6)				Envision	Zearn / EngageNY, SplashMath		
3	3.MD.8. Relate area to the operations of multiplication and addition (Measurement and Data (measurement part) Progression K–5 Pg. 16)				Envision	Zearn / EngageNY, SplashMath		

3	3.MD.9. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. (3.MD.8)				Envision	Zearn / EngageNY, SplashMath		
3	3.G.1. Understand that shapes in different categories (e.g. rhombuses, rectangles, trapezoids, kites and others) may share attributes (e.g. having four sides), and that the shared attributes can define a larger category (e.g. quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. Refer to inclusive definitions noted in the glossary. (3.G.1)	attribute, angle, close figure, open figure, parrallel, side, polygon, quadrilateral, rhombus, rectangle, square, parallelogram, trapezoid, right angle, corners, edge, equal shares, figure, fraction, geometry, half, line, line segment, partition, properties, quarter, hexagon, surface, triangle, scalene triangle, isosceles triangle, equilateral triangle, two-dimensional shapes, vortex, whole, area, numerator, denominator	sort shapes, graphic organizers to compare, draw shapes, geoboards, pattern blocks, partition shapes, fold shapes	geometery scavenger hunt, sorting and categorizing figures,	Envision	Zearn / EngageNY, SplashMath		
3	3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1 4 of the area of the shape. (3.G.2)				Envision	Zearn / EngageNY, SplashMath		

4th Grade

Grade	Standards	Vocabulary	Models	Strategies	Resources	Supplimental Resources
4	4.OA.1. Interpret a multiplication equation as a comparison, (e.g. interpret 35 = 5 · 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.) Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.1)	Array, Factor, product, multiple, communitive property, zero property, identity property, fact familyPlace Value, Addition, Subtraction, compare, standard form, expanded form, word form, digits Multiplication-Basic Facts, factors, product, fact family, factor pairs Fraction, numerator, denominator, eqivalent, ordering, compare, prime number, composite number	Array, Number line, Times tables, hundreds chart, repeated addition, area model, skip counting, fact family, counters, Number Bond, Tape Diagram, Bar Model, Times Table, Groups of, Number Line of Repeated Addition, Hundreds Chart, Multiplication Chart, Area Model, Chips/Counters, Cups/Containers (something to respresent groups), Place Value Chart to Hundreds, Square Tiles, Grid Paper, Pattern Blocks, Number Cards, Comparision Model	Repeated Addition, Skip Counting, Equal Groups, Arrays, Number Lines, Groups of, Sets, Fact Family, Doubles, Fives, Zeroes, Ones, Tens, Nines, Double+Double, Double+1, drawings,	ENVISION	https://drive.google.com/drive/folders/1HVQFMfSgsmn1ekpDjucrQw8Zzt7UXepC?usp=sharing, Splash Math, Prodigy, blooket, quizizz, kahoot, teacher pay teachers, super teacher, k-5 learning
4	4.OA.2. Multiply or divide to solve word problems involving multiplicative comparison, (e.g. by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.) (4.OA.2)				ENVISION	
4	4.OA.3. Solve multi-step word problem posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using situation equations and/or solution equations with a letter or symbol standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4.OA.3)				ENVISION	
4	4.OA.4. Find all factor pairs for a whole number in the range 1 to 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1 to 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1 to 100 is prime or composite. (4.OA.4)				ENVISION	
4	4.OA.5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (4.OA.5)				ENVISION	
4	4.NBT.1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. (4.NBT.1)	Place Value, Addition, Subtraction, compare, standard form, expanded form, word form, digits, Add, Subtract, Multiplication Multiplication-Basic Facts, factors, product, fact family, factor pairs Multiplication-Basic Facts, 2x1, 3x1, 4x1 Multiplication-2x2 Division, remainder, quotient, divisor, dividen	place value chart, blocks/cubes, horizontal and verticle number line, tape diagram	skip counting, repeated addition/subtraction, window method, break apart to multiply, fact family, factor tree,	ENVISION	
4	4.NBT.2. Read and write multi-digit whole numbers using base-ten numerals, number names, expanded form, and unit form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, <, =, and ≠ symbols to record the results of comparisons. (Note: Students should demonstrate understanding and application of place value decomposition. For example, 127 can be 1 hundred, 2 tens, 7 ones or 12 tens, 7 ones Refer to 2.NBT.1) (4.NBT.2)				ENVISION	
4	4.NBT.3. Use place value understanding to round multi-digit whole numbers to any place. (4. NBT.3) Use place value understanding and properties of operations to perform multi-digit arithmetic.				ENVISION	
4	4.NBT.4. Fluently (efficiently, accurately, and flexibly) add and subtract multi-digit whole numbers using an efficient algorithm (including, but not limited to: traditional, partial-sums, etc.), based on place value understanding and the properties of operations. (4.NBT.4)				ENVISION	
4	4.NBT.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.5)				ENVISION	
4	4.NBT.6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.6)				ENVISION	
4	4.NF.1. Explain why a fraction ____is equivalent to a fraction ____ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.1)	Fraction, numerator, denominator, eqivalent, ordering, compare, prime number, composite number, improper fraction, mixed number, decimal point, hundreth, tenth, unit fraction	Number line 0-1, fraction strips, array, decimal number line, comparison concept, bar models, tape diagram	fraction strips, number line, use fraction model/ manipulatives	ENVISION	
4	4.NF.2. Compare two fractions with different numerators and different denominators, (e.g. by creating common numerators or denominators, or by comparing to a benchmark fraction such as 12.) Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with relational symbols >, <, =, or ≠, and justify the conclusions, (e.g. by using visual fraction models.). (4.NF.2)				ENVISION	
4					ENVISION	
4	4.NF.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. (4.NF.3a)				ENVISION	
4	4.NF.3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g. by using a visual fraction model. (4.NF.3b)				ENVISION	
4	*Examples: 38 = 18+ 18+ 18 ;38 = 18+ 28 ; 2 18 = 1 + 1 + 18 = 88+ 88+ 18.*				ENVISION	
4	4.NF.3c. Add and subtract mixed numbers with like denominators, e.g. by replacing each mixed number with an equivalent fraction (simplest form is not an expectation), and/or by using properties of operations and the relationship between addition and subtraction. (4.NF.3c)				ENVISION	
4	4.NF.3d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g. by using visual fraction models and equations to represent the problem. (4.NF.3d)				ENVISION	
4	4.NF.4. Apply and extend previous understandings of multiplication (refer to 2.OA.3, 2.OA.4, 3.OA.1, 3. NF.1, 3.NF.2) to multiply a fraction by a whole number.				ENVISION	
4	4.NF.4a. Understand fractions a multiple of 1 For example, use a visual fraction model to represent 5/4 as 5 copies of 1/4, recording the conclusion by the equation 5/4 = 5 ·14. (4.NF.4a)				ENVISION	
4	*4.NF.4b. Understand a multiple A/B as a multiple of 1/B and use this understanding to multiply a fraction by a whole number.*				ENVISION	

4	**4.NF.4c. Solve word problems involving multiplication of a fraction by a whole number, (e.g. by using visual fraction models and equations to represent the problem.) For example, if each person at a party will eat 38 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? (4.NF.4c)**				ENVISION	
4	4.NF.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.				ENVISION	
4	4.NF.6. Use decimal notation for fractions with denominators 10 or 100				ENVISION	
4	**4.NF.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the relational symbols >, < =, or ≠, and justify the conclusions, (e.g. by using a visual model.). (4.NF.7)**				ENVISION	
4	*4.MD.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), … (4.MD.1*				ENVISION	
4	**4.MD.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.2)**	Mile, foot, inch, yard, capacity, quart, gallon, pint, pound, ton, weight, ounce, fluid ounce, tablespoon, teaspoon, centimeter, decimeter, kilometer, meter, millimeter, liter, milliliter, gram, kilogram, mass, day, hour, leap year, minute, month, decade, week, year, century, millennium perimeter, area, line plot	Bar graph, line plot, pie graph, arrays, judy clock, measuring cups, ruler/yard stick, conversion table, calendar, various types of scales and leniar measuring tools,	kinesthetic strategies: using measuring cups to compare, scale to compare weight/mass, record in table, coins and bills for money, get rulers or yard sticks to measure.	ENVISION	
4	**4.MD.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems explaining and justifying the appropriate unit of measure. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. (4.MD.3)**				ENVISION	
4	4.MD.4. Make a data display (line plot, bar graph, pictograph) to show a set of measurements in fractions of a unit 12 ,14 ,18. Solve problems involving addition and subtraction of fractions by using information presented in the data display.				ENVISION	
4	**4.G.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse, straight, reflex), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1)**	Acute angle, acute triangle, angle, degrees, equilateral triangle, obtuse angle, obtuse triangle, right angle, right triangle, scalene triangle, side, square, straight angle, vertex, angle measure, unit angle hexagon, intersecting lines, isosceles triangle, line, line segment, line of symmetry, octagon, parallel lines, parallelogram, pentagon, perpendicular lines, plane, point, polygon, protractor, quadrilateral, ray, rectangle, rhombus, symmetric, trapezoid, triangle,	kinesthetic strategy (use arms to make angles), toothpicks to represent the four types of angles, tanagrams, shapes, 3 column chart in their notebooks and fill out the word, definition, and drawing for each key word.	kinesthetic strategy (use arms to make angles), toothpicks to represent the four types of angles, tanagrams, shapes, 3 column chart in their notebooks and fill out the word, definition, and drawing for each key word.	ENVISION	
4	**4.G.2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse, straight, reflex). Recognize and categorize triangles based on angles (right, acute, obtuse, and equiangular) and/or sides (scalene, isosceles, and equilateral). (4.G.2)**				ENVISION	
4	**4.G.3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4.G.3)**				ENVISION	

5th Grade

5th grade-Standards

Numbers and Operations in Base Ten 5.NBT	Vocabulary	Model/Tools	Strategies	Resources
Topic 1: Understand the Place Value System				
5.NBT.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	digits, value	place value chart, place value blocks		interactive NB, task cards,digital practice SuperTeacher website
5.NBT.3. Read, write, and compare decimals to thousandths. ***5.NBT.3a.*** *Read and write decimals to thousandths using base-ten numerals, number names, expanded form, and unit form*	expanded form, standard form, value equivalent decimals, comparing decimals word form			
Topic 2: Adding and Subtracting Decimals				
5.NBT.4. Use place value understanding to round decimals to any place **5.NBT.B.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	rounding, compensation, compatible numbers, commutitave property of addition, associative property of addition, adding, subtracting, sum, sum, difference, product, quotient	number line		online task cards, word problem task cards Halloween crack the code
Topic 3- Multiplying Whole Numbers				
5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and expain patterns in the placesment of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	product, commutative property, associative property, identity property, zero property	multiplication chart	number line, area model distributive property, partial products, **standard algorithm**	roll and answer, bump it tic-tac-toe centers task cards for properties
5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.				
Topic 4--Dividing by 1-digit divisors				
5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	dividend, divisor, quotient		divide, multiply, subtract, bring it on down and bring it on back (song) https://www.youtube.com/wat skip counting, box method, partial quotients, **standard algorithm**	roll and answer centers bump it SuperTeacher website
Topic 5--Dividing by 2-digit divisors				
5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	dividend, divisor, quotient		divide, multiply, subtract, bring it on down and bring it on back (song) https://www.youtube.com/wat skip counting, box method, partial quotients, standard algorithm	SuperTeacher website division scavenger hunt division dice games, task cards
Topic 6--Multiplying decimals				
5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	product, exponents, powers of 10	multiplicaton chart	place value chart, 1. multiply normally 2. add number of decimal places 3. move the decimal point that many places	Math Myster: Case of the Super Bad Superhero
5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	product,			
Topic 7--Dividing Decimals				
5.NBT.2				

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.		dividing, decimals, quotient, operations, base 10, 10, 100, 1,000		place value chart 1. bring up the decimal 2. divide and follow steps		
5.NBT.7						
Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.						
Topic 8--Numerical Expressions, Patterns, and Relationships						
5.OA.1						
Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.						
5.OA.2						
Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.		variable, term, sequence, algebraic expression, order of operations, corresponding		PEMDAS (please, excuse, my dear, aunt, sally)	Interactive NB, task cards	
5.OA.3						
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.						
Topic 9--Adding and Subtracting Fractions						
5.NF.1						
Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.		prime number, composite number, benchmark fraction, prime factorization, factor tree, common denominator, least common denominator(LCD) equivalent fractions, least common multiple (LCM), simplest form (simplify)	fraction strips, number line		fraction race worksheet, Interactive NB	
5.NF.2						
Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7 , by observing that 3/7 < 1/2 . Apply and extend previous understandings of multiplication and division to multiply and divide fractions.						
Topic 10--Adding and Subtracting Fractions						
5.NF.1						
Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.		proper fraction, mixed number, improper fraction, numerator, denominator, least common denominator	fraction strips, number line	drawing a picture to create an equation	fraction race worksheet, Interactive NB	
5.NF.2						
Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.						
Topic 11--Multiplying and Dividing Fractions and Mixed Numbers						
5.NF.B.3						
Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.		reciprocal, resizing, scaling, quotient, product	fraction strips, number line, butterfly method for dividing fractions	drawing a diagram		
5.NF.B.4a						
Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.						
5.NF.B.4b						
Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.						
5.NF.B.5a						
Interpret multiplication as scaling (resizing), by: Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.						
5.NF. B.5b						
Interpret multiplication as scaling (resizing), by: Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n x a) /(n x b) to the effect of multiplying a/b by 1.						
5.NF.B.6						
Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.						
5.NF.B.7a						

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.						
5.NF.B.7b						
Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Interpret division of a whole number by a unit fraction, and compute such quotients.						
Topic 12--Volume of Solids						
5.MD.C.3a						
Recognize volume as an attribute of solid figures and understand concepts of volume measurement. A cube with side length 1 unit, called a unit cube, is said to have one cubic unit of volume, and can be used to measure volume.						
5.MD.C.4		volume, cubic unit	students build with unit cubes			
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.						
5.MD.C.5a						
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold wholenumber products as volumes, e.g., to represent the associative property of multiplication.						
5.MD.C.5c						
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.						
Topic 13--Units of Measure						
5.MD.A.1						
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.		units, customary units, converting, length, measurment,	measurement meaning chart (prefixes) conversion chart			
Topic 14--Data						
5.MD.B.2						
Make a line plot to display a data set of measurements in fractions of a unit (1/2 , 1/4 , 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.		data, problem solving, geometry, line plot, outlier, survey, data, frequency table, sample			students create own survey and data chart	
5.G.A.2						
Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.						
Topic 15--Classifying Plane Figures						
5.G.B.3						
Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.		polygon, regular polygon, triangle, quadrilateral, pentagon, hexagon, octagon, equilateral triangle, isoceles triangle, scalene triangle, right triangle, acute triangle, obtuse triang parallelogram, trapezoid, rectangle, rhombus, square, gen	classification chart			
5.G.B.4						
Classify two-dimensional figures in a hierarchy based on properties.						
Topic 16--Coordinate Geometry						
5.G.A.1						
Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).		coordinate grid, x-axis, y-axis, origin, ordered pair, x-coordinate, y-coordinate,		(x,y)--you go over to your friends house (x) before you go upstairs (y)	turkey coordinate picture santa coordinate picture battleship	
5.G.A.2						
Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.						
5.OA.B.3						
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.						
Topic 17--Step up to Grade 6						
6.RP.A.1						
Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.						
6.RP.A.2						
Understand the concept of a unit rate a/b associated with a ratio a:b with b _ 0, and use rate language in the context of a ratio relationship.		ratios, proportions, product, greatest common factor, expressions, properties, surface area				
6.RP.A.3a						
Use ratio and rate reasoning to solve real world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.						

6.RP.A.3b			
Solve unit rate problems including those involving unit pricing and constant speed.			
6.NS.B.3			
Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.			
6.NS.B.4			
Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1_100 with a common factor as a multiple of a sum of two whole numbers with no common factor.			
6.EE.A.2a			
Write, read, and evaluate expressions in which letters stand for numbers. Write expressions that record operations with numbers and with letters standing for numbers.			
6.EE.A.3			
Apply the properties of operations to generate equivalent expressions.			
6.G.A.4			
Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.			

6th Grade

6th Grade Standards

Topic 1 : Variables and Expressions	Vocabulary	Resources	Other Strategies
6.EE.A.1 Write and evaluate numerical expressions involving whole- number exponents	exponential form, base, exponent, power, order of operations	Envision- Trillions Place-Value Chart	
6.EE.A.3 Apply the properties of operations to generate equvalent expressions	Commutative Property of addtion, of Multiplication Associative Property of Addition, of Multiplication Identity Property of Addition, of Multiplication	Envision	
6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 00 and the least common multiple of two whole numbers less than or equal to 12	Distributive Property	Envision	
6.EE.A.2a Write, read, and evaluate expressions in which letters stand for numbers	variable, algebraic expression, coefficient , input/output table	Envision	
6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem	variable, algebraic expression, coefficient	Envision	
6. EE.A.2.c Write, read, and evaluate expressions in which letters stand for numbers.	evaluate, substitute	Envision- Interactive learning recording sheet 1-8	
6.EE.A.3 Apply the properties of operationsto generate equivalent expressions	like terms	Envision	
6.EE.A.4 Identify when two expressions are equivalent	equivalent expressions	Envision- Pan Balance, Unit Cubes 30 per student	
6.EE.A.3 Apply the properties of operations to generate equivalent expressions		Envision	
6.EE.A.2a Write, read, and evaluate expressions in which lettters stand for numbers		Envision	
Topic 2: Equations and Inequalities			
6.EE.B.5 Understand solving an equation or inequality as a process of answering a question which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	equation	Envision- Unit cubes, 20 per group, pan balance, Two color counters, recording sheet	
6.EE.A.4 Identify when two expressions are equivalent	Properties of Equality (Addition, Subtraction, Multiplication, Division)	Envision	
6.EE.B.7 Solve real world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers	inverse relationship reciprocal	Envison- Unit cubes 30 per student, pan balance, paper bag, problem solving recording sheet	
6.EE.B.8 Write an inequality of the form x > c or x < c to represent a constraint or condition in a real world or mathematical problem.	inequality	Envisoin	

Topic 3: Patterns and Equations						
6.EE.C.9 Use variables to represent two quantities in a real-world problem that change relationship to one another		independent variable dependent variable		Envision		
6.EE.B.5 Understand solving an equation or inequality as a process of answering a question				Envision		
Topic 4: Achieving Fluency: Adding, Subtracting and Multiplying Decimals						
6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals				Envision		
6.EE.B.7 Solve real- world and mathematical				Envision		
6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation				Envision		
6.EE.B.6 Use variables to represnt numbers and write expressions when solving a real world or mathematical problems				Envision		
Topic 5: Achieving Fluency: Dividing Whole Numbers and Decimals						
6.NS.B.2 Fluently adivide multi-digit numbers using the standard algorithm				Envision		
6.NS.B.3 Fluently add, subtract, multiply, and divide multi digit decimals using the standard algorithm for each operation				Grocery store fliers, decimal grids, color pencils, decimal models, scissors		
6.EE.A.2c Write, read, and evaluate expressions in which letters stand for numbers.				Envision		
6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form x+p= q for cases in which p, q, and x are all nonnegative rational numbers				Envision		
6.NS.B.3 Fluently add, subtract, multiply, and dive multi-digit decimals using the standard algorithm for each operation				Envision		
Topic 6: Dividing Fractions						
6.NS.B.4 - Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.		Greatest common factor, least common multiple		Envision		
6.NS.A.1 - Interpret and compute quotients of fractions, and solve word problems involing division of fractions by fractions		Reciprocal		Envision		
6.EE.A.2.C- Evaluate expressions at specific values of their variables.				Envision		
6.NS.C.6c- Understand a rational number as a point on the number line.				Envision		
Topic 7: Integers and other Rational Numbers						
6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values		opposites, integers, absolute value,		Envision, thermometers		
6.NS.C.6c Understand a rational number as a point on the nubmer line				Envision- coordinate grid paper		
6.NS.C.7a- Understand ordering and absolute value of rational numbers.				Envision		

6.NS.C.7c Understand the absolute value of a rational number as its distance from 0 on the number line				number lines		
Topic 8: Coordinate Geometry						
6.NS.C.6b- Understad signs of numbers in orderred pairs as indicating locations in quadrants of the coordinate plane				Envision, coordinate grid paper		
6.NS.C.8- Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.				Envision, coordinate grid paper		
6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationsihp to one another		T-table, linear equation		Envison, T Tables, coordinate grid paper		
6.NS.C.6c Understand a rational number as a point on the number line.		coordinate plane, x-axis, y-axis, quadrants, ordered pair, origin		Envision, coordinate grid paper		
Topic 9: Ratios						
6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities		ratio, terms		Envision, newspaper articles, markers, two color counters		
6.Rp.A.3a Use ratio and rate reasoning to solve real-world and mathematical problems		proportion		Envision		
Topic 10: Rates						
6.RP.A.2. Understand the concept of a unit rate a/b associated with a ratio a:b with b not equal to 0.		rate, unit rate		Envision		
6. RP.A.3b Use ratio and rate reasoning to solve real-world and mathematical problems		constant speed, formula				
6.RP.A.3d Use ratio and rate reasoning to solve real-world and mathematical problems		capacity, meter, gram, liter		Envision, coordinate grid paper, masking tape, yardsticks and rulers		
Topic 11: Percents						
6.RP.A.3c Use ratio and rate reasoning to solve real-world and mathematical problems		percent		Envision, Interactive learning recording sheet, ruler or straightedge		
Topic 12: Area						
6.G.A.1 Find the area of righ triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes		area, trapezoid, kite		Envison, centimeter grid paper, interactive learning recording sheet, metric ruler		
6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices				Envision, coordinate grid paper		
6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures				Envision, net for cylinder, net for rectangular prism, scissors, tape or glue, square and cube models, markers		
Topic 13: Surface Area and Volume						
6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles		cone, cylinder,edge,faces,net,polyhedron,prism,pyramid,sphere, vertex		Envison, color tiles, 1/4 inch grid paper		

6.G.A.2 Find the ovlume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism		volume		Envision, 10 cubes per student, interactive learning recording sheet 13-3		
Topic 14: Statistics						
6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	ue	statistical question,		Envision		
6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be dscibed by its center, spread, and overall shape		data distribution, outlier		Envison		
6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation descibes how its values vary with a single number		mean, average		Envision		
6.SP.B.5c Summarize numerical data sets in relation to their context, such as by giving quantitative measures of center and variability		median, mode, range, absolute deviation, interquartile range, mean absolute deviation		Envison		
6.SP.B.5a Summarize numerical data sets in relation to their context, such as by reporting the number of observations		frequency table, histogram		Envision		
6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots		box plot, quartiles		Envision		
6.SP.B.5d Summarize numerical data sets in relation to their context, such as by relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered				Envison, Tennis ball, meter stick		

7th Grade

STANDARDS:	VOCAB:	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Extra Resources	**Kuta software used for all standards as a resource.
Ratios and Proportional Relationships 7.RP							Resources: iReady will be used for standards starting fall 2021
Analyze proportional relationships and use them to solve real-world and mathematical problems.							
7.RP.1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks 1 2 mile in each 1 4 hour, compute the unit rate as the complex fraction 1 2 1 4 miles per hour (interpreting a complex fraction as division of fractions), equivalently 2 miles per hour.	Proportion, Proportional, ratio, rate, unit rate					yummymath.com	
7.RP.2a. Determine whether two quantities are in a proportional relationship, e.g. by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin	Equivalent, Linear, Coordinate Plane, Origin					yummymath.com	
7.RP.2b. Analyze a table or graph and recognize that, in a proportional relationship, every pair of numbers has the same unit rate (referred to as the "m").	relationship, slope					yummymath.com	
7.RP.2c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = $ ◆	Equation, Expression					yummymath.com	
7.RP.2d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.							
7.RP.3. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error	Percent, Percentage, interest, tax, markup, markdown, percent increase, percent decrease, percent error					yummymath.com	
The Number System 7.NS							
Apply and extend previous understandings of operations with positive rational numbers to add, subtract, multiply, and divide all rational number.							
7.NS.1a. Describe situations in which opposite quantities combine to make 0. Show that a number and its opposite have a sum of 0 (are additive inverses). For example, show zero-pairs with two-color counters.	integer, additive inverse						
7.NS.1b. Show $pp + qq$ as the number located a distance $\|qq\|$ from p, in the positive or negative direction depending on whether q is positive or negative.	Absolute Value						
7.NS.1c. Model subtraction of rational numbers as adding the additive inverse, $pp - qq = pp + (-qq)$.	Rational, irrational						
7.NS.1d. Model subtraction as the distance between two rational numbers on the number line where the distance is the absolute value of their difference							
7.NS.1e. Apply properties of operations as strategies to add and subtract rational numbers.							
7.NS.2a. Describe how multiplication is extended from positive rational numbers to all rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (−1)(−1) = 1 and the rules for multiplying signed numbers. (							
7.NS.2b. Explain that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. Leading to situations such that if p and q are integers, then $- ◆ pp\ qq ◆ = -pp\ qq = pp\ -qq$.							
7.NS.2c. Apply properties of operations as strategies to multiply and divide rational numbers.							
7.NS.2d. Convert a rational number in the form of a fraction to its decimal equivalent using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.							
7.NS.3. Solve and interpret real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.) (							
Expressions and Equations 7.EE							
Use properties of operations to generate equivalent expressions.							
7.EE.1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. Note: factoring is limited to integer coefficients. For example: apply the distributive property to the expression $24xx + 18yy$ to produce the equivalent expression $6(4xx + 3yy)$.	Coefficient, variable, expression, equation, exponent, factoring, Distributing, term, Combine like terms.						

7.EE.2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $aa + 0.05aa = 1.05aa$ means that "increase by 5%" is the same as "multiply by 1.05." (							
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.							
7.EE.3. Solve multi-step real-life and mathematical problems with rational numbers. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1 10 of her salary an hour, or $2.50, for a new salary of $27.50							
7.EE.4. Use variables to represent quantities in a real-world or mathematical problem, and construct two-step equations and inequalities to solve problems by reasoning about the quantities.							
7.EE.4a. Solve word problems leading to equations of the form $pppp + qq = rr$, and $pp(xx + qq) = rr$ where p, q, and r are specific rational numbers. Solve equations of these forms fluently (efficiently, accurately, and flexibly). Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?							
7.EE.4b. Solve word problems leading to inequalities of the form $pppp + qq > rr$ or $pppp + qq < rr$ where p, q, and r are specific rational numbers and $pp > 0$. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions. (	inequality						
Geometry 7.G							
Draw, construct, and describe geometrical figures and describe the relationships between them.							
7.G.1. Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Scale, Scale Factor						
7.G.2. Identify three-dimensional objects generated by rotating a two-dimensional (rectangular or triangular) object around one edge.							
7.G.3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right cylinder.	Prism, Cylinder, Pyramid, Cone						
Solve real-life and mathematical problems involving area, surface area, and volume							
7.G.4. Use the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	area, circumference, derivation, circumference						
7.G.5a. Generalize the volume formula for prisms and cylinders ($VV = BBh$ where B is the area of the base and h is the height).	prism, cylinder, area, base, height						
7.G.5b. Generalize the surface area formula for prisms and cylinders ($SSSS = 2BB + PPh$ where B is the area of the base, P is the perimeter of the base, and h is the height (in the case of a cylinder, perimeter is replaced by circumference)). (	surface area, prism, cylinders, base, perimeter, circumference						
7.G.6. Solve real-world and mathematical problems involving area of two-dimensional objects and volume and surface area of three-dimensional objects including cylinders and right prisms. (Solutions should not require students to take square roots or cube roots. For example, given the volume of a cylinder and the area of the base, students would identify the height.) (	volume, surface area, 2D, 3D, cylinder, right prism, root						
Statistics and Probability 7.SP							
Use random sampling to draw inferences about a population							
7.SP.1a. Know that generalizations about a population from a sample are valid only if the sample is representative of that population and generate a valid representative sample of a population.	generalization, sample, valid						
7.SP.1b. Identify if a particular random sample would be representative of a population and justify your reasoning	reasoning, random sample						
7.SP.2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to informally gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.	characteric of interest, estimate, sample						
Draw informal comparative inferences about two populations							

7.SP.3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability (requires introduction of mean absolute deviation). For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	variable						
7.SP.4. Use measures of center (mean, median and/or mode) and measures of variability (range, interquartile range and/or mean absolute deviation) for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. (	mean, median, mode, range, interquartile range, mean, absolute deviation						
Investigate chance processes and develop, use, and evaluate probability models							
7.SP.5. Express the probability of a chance event as a number between 0 and 1 that represents the likelihood of the event occurring. (Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1 2 indicates an event that is neither unlikely or likely, and a probability near 1 indicates a likely event.)	probability						
7.SP.6. Collect data from a chance process (probability experiment). Approximate the probability by observing its long-run relative frequency. Recognize that as the number of trials increase, the experimental probability approaches the theoretical probability. Conversely, predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.	probability, frequency, trail						
7.SP.7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. (	probability, outcome						
7.SP.7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?	frequency, compound events, probability						
7.SP.8a. Know that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	probability, compound event, outcome						
7.SP.8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g. "rolling double sixes"), identify the outcomes in the sample space which compose the event.	compound event, table, tree diagram						
7.SP.8c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?	frequency, compound events, probability						

8th Grade

STANDARDS:	VOCAB:	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Extra Resources	**Kuta software used for all standards as a resource.
The Number System (8.NS)							Resources: iReady will be used for standards starting fall 2021
Know that there are numbers that are not rational, and approximate them by rational numbers							
8.NS.1 :Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	Rational, Irrational, Repeating Decimal						
8.NS.2: Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g. π^2). For example, for the approximation of 68, show that √68 is between 8 and 9 and closer to 8.	Rational, Irrational, Square Root						
Expressions and Equations 8.EE							
Work with radicals and integer exponents							
8.EE.1: Use square root and cube root symbols to represent solutions to equations of the form $xx2 = pp$ and $xx3 = pp$, where p is a positive rational number. Evaluate square roots of whole number perfect squares with solutions between 0 and 15 and cube roots of whole number perfect cubes with solutions between 0 and 5. Know that √2 is irrational.	Squared, Cubed, Square Root, Cube Root, Irrational						
8.EE.2: Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger	Scientific Notation, Exponents						
8.EE.3: Read and write numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g. use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	Scientific Notation, Exponents, Appropriate size						
Understand the connections between proportional relationships, lines, and linear equations.							
8.EE.4: Graph proportional relationships, interpreting its unit rate as the slope (m) of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distancetime graph to a distance-time equation to determine which of two moving objects has greater speed.	Unit Rate, slope, slope-intercept form, y-intercept, Proportional						
8.EE.5: Use similar triangles to explain why the slope (m) is the same between any two distinct points on a nonvertical line in the coordinate plane and extend to include the use of the slope formula (m= ($y2$−$y1$)/ ($x2$−$x1$) when given two coordinate points (x1, y1) and (x2, y2)). Generate the equation y= mx for a line through the origin (proportional) and the equation y = mx + b for a line with slope m intercepting the vertical axis at y-intercept b (not proportional when $b \neq 0$).	Similar Triangles, Slope formula, Proportional, Similar Figures						
8.EE.6: Describe the relationship between the proportional relationship expressed in $y = mx$ and the nonproportional linear relationship $y = mx+ b$ as a result of a vertical translation. Note: be clear with students that all linear relationships have a constant rate of change (slope), but only the special case of proportional relationships (line that goes through the origin) continue to have a constant of proportionality	Proportional, Vertical Translation, Rate of Change,						
Analyze and solve linear equations and inequalities.							
8.EE.7 Fluently (efficiently, accurately, and flexibly) solve one-step, two-step, and multi-step linear equations and inequalities in one variable, including situations with the same variable appearing on both sides of the equal sign.	fluent (adding in efficient vs accurate vs flexibly), linear equations, inequalities, variable						
8.EE.7a: Give examples of linear equations in one variable with one solution ($x = a$), infinitely many solutions ($a = a$), or no solutions ($a = b$). Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	linear equations, variable, infinite, equivalent						
8.EE.7b: Solve linear equations and inequalities with rational number coefficients, including equations/inequalities whose solutions require expanding and/or factoring expressions using the distributive property and collecting like terms.	linear equations, inequalities, rational number, coefficient, factoring expressions, distributive property						
Functions 8.F							
Define, Evaluate, and compare functions							

8.F.1: Explain that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in Grade 8.)	function, input vs output, ordered pairs						
8.F.2: Compare properties of two linear functions represented in a variety of ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change, the greater y-intercept, or the point of intersection.	linear function, algebraic vs graphic vs numerical descriptions						
8.F.3:Interpret the equation *yy* = *mmmm* + *bb* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function *AA* = *ss*2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	equation, linear function, straight line						
Use Functions to model relationships between quanities							
8.F.4: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	linear relationship, rate of chance, function						
8.F.5: Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g. where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally	functional relationship						
Geometry 8.G							
Geometric measurement: understand concepts of angle and measure angles.							
8.G.1: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	angles, ray, endpoint						
8.G.1a: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.	center of circle, endpoint, rays, circular arc, intersect, degrees						
8.G.1.b: An angle that turns through n one-degree angles is said to have an angle measure of n degrees.	angle, degree						
8.G.2: Measure angles in whole-number degrees using a protractor. Draw angles of specified measure using a protractor and straight edge	degree, protractor, angle vs straight edge						
8.G.3: Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g. by using an equation with a symbol for the unknown angle measure	angle, decomposed, sum						
8.G.4: Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and use them to solve simple equations for an unknown angle in a figure.	supplementary, complementary, vertical, adjacent angles						
8.G.5: Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	sum, exterior angle, parallel lines, transversal, similarity						
8.G.6: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on drawing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	angles, sides						
Understand and apply the Pythagorean Theorem.							
8.G.7: Explain a proof of the Pythagorean Theorem and its converse.	proof, pythagorean theorem, converse						
8.G.8: Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. For example: Finding the slant height of pyramids and cones.	pythagorean theorem, side, 3D						
8.G.9: Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	pythagorean theorem, side, 3D, points						
Solve real-world and mathematical problems involving measurement.							
8.G.10: Use the formulas or informal reasoning to find the arc length, areas of sectors, surface areas and volumes of pyramids, cones, and spheres. For example, given a circle with a 60° central angle, students identify the arc length as 1/6 of the total circumference.	arc, area of sectors, surface area, volume, pyramid, cone, sphere						
8.G.11: Investigate the relationship between the formulas of three dimensional geometric shapes;	3 d shapes						
8.G.11a: Generalize the volume formula for pyramids and cones (*V* = 1/3**B***h*).	volume, pyramid, cone						
8.G.11b: Generalize surface area formula of pyramids and cones (SA = *B* + 1/2*P*L).	surface area, pyramid, cones						

8.G.12: Solve real-world and mathematical problems involving arc length, area of two-dimensional shapes including sectors, volume and surface area of three-dimensional objects including pyramids, cones and spheres.	length, area						
	volumme, surface area						
Statistics and Probability 8.SP							
Investigate patterns of association in bivariate data.							
8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	scatter plot, bivariate measurement, cluster, outliers, positive/negative, linear vs nonlinear						
8.SP.2: Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	straight line, variable, scatter plot						
8.SP.3: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	linear model, bivariate measurement, slope, intercept						

9th Grade

STANDARDS:	VOCAB:	1st semester	2nd semester	Extra Resources	**Kuta software used for all standards as a resource.
NUMBER AND QUANTITY					Resources: Allignment of new math curriculum next year will be in this column.
The Real Number System N.RN					
Use properties of rational numbers and irrational numbers					
N.RN.1-Know and apply properties of integer exponents to generate equivalent numerical and algebraic expressions.	integer, equivalent, numerical expressions, algebraic expressions				
Quantities N.Q					
Reason quantitatively and use units to solve problems.					
N.Q.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	scale				
N.Q.2-Define appropriate quantities for the purpose of descriptive modeling.					
N.Q.3-Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	quantity, limitations				
ALGEBRA					
Seeing Structure in Expressions A.SSE					
Interpret the structure of expressions					
A.SSE.1-interpret expressions that representa. quantity in terms of its context	expressions				
A.SS.E.1a-interpret parts of an expression, such as terms, factors, and coefficients	factors, coefficients				
A.SSE.1b-interpret complicated expressions by viewing one of more of their parts as a single entity.					
A.SSE.2-Use the structure of an expression to identify ways to rewrite it.	expression				
Write expressions in equivalent forms to solve problems					
A.SSE.3a-Factora. quadratic expression to reveal the zeros of the function it defines	factors, quadratic expression, function				
Arithmetic with Polynomials and Rational expressions A.APR					
Perform arithmetic operations on polynomials	polynomials				
A.APR.1-Add, subtract, and multiply polynomials	polynomials				
Use polynomial identities to solve problems					
A.APR.4-Generate polynomial identities from a pattern					
Creating Equations-A.CED					
Create equations that describe numbers or relationships					
A.CED.1-Apply and extend previous understanding to create equations and inequalities in one variable and use them to solve problems.	equations, inequalities, variable				
A.CED.2-Apply and extend previous understanding to create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	variable, equation, coordinate axes				
A.CED.3-Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	inequalities, viable vs non-viable				
A.CED.4-Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.					
Reasoning with Equations and Inequalities A.REI					
Understand solving equations as a process of reasoning and explain the reasoning.					

A.REI.1 -Explain each step in solving a simple equation as following for the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	viable argument/justification (Model what that means)				
A.REI.2-Apply and extend previous understanding to solve equations, inequalities, and compound inequalities in one variable, including literal equations and inequalities.	inequalities, compound inequalities,				
A.REI.3a-Solve rational, absolute value and square root equations; limited to simple equations	absolute value, rational value, square root equations vs simple equations				
A.REI.5a-Solve quadratic equations by inspection, taking square roots, the quadratic formula dn factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives no real solutions	quadratic equations, square root, quadratic formula, factor				
Solve systems of equations.					
A.REI.6-Analyze and solve pairs of simultaneous linear equations.	linear equations, simultaneous linear equations				
A.REI.6a-Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	linear equations, variables, intersections, simultaneously				
A.REI.6b Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations.	linear equations, variables				
A.REI.6c-Solve real-world and mathematical problems leading to two linear equations in two variables.	linear equations, variables				
A.REI.8-Understand that the graph of an equation in two variables is the set of all its solutions plotted in coordinate plane, often forming a curve.	variables, curve				
A.REI.9-Solve an equation by graphing and finding the x-value of the intersection point. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	intersect, linear, polynomial, rational number, absolute value, exponential, logarthmic functions				
A.REI.10-Graph the solution to a linear inequality in two variables as a half-plane and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	linear inequality, varibles, intersection, half-planes				
Interpreting Functions F.IF					
Understand the concept of a function and use function notation.					
F.IF.1-Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x i s an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y= f(x)	domain, range, domain, function, output,				
F.IF.2-Use function notation, evaluate functions for inputs in their domains and interpret statements that use function notation in terms of a context.	function notation, inputs, domains, notation				
F.IF.3-REcognize patterns in order to write functions whose domain is a subset of the integers	functions, domain, subset of integers				
Interpret functions that arise in applications in terms of the context.					
F.IF.4-For a function that models a relationship between two quantities, interpret key features of expressions, graphs and tables in terms of the quantities, and sketch graphs showing key features given a description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	expression, intercetps, intervals, relative maximums and minimums, symmteries, periodicity				
F.IF.5-Relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.	domain of a function				
F.IF.6-Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph.	average rate, function, interval, rate				
Analyze functions using different representations					
F.IF.7-Graph linear, quadratic and absolute value functions and show intercepts, maxima, minima, and end behavior	linear functions, quadratic function, absolute value, intercetps, maxima, minima, end				
F.IF.8a-Use different forms of linear functions, such slope-intercept, standard, and point-slope form to show rate of change and intercepts.	slope-intercetp, standard, point-slope form, intercetps				

Building Functions F.BF					
Build a function that models a relationship between two quantities.					
F.B.1a-Combine multiple functions to model complex relationships.	functions				
Build new functions from existing functions.					
F.BF.3-Transform parent functions by replacing with specific values of k; find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	partent functions, value				
STATISTICS AND PROBABILITY					
Interpreting Categorical and Quantitative Data					
Summarize, represent, and interpret data on a single count or measurement variable.					
S.ID.1-Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	distribution, median, mean, interquartile range, standard deviation				
S.ID.2-Interpret differences in shape, center, adn spread in the context of the data sets using dot plots, histograms, and box plots, accounting for possible effects of extreme data points (outliers).	shape, center, spread, dot plots, histograms, box plots, outliers				
Summarize, represent, and interpret data on two categorical and quantitative variables.					
S.ID.4-Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data.	relative frequencies, categorical data				
S.ID.5-Represent data on two quantitative variables on a scatter plot, adn describe how the variables are related.	quantitive variables, scatter plots				
Interpret Linear models					
S.ID.6-Interpret the slope (rate of change) nad the intercept (constant term) of a linear model in the context of the data.	slope, intercept, linear model				
S.ID.7-Compute and interpret the correlation coefficient of a linear fit.	correlation coefficient				
S.ID.8-Distinguish between correlation and causation.	correlation vs causation				

10th Grade

STANDARD:	VOCAB:	1st semester	2nd semester	Extra Resources	**Kuta software used for all standards as a resource.
NUMBER AND QUANTITY					Resources: Allignment of new math curriculum next year will be in this column.
The Real Number System N.RN					
Use properties of rational numbers and irrational numbers					
N.RN.1-Know and apply properties of integer exponents to generate equivalent numerical and algebraic expressions.	integer exponents, equivalent, numerical expressions vs algebraic expressions.				
Quantities N.Q					
Reason quantitatively and use units to solve problems.					
N.Q.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	units, scale, origin				
N.Q.2-Define appropriate quantities for the purpose of descriptive modeling.					
N.Q.3-Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.					
ALGEBRA					
Seeing Structure in Expressions A.SSE					
Interpret the structure of expressions					
Creating Equations-A.CED					
Create equations that describe numbers or relationships					
A.CED.1-Apply and extend previous understanding to create equations and inequalities in one variable and use them to solve problems.	equations, inequalities, variable				
A.CED.2-Apply and extend previous understanding to create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	equations, variables, axes, scales				
GEOMETRY					
Congruence G.CO					
Experiment with transformations in the plane.					
G.CO.1-Verify experimentally the properties of rotations, reflections, translations, and symmetry	rotations, reflections, translations, symmetry			desmos coordinate grid	
G.CO.1a Lines are taken to lines, and line segments to the segments of the same length.	lines, line segments,			desmos coordinate grid	
G.CO.1b-Angels are taken to angles of the same measure.	Angels			desmos coordinate grid	
G.CO.1c-Parallel lines are taken to parallel lines.	parallel lines			desmos coordinate grid	
G.CO.1d-Identify any line of reflection and or rotational symmetry within a figure.	reflection or rotational symmetry			desmos coordinate grid	
G.CO.2- Recognize transformations as functions that take points in the plane as inputs and give other points as outputs and describe the effect of translations, rotations, and reflections on two-dimensional figures.	input, output, translations, rotations, reflections,			Desmos Coordinate Plane	

STANDARD:	VOCAB:	1st semester	2nd semester	Extra Resources	**Kuta software used for all standards as a resource.
Understand congruence in terms of rigid motions					
G.CO.3-Given two congruent figures, describe a sequence of rigid motions that exhibits the congruence (isometry) between them using coordinates and non-coordinate plane.	congruent, isometry, coordinate vs non-coordinate plane			Desmos Coordinate Plane	
G.CO.4-Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	congruence, rigid motion, corresponding			Patty Paper folding, Compass and Straitedge	
Construct arguments about geometric theorems using rigid transformations an/or logic.					
G.CO.7-Construct arguments about line and angles using theorems. theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	vertical angles, transversal, parallel lines, alternate interior angles, congruent, perpendicular bisector			Geogebra, Patty Paper folding	
G.CO.8-Construct arguments about the relationships within one triangle using theorems. Theorems include: measures of interior angles of a triangle sum to 180*; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point; angle sum and exterior angle of triangles.	interior angles, base angles, isosceles triangle, congruent, midpoints, parallel, median, exterior angle			Geogebra, Patty Paper folding	
G.CO.9-Construct arguments about the relationships between two triangles using theorems.				Patty Paper folding, Compass and Straitedge	
G.CO.10-Construct arguments about parallelograms using theorems. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.	parallelograms, opposite sides, congruent, diagonals, parallelogram, bisect,			Geogebra	
G.CO.11-Make formal geometric constructions with a variety of tools and methods. Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	bisecting segment, perpendicular,			Geogebra, Compass and Straightedge, Ruler and Protractor, Patty Paper folding	
Similarity, Right Triangles, and Trigonometry G.SRT					
Understand similarity in terms of similarity transformations.					
G.SRT.1-Use geometric constructions to verify the properties of dilations given by a center and a scale factor:	dilations,			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
G.SRT.1a- A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	dilation,			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
G.SRT.1b-The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	dilatation, line segment, ratio, scale factor			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	

STANDARD:	VOCAB:	1st semester	2nd semester	Extra Resources	**Kuta software used for all standards as a resource.
G.SRT.2-Recognize transformations as functions that take points in the plane as inputs and give other points as outputs nand describe the effect dilations on two-dimensional figures.	input, output, dilations			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
G.SRT.3-Given two similar figures, describe a sequence of transformations that exhibits the similarity between them using coordinates and the non-coordinate plane.				compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
G.SRT.4-Understand the meaning of similarity for two-dimensional figures as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	corresponding angles			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
Construct arguments about theorems involving similarity					
G.SRT.5-Construct arguments about triangles using theorems.				compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
G.SRT.6-Use congruence and similarity criteria for triangles to solve problems adn to prove relationships in geometric figures.	congruent			compass and Straightedge, Ruler and Protractor, EngageNY Curriculum	
Define trigonometric ratios and solve problems involving right triangles.					
G.SRT.7-Show that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	ratios, trigonometric ratios, acute angles				
G.SRT.8-Explain and use the relationship between the sine and cosine of complementary angles.	sine, cosine, complementary angles				
G.SRT.9-Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	trigonometric ratios, pythagorean theorem				
Circles G.C					
Understand and apply theorems about circles					
G.C.1-Construct arguments that all circles are similar	similar				
G.C.2-Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects to the circle.	inscribed angles, radii, chords, central angle, inscribed angle, circumscribed angle, diameter, radius, perpendicular, tangent, intersect			Geogebra	
G. C.3-Construct arguments using properties of polygons inscribed and circumscribed about circles.	polygons, circumscribed			Geogebra	
Expressing Geometric Properties with Equations G.GPE					
Translate between the geometric description and the equation for a conic section.					
G.GPE.1-Write the equation of a circle given the center and radius or a graph of the circle; use the center and radius to graph the circle in the coordinate plane.	center, radius			Desmos Coordinate Grid	

STANDARD:	VOCAB:	1st semester	2nd semester	Extra Resources	**Kuta software used for all standards as a resource.
Use coordinates to prove simple geometric theorems algebraically.					
G.GPE.6-Use coordinates to prove simple geometric theorems algebraically, including the use of slope, distance, and midpoint formulas.	slope, distance, midpoint (and their formulas)			Desmos Coordinate Grid	
G.GPE.7-Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.	slope, parallel, perpendicular			Desmos Coordinate Grid	
G.GPE.8-Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, including the use of the distance and midpoint formulas.	perimeter, area, distance, midpoint			Desmos Coordinate Grid	
Modeling with Geometry G-MG					
Apply geometric concepts in modeling situations.					
G.MG.1-Use geometric shapes, their measures, and their properties to describe objects.					
G.MG.2-Apply concepts of density and displacement based on area and volume in modeling situations.	density vs displacement, area, volume				
G.MG.3-Apply geometric methods to solve design problems.					

11th Grade

STANDARDS:	VOCAB:	Alg 2 1st semester	Alg 2 2nd semester	IA 2	***IA 2 NOTE. Standards marke		**Kuta software used for all standards as a resource.
NUMBER AND QUANTITY							Resources: Allignment of new math curriculum next year will be in this column.
The Real Number System N.RN							
Use properties of rational numbers and irrational numbers							
N.RN.2-Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents	rational exponents, integer, notation, radicul						
N.RN.3-Rewrite expressions involving radicals and rational exponents using the properties of exponents.	radicals, rational exponents						
Quantities N.Q							
Reason quantitatively and use units to solve problems.							
N.Q.1-Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	scale						
N.Q.2-Define appropriate quantities for the purpose of descriptive modeling.							
N.Q.3-Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.							
The Complex Number System N.CN							
Perform arithmetic operations with complex numbers							
N.CN.1-Know there is a complex number i and every complex number has the form a+bi with a and b real.	complex number						
N.CN.2-Use the relation i2=-1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers	commutative, associative, distributive, complex number						
N.CN.3-Find the conjugate of a complex number	conjugate, complex number						
Use complex numbers in polynomial identities and equations							
N.CN.8-Solve quadratic equations with real coefficients that have complex solutions.	quadratic equations, coefficients						
Perform operations on matrices and use matrices in applications							
N.VM.6-Use matrices to represent and manipulate data	matrices						
N.VM.7-Multiply matrices by scalars to produce new matrices.	matrices, scalars						
N.VM.8-Add, subtract, and multiply matrices of appropriate dimensions; find determinants of 2x2 matrices.							
ALGEBRA							
Seeing Structure in Expressions A.SSE							
Interpret the structure of expressions							
A.SSE.1-interpret expressions that representa. quantity in terms of its context							
A.SS.E.1a-interpret parts of an expression, such as terms, factors, and coefficients	terms, factors, coefficients						
A.SSE.1b-interpret complicated expressions by viewing one of more of their parts as a single entity.							
A.SSE.2-Use the structure of an expression to identify ways to rewrite it.							
Write expressions in equivalent forms to solve problems							
A.SSE.3b-Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	quadratic expression, maxim, minimum						
A.SSE.3c-Use the properties of exponents to transform expressions for exponential functions	exponential functions						
Arithmetic with Polynomials and Rational Expressions-A.APR.2							
Perform arithmetic operations on polynomials							
A.APR.2-Factor higher degree polynomials; identifying that some polynomials are prime	polynomials, prime						

A.APR.3-Know and apply the Remainder Theorem	remainder theorem						
Use polynomial identities to solve problems							
A.APR.4-Generate polynomial identities from a pattern	polynomial						
Creating Equations-A.CED							
Create equations that describe numbers or relationships							
A.CED.1-Apply and extend previous understanding to create equations and inequalities in one variable and use them to solve problems.	inequalities, variable						
A.CED.2-Apply and extend previous understanding to create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	axes, scales						
A.CED.3-Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	constraints, inequalities, viable vs non-viable						
A.CED.4-Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.							
Reasoning with Equations and Inequalities A.REI							
Understand solving equations as a process of reasoning and explain the reasoning.							
A.REI.1 -Explain each step in solving a simple equation as following for the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	viable argument						
A.REI.2-Apply and extend previous understanding to solve equations, inequalities, and compound inequalities in one variable, including literal equations and inequalities.	inequalities, compound inequalities, variable, literal equations, inequalities						
A.REI.3a-Solve rational, absolute value and square root equations; limited to simple equations	rational, absolute value, square root equations, simple equations						
A.REI.4-Solve radical and rational exponent equations and inequalities in one variable, and give examples showing how extraneous solutions may rise.	radical, rational exponent equations, inequalities, variable, extraneous						
A.REI.5b-Solve quadratic equations with complex solutions written in the form a+ bi for real numbers a and b	quadratic equations, real numbers						
A.REI.5c-Use the method of completing the square to transform and solve any quadratic equation in x into an equation of the form (x-p)2=q that has the same solutions.	quadratic equations,						
Represent and solve equations and inequalities graphically.							
A.REI.8-Understand that the graph of an equation in two variables is the set of all its solutions plotted in coordinate plane, often forming a curve.	curve						
A.REI.9-Solve an equation by graphing and finding the x-value of the intersection point. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	linear, polynomial, rational, absolute value, exponential, logarithmic function						
Interpreting Functions F.IF							
Understand the concept of a function and use function notation.							
F.IF.1-Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x i s an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y= f(x)	domain, range,						
F.IF.2-Use function notation, evaluate functions for inputs in their domains and interpret statements that use function notation in terms of a context.	function notation, inpu,						
F.IF.3-REcognize patterns in order to write functions whose domain is a subset of the integers	integers						
Interpret functions that arise in applications in terms of the context.							
F.IF.4-For a function that models a relationship between two quantities, interpret key features of expressions, graphs and tables in terms of the quantities, and sketch graphs showing key features given a description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	intercepts, intervals, relative maximums/minimums; symmetries, end behavior, periodicity						
F.IF.5-Relate the domain of a function to its graph and where applicable, to the quantitative relationship it describes.	domain						

F.IF.6-Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph.	rate; interval						
Analyze functions using different representations.							
F.IF.7b Graph square root, cube root, and exponential functions.	square root, cube root, exponential functions						
F.IF.7c-Graph logarithmic functions, emphasizing the inverse relationship with exponentials and showing intercepts and end behavior.	logarithmic function, inverse relationship, exponentials,						
F.IF.7e-Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	polynomial function, identifying zeros, factorization						
F.IF. 8b-Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	factoring, quadratic function, extreme values, symmetry						
F.IF.8c-Use the properties of exponents to interpret expressions for exponential functions.	exponents, exponential function						
F.IF.9-Compare properties of two functions using a variety of representations							
Building Functions F.BF							
Build a function that models a relationship between two quantities.							
F.BF.1b-Determine an explicit expression, a recursive function, or steps for calculation from a context.	explicit expression, recursive function,						
F.BF.1c Compose functions.	functions						
Build new functions from existing functions.							
F.BF.3-Transform parent functions by replacing with specific values of k; find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	parent functions, value, even/odd functions, algebraic expressions						
F.BF.4a-Write an expression for the inverse of a function.	inverse of a function						
F.BF.4b-Read values of an inverse function from a graph of a table, given that the function has an inverse	inverse						
Linear, Quadratic, and Exponential Models-F.LQE							
Construct and compare linear, quadratic, and exponential models and solve problems.							
F.LQE.1a-Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	linear functions, equal intervals, exponential functions						
F.LQE.1b-Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	rate, interval						
F.LQE.1c-Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	decays, rate,						
F.LQE.2-Construct exponential functions, given a graph, a description of a relationship, or two input-output pairs.	exponential functions, input/output pairs						
STATS and PROBABILITY							
Interpret linear models							
S.ID.7-Compute (using technology) and interpret the correlation coefficient of a linear fit.	correlation coefficient, linear fit						
S.ID.8-Distinguish between correlation and causation.	correlation and causation						