OVERVIEW:

1. Order of Operations and Exponents
2. Positive and Negative Numbers
3. Introduction to Algebra
4. Graphing and Functions
5. Proportions and Percents
6. Compound Interest using Excel
7. Planar Geometry
8. Perimeter and Area
9. Square Roots, Radicals, and the Pythagorean Theorem
10. Volume and Surface Area
11. Probability

OUTLINE: Notes: Each class is 50 minutes and meets 4 times per week.
Time frames are approximate and include assessments.
Asterisks (*) indicate optional topics.

Quarter 1:

UNIT 1: ORDER OF OPERATIONS AND EXPONENTS  Approx. 8 classes

1. Simplify expressions with exponents using the order of operations.
2. Convert between decimals and multiples of powers of ten.
3. Evaluate expressions using substitution.
4. Add, subtract, multiply and divide decimals.
5. Add, subtract, multiply and divide fractions.
UNIT 2: POSITIVE AND NEGATIVE NUMBERS Approx. 8 classes

1. Determine absolute value and evaluate expressions with absolute value.
2. Add and subtract integers.
3. Add and subtract positive and negative decimals and fractions.
4. Multiply and divide integers.
5. Multiply and divide positive and negative decimals and fractions.
6. Apply the order of operations to expressions involving positive and negative numbers, including positive and negative exponents.

UNIT 3: INTRODUCTION TO ALGEBRA Approx. 16 classes

1. Identify "like terms".
2. Use the distributive rule to simplify expressions.
3. Convert everyday language into variable expressions.
4. Determine whether given answers are solutions to equations.
5. Simplify the expressions in an equation to obtain an equivalent equation.
6. Solve equations with addition or subtraction.
7. Solve equations with multiplication and division.
8. Solve equations with multiple transformations.
9. Solve equations with variables on both sides of the equation.
10. Use equations to solve word problems.

Quarter 2:

UNIT 4: GRAPHING AND FUNCTIONS Approx. 10 classes

1. Find and identify points on the coordinate plane.
2. Determine whether ordered pairs are solutions to a linear equation.
3. Make a table of values of points from a linear equation, and use them to determine the graph.
4. Understand slope and y-intercept.
5. Relate the concept of slope to rise-over-run.
6. Graph an equation using the slope/intercept form.
7. Solve for y in terms of x.
8. Find the equation of a line from the graph.
9. Identify the equation of a parabola.
UNIT 5: PROPORTIONS AND PERCENTS  
Approx. 16 classes

1. Convert fractions to decimals to percents, and the reverse.
2. Solve proportions using equivalent fractions and cross-multiplying.
3. Solve word problems involving proportions and ratios.
4. Solve word problems involving distance rate and time.
5. Use unit pricing to compare prices.
6. Find a percent of an amount.
7. Use percent change in word problems.
8. Use proportions to solve percent problems.
9. Compute simple and compound interest.

UNIT 6: COMPOUND INTEREST USING EXCEL  
Approx. 4 classes

1. Format the cells, columns and rows of an excel spreadsheet.
2. Use formulas in the spreadsheet, including sums and interest calculations.
3. Copy formulas.
4. Calculate interest over long time periods using an Excel spreadsheet.
5. Calculate the value of an investment over long time periods.
6. Calculate the true cost of items purchased on credit.

UNIT 7: PLANAR GEOMETRY  
Approx. 8 classes

1. Name points, lines, line segments, rays and planes.
2. Measure and construct angles using a protractor.
3. Use knowledge of parallel and perpendicular lines, corresponding, alternate interior, supplementary and complementary angles to solve angle puzzles.
4. Classify polygons.
5. Classify triangles based on sides and angles.
6. Determine measurement of angles in triangles and quadrilaterals.
Quarter 3:

UNIT 8: PERIMETER AND AREA
Approx. 8 classes

1. Find the perimeter of a polygon.
2. Use the perimeter to find the length of missing sides in regular and irregular shapes.
3. Find the circumference of a circle, both using 3.14 for pi and in terms of pi.
4. Find the radius or diameter of a circle if the circumference is given.
5. Find the area of a triangle, parallelogram, regular polygon or compound polygon.
6. Find the area of a circle.
7. Find the radius or diameter of a circle if the area is given.

UNIT 9: SQUARE ROOTS, RADICALS, PYTHAGOREAN THEOREM
Approx. 8 classes

1. Use the Pythagorean Theorem to find the missing sides of triangles, and then the area of triangles.
2. Simplify radicals.
3. Add, subtract, multiply and divide radicals.
4. Rationalize a denominator.
5. Use the patterns of side lengths for 30-60-90, and 45-45-90 triangles to finding the missing sides of triangles.
6. Use 30-60-90 and 45-45-90 triangles to find the area of inscribed and circumscribed polygons and circles.

Quarter 4:

UNIT 10: VOLUME AND SURFACE AREA
Approx. 9 classes

1. Find the volume of a prism, including rectangular, triangular prisms and cylinders.
2. Use the Pythagorean theorem to find missing sides, and then finding the volume of a triangular prism.
3. Find the volume of a pyramid, including rectangular, triangular pyramids and cones.
4. Find the surface area of a prism.
UNIT 11: PROBABILITY

Approx. 8 classes

1. Calculate factorials.
2. Understand the notation used for permutations and combinations.
3. Determine the number of permutations that can be made from a group of objects.
4. Determine the number of combinations that can be made from a group of objects.
5. Determine the probability of an event, using concrete examples such as spinners, dice and playing cards.
6. Determine the odds in favor and against an event.
7. Identify independent events and calculating combined probabilities for independent events.
8. Identify dependent events and calculating combined probabilities for dependent events.