MATHEMATICS
COMMON CORE STATE STANDARDS
KINDERGARTEN

K.CC **Counting and Cardinality**
- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

K.OA **Operations and Algebraic Thinking**
- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

K.NBT **Number and Operations in Base Ten**
- Work with numbers 11-19 to gain foundations for place value.

K.MD **Measurement and Data**
- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.

K.G **Geometry**
- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.

MATHEMATICS
COMMON CORE STATE STANDARDS
GRADE 1

1.OA **Operations and Algebraic Thinking**
- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

1.NBT **Number and Operations in Base Ten**
- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

1.MD **Measurement and Data**
- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

1.G **Geometry**
- Reason with shapes and their attributes.

MATHEMATICS
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GRADE 2

2.OA **Operations and Algebraic Thinking**
- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplications.

2.NBT **Number and Operations in Base Ten**
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

2.MD **Measurement and Data**
- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

2.G **Geometry**
- Reason with shapes and their attributes.

MATHEMATICS
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GRADE 3

3.OA **Operations and Algebraic Thinking**
- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

3.NBT **Number and Operations in Base Ten**
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

3.NF **Number and Operations—Fractions**
- Develop understanding of fractions as numbers.

3.MD **Measurement and Data**
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Present and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

3.G **Geometry**
- Reason with shapes and their attributes.

MATHEMATICS
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GRADE 4

4.OA **Operations and Algebraic Thinking**
- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

4.NBT **Number and Operations in Base Ten**
- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

4.NF **Number and Operations—Fractions**
- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

4.MD **Measurement and Data**
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

4.G **Geometry**
- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

MATHEMATICS
COMMON CORE STATE STANDARDS
GRADE 5

5.OA **Operations and Algebraic Thinking**
- Write and interpret numerical expressions.
- Analyze patterns and relationships.

5.NBT **Number and Operations in Base Ten**
- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.NF **Number and Operations—Fractions**
- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.MD **Measurement and Data**
- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

5.G **Geometry**
- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

MATHEMATICS
COMMON CORE STATE STANDARDS
GRADE 6

6.RP **Ratios and Proportional Relationships**
- Understand ratio concepts and use ratio reasoning to solve problems.

6.NS **The Number System**
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

6.EE **Expressions and Equations**
- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

6.G **Geometry**
- Solve real-world and mathematical problems involving area, surface area, and volume.

6.SP **Statistics and Probability**
- Develop understanding of statistical variability.
- Summarize and describe distributions.

MATHEMATICS
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GRADE 7

7.RP **Ratios and Proportional Relationships**
- Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.NS **The Number System**
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

7.EE **Expressions and Equations**
- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

7.G **Geometry**
- Draw, construct, and describe geometrical figures and describe the relationships between them.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

7.SP **Statistics and Probability**
- Use random sampling to draw inferences about a population.
- Draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use and evaluate probability models.

MATHEMATICS
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GRADE 8

8.NS **The Number System**
- Know that there are numbers that are not rational, and approximate them by rational numbers.

8.EE **Expressions and Equations**
- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

8.F **Functions**
- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

8.G **Geometry**
- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

8.SP **Statistics and Probability**
- Investigate patterns of association in bivariate data.

MATHEMATICS
COMMON CORE STATE STANDARDS
HIGH SCHOOL
NUMBER AND QUANTITY

N.RN **The Real Number System**
- Extend the properties of exponents to rational exponents.
- Use properties of rational and irrational numbers.

N.Q **Quantities**
- Reason quantitatively and use units to solve problems.

N.CN **The Complex Number System**
- Perform arithmetic operations with complex numbers.
- Represent complex numbers and their operations on the complex plane.
- Use complex numbers in polynomial identities and equations.

N.VM **Vector and Matrix Quantities**
- Represent and model with vector quantities.
- Perform operations on vectors.
- Perform operations on matrices and use matrices in application.

MATHEMATICS
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HIGH SCHOOL
ALGEBRA

A.SSE **Seeing Structure in Expressions**
- Interpret the structure of expressions.
- Write expressions in equivalent forms to solve problems.

A.APR **Arithmetic with Polynomials and Rational Expressions**
- Perform arithmetic operations on polynomials.
- Understand the relationship between zeros and factors of polynomials.
- Use polynomial identities to solve problems.
- Rewrite rational expressions

A.CED **Creating Equations**
- Create equations that describe numbers or relationships.

A.REI **Reasoning with Equations and Inequalities**
- Understand solving equations as a process of reasoning and explain the reasoning.
- Solve equations and inequalities in one variable.
- Solve systems of equations.
- Represent and solve equations and inequalities graphically.

MATHEMATICS
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HIGH SCHOOL
FUNCTIONS

F.IF **Interpreting Functions**
- Understand the concept of a function and use function notation.
- Interpret functions that arise in application in terms of the context.
- Analyze functions using different representations.

F.BF **Building Functions**
- Build a function that models a relationship between two quantities.
- Build new functions from existing functions.

F.LE **Linear, Quadratic, and Exponential Models**
- Construct and compare linear, quadratic, and exponential models and solve problems.
- Interpret expressions for functions in terms of the situation they need.

F.TF **Trigonometric Functions**
- Extend the domain of trigonometric functions using the unit circle.
- Model periodic phenomena with trigonometric functions.

MATHEMATICS
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HIGH SCHOOL
GEOMETRY

G.CO **Congruence**
- Experiment with transformation in the plane.
- Understand congruence in terms of rigid motions.
- Prove geometric theorems.
- Make geometric constructions.

G.SRT **Similarity, Right Triangles, and Trigonometry**
- Understand similarity in terms of similarity transformations.
- Prove theorems involving similarity.
- Define trigonometric ratios and solve problems involving right triangles.
- Apply trigonometry to general triangles.

G.C **Circles**
- Understand and apply theorems about circles.
- Find arc lengths and areas of sectors of circles.

G.GPE **Expressing Geometric Properties with Equations**
- Translate between the geometric description and the equation for a conic section.
- Use coordinates to prove simple geometric theorems algebraically.

G.GMD **Geometric Measurement and Dimension**
- Explain volume formulas and use them to solve problems.
- Visualize relationships between two-dimensional and three-dimensional objects.

G.MG **Modeling with Geometry**
- Apply geometric concepts in modeling situations.

MATHEMATICS
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HIGH SCHOOL
STATISTICS AND PROBABILITY

S.ID **Interpreting Categorical and Quantitative Data**
- Summarize, represent, and interpret data on a single count or measurement variable.
- Summarize, represent, and interpret data on two categorical and quantitative variables.
- Interpret linear models.

S.IC **Making Inferences and Justifying Conclusions**
- Understand and evaluate random processes underlying statistical experiments.
- Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

S.CP **Conditional probability and the Rules of Probability**
- Understand independence and conditional probability and use them to interpret data.
- Use the rules of probability to compute probabilities of compound events in a uniform probability model.

S.MD **Using Probability to Make Decisions**
- Calculate expected values and use them to solve problems.
- Use probability to evaluate outcomes of decisions.