7th Grade Math Outcomes and Curriculum

Course Outcome 1: **SWBAT** apply rules of exponents and other appropriate techniques, tools, and formulas to estimate and determine geometric measurements and transformations.
Students will be able to incorporate mental-math strategies of computation and estimation while incorporating order of operations, variables and expressions, powers, and exponents to solve mathematical problems.

Skills and Concepts:

1. Apply rules of exponents (diocese outcome #4)
2. Apply appropriate techniques, tools, and formulas to estimate
3. Apply order of operations (diocese outcome #6)
4. Apply use of variables and expressions
5. Apply rules of powers
6. Analyze to solve real-world problems
7. Apply appropriate techniques, tools, and formulas to estimate and determine geometric measurements and transformations (diocese Outcome #6)

possible final assessment:

On a unit test, students will solve mathematical problems by using four algebraic concepts and applications, including order of operations, variables and expressions, powers, and exponents. They will also be able to use mental strategies of computation and estimation in order to solve mathematical and real world problems. .

Course Outcome 2: **SWBAT** compare (inequalities), order, and round decimals, while working with the powers of ten as a mental math strategy and becoming fluent with scientific notation.

Skills and Concepts:

1. Construct inequalities using real-world situations(diocese outcome #1)
2. Apply rounding of decimals
3. Apply powers of ten
4. Apply scientific notation
5. Analyze relationships to solve real-world problems

possible final assessment:

On a unit test, students will order sets of decimals, round decimals to specific place values, multiply and divide decimals, and express numbers greater than 100 in scientific notation. .

Course Outcome 3: **SWBAT** interpret bar, line, and circle graphs; find ranges and scales; make line plots, stem and leaf plots, and learn three statistical measures; mean, median, and mode. Students will also be able to problem solve by interpreting graphs and organizing data in a table.

Skills and Concepts:

1. Analyze proportional relationships to solve real-world problems (diocese outcome #3)
2. Apply bar, line, and circle graphs
3. Apply ranges and scales
4. Apply line and stem and leaf plots
5. Interpret data using descriptive statistics including range, mode, median, quartiles, outliers, and mean (diocese outcome #7)

Possible Assessment:

On a unit test, students will find the range for sets of data and find an appropriate scale and interval for said data. Students will also be able to make a line plot and identify outliers as well as find the mean, median, and mode for data. Finally, on a unit test, students will be able to create a stem and leaf plot and be fluent with it. .

Course Outcome 4: **SWBAT** become fluid with number theory including divisibility, prime and composite numbers, and factorization while incorporating geometric and arithmetic sequences, factors and multiples, fractions, relationships between fractions and decimals, and probability of simple events.

Skills and Concepts

1. Analyze proportional relationships to solve real-world problems (diocese outcome #3)
2. Solve equations and inequalities using rational number properties(diocese outcome #2)
3. Apply factors and multiples
4. Apply prime and composite numbers and their divisibility

5. Apply the difference between fractions and decimals
6. Apply the probability of simple events

Possible Assessment:

On a unit test, students will determine divisibility patterns, write numbers through prime factorization, identify prime and composite numbers and simplify fractions. They will convert fractions to decimals and vice-versa while working with factors and multiples, as well as identify geometric and arithmetic sequences and compute probability of events. .

Course Outcome 5: **SWBAT** master operations while using fractions and be able to connect this skill to the fields of geometry and probability, specifically perimeter and circumference. Students will also be fluent in working with expected value as well as properties of real numbers such as the associative property of addition and multiplication while using fractions.

Skills and Concepts

1. Change mixed numbers to improper fractions and visa-versa
2. Apply addition, subtraction, multiplication and division of mixed numbers and improper fractions
3. Analyze perimeter of shapes and circumference of circles using integers and fractions (diocese outcome #6)
4. Analyze expected values of outcomes (diocese outcome #3)

Possible Assessment:

On a unit test, students will change improper fractions to mixed numbers and visa-versa, as well as add, subtract, multiply and divide fractions, improper fractions, and mixed numbers. In addition, they will be able to compute the perimeter of shapes and the circumference of circles. .

Course Outcome 6: **SWBAT** become fluent in work with inverse operations and all four properties of equality (addition, subtraction, multiplication and division), using these properties to efficiently solve equations. They will also become masters at changing units in the standard system as well as finding the areas of rectangles and parallelograms.

Skills and Concepts

1. Solve equations with both whole and mixed numbers using inverse operations
2. Solve equations with both whole and mixed numbers using the four properties of equality (addition, subtraction, multiplication, division) (diocese outcome #2)
3. Analyze the area of a rectangle and parallelogram and find the area and/or a side using algebra (diocese outcome #3 and #6)
4. Convert units within the standard system of measure

Possible Assessment:

On a unit test, students will solve equations using inverse operations and the four properties of equality (addition, subtraction, multiplication, and division). In addition, they will be able to compute the area of a parallelogram and a rectangle as well as be able to compute their sides through algebraic equations. Finally, students will be able to convert measurements within the standard units of measure. .

Course Outcome 7: **SWBAT** classify angles, triangles and quadrilaterals, and identify polygons and regular polygons along with their interior and exterior angles.

Skills and Concepts

1. Classify angles
2. Identify polygons
3. Classify triangles and quadrilaterals (diocese outcome #6)
4. Identify regular polygons and their interior and exterior angles (diocese outcome #3 and #6)

Possible Assessment:

On a unit test, students will classify angles through bisecting, identify regular and irregular polygons, classify triangles and quadrilaterals, and calculate the interior and exterior angles of regular polygons. .

Course Outcome8: **SWBAT** find and estimate square roots by relating the area of a square to the length of its sides. They then will explore the relationship among the sides of a right triangle and apply the Pythagorean Theorem. The area concept is then extended to triangles, trapezoids and circles.

Skills and Concepts

1. Analyze square roots of perfect squares (diocese outcome #4)
2. Estimate square roots (diocese outcome #4)
3. Apply and analyze the Pythagorean Theorem (diocese outcome #2, #3 and #6)
4. Analyze the areas of triangles, trapezoids and circles (diocese outcome #2, #3 and #6)

Possible Assessment:

On a unit test, students will calculate the length of a leg and hypotenuse of a right triangle using the Pythagorean Theorem. They will also be able to calculate the square roots of perfect squares and estimate square roots. Finally, students will be able to calculate the area of triangles, trapezoids and circles. .

Course Outcome 9: **SWBAT** analyze two-step equations and equations which contain two variables. Students will also be able to graph equations by plotting points.

Skills and Concepts

1. Analyze two-step equations
2. Analyze equations with two variables
3. Graph equations by plotting points

Possible Assessment:

On a unit test, students will analyze and solve two-step problems and problems with two variables. They would also be able to graph equations by plotting their points. .