

**Franklin Special School District  
Grade 8 Mathematics Syllabus  
2021-2022**

<b>1<sup>st</sup> Quarter Standards/Objectives</b>		
<b>8.EE.A.1</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Understand the properties of integer exponents.</li> <li>● Use the properties of integer exponents to evaluate expressions with exponents.</li> <li>● Generate equivalent expressions.</li> </ul>
<b>8.EE.A.2</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Identify perfect squares between 1 and 225.</li> <li>● Understand that <math>x^2</math> and <math>\sqrt{x}</math> are inverses as are <math>x^3</math> and <math>\sqrt[3]{x}</math>.</li> <li>● Solve equations with squares and cubes (<math>y^2 = a</math> and <math>x^3 = a</math>).</li> <li>● Use squares, cubes, square roots, and cube roots to solve word problems.</li> <li>● Understand and use the square root and cube root symbols.</li> </ul>
<b>8.NS.A.1</b>	<b>The Number System</b>	<ul style="list-style-type: none"> <li>● Understand what rational and irrational numbers are.</li> <li>● Identify rational and irrational numbers.</li> <li>● Express a repeating decimal as a fraction.</li> </ul>
<b>8.NS.A.2</b>	<b>The Number System</b>	<ul style="list-style-type: none"> <li>● Estimate square roots to the nearest hundredth.</li> <li>● Compare and order rational and irrational numbers using a number line.</li> <li>● Estimate the value of expressions.</li> </ul>
<b>8.EE.A.3</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Write numbers using scientific notation.</li> <li>● Express numbers written in scientific notation in standard form.</li> <li>● Given two numbers written in scientific notation, identify how many times as much one is than the other.</li> </ul>

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**1<sup>st</sup> Quarter Standards/Objectives**

<b>8.EE.A.4</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"><li>● Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.</li><li>● Solve real-world problems that require operations with numbers expressed in scientific notation.</li><li>● Choose units of appropriate size for large and small measurements.</li><li>● Interpret scientific notation that has been generated by technology.</li></ul>
<b>Topics covered:</b> <ul style="list-style-type: none"><li>● <i>Exponents</i></li><li>● <i>Square and Cube Roots</i></li><li>● <i>Rational and Irrational Numbers</i></li><li>● <i>Scientific Notation</i></li></ul>		<b>Major assignments:</b> <ol style="list-style-type: none"><li>1) Exponents Test</li><li>2) square and cube roots/rational and irrational tests</li><li>3) Scientific Notation Test 1</li><li>4) Scientific Notation Test 2</li><li>5) Quarter 1 Benchmark</li></ol>
<b>Notes:</b>		

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<b>2<sup>nd</sup> Quarter Standards/Objectives:</b>		
<b>8.F.A.1</b>	<b>Functions</b>	<ul style="list-style-type: none"> <li>● Understand that a function is a rule that assigns to each input exactly one output.</li> <li>● Identify whether a relationship is a function from a diagram, table of values, graph, or equation.</li> </ul>
<b>8.F.A.3</b>	<b>Functions</b>	<ul style="list-style-type: none"> <li>● Determine if a function is linear or nonlinear.</li> <li>● Interpret the equation <math>y = mx + b</math>.</li> </ul>
<b>8.F.B.5</b>	<b>Functions</b>	<ul style="list-style-type: none"> <li>● I can Analyze a graph to qualitatively describe a relationship between two quantities.</li> <li>● I can Sketch a graph of a function from a verbal description.</li> </ul>
<b>8.EE.B.5</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Graph proportional relationships.</li> <li>● Interpret the unit rate of a proportional relationship as the slope of its graph.</li> <li>● Understand that the y-intercept is always 0 for proportional relationships.</li> <li>● Compare two different proportional relationships represented in different ways.</li> </ul>
<b>8.EE.B.6</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Understand that similar triangles have proportional side lengths.</li> <li>● Use the slope and y-intercept to derive an equation for a linear function.</li> </ul>
<b>8.F.A.2</b>	<b>Functions</b>	<ul style="list-style-type: none"> <li>● Translate among forms of linear functions: equation, table, graph, or verbal description.</li> <li>● Identify the rate of change and initial value of a function.</li> <li>● Compare rate of change and initial value in two linear functions, each represented in a different way.</li> </ul>

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**2<sup>nd</sup> Quarter Standards/Objectives:**

<b>8.F.B.4</b>	<b>Functions</b>	<ul style="list-style-type: none"> <li>● Understand that the rate of change of a linear function is the slope of a line: <math>\frac{\text{rise}}{\text{run}}</math> or <math>\frac{\text{change in } y\text{-value}}{\text{change in } x\text{-value}}</math></li> <li>● Find slope of a line given two points from a table or graph using the formula <math>\frac{y_2 - y_1}{x_2 - x_1}</math>.</li> <li>● Find the slope of a line from an equation.</li> <li>● Understand that the initial value of a function is the y-intercept.</li> <li>● Find the y-intercept given a table, graph, or equation.</li> <li>● Make a table of values, write an equation, or construct a graph to represent a linear function in a real-world context.</li> </ul>
<b>Topics covered:</b> <ul style="list-style-type: none"> <li>● <i>Functions</i></li> </ul>		<b>Major assignments:</b> <ol style="list-style-type: none"> <li>1) Functions Test 1</li> <li>2) Functions Test 2</li> <li>3) Functions Test 3</li> <li>4) Benchmark</li> <li>5) Semester Exam</li> </ol>
<b>Notes:</b>		

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<b>3<sup>rd</sup> Quarter Standards/Objectives:</b>		
<b>8.EE.C.7</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Solve multi-step linear equations with rational coefficients and with variables on both sides of the equation.</li> <li>● Identify and provide examples of equations that have exactly one solution, infinitely many solutions, or no solutions.</li> </ul>
<b>8.EE.C.7a</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Identify and provide examples of equations that have exactly one solution, infinitely many solutions, or no solutions.</li> </ul>
<b>8.EE.C.7b</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Solve multi-step linear equations with rational coefficients and with variables on both sides of the equation.</li> </ul>
<b>8.EE.C.8</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Describe solution sets of systems of linear equations.</li> </ul>
<b>8.EE.C.8a</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Determine whether a system of linear equations has exactly one solution, infinitely many solutions, or no solution, by graphing and analyzing the equations.</li> </ul>
<b>8.EE.C.8b</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Solve systems of two linear equations algebraically, by substitution or elimination.</li> <li>● Estimate solutions of systems of equations by graphing the equations.</li> </ul>
<b>8.EE.C.8c</b>	<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>● Write systems of linear equations to represent mathematical and real-world problems.</li> <li>● Understand that variables in the related equations must represent the same quantities and have the same value.</li> <li>● Graph systems to estimate solutions and describe how the graph represents the situation modeled.</li> <li>● Solve systems of equations algebraically and explain what the solution means in context of the problem.</li> </ul>

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**3<sup>rd</sup> Quarter Standards/Objectives:**

<b>8.G.A.1</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Give a general description of a rotation, reflection, or translation.</li> <li>● Describe the effect of translations on the properties of two- dimensional figures.</li> <li>● Describe the effect of rotations on the properties of two-dimensional figures.</li> <li>● Describe the effect of reflections on the properties of two-dimensional figures.</li> </ul>
<b>8.G.A.1a</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Lines are taken to lines, and line segments to line segments of the same length.</li> </ul>
<b>8.G.A.1b</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Angles are taken to angles of the same measure.</li> </ul>
<b>8.G.A.1c</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Parallel lines are taken to parallel lines.</li> </ul>
<b>8.G.A.2</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations.</li> <li>● Recognize and describe translations, rotations, reflections, and dilations individually and in a sequence.</li> <li>● Given an image and its transformed image, use coordinate notation to describe the transformation.</li> <li>● Make dilations of figures by a given scale factor.</li> <li>● Distinguish between similar and congruent.</li> <li>● Understand that a figure is congruent to its image after a rigid transformation.</li> <li>● Describe translations, rotations, and reflections individually and in a sequence.</li> <li>● Understand how to translate, rotate, and reflect two-dimensional figures on the coordinate plane.</li> <li>● Describe the effect of translations, rotations, and reflections on two- dimensional figures using coordinates.</li> </ul>

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<b>3<sup>rd</sup> Quarter Standards/Objectives:</b>		
<b>8.G.B.4</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Explore the relationships of the areas of squares built on all sides of a triangle.</li> <li>● Know that in a right triangle, <math>a^2 + b^2 = c^2</math> (the Pythagorean Theorem).</li> <li>● Understand and explain a proof of the Pythagorean Theorem.</li> <li>● Understand and explain a proof of the converse of the Pythagorean Theorem.</li> </ul>
<b>8.G.B.5</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● I can Use the Pythagorean Theorem to solve for a missing side length of a right triangle given the other two side lengths.</li> <li>● I can Use the Pythagorean Theorem to solve problems in real-world contexts, including three-dimensional contexts.</li> </ul>
<b>8.G.B.6</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● I can Use the Pythagorean Theorem to find the distance between any two points on the coordinate plane.</li> </ul>
<b>Topics covered:</b> <ul style="list-style-type: none"> <li>● <i>Equations</i></li> <li>● <i>Systems of Equations</i></li> <li>● <i>Transformations</i></li> <li>● <i>Pythagorean Theorem</i></li> </ul>		<b>Major assignments:</b> <ol style="list-style-type: none"> <li>1) Equations Test</li> <li>2) Systems of Equations Test</li> <li>3) Transformations Test</li> <li>4) Pythagorean Theorem Test</li> <li>5) Benchmark</li> </ol>

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**3<sup>rd</sup> Quarter Standards/Objectives:**

**Notes:**



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**4<sup>th</sup> Quarter Standards/Objectives:**

<b>8.G.C.7</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Use formulas to find the volumes of cylinders, cones, and spheres.</li> <li>● Solve real-world and mathematical problems involving the volumes of cylinders, cones, and spheres.</li> <li>● Compare volumes of cylinders, cones, and spheres.</li> <li>● Understand the relationship between the volume of a cylinder and the volume of a cone.</li> <li>● Understand the relationship between the volume of a cylinder and the volume of a sphere.</li> <li>● Compare the volumes of different-sized cylinders, cones, and spheres, and explain how different-sized figures can have the same volume.</li> </ul>
<b>8.SP.A.1</b>	<b>Statistics and Probability</b>	<ul style="list-style-type: none"> <li>● Construct a two-way frequency table of categorical data.</li> <li>● Interpret and describe relative frequencies for possible associations from a two-way table.</li> <li>● Construct a scatter plot using two sets of quantitative data.</li> <li>● Identify clusters and outliers in a scatter plot.</li> <li>● Determine if there is a linear or nonlinear association in a scatter plot.</li> <li>● Determine if a linear association in a scatter plot is positive or negative.</li> </ul>
<b>8.SP.A.2</b>	<b>Statistics and Probability</b>	<ul style="list-style-type: none"> <li>● Recognize that a straight line can be used on a scatter plot to model the relationship between two quantitative variables.</li> <li>● Draw a straight line on a scatter plot that closely fits the data points.</li> <li>● Informally evaluate the fit of the line by judging the closeness of data points to the line.</li> </ul>

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<b>4<sup>th</sup> Quarter Standards/Objectives:</b>		
<b>8.SP.A.3</b>	<b>Statistics and Probability</b>	<ul style="list-style-type: none"> <li>● Use the equation of a linear model to solve problems.</li> <li>● Interpret the meaning of the slopes as a rate of change and the meaning of the <math>y</math>-intercept in context given quantitative data.</li> </ul>
<b>8.SP.B.4</b>	<b>Statistics and Probability</b>	<ul style="list-style-type: none"> <li>● Find the probabilities of compound events.</li> <li>● Use tables, tree diagrams, and lists to describe sample space.</li> <li>● Identify favorable and total outcomes using ratios.</li> </ul>
<b>8.G.A.3</b>	<b>Geometry</b>	<ul style="list-style-type: none"> <li>● Understand that the measure of an exterior angle of a triangle is equal to the sum of the measures of the non- adjacent angles.</li> <li>● Know that the sum of the measures of the angles of a triangle equals <math>180^\circ</math>.</li> <li>● Find the measures of interior and exterior angles of triangles.</li> <li>● Recognize that if two triangles have two pairs of congruent angles, then they are similar triangles (angle-angle criterion).</li> </ul>
<b>Topics covered:</b> <ul style="list-style-type: none"> <li>● Volume of 3D Figures</li> <li>● Statistics</li> <li>● Probability</li> <li>● Angles</li> </ul>		<b>Major assignments:</b> <ol style="list-style-type: none"> <li>1) Volume of 3D Figures Test</li> <li>2) Statistics Test</li> <li>3) Probability Test</li> <li>4) TNReady</li> <li>5) Angles Test</li> <li>6) Final Exam</li> </ol>

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**4<sup>th</sup> Quarter Standards/Objectives:**

**Notes:**

**Procedures for Parental Access for Instructional Materials:**

- 1) Many instructional materials can be accessed digitally via the FSSD website (fssd.org ) using your student's unique username and password.
  - a. Student Resources : FSSD website > Parents & Students > Parent Information > Online Resources > Student
  - b. Parent Resources: FSSD website > Parents & Students > Parent Information > Online Resources > Parent
- 2) If additional information is needed regarding instructional materials, a written request may be submitted to your child's teacher. Instructional material review is included in Board Policy 4.400.