**Bayside Middle School – Parent Mathematics Curriculum Overview**

***5th Grade Mathematics***

The school district uses **Math Expressions Common Core** as the primary curriculum resource for grades kindergarten through grade five. In Math Expressions, teachers create an inquiry environment and encourage constructive discussion. Students invent, question, model, represent, and explore, but also learn and practice important math strategies. Students engage in Math Talks where they develop viable arguments and critique the reasoning of others. Math content and models connect and build across grade levels in order to provide a learning progression that aligns with the Common Core State Standards for Mathematics.

***For access to Math Expressions Family Resources, please see:***

[***http://www.eduplace.com/parents/mthexp/g5/index.html***](http://www.eduplace.com/parents/mthexp/g5/index.html)

Please make sure to ask your child what their login is to ThinkCentral. This will allow them to access their textbooks and journals (workbooks). You can access the website here: <https://www-k6.thinkcentral.com/ePC/start.do>

**Based on the Standards of Mathematical Practices, students will:**

* Use the language of the problem to conceptualize real world situations
* Focus on the mathematical aspects of the situation and make a math drawing and or write a situation equation to represent the relationship of the numbers in the problem
* Use the math drawing and/or the situation to find the unknown
* Write the answer to the problem including a label; explain and compare solutions with a classmate.

**Students engage in the following types of problems in Fifth Grade:**

* Add To-Result Unknown, Change Unknown, Start Unknown
* Take From-Result Unknown, Change Unknown, Start Unknown
* Put Together/Take Apart-Total Unknown, Addend Unknown, Other Addend Unknown
* Additive Comparison-Difference Unknown, Greater Unknown, Smaller Unknown
* Equal Groups-Unknown Product, Group Size Unknown, Number of Groups Unknown
* Arrays- Unknown Product, Unknown Factor, Unknown Factor
* Area-Unknown Product, Unknown Factor, Unknown Factor
* Multiplicative Comparison-Unknown Product, Unknown Factor, Unknown Factor

**The three critical areas of focus in Fifth Grade include:**

* Developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication and division of fractions in limited cases
* Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations
* Developing an understanding of volume

**5th Grade Students will:**

* Make sense of problems and persevere in solving them (practice standard)
* Model with mathematics and attend to precision (practice standard)
* Use appropriate tools strategically (practice standard)
* Writes and interprets numerical expressions using order of operations
* Represent multiplying decimals with money and drawings; use strategies based on place value and properties to multiply decimal numbers
* Fluently multiply multi-digit whole numbers with standard algorithm
* Use number lines to represent equivalent fractions
* Divide a four-digit by a two-digit whole numbers
* Add, subtract, multiply and divide decimals to the hundredths; read, write, round, and compare decimals to thousandths
* Collect and organize data in charts, graphs and written format
* Express fractions with unlike denominators in terms of the same unit fraction so they can be added or subtracted
* Use bar models to visualize a sum or difference; use bar models to multiply, compare, and divide fractions
* Use equations and models to solve real world problems; use area models to solve problems involving fractions
* Solve real world problems involving addition, subtraction, multiplication and division of fractions and mixed numbers; solve real world problems involving division with unit fractions and whole numbers
* Divide unit fractions by whole numbers and whole numbers by unit fractions
* Use estimation to determine whether answers are reasonable
* Use equivalent fractions to add, subtract, and compare fractions
* Add and subtract fractions and mixed numbers with like and unlike denominators
* Use visual models and equations that represent problems involving fractions
* Estimate sums and differences of fractions and mixed numbers and use estimates to determine whether answers are reasonable
* Recognize base ten patterns for whole numbers and decimals
* Interpret a fraction as division of the numerator by the denominator
* Multiply a fraction by a fraction
* Find the area of a rectangle with fractional side lengths
* Use mixed numbers and improper fractions
* Convert like measurement units within a given measurement system
* Understand geometry concepts relating to the shapes and sides of figures, and congruence vs. similarity
* Understand volume as an attribute of three-dimensional space and that it is measured in cubic units
* Select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume
* Decompose factors into base-ten units and apply the distributive property
* Divide a whole number or a decimal by a power of 10 with and without exponents
* Graph real world and mathematical problems on the coordinate plane

***6th Grade - 8th Grade Mathematics***

**Big Ideas Math Common Core** is the primary curriculum resource for grades six through eight. In Big Ideas, teachers create an inquiry environment and encourage constructive discussion. Students invent, question, model, represent, and explore, but also learn and practice important math strategies. Students develop viable arguments and critique the reasoning of others. Teachers provide a learning progression that aligns with the Common Core State Standards for Mathematics.

***Make sure to ask your child what their login is to Big Ideas Math. This will allow them to access their textbooks and journals (workbooks). You can access the website here:*** [***https://www.bigideasmath.com/students/***](https://www.bigideasmath.com/students/)

**6th Grade:** Students will learn about numerical expressions and factors, fractions and decimals, algebraic expressions and properties, areas of polygons, ratios and rates, integers and the coordinate plane, equations and inequalities, surface area and volume, statistical measures, and data displays.

**7th Grade:** Students will learn about integers, rational numbers, expressions and equations, inequalities, ratios and proportions, percent, construction and scale drawings, circles and areas, surface area and volume, and probability and statistics.

**8th Grade:** Students will learn about equations, transformations, angles and triangles, graphing and writing linear equations, systems of linear equations, functions, real numbers and the Pythagorean theorem, volume and similar solids, data analysis and displays, and exponents and scientific notation.

**Based on the Standards of Mathematical Practices, mathematicians will:**

* Make sense of problems and persevere in solving them
* Reason abstractly and quantitatively.
* Construct viable arguments and critique the reasoning of others.
* Model with mathematics
* Use appropriate tools strategically
* Attend to precision
* Look for and make use of structure
* Look for and express regularity in repeated reasoning

***The four critical areas of focus in Sixth Grade include:***

* Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems
* Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers
* Writing, interpreting, and using expressions and equations
* Developing understanding of statistical thinking.

**6th Grade Students will:**

* Fluently divide
* Write and evaluate with whole number exponents
* Find the prime factorization of a number
* Find the greatest common factor of two whole numbers; find the least common multiple of two whole numbers
* Divide fractions and mixed numbers
* Add, subtract, multiply, and divide decimals efficiently
* Write and evaluate algebraic expressions
* Find the greatest common factor in algebraic expressions
* Apply the commutative, associative, and distributive properties to show expressions are equivalent
* Find areas of triangles, special quadrilaterals, and polygons
* Find the distance between points with the same x or y coordinate
* Draw polygons in the coordinate plane given vertices and find lengths of sides
* Understand ratios, rates, and unit rates; compare ratios using tables
* Find percent as a rate per 100
* Solve problems involving finding the whole, given a part and the percent
* Use ratio reasoning to convert measurement units
* Describe quantities with positive and negative numbers
* Compare and order integers and absolute value numbers
* Graph ordered pairs in all four quadrants of the coordinate plane
* Determine if a value is a solution
* Solve one-step equations and inequalities
* Represent constraints with inequalities and recognize they can have infinitely many solutions
* Use nets made up of rectangles and triangles to find surface areas
* Find the volume of prisms with fractional edge lengths
* Understand that data use to answer statistical questions has a distribution that can be described by center, spread, and shape
* Use measures of center to summarize all of the values in a data set with a single number
* Use measures of variation to summarize how all of the values in a data set vary with a single number
* Display data on a number line, including line (dot) plots, stem and leaf plots, histograms, and box and whisker plots
* Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, and a measure of variation describes how its values vary with a single number
* Choose appropriate measures of center and variation based on shape.

***The four critical areas of focus in Seventh Grade include:***

* Developing understanding of and applying proportional relationships
* Developing understanding of operations with rational numbers and working with expressions and linear equations
* Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume
* Drawing inferences about populations based on samples.

**7th Grade Students will:**

* Add, subtract, factor, and expand linear expressions with rational coefficients
* Solve multi-step problems posed with positive and negative rational numbers
* Solve word problems leading to equations with rational numbers
* Draw geometric shapes with given conditions
* Represent proportional relationships with equations
* Find unit rates associated with ratios of perimeters and areas
* Use proportionality to solve ratio problems
* Reproduce a scale drawing at a different scale
* Measure and describe relationships among vertical, adjacent, supplementary, and complementary angles
* Use proportions to solve problems
* Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions
* Represent proportional relationships with equations
* Write, graph, and solve one step equations
* Solve two step equations
* Construct simple equations
* Convert rational numbers to decimals using long division
* Add, subtract, multiply, and divide rational numbers
* Understand that every quotient of integers (non-zero divisor) is a rational number
* Find areas and circumferences of circles
* Solve problems involving area, volume, and surface area of objects
* Decide whether two quantities are proportional
* Use scale drawings to compute actual lengths and areas
* Use samples to draw inferences about populations
* Use measures of center and variability from random samples to compare two populations
* Solve problems involving operations with rational numbers
* Understand that rewriting expressions in different forms can show how quantities are related

***The three critical areas of focus in Eighth Grade include:***

* Formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations
* Grasping the concept of a function and using functions to describe quantitative relationships
* Analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

**8th Grade Students will:**

* Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms
* Show that a linear equation in one variable has one solution, infinitely many solutions, or no solution by transforming the equation into simpler forms
* Verify properties of translations, reflections, and rotations
* Describe translations, reflections, rotations, and dilations using coordinates
* Understand that figures are congruent (or similar) when they can be related by a sequence of translations, reflections, and rotations (and dilations)
* Describe a sequence that exhibits congruence or similarity between two figures
* Classify and determine the measures of angles created when parallel lines are cut by a transversal
* Demonstrate that the sum of the interior angle measures of a triangle is 180 degrees and apply this fact to find the unknown measures of angles and the sum of angles of polygons
* Use similar triangles to solve problems that include height and distance; use similar triangles to explain why the slope is the same between any two points on a line
* Graph proportional relationships, interpreting the unit rate as the slope
* Compare proportional relationships represented in different ways
* Derive y=mx and y=mx+b
* Solve multi-step equations
* Understand that the solution of a system of two linear equations in two variables corresponds to the point of intersection of their graphs
* Solve systems of two linear equations in tow variables graphically and algebraically
* Solve real world mathematical problems leading to systems of two linear equations in two variables
* Understand the definition of a function; compare and write functions represented in different ways (words, tables, graphs)
* Understand that y=mx+b is a linear function and recognize nonlinear functions
* Interpret the rate of change and initial value of a function
* Understand that every rational number has a decimal expansion that terminates or repeats
* Understand that numbers that are not rational are irrational; compare irrational numbers using rational approximations
* Evaluate the square root and cube roots, including those resulting from solving equations
* Explain a proof of the Pythagorean theorem to find missing measures of right triangles and distance between two points in the coordinate plane
* Know and apply the formulas for the volumes of cones, cylinders, and spheres
* Describe a sequence that exhibits similarity between two figures
* Construct and interpret scatter plots; find and assess lines of fit for scatter plots
* Use equations of lines to solve problems and interpret the slope and the y intercept
* Use two-way tables; choose appropriate data displays
* Use the properties of integer exponents to generate equivalent expressions
* Use scientific notation to estimate very large or very small quantities; perform operations with numbers expressed in scientific notation and other forms; interpret scientific notation that has been generated by technology

**Vocabulary:**

The following links will take you to mathematics vocabulary flash cards for vocabulary words used in Big Ideas:

Big Ideas Green:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_g6.pdf>

Big Ideas Advanced 1:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_adv1.pdf>

Big Ideas Red:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_g7.pdf>

Big Ideas Red Accel:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_g7a.pdf>

Big Ideas Blue:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_g8.pdf>

Big Ideas Algebra 1:

<http://static.bigideasmath.com/protected/content/gfc/cc2/glossary_flashcards_a1.pdf>