Math Curriculum Course Content Grade One					
By the end of grade one, students will understand and use the concept of ones and tens in the place value number system. Students will add and subtract small numbers with confidence. Students will measure with simple units and locate objects in space. Students will describe data and analyze and solve simple problems. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Count, read, and write whole numbers to 100					
Use a number line to count					
Define place value (ones, tens, hundreds)					
Compare and order whole numbers to 100 using the symbols for less than, equal to, or greater than (<, =, >)					
Represent equivalent forms of the same number through the use of physical models, diagrams, and number expressions (to 20) (e.g., 8 may be represented as 4+4, 5+3, 2+2+2+2, 10-2, 11-3)					
Count and group objects in ones and tens (e.g., three groups of ten and 4 ones equals 34, or 30+4)					
Identify and know the value of coins (pennies, nickels, dimes, quarters) and show different combinations of coins that equal the same value					
Identify and count odd and even numbers to 20					
Know the addition facts (sums up to 20) and the corresponding subtraction facts and commit them to memory					
Use the inverse relationship between addition and subtraction to solve problems (fact families and related facts)					
Identify one more than, one less than, 10 more than, and 10 less than a given number					
Count by 2's, 5's, and 10's to 100					
Show the meaning of addition (putting together, increasing) and subtraction (taking away, comparing, finding the difference)					
Solve addition and subtraction problems with one and two-digit numbers regrouping when necessary					
Find missing addend, number in an equation					
Find the sum of three one-digit numbers					
Make reasonable estimates when comparing larger or smaller numbers					
Identify ordinal positions (1^{st}-31^{st})					
Algebra and Functions					
Write and solve number sentences from problem situations that express relationships involving addition and subtraction					
Understand the meaning of the symbols +, -, =					

Use problem solving steps to create problem situations that might lead to given number sentences involving addition and subtraction					
Recognize fractions (1/2, 1/3, 1/4)					
Measurement and Geometry					
Compare the length, width, and volume of two or more objects using customary and metric standards					
Determine the perimeter of an object					
Tell time to the nearest hour and half-hour and relate time to events (e.g., before/ after, shorter/longer)					
Read, understand, and solve problems using a calendar					
Identify, describe, and compare triangles, rectangles, squares, and circles, including the faces of three-dimensional objects					
Classify familiar plane and solid objects (sphere, cube, cone, cylinder, pyramid, rectangular prism) by common attributes, such as color, position, shape, size, roundness, or number of corners, and explain which attributes are being used for classification					
Give and follow directions about location					
Arrange and describe objects in space by proximity, position, and direction (e.g., near, far, below, above, up, down, behind, in front of, next to, left or right of)					
Identify and create symmetrical and congruent objects					
Identify cups, pints, and quarts and compare capacities					
Statistics, Data Analysis and Probability					
Sort objects and data by common attributes and describe the categories					
Represent and compare data (e.g., largest, smallest, more often, least often) by using pictures, bar graphs, tally charts, picture graphs, and Venn diagrams					
Describe, extend, and explain ways to get to a next element in simple repeating patterns (e.g., rhythmic, numeric, color, and shape)					
Mathematical Reasoning					
Determine the approach, materials, and strategies to be used in setting up a problem					
Use tools, such as manipulatives or sketches, to model problems					
Explain the reasoning used and justify the procedure selected to solve a problem					
Make precise calculations and check the validity of the results from the context of the problem.					

Math Curriculum Course Content Grade Two					
By the end of the second grade, students should be able to understand place value and number relationships in addition and subtraction, and use simple concepts of multiplication. They measure quantities with appropriate units. They classify shapes and see relationships among them by paying attention to their geometric attributes. They collect and analyze data and verify the answers. Some tools to help you meet these standards could include peer teaching, and using a variety of teaching methods to ensure that all the children have an opportunity to learn. How many stories from the Bible use numbers? The possibilities of incorporating religious teaching into the math curriculum are endless. For example, the loaves and the fishes, Joseph's brothers, the apostles, tax collectors and the number of days to Advent and Lent to name a few. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Count, read, and write whole numbers to 1,000 and identify the place value for each digit					
Use words, models, and expanded forms (e.g., 45 = 4 tens and 5 ones) to represent numbers (to 1,000)					
Order and compare whole numbers to 1,000 by using the symbols <, =, >					
Understand and use the inverse relationship between addition and subtraction (e.g., an opposite number sentence for 8 + 6 = 14 is 14 - 6 = 8) to solve problems and check solutions					
Find the sum or difference of two whole numbers up to three digits with and without regrouping					
Use mental math to find the sum or difference of two-digit numbers with and without regrouping					
Use repeated addition, arrays, and counting by multiples to do multiplication					
Use repeated subtraction, equal sharing, and forming equal groups with remainders to do division					
Introduce the multiplication tables of 2's, 3's, 4's, and 5's to times 10					
Recognize, name, and compare unit fractions from 1/12 through 1/2					
Recognize fractions of a whole and parts of a group (e. g., one-fourth of a pie, two-thirds of 15 balls)					
Know that when all fractional parts are included, such as four-fourths, the result is equal to the whole and to one					
Solve problems using combinations of coins and bills					
Know and use the decimal notation and the dollar and cent symbols for money					
Recognize when an estimate is reasonable in measurements (e. g., closest inch)					
Solve problems using combinations of coins and bills					
Know and use the decimal notation and the dollar and cent symbols for money					
Recognize when an estimate is reasonable in measurements (e. g., closest inch)					

Algebra and Functions					
Use the commutative and associative rules to simplify mental calculations and to check results					
Relate problem situations to number sentences involving addition and subtraction					
Solve addition and subtraction problems by using data from simple charts, picture graphs, and number sentences					
Accurately construct a graph or chart based on information gathered					
Measurement and Geometry					
Measure the length of objects using customary and metric units and know their abbreviations					
Use different units to measure the same object and predict whether the measurement will be greater or smaller when a different unit is used					
Measure the length of an object to the nearest inch and/or centimeter					
Read a thermometer					
Tell time to the nearest hour, half hour, quarter hour, and minute and know relationships of time (e. g., minutes in an hour, days in a month and weeks in a year)					
Determine the duration of intervals of time in hours (e.g., 11:00 a.m. to 4:00 p.m.)					
Describe and classify plane and solid geometric shapes (e.g., circle, triangle, square, rectangle, sphere, pyramid, cube, rectangular prism) according to the number and shape of faces, edges, and vertices					
Put shapes together and take them apart to form other shapes					
Compare symmetry and congruency of geometrical figures					
Statistics, Data Analysis and Probability					
Record numerical data in a systematic way, keeping track of what has been counted					
Represent the same data set in more than one way (e.g., bar graphs and charts with tallies)					
Ask and answer simple questions related to data representations					
Identify and continue simple number patterns					
Solve problems involving simple number patterns					
Mathematical Reasoning					
Defend the reasoning used and justify the procedures selected in solving problems					
Make precise calculations and check the validity of the results in the context of the problem					

Math Curriculum Course Content Third Grade					
By the end of third grade students will be able to multiply, divide, add, and subtract whole numbers. Students will be able to estimate quantities and measure a variety of objects using customary and metric units. They will continue to work on solving word problems applying the skills they have learned. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Read, compare, order and write whole numbers up to 100,000					
Identify the place value for each digit of whole numbers to 100,000					
Continue rounding whole numbers to the nearest ten, hundred, thousand and ten thousand and introduce rounding to the nearest 100,000					
Use expanded notation to represent numbers (e.g. 3,196= 3,000+100+90+6)					
Maintain proficiency in adding and subtracting numbers up to 3 digits; introduce the concept using numbers up to 5 digits					
Understand the concept of multiplication and master facts through 12's					
Reinforce the concept of fact families					
Solve problems using multiplication of multi-digit numbers by one digit number					
Solve division problems in which a multi-digit number is divided by a one digit number with and without a remainder					
Compare the value of fractions					
Find simple equivalent fractions using manipulatives					
Demonstrate and explain the relationship between whole numbers, simple fractions and decimals					
Add and subtract a fraction with a common denominator					
Algebra and Functions					
Select appropriate symbols, operations and properties to describe and solve simple number relationships					
Measurement and Geometry					
Choose appropriate units and tools for estimating and measuring objects					
Describe, compare, and contrast attributes of plane and solid geometric figures					
Identify and continue numerical and geometric pattern recognition					
Measure to the nearest inch, ½ inch and ¼ inch					
Know that 1 quart=2pints, 1 gallon=4quarts					
Estimate and measure liquid capacity in cups, pints, quarts, gallons and liters					
Statistics, Data Analysis and Probability					

Understand basic principals of probability and determine possible outcomes for a simple event.					
Understand data in order to produce a variety of charts, tables and graphs					
Interpret charts, tables and graphs in order to extract information					
Mathematical Reasoning					
Solve problems involving addition, subtraction, multiplication and division of money amounts in decimal notation					
Identify key words in word problems to determine the appropriate operation					
Apply and adapt a variety of appropriate strategies to solve word problems					
Reinforce concepts related to time including time elapsed and telling time					
Continue developing estimation skills to solve a variety of math problems					

Math Curriculum Course Content Fourth Grade					
By the end of fourth grade, students should understand large numbers and addition, subtraction, multiplication, and division of whole numbers. They should be able to describe and compare simple fractions and decimals. They should understand the properties of, and the relationship between plane and solid geometric figures. They should be able to collect, represent, and analyze data to answer questions. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Read, compare, order and write whole numbers up to 1,000,000, including					
decimals, tenths and hundredths					
Identify the place value of each digit in whole numbers up to 1,000,000 and in					
decimals (tenths and hundredths)					
Round whole numbers through the millions					
Use expanded form to represent numbers (standard and word form)					
Master basic addition, subtraction, multiplication, and division facts up to and					
including the 12's					
Solve multiplication problems using two and three-digit multipliers					
Develop proficiency in solving division problems with a 1 and 2-digit divisor					
Add and subtract decimals, including money					
Add and subtract fractions with like and unlike denominators					
Compare and simplify fractions and mixed numbers					
Recognize basic percentages, and fraction and decimal equivalences					
Algebra and Functions					
Use letters (variables), boxes, or other symbols to stand for any number in simple					
expressions or equations					
Use two -dimensional coordinate grids to represent points and graph lines					
Interpret and create picto-graphs, circle, bar and line graphs					
Measurement and Geometry					
Define basic geometric terms (such as: radius, diameter, angles, perpendicular and parallel lines)					
Identify basic geometric shapes (such as: parallelograms, quadrilaterals, regular polygons)					

Understand and use formulas to solve problems involving perimeters and areas of rectangles and squares					
Measure line segments and various objects to the nearest 1/4 inch, 1/2 inch, and nearest centimeter					
Statistics, Data Analysis and Probability					
Make predictions for simple probability problems					
Reinforce the use of mode, mean, range and median and recognition of outliers					
Interpret various forms of data graphs					
Mathematical Reasoning					
Analyze problems by identifying relationships, distinguishing relevant and irrelevant information, sequencing and prioritizing information, and observing patterns					
Apply and adapt a variety of appropriate strategies to solve multi -step word problems					
Introduce Roman numerals					
Recognize and use set operations of union and intersection of sets and subsets					
Statistics, Data Analysis and Probability					
Understand basic principals of probability and determine possible outcomes for a simple event.					
Understand data in order to produce a variety of charts, tables and graphs					
Interpret charts, tables and graphs in order to extract information					
Mathematical Reasoning					
Solve problems involving addition, subtraction, multiplication and division of money amounts in decimal notation					
Identify key words in word problems to determine the appropriate operation					
Apply and adapt a variety of appropriate strategies to solve word problems					
Reinforce concepts related to time including time elapsed and telling time					
Continue developing estimation skills to solve a variety of math problems					

Math Curriculum Course Content Fifth Grade					
By the end of grade five, students increase the proficiency with the four basic arithmetic operations applied to fractions, decimals and whole numbers. They are able to use customary and metric measuring units to determine length, area and volume. They are able to produce charts, graphs and tables to record and analyze data. Students develop their ability to use various strategies to solve multi-step word problems. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Read, compare, order and write whole numbers up to billions					
Reinforce the identification of place value using numbers up to the billions					
Estimate and round whole numbers up to the billions and decimals to the thousandths place					
Interpret percents as part of a hundred; find decimal and percent equivalents for fractions and compute a given percent of a whole number					
Reinforce addition, subtraction, multiplication and division facts					
Add, subtract, multiply and divide using decimals					
Demonstrate proficiency with two digit divisors and introduce three digit divisors					
Define and identify prime and composite numbers, factors and multiples					
Define, identify, and use least common multiples, greatest common factors and mixed numbers					
Add, subtract, multiply and divide fractions and mixed numbers expressing answers in simplest form					
Define and identify the concept of positive and negative numbers					
Algebra and Functions					
Write and evaluate simple algebraic expressions in one variable by substitution					
Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions, and justify each step in the process					
Identify and graph ordered pairs in the four quadrants of the coordinate plane					
Measurement and Geometry					
Identify, describe, and classify the properties of, and relationships between plane and solid geometric figures.					
Understand and compute the perimeter, area and volume of various plane and solid geometric figures					
Measure and identify angles, perpendicular and parallel lines, rectangles and triangles by using appropriate tools (e.g. ruler and protractor)					

Use a two dimensional shape to determine the surface area of a three dimensional object					
Convert to common units in problems involving addition and subtraction					
Statistics, Data Analysis and Probability					
Reinforce the concepts of probability, mean, median, range and mode, and outliers					
Interpret information provided in the form of graphs, tables and charts. Organize and display data in appropriate graphs, tables and charts					
Mathematical Reasoning					
Apply and adapt a variety of appropriate strategies to solve multi-step word problems					
Use estimation to verify the reasonableness of calculated results					

Math Curriculum Course Content Sixth Grade					
By the end of grade six, students have mastered the four arithmetic operation with whole numbers, positive fractions, positive decimals, and positive and negative integers; they accurately compute and solve problems. They apply their knowledge to statistics and probability. Students understand the concepts of mean, median, mode and range of data sets. Students understand and work with ratios and proportions; they compute percentages (e.g. tax, tips, interest). Students are adept in geometry, (e.g. pi, perimeter and area of geometric planes as well as surface area and volume of three dimensional objects. They are able to graph on coordinate plane and solve one-step linear equations. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Compare and order positive and negative fractions, decimals and mixed numbers and place them along a number line					
Solve problems involving fractions, ratios, proportions and percentages					
Interpret and use ratios in different contexts to show the relative sizes of two quantities, using appropriate notations (a/b, a to b, a:b)					
Use proportions to solve problems; use cross-products as a method of solving such problems, understanding it as the multiplication of both sides of an equation by a multiplicative inverse					
Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned and tips					
Solve problems involving addition, subtraction, multiplication and division of whole numbers, integers, fractions, mixed numbers and explain why a particular operation was used					
Determine the least common multiple and the greatest common factor of whole numbers, and use them to solve problems with fractions					
Algebra and Functions					
Write verbal expressions and sentences as algebraic expressions and equations; evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results					
Write and solve one-step linear equations in one variable					
Write and evaluate an algebraic expression for a given situation, using up to three variables					
Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions, and justify each step in the process					
Solve problems manually by using the correct order of operations					
Describe and use geometric and exponential patterns (including square roots)					

Measurement and Geometry					
Analyze and use tables, graphs, and rules to solve problems involving rates and proportions					
Convert one unit of measurement to another (for example, feet to miles, centimeters to inches)					
Use variables in expressions describing geometric quantities (for example, P=2W + 2L, A=(1/2)bh), the formulas for the perimeter and area of triangles, quadrilaterals and circles					
Understand the measurement of plane and solid shapes and use this understanding to solve problems					
Know and use the formulas for the volume and surface area of prisms and cylinders					
Identify angles as vertical, adjacent, complementary or supplementary and the sum of the angles of a triangle to solve problems involving an unknown angle					
Draw quadrilaterals and triangles from given information about them (for example, a quadrilateral having equal sides but no right angles, a right isosceles triangle)					
Classify triangles, quadrilaterals, regular and irregular polygons					
Statistics, Data Analysis and Probability					
Compute and analyze statistical measurements for data sets					
Compute the measures of central tendencies and understand their uses					
Understand how the inclusion or exclusion of outliers affects measures of central tendency					
Use a variety of ways to display information (for example, stem-and-leaf, scatter plots, frequency tables, line, bar and circle graphs)					
Identify different ways of selecting a sample (for example, convenience sampling, responses to a survey, random sampling) and which method makes a sample more representative for a population					
Determine theoretical and experimental probabilities and use these to make predictions about events					
Represent all possible outcomes for compound events in an organized way (for example, batting averages, accidents per hour)					
Mathematical Reasoning					
Make decisions about how to approach problems					
Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns					
Determine when and how to break a problem into simpler parts					
Use estimation to verify the reasonableness of calculated results					
Apply strategies and results from simpler problems to more complex problems (such as: interpreting a remainder, identifying extra and missing information, working backwards, formulas and patterns)					
Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams and models to explain mathematical reasoning					

Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work					
Make precise calculations and check the validity of the results from the context of the problem					
Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems					
Develop generalizations of the results obtained and the strategies used and apply them in new problem situations					

Math Curriculum Course Content Seventh Grade					
By the end of grade seven, students are adept at manipulating numbers in all forms. Students know and understand exponents, percentages, ratios and proportion. Students are able to use different representations of fractional numbers (fractions, decimals, percentages) and be proficient at changing from one to another. Seventh grade students are able to compute the surface area and volume of basic three-dimensional objects. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Read, write and compute with real numbers expressed in a variety of forms [positive and negative powers, scientific notation, integers, rational (terminating and repeating decimals) and irrational (non-repeating decimals) numbers] in estimation, comparisons, computation and application					
Convert fractions, decimals and percentages					
Calculate the percentage of increase and decrease of a quantity					
Solve problems that involve discount, markup, commission, profit and simple interest					
Use ratios, rates and proportional reasoning to solve problems					
Find the roots of rational and irrational numbers					
Understand the meaning of the absolute value of a number and determine the absolute value of real numbers					
Algebra and Functions					
Simplify numerical and algebraic expressions by applying order of operations and the properties of identity, inverse, distributive, associative and commutative to real numbers					
Express, interpret and evaluate quantitative relationships using algebraic terminology, expressions, equations, inequalities, and their graphs (including powers and simple roots)					
Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph for the situation represented by the graph					
Identify, describe, represent, solve, extend and create linear and non-linear number patterns					
Interpret positive whole number powers as repeated multiplication and negative whole number powers as repeated division					
Simplify and evaluate expressions that include exponents					
Solve linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results					
Model and solve multi-step rate, average speed, distance/time and direct variation problems					
Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths					

Introduce graphing of linear and non-linear functions and the slope of a line					
Measurement and Geometry					
Compare and convert weights, capacities, geometric measures, times, and temperatures within and between measurement systems (for example, miles/hour and feet/second, cubic inches and cubic centimeters)					
Relate the changes in measurement with a change of scale to the units used (for example, square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches, 1 cubic inch is approximately 16.38 cubic centimeters)					
Use measures expressed as rates (for example, speed, density) and measures expressed as products (for example, person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer					
Choose appropriate units of measurement and use proportional reasoning to select, use and justify methods for finding perimeter, circumference, area, surface area and volume of simple and complex shapes, including rectangles, parallelograms, trapezoids, squares, triangles, circles, cylinders, and prisms					
Construct and read drawings and models made to scale					
Demonstrate understanding of plane and solid geometric space by identifying and constructing basic elements of such figures					
Identify and construct basic elements of geometric figures (for example, altitudes, midpoints, diagonals, angle bisectors, perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and a straightedge					
Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections					
Understand and use both Cartesian coordinate graphing and the Pythagorean Theorem					
Know and understand the Pythagorean Theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments					
Demonstrate an understanding of conditions that indicate two geometrical figures are similar or congruent and what congruence means about the relationships between the sides and angles of the two figures					
Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, cones, and pyramids, for example, through netting					
Statistics, Data Analysis and Probability					
Collect, organize and represent data sets that have one or more identified variables by demonstrating theoretical, experimental and empirical probabilities					
Know various forms of display for data sets, including a stem-and-leaf plot and a box-and-whisker plot; use the forms to display a single set of data to compare two sets of data					
Represent two numerical variables on a scatter plot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (for example, between the time spent on homework and grade					

level)					
Mathematical Reasoning					
Use analysis and formulation in problem solving by identifying relationships, observing patterns, sequencing and prioritizing information, and sorting information into relevant, irrelevant, or missing categories by using logical reasoning and arithmetic and algebraic techniques					
Determine when and how to break a problem into simpler parts					
Use estimation to verify the reasonableness of calculated results; indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy					
Apply strategies and results from simpler problems to more complex problems					
Make and test conjectures by using both inductive and deductive reasoning					
Use a variety of methods (words, numbers, symbols, charts, graphs, tables, diagrams, and models) to explain mathematical reasoning					
Express the solution clearly and logically by using the appropriate mathematical notation, terms and clear language; support solutions with evidence in both verbal and symbolic work					
Make precise calculations and check the validity of the results from the context of the problem					
Determine that a solution is complete and be able to move beyond a particular problem by generalizing it to other situations					

Math Curriculum Course Content Eighth Grade Basic Math					
By the end of eighth grade, students should be proficient at manipulating numbers, equations and inequalities and understand the principles that are being applied. They know how to solve linear and quadratic equations, polynomials, compute volume and surface area for solid figures. Students know and understand basic trigonometric ratios and functions, and probability. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Identify and use the arithmetic properties of subsets of integers and rational, irrational and real numbers, including closure properties for the four basic arithmetic operations					
Read, write and compute proficiently with real numbers expressed in a variety of forms in estimation, comparisons, computation and application					
Use ratios, rates and proportional reasoning adeptly to solve problems					
Understand and use operations such as taking the opposite, finding the reciprocal, taking a root, and raising to a power					
Algebra and Functions					
Introduce concept of relations and functions					
Use algebraic expressions, equations, and inequalities to model linear and non-linear relationships, including direct and inverse variations, exponential growth, absolute value, and an introduction to quadratic behavior for solutions set equal to zero					
Explain and understand why linear equations are written in a variety of ways					
Simplify expressions before solving linear equations and inequalities in one variable [for example, $3(2x-5) + 4(x-2) = 12$]					
Solve multi-step problems, including word problems, involving linear equations and inequalities in one variable and provide justification for each step					
Apply algebraic techniques to solve rate problems, work problems and percent mixture problems					
Introduce graphing of quadratic functions and know that their roots are the x-intercepts					
Simplify basic polynomials by adding, subtracting, multiplying, dividing					
Apply basic factoring techniques to second-degree polynomials where the techniques include finding a common factor for all terms in a polynomial					
Simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to its lowest terms					
Add, subtract, multiply and divide basic rational expressions and functions					

Measurement and Geometry					
Prove that triangles are congruent or similar, and use the concept of corresponding parts of congruent triangles					
Know, derive, and solve problems involving the perimeter, circumference, area, surface area, lateral surface area, volume of common geometric figures					
Compute the volumes and surface areas of prisms, pyramids, cylinders, cones and spheres					
Compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids					
Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids					
Prove relationships between angles in polygons by using properties of complementary, supplementary, vertical and exterior angles					
Prove the Pythagorean Theorem and use it to determine missing lengths of sides of right triangles					
Perform basic constructions with a compass and straightedge, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line					
Prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of a line					
Know the definitions of the basic trigonometric functions defined by the angles of a right triangle					
Use trigonometric functions to solve for an unknown of a side of a right triangle, such as 30°, 60° and 90° triangles and 45°, 45°, and 90° triangles					
Statistics, Data Analysis and Probability					
Extend probability with independent events, dependent events, and sampling techniques					
Mathematical Reasoning					
Analyze and formulate reasonable mathematical conjectures by breaking a problem into simpler parts					
Use strategies, skills and concepts to find solutions, predict outcomes, make reasonable estimates, or solve for unknown quantities					
Demonstrate mathematical reasoning in solutions involving words, numbers, symbols, pictures, charts, tables, diagrams, and models					
Express mathematical solutions clearly in both oral, symbolic and written work, and generalize results to new or similar situations					
Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information and observing patterns					
Explain the difference between inductive and deductive reasoning and identify and provide examples of both					
Math					

Curriculum Course Content Eighth Grade Algebra					
By the end of eighth grade, algebra students should be proficient at manipulating numbers in equations and inequalities and understanding the principles that are being applied. Students should thoroughly know and understand how to solve and graph equations and inequalities for linear, quadratic and absolute value problems; use rates, ratios and proportions when applicable; solve and graph systems of linear equations and linear inequalities; add, subtract, multiply, divide, and factor polynomials; display, analyze and interpret data; understand theoretical and experimental probability with dependent and independent events; add, subtract, multiply and divide radical equations and rational expressions; and solve exponential functions. Teachers should use differentiated instruction to better address the learning needs of all students. As a component of Catholic social justice math is taught in order to meet the needs of all learners. An example would be providing differentiated instruction to meet the needs of all students.	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**2013-2014**
Number Sense					
Identify and use the arithmetic properties of subsets of integers and rational, irrational and real numbers, including closure properties for the four basic arithmetic operations					
Read, write and compute proficiently with real numbers expressed in a variety of forms in estimation, comparisons, computation and application					
Use ratios, rates and proportional reasoning adeptly to solve problems					
Understand and use operations such as taking the opposite, finding the reciprocal, taking a root, and raising to a power					
Algebra and Functions					
Use algebraic expressions, equations, and inequalities to model linear and non-linear relationships, including direct and inverse variations, exponential growth, absolute value, and an introduction to quadratic behavior for solutions set equal to zero					
Explain and understand why linear equations are written in a variety of ways (standard form, slope-intercept form, point-slope form), using rate of change (slope) and one or two reference points to write a linear equation which models a situation					
Simplify expressions before solving linear equations and inequalities in one variable [for example, $3(2x-5) + 4(x-2) = 12$]					
Solve equations and inequalities involving absolute value					
Solve multi-step problems, including word problems, involving linear equations and inequalities in one variable and provide justification for each step					
Graph a linear equation and compute the x- and y-					
Graph and sketch the region defined by a linear inequality					
Verify that a point lies on a line when given an equation of the line, and derive linear equations by using the point-slope formula					
Understand the concepts of parallel lines and perpendicular lines and how those slopes are related; and find the equation of					

a line perpendicular to a given line that passes through a given point					
Solve a system of two linear equations in two variables algebraically (substitution and elimination) and interpret the answer graphically					
Solve a system of two linear inequalities in two variables and sketch the solutions sets					
Add, subtract, multiply and divide monomials and polynomials; and solve multi-step problems, including word problems by using these techniques					
Apply algebraic techniques to solve rate problems, work problems and percent mixture problems					
Apply basic factoring techniques to second-degree and simple third-degree polynomials where the techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares and perfect square binomials					
Simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to its lowest terms					
Add, subtract, multiply and divide rational expressions and functions; and solve both computationally and conceptually problems using these techniques					
Solve a quadratic equation by factoring or completing the square					
Understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions					
Determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression					
Determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion					
Know the quadratic formula and how to prove the formula by completing the square					
Use the quadratic formula to find the roots of a second-degree polynomial and solve quadratic equations					
Graph quadratic functions and know that their roots are the x-intercepts					
Use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one or two points					
Apply the quadratic equation to physical problems, such as the motion of an object under the force of gravity					
Measurement and Geometry					
Know, derive, and solve problems involving the perimeter, circumference, area, surface area, lateral surface area, volume of common geometric figures					
Compute the volumes and surface areas of prisms, pyramids, cylinders, cones and spheres					
Compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids					
Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids					

Prove relationships between angles in polygons by using properties of complementary, supplementary, vertical and exterior angles					
Prove the Pythagorean Theorem and use it to determine missing lengths of sides of right triangles					
Perform basic constructions with a compass and straightedge, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line					
Prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of a line					
Know the definitions of the basic trigonometric functions defined by the angles of a right triangle					
Statistics, Data Analysis and Probability					
Extend probability with independent events, dependent events, and sampling techniques					
Problem Solving and Mathematical Reasoning					
Analyze and formulate reasonable mathematical conjectures by breaking a problem into simpler parts					
Use strategies, skills and concepts to find solutions, predict outcomes, make reasonable estimates, or solve for unknown quantities					
Demonstrate mathematical reasoning in solutions involving words, numbers, symbols, pictures, charts, tables, diagrams, and models					
Express mathematical solutions clearly in both oral and written work, and generalize results to new or similar situations					
Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information and observing patterns					
Explain the difference between inductive and deductive reasoning and identify and provide examples of both					
Identify the hypothesis and conclusion in logical deduction					
Use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assert					
Use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements					
Determine whether a statement is true sometimes, always, or never for a specific algebraic statement involving linear, quadratic or absolute value expressions, equations or inequalities					