

**MATH (UPK-12)**  
**Essential Standards/Skills List for May & June**

Course	Grade	Essential Skills/Standards in May	Essential Skills/Standards in June
<a href="http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/nys-next-generation-mathematics-p-12-standards.pdf">http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/nys-next-generation-mathematics-p-12-standards.pdf</a>			
Math	UPK	<p><b>PK.CC.1:</b> Orally count to 20 without prompting  Identify colors  <b>PK.OA.2:</b> Create patterns  <b>PK.G.2:</b> Identify shapes  <b>PK.CC.2:</b> Write numbers 0-5 using proper formation (follow instruction sheet)  <b>PK.CC.3:</b> Recognize numbers 0-10  <b>PK.CC.3a:</b> Count objects with 1:1 correspondence</p>	<p><b>PK.CC.1:</b> Orally count to 20 without prompting  <b>PK.OA.2:</b> Create patterns  <b>PK.G.2:</b> Identify shapes  <b>PK.CC.2:</b> Write numbers 0-5 using proper formation (follow instruction sheet)  <b>PK.CC.3:</b> Recognize numbers 0-10  <b>PK.CC.3a:</b> Count objects with 1:1 correspondence</p>
Math	K	<p><i>Understand addition as adding to and understand subtraction as taking from.</i>  <b>K.OA.1</b> Represent addition and subtraction using objects, fingers, pennies, drawings, sounds, acting out situations, verbal explanations, expressions, equations or other strategies.</p> <p><b>NY-K.OA.2a</b> Add and subtract within 10</p> <p><b>NY-K-G.4</b> Analyze, compare, and sort two- and three-dimensional shapes, in different sizes and orientations to describe their similarities and differences. e.g., number of sides, number of vertices/"corners," or having sides of equal length</p> <p><b>NY-K-G.5</b> Model objects in their environment by building and/or drawing shapes.</p> <p><b>NY-K-G.6</b> Compose, make, larger shapes from simple shapes. e.g., join two triangles to make a rectangle</p>	<p><i>Work with numbers 11–19 to gain foundations for place value.</i>  <b>K.NBT.1</b> Compose and decompose (break apart) the numbers from 11 to 19 into ten ones and one, two, three, four, five, six, seven, eight, or nine ones.</p> <p><b>NY-K.CC.1</b> Count to 100 by ones and by tens.</p> <p><b>NY-K.CC.3</b> Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with proper number formation)</p> <p><i>Count to tell the number of objects.</i></p> <p><b>NY-K.CC.4</b> Understand the relationship between numbers and quantities up to 20; connect counting to cardinality. (Understand that the last number counted represents the total number in the group for quantities up to 20.)</p> <p><b>NY-K.CC.5a</b> Answer counting questions using as many as 20 objects arranged in a line, a rectangular array (rows/columns), and a circle. Answer counting questions using as many as 10 objects in a scattered configuration (no order.)</p> <p><i>Compare numbers.</i></p> <p><b>NY-K.CC.6</b> Identify whether the number of objects in one group is greater than (more than), less than (fewer than), or equal to (the same as) the number of objects in another group.</p> <p><i>Describe and compare measurable attributes.</i></p> <p><b>NY-K.MD.1</b> Describe measurable attributes (features) of an object(s), such as length or weight, using appropriate vocabulary. e.g., small, big, short, tall, empty, full, heavy, and light.</p> <p><i>Classify objects and count the number of objects in each category.</i></p> <p><b>NY-K.MD.3.</b> Classify objects into given categories; count the objects in each category and sort the categories Note: Limit category</p>

			<p>counts to be less than or equal to 10. (Sort and count objects by like features up to 10.)</p> <p><b>NY-K.MD.4</b> Explore coins (pennies, nickels, dimes, and quarters) and begin identifying pennies and dimes.</p>
Math	1	<p>Students will be fluent in subtraction and addition facts 0-20</p> <p>Students use and understand Math Vocabulary: equation, math sentence, Addends, sum, total, difference, addition, add, subtraction, and subtract</p> <p>Students will be able to count and write correctly 0-120</p>	<p>Students fluent be fluent in subtraction and addition facts 0-20</p> <p>Students use and understand Math Vocabulary: equation, math sentence, Addends, sum, total, difference, addition, add, subtraction, and subtract</p> <p>Students will be able to count and write correctly 0-120</p>
Math	2	<p>Add and subtract 2 and 3 digit numbers with and without regrouping</p> <p>Fluency and mastery of math facts 0-20</p> <p>Partitioning shapes into equal shares halves, thirds and fourths (2.G3)</p> <p>Use addition and subtraction to solve 1 step word problems</p> <p>Measure the length of an object to the nearest whole unit while using a ruler. (cm or in)</p>	<p>Add and subtract 2 and 3 digit numbers with and without regrouping</p> <p>Fluency and mastery of math facts 0-20</p> <p>Partitioning shapes into equal shares halves, thirds and fourths (2.G3)</p> <p>Use addition and subtraction to solve 1 step word problems</p> <p>Measure the length of an object to the nearest whole unit while using a ruler. (cm or in)</p>
Math	3	<p><b>May 4-15</b></p> <p><b>BIG IDEA</b> <b>Create graphs and explain the data shown (“how many more”and “how many less”)</b> NY-3.MD.3 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 a scaled picture graph or a scaled bar graph.</p> <p><b>May18-29</b></p> <p><b>BIG IDEA Find the area of a shape by multiplying the length and the width of a shape. Formula- Area=l x w</b> NY-3.MD5. Recognize <b>area</b> as an attribute of plane figures and understand concepts of area measurement.</p> <p><b>BIG IDEA Count each square to show the area of a figure</b> NY-3.MD.6 Measure areas by counting unit squares.</p> <p><b>BIG IDEA Recognize how addition and multiplication are used to find the area of a figure</b> NY-3.MD.7 Relate area to the operations of multiplication and addition</p>	<p><b>June 1-12</b></p> <p><b>BIG IDEA Recognize shapes with at least 3 sides and sort them based on the amount of sides and corners (triangle, square, rectangle, pentagon, and hexagon) Identify shapes that do not belong to one of those categories</b> NY-3.G.1 Recognize and classify polygons based on the number of sides and vertices (triangles, quadrilaterals, pentagons, and hexagons). Identify shapes that do not belong to one of the given subcategories.</p> <p><b>BIG IDEA Divide shapes into equal parts and label the area of each part as a fraction (<math>\frac{1}{4}</math> where one part is shaded out of four equal parts within a shape)</b> NY-3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. e.g.Partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</p> <p><b>June 15-26</b></p> <p><b>BIG IDEA Find the perimeter of a shape by adding all of the sides. Formula- Perimeter= side + side + side + side</b> NY-3.MD.8a Solve real world and mathematical problems involving <b>perimeters</b> of polygons, including finding the perimeter given the side lengths or finding one unknown side length given the perimeter and other side lengths</p>

			<p><b>BIG IDEA</b> Find rectangles with the same Perimeter (side+side+side+side=Perimeter) and different Areas (length x width=Area) OR find rectangles with the same Area (length x width=Area) and different Perimeters(side+side+side+side=Perimeter)</p> <p>NY-3.MD.8b Identify rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>
Math	4	<p>★ <b>Parent Guidance</b></p> <p><b>May 4 - May 8</b> Unit 1: Geometry</p> <p>★ <b>Draw and identify lines and angles, and classify shapes by properties of their sides and angles.</b></p> <p><u>Standard NY - 4.G</u> 2a. Identify and name triangles based on angle size (right, obtuse, acute). 2b. Identify and name all quadrilaterals with 2 pairs of parallel sides as parallelograms. 2c. Identify and name all quadrilaterals with four right angles as rectangles.</p> <p><b>May 11 - May 22</b> Unit 2: Geometry</p> <p>★ <b>Geometric measurement: understand characteristics of angles and measure angles.</b></p> <p><u>Standard NY - 4.MD</u> 5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. A. Recognize 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 <math>\frac{1}{360}</math> of a circle is called a "one-degree angle," and can be used to measure angles. B. Recognize an angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees. 6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. 7. 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</p> <p><b>May 25 -June 5</b> Unit 4: Numbers and Operations - Fractions</p>	<p>★ <b>Parent Guidance</b></p> <p><b>June 8 - June 12</b> Unit 5: Numbers and Operations - Fractions</p> <p>★ <b>Understand decimal notation for fractions, and compare decimals.</b></p> <p><u>Standard NY-4.NF</u> 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. 6. Use decimal notation for fractions with denominators 10 or 100. 7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions.</p> <p><b>June 15 - June 19</b> Unit 6: Measurement and Data</p> <p>★ <b>Represent and interpret data.</b></p> <p><u>Standard NY - 4.MD</u> 4. Make a line plot to display a data set of measurements in fractions of a unit . Solve problems involving addition and subtraction of fractions by using information presented in line plots.</p>

		<p>★ <b>Extend understanding of equivalent fractions and ordering fractions.</b></p> <p>★ <b>Build fractions from unit fractions by applying and extending previous understandings of operations (+, -, x and ÷) on whole numbers.</b></p> <p><u>Standard NY-4.NF</u></p> <p>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.</p> <p>2. Compare two fractions with different numerators and different denominators. Recognize that comparisons are valid only when the two fractions refer to the same whole.</p> <p>3. Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>.</p> <p>A. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p> <p>B. 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.</p> <p>C. Add and subtract mixed numbers with like denominators.</p> <p>D. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.</p> <p>4. Apply and extend previous understandings of multiplication to multiply a whole number by a fraction.</p> <p>A. Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>.</p> <p>B. Understand a multiple of <math>a/b</math> as a multiple of <math>1/b</math>, and use this understanding to multiply a whole number by a fraction.</p> <p>C. Solve word problems involving multiplication of a whole number by a fraction.</p>	
Math	5	<p><b>5.NF.A.1</b> 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</p> <p><b>5.NF.A.2</b> Word problems with add/sub of unlike denominators</p> <p><b>5.NF.B.4</b> Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction (repeated addition, multiplying rules that were used with whole numbers and decimals).</p> <p><b>5.NF.B.4b</b> Find the area of a rectangle with fractional side lengths by tiling it with rectangles 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</p>	<p><b>5.NF.B.3</b> Interpret a fraction as division of the numerator by the denominator (<math>a/b = a \div b</math>). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.</p> <p><b>5.NF.B.7</b> Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</p> <p><b>5.NF.B.7a</b> Interpret division of a unit fraction by a non-zero whole number, and compute such quotients (EX <math>\frac{1}{2} \div 3 = \frac{1}{6}</math>)</p> <p><b>5.NF.B.7b.</b> Interpret division of a whole number by a unit fraction, and compute such quotients (EX <math>4 \div \frac{1}{2} = 8</math>)</p> <p><b>5.NF.B.7c</b> Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit</p>

		<p>rectangles, and represent fraction products as rectangular areas.</p> <p><b>5.NF.B.5a.</b> Compare 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.</p> <p><b>5.NF.B.5b</b> Explain 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); explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number;</p> <p><b>5.NF.B.6</b> Solve real world problems involving multiplication of fractions and mixed numbers.  <b>***AS well as continued review of whole number &amp; decimal operations</b></p>	<p>fractions.(EX. <math>4 \div 3 = 4/3</math> or <math>1 \frac{1}{3}</math> )</p> <p><b>5.G.A.3</b> Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.(EX. all rectangles have four right angles and squares are rectangles, so all squares have four right angles)</p> <p><b>5.G.A.4.</b> Classify two-dimensional figures in a hierarchy based on properties.(Being able to identify quadrilaterals by their given characteristics: equal sides, 4 right angles, parallel sides)</p> <p><b>5.G.A.1</b> 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.(plotting x,y coordinates on a graph)</p> <p><b>5.G.A.2</b> 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.  <b>***AS well as continued review of whole number &amp; decimal operations</b></p>
Math	6	<p>6.G.A.1 1. Find the area of triangles, trapezoids, parallelograms, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals; apply these techniques in the context of solving real-world and mathematical problems. (Formulas for finding the area of different shapes)</p> <p>6.G.A.2 2. Find volumes of right rectangular prisms with fractional edge lengths in the context of solving real world and mathematical problems.(volume= l x w x h)</p> <p>6.G.A.3 3. Draw polygons in the coordinate plane given coordinates for the vertices. Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.(Finding the area and perimeter of a polygon constructed on a coordinate plane).</p> <p>6.G.A. 4 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.(Find the surface area of a 3D figure).</p> <p>6.G.A.5 5. Use area and volume models to</p>	<p>6.SP.A.1 1a. Recognizing that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. 1b. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. 1c. Develop the concept of sampling when collecting data (qualitative or quantitative) from a population and decide the best method to collect data for a particular question. (A question that generates more than one answer to create a statistic).</p> <p>6.SP.A.2 2. Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.(Bell curve and the outliers)</p> <p>6.SP.A.3 3. Recognize that a measure of center for a quantitative data set summarizes all of its values with a single number while a measure of variation describes how its values vary with a single number. (Finding the mean, median, mode and range.)</p>

		explain perfect squares and perfect cubes.	
Math	7	<p>7.G.B.4. Apply the formulas for <b>area</b> and <b>circumference</b> of a circle.</p> <p>7.G.B.6 Solve real-world and mathematical problems involving <b>perimeter</b>, <b>area</b>, <b>volume</b> and <b>surface area</b> of two- and three-dimensional objects composed of triangles, trapezoids, parallelograms, cubes and right rectangular prisms.</p>	<p><b>Review of solving equations:</b>  One- step equations  Two- step equations  Multi-step Equations  Distributive property  Combining like terms</p>
Math	8	<p><b>Learning and using the Pythagorean Theorem:</b>  8.G.B.6 6. Understand a proof of the Pythagorean Theorem and its converse.  8.G.B.7 7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.  8.G.B.8 8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</p>	<p><b>Introduction to Trigonometry F-TF</b>  Defining Theta  Identifying the sides of a right triangle given an angle  Identifying the proper trig ratio to use for finding a missing side or angle (SOHCAHTOA)</p> <p><b>Fraction review:</b>  Simplifying Fractions  Adding, Subtracting, Multiplying, Dividing  Fractions raised to an exponent  Adding, Subtracting, Multiplying, Dividing fractions with variables</p>
Foundations of Algebra	9	<p>-Ratios, Rates, and Proportions</p> <p><b>-7.RP.A.1</b>  Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</p> <p><b>-7.EE.A.1</b>  Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p><b>-HSA-CED.A.1</b>  Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</p>	<p>-Solving equations review</p> <p><b>-7.EE.A.1</b>  Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p><b>-6.EE.A.1</b>  Write and evaluate numerical expressions involving whole-number exponents.</p> <p><b>-7.EE.A.2</b>  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.</p> <p><b>-7.EE.B.3</b>  Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. 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.</p> <p><b>-7.EE.B.4</b>  Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p>
Algebra I	9 & 10	<p><b>Statistics-</b>  S-ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).</p> <p>S-ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard</p>	<p><b>Whatever is not covered in May will be finished in June before review is started. Listed is June review..</b></p>

		<p>deviation) of two or more different data sets.</p> <p>S-ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).</p> <p>S-ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.</p> <p>S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</p> <p>a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. Exponential functions are limited to those with domains in the integers.</p> <p>b. Informally assess the fit of a function by plotting and analyzing residuals.</p> <p>c. Fit a linear function for a scatter plot that suggests a linear association.</p> <p>S-ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p> <p>S-ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.</p> <p>S-ID.9 Distinguish between correlation and causation.</p>	<p>1. Average Rate of Change means <i>slope</i>. Use boundaries of given domain (x) to find corresponding range (y) values, then apply slope formula (change in y / change in x).</p> <p>2. With multiple choice questions, check to see what answers look like before you begin the question. Ex) Solving Quadratic question with radicals in each choice → CTS or Quadratic formula must be used</p> <p>3. Domain (x) and Range (y). If given a restricted domain for a graph, don't use arrows! (open/closed circles).</p> <ol style="list-style-type: none"> <li>Interval notation → brackets [ ] indicate value is included, parenthesis not included.</li> <li>Ex: <math>[3, \infty)</math> means starting at 3 (closed circle) to infinity (always not included)</li> <li>Ex: <math>(-2, 5]</math> means starting at -2 (open circle) to 5 (closed circle)</li> </ol> <p>4. Residual plot. Pattern indicates non-linear data. Randomness indicates linear data.</p> <p>5. Functions: To be a function, graph must pass vertical line test or x-value can't repeat. Linear functions have a constant rate of change. Exponential functions have a non-constant rate of change (multiplier)</p> <p>6. Factoring: Express a polynomial as a product of two or more polynomials</p> <ol style="list-style-type: none"> <li>GCF: Factor out GCF of coefficients and/or the greatest variable exponent all the terms share</li> <li>Difference of Perfect Squares: Must have two terms, subtraction, perfect squares</li> <li>Sum/Product: For a trinomial, find numbers that have a sum of "b" and product of "c"</li> <li>AC "Eyeglass": When <math>a &gt; 1</math>, multiply "a" by "c" to create product, sum is still "b."</li> <li>Factor Completely: Factor more than once!</li> </ol> <p>7. Evaluating Functions:</p> <ol style="list-style-type: none"> <li><math>f(2)</math> means substitute a 2 in for x, find output</li> <li><math>f(x) = 2</math> means set equation equal to 2, find the input, x.</li> </ol> <p>8. Creating Equations:</p> <ol style="list-style-type: none"> <li>Linear: <math>y = mx + b</math>    <math>m</math> = slope (rate of change)    <math>b</math> = y-int (starting value)</li> <li>Exponential: <math>y = a \cdot b^x</math>    <math>a</math> = initial, starting value    <math>b</math> = common multiplier</li> </ol> <p>9. Correlation Coefficient: "r", close to 1 or -1 represents a stronger relationship for the data.</p> <ol style="list-style-type: none"> <li>Use LINREG (STAT → CALC #4) to find. Diagnostics must be on</li> <li>Correlation DOES NOT imply causation!</li> </ol> <p>10. Explicit Sequences: "n" represents the term number in the sequence</p> <ol style="list-style-type: none"> <li>Arithmetic: <math>A_n = A_1 + d(n - 1)</math>. Need first term and common difference (d).</li> <li>Geometric: <math>A_n = A_1 \cdot r^{n-1}</math>. Need first term and common ratio (r)</li> <li>Recursive formulas: Need to find each previous term to find desired term.</li> </ol> <p>11. Completing the Square/Vertex Form</p> <ol style="list-style-type: none"> <li>Once in standard form, make sure <math>a = 1</math>. If not, divide each term by "a"</li> <li>Move constant over</li> <li>Add "magic number" <math>(b/2)^2</math> to both sides to create perfect trinomial <math>( \quad )^2</math> <ol style="list-style-type: none"> <li>To Solve: Use Square Root Property to solve</li> <li>Vertex Form: Move constant back over, get back into "y=" form.</li> </ol> </li> </ol> <p>12. Inequalities: FLIP sign when you multiply or divide by a negative value</p> <ol style="list-style-type: none"> <li>At least and minimum: <math>\geq</math></li> <li>At most and maximum: <math>\leq</math></li> <li>Linear inequalities: Use dotted line for <math>&gt;</math> and <math>&lt;</math>, Use solid line for <math>\geq</math> and <math>\leq</math></li> <li>Shade above the line for <math>&gt;</math> and shade below for <math>&lt;</math>. Solutions are in shaded region</li> <li>Systems of inequalities: Graph using intercepts or convert to "y" form. Look for overlap for solution set. LABEL!</li> </ol> <p>13. Any Statistic question referencing mean, median, IQR, etc.. → Use L1 and then 1-VAR STATS (STAT → CALC #1) for summary of information. <math>x = \text{mean}</math>.</p> <ol style="list-style-type: none"> <li><math>IQR = Q3 - Q1</math></li> </ol> <p>14. To multiply polynomials, use distributive property <math>(x - 4)(x + 7) = x^2 + 3x - 28</math></p> <p>15. Add/Subtract Polynomials: Distribute the negative if subtracting entire polynomial. Watch out for from to switch the order of your polynomials. Combine like terms by adding coefficients (must have same exponent)</p> <p>16. Equations: Use inverse operations and keep equation balanced. Multiply by reciprocal to get rid of fractional coefficients. Fractional equations, multiply by LCM of terms. Ex) <math>\frac{1}{2x} + \frac{3}{5} = \frac{4}{x} + \frac{2}{2}</math></p> <p>17. To find intercepts:</p> <ol style="list-style-type: none"> <li>X - int: Let <math>y = 0</math>, solve for x</li> <li>Y - int: Let <math>x = 0</math>, solve for y</li> </ol> <p>18. Graphing Linear Functions: Put into "y=" form. <math>y = mx + b</math> → Begin with <math>b</math> value (y-int), slope (<math>m</math>) tells you how to move.</p> <ol style="list-style-type: none"> <li><math>y = \#</math> (horizontal line)    <math>x = \#</math> (vertical line)</li> </ol> <p>19. Exponential Growth/Decay: <math>A = P(1 \pm r)^t</math>    <math>P</math> = initial amount, <math>r</math> = rate as decimal, <math>t</math> = time</p> <ol style="list-style-type: none"> <li>Growth: Add to one</li> <li>Decay: Subtract rate from one</li> </ol> <p>20. Simplifying Radicals: Factor radical out the largest perfect square radical, simplify.</p> <ol style="list-style-type: none"> <li><math>\sqrt{80} = \sqrt{16 \cdot 5} = 4\sqrt{5}</math></li> </ol> <p>21. Rational vs. Irrational</p> <ol style="list-style-type: none"> <li>Rational Numbers: Terminating decimals, fractions, repeating decimals, perfect radicals</li> <li>Irrational Numbers: Pi, non-perfect radicals. An irrational number times an irrational number can be either rational or irrational.</li> </ol> <p>22. Systems of Equations - solution is coordinate(s) that satisfy both equations</p> <ol style="list-style-type: none"> <li>Graphically on Calculator: Enter each equation in "Y=", Hit 2<sup>nd</sup> + Trace, #5 Intersect, Hit Enter 3 times with cursor near intersection point.</li> <li>Algebraically - use elimination (create inverse coefficient) or substitution (one variable isolated)</li> </ol> <p>23. Parabolas: Graph of a quadratic equation</p> <ol style="list-style-type: none"> <li>Axis of Symmetry: <math>x = -b/2a</math></li> <li>Make symmetric table of values with AOS/vertex in center. Use calculator table to complete</li> <li>Roots are where <math>y = 0</math> or where graph hits x-axis</li> <li>Vertex can be maximum (negative a-value) or minimum (positive a-value)</li> <li>Vertex form: <math>y = a(x - h) + k</math>    Vertex: (h, k)</li> </ol>
<p>Geometry (Regents)</p>	<p>10</p>	<p>-Unit 10: Measurement and Modeling</p> <p>-G-GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.</p> <p>-G-GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.</p> <p>-G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.</p>	<p>-Finish Unit 10 from May</p> <p>-Unit 9: Circle Geometry (if time)</p> <p>-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 the circle.</p> <p>-G-GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.</p>

		<p>-G-MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).</p> <p>-G-MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).</p>	
Geometry (Non-Regents)	10	<p>-Solid Geometry: 2D vs. 3D, Volume</p> <p>-G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.</p> <p>-G-GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.</p>	<p>-Geometry Basics Review: Euclidean Geometry, Angles, Area, Polygons, Transformations</p> <p><b>-8.G.A.1</b> Verify experimentally the properties of rotations, reflections, and translations</p> <p><b>-7.G.A.1</b> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p>
Algebra II (w/ TC3 Math 120 College Algebra)*	11&12	<p><b>May 1st -17th</b> Students will: Identify the key features of Trigonometric Functions (Amplitude, Period, Center)</p> <ul style="list-style-type: none"> <li>Graph the Sine and Cosine Functions</li> <li>Choose Trigonometric Functions to Model Periodic (Sinusoidal) Phenomena</li> </ul> <p>(Standard: F-TF.B)</p>	<p><b>May 20th-End of School Year</b> Students will review core concepts taught in the course in preparation for their TC3 Final Exams.</p> <p>Students will review:</p> <ul style="list-style-type: none"> <li>Seeing structure in expressions (Standard: A-SSE) <ul style="list-style-type: none"> <li>Recognize and Algebraically Simplify Linear, Quadratic, Polynomial, Rational, Radical, Exponential, Logarithmic &amp; Trigonometric Expressions</li> </ul> </li> <li>Reasoning with Equations (Standard: A-REI, F-LE, F-TF) <ul style="list-style-type: none"> <li>Solving methods for Linear, Quadratic, Polynomial, Rational, Radical, Exponential &amp; Logarithmic Functions</li> </ul> </li> <li>Interpreting Functions with a Graph (Standard: F-IF.B.4-C.9) <ul style="list-style-type: none"> <li>Describe key features (Domain, Range, End Behavior) of the graph of Linear, Quadratic, Polynomial, Rational, Radical, Exponential &amp; Logarithmic Functions</li> <li>Sketch a graph of Linear, Quadratic, Polynomial, Rational, Radical, Exponential &amp; Logarithmic Functions</li> </ul> </li> </ul>
Algebra II w/ Precalculus (w/TC3 Math 138 Precalculus)*	11&12	<p><b>May 1st -17th</b> Students will:</p> <ul style="list-style-type: none"> <li>Identify the key features of Trigonometric Functions (Amplitude, Period, Center)</li> <li>Graph the Sine and Cosine Functions</li> <li>Choose Trigonometric Functions to Model Periodic (Sinusoidal) Phenomena</li> <li><i>Solving Trigonometric Functions</i></li> </ul>	<p><b>May 20th-End of School Year</b> Students will review core concepts taught in the course in preparation for their TC3 Final Exams.</p> <p>Students will review:</p> <ul style="list-style-type: none"> <li>Seeing structure in expressions (Standard: A-SSE) <ul style="list-style-type: none"> <li>Recognize and Algebraically Simplify Linear, Quadratic, Polynomial, Rational, Radical, Exponential, Logarithmic &amp;</li> </ul> </li> </ul>

		(Standard: F-TF.B)	<p><i>Trigonometric Expressions</i></p> <ul style="list-style-type: none"> <li>● Reasoning with Equations (Standard: A-REI, F-LE, F-TF) <ul style="list-style-type: none"> <li>○ Solving methods for Linear, Quadratic, Polynomial, Rational, Radical, Exponential, Logarithmic Functions &amp; Trigonometric Functions</li> </ul> </li> <li>● Interpreting Functions with a Graph (Standard: F-IF.B.4-C.9) <ul style="list-style-type: none"> <li>○ Describe key features (Domain, Range, End Behavior) of the graph of Linear, Quadratic, Polynomial, Rational, Radical, Exponential &amp; Logarithmic Functions</li> <li>○ Sketch a graph of Linear, Quadratic, Polynomial, Rational, Radical, Exponential &amp; Logarithmic Functions</li> </ul> </li> </ul> <p>CollegeNow Math 120 Final Exam</p>
TC3 Math 138 Precalculus*	12	<p><b><u>May 1st - 29th</u></b></p> <p>Finish Chapter 2 Analytic Trigonometry</p> <ul style="list-style-type: none"> <li>● Lesson 2.5 Solving Trigonometric Equations Algebraically using Identities</li> <li>● Lesson 2.6 Solving Trigonometric Equations Graphically</li> </ul> <p>Chapter 3: Solving Systems of Equations</p> <ul style="list-style-type: none"> <li>● Chapter 3.1 Solving Systems of Two Variables</li> <li>● Chapter 3.2 Solving Systems of Three Variables</li> <li>● Chapter 3.3 Partial Fractions</li> </ul>	<p><b><u>June 1st - Remainder of Year</u></b></p> <p>Review Solving Methods from Math 120:College Algebra in Preparation for Final Exam</p> <ul style="list-style-type: none"> <li>● Reasoning with Equations (Standard: A-REI, F-LE, F-TF) <ul style="list-style-type: none"> <li>○ Solving methods for Linear, Quadratic, Polynomial, Rational, Radical, Exponential, Logarithmic</li> </ul> </li> </ul> <p>Review Trigonometry Topics from the Beginning of Course in Preparation for Final Exam (F-TF)</p> <ul style="list-style-type: none"> <li>● Right Triangle Trigonometry</li> <li>● Law of Cosines and Sines</li> <li>● Unit Circle</li> <li>● The Graph of the Sine and Cosine Function</li> </ul> <p>CollegeNow Math 138 Precalculus Final Exam</p>
TC3 Math 200 Statistics*	12	<p><b><u>May 1st-May 29th</u></b></p> <p>Finish Chapter 8 Confidence Intervals</p> <p>Chapter 9 Significance Test</p>	<p><b><u>June 1st - Remainder of Year</u></b></p> <p>End of Course Project:</p> <ul style="list-style-type: none"> <li>● Confidence Intervals</li> <li>● Significance Test</li> </ul>
TC3 Math 201 Calculus I*	11&12	<p><b><u>May 1st - May 29th</u></b></p> <p>Chapter 5 Applications of Integration</p> <ul style="list-style-type: none"> <li>● 5.1 Area of a Region Between Two Curves</li> <li>● 5.2 Volume with the Disk and Washer Method</li> <li>● 5.3 Volume with the Shell Method</li> <li>● 5.4 Parametric Equations</li> </ul> <p>Start Calculus I Review</p> <ul style="list-style-type: none"> <li>● Chapter 1 Limits</li> </ul>	<p><b><u>June 1st - Remainder of Year</u></b></p> <p>Calculus I Review</p> <ul style="list-style-type: none"> <li>● Chapter 2 &amp; 3 Derivatives &amp; Applications</li> <li>● Chapter 4 Integration Methods</li> </ul> <p>CollegeNow Final Exam</p>
TC3 Math 202 Calculus II*	12	<p><b><u>May 1st-May 29th</u></b></p> <p>End of Course Project:</p> <ul style="list-style-type: none"> <li>● Integration Methods</li> </ul>	<p><b><u>June 1st - Remainder of Year</u></b></p> <p>Finish Review: Integration Methods</p> <p>CollegeNow Final Exam</p>

		Calculus II Review <ul style="list-style-type: none"> <li>Integration Methods</li> </ul>	
*TC3 Final exams still required in order to receive college credit for the course.			
21st Century Math	12	<b>May 3rd - May 29th</b> Credit cards Credit reports/scores Making wise decisions with credit Looking into areas that math affects us in the real world Evaluate current statistics and data in the world right now! Analyze	<b>June 1st - Remainder of the year</b> TC3 college entrance math Exam topics review such as: Factoring Polynomials, GCF Solving Equations & Inequalities Decimals, Fractions, percents Simplify algebraic expressions  Career Readiness Review: - Budget review (how has covid changed your plans of having a budget compared to the beginning of the year when you created budget plans?) - Steps for setting up a bank account, managing a bank account, and taking out a loan - Managing credit and paying off credit