

## High School: Number and Quantity

Major	Supporting	Additional
<p>Quantities</p> <ul style="list-style-type: none"> <li>▫ Reason quantitatively and use units to solve problems.</li> </ul> <p>The Real Number System</p> <ul style="list-style-type: none"> <li>▫ Extend the properties of exponents to rational exponents.</li> </ul>	<p>The Complex Number System</p> <ul style="list-style-type: none"> <li>▫ Perform arithmetic operations with complex numbers.</li> </ul> <p>The Real Number System</p> <ul style="list-style-type: none"> <li>▫ Use properties of rational and irrational numbers.</li> </ul>	<p>The Complex Number System</p> <ul style="list-style-type: none"> <li>⦿ Represent complex numbers and their operations on the complex plane.</li> <li>⦿ Use complex numbers in polynomial identities and equations.</li> </ul> <p>Vector and Matrix Quantities</p> <ul style="list-style-type: none"> <li>⦿ Represent and model with vector quantities.</li> <li>⦿ Perform operations on vectors.</li> <li>⦿ Perform operations on matrices and use matrices in applications.</li> </ul>

**Depth Opportunities:**

N–NQ 1

## High School: Algebra

Major	Supporting	Additional
<p>Seeing the Structure in Expressions</p> <ul style="list-style-type: none"> <li>☛ Interpret the structure of expressions.</li> <li>☛ Write expressions in equivalent forms to solve problems.</li> </ul> <p>Arithmetic with Polynomials and Rational Expressions</p> <ul style="list-style-type: none"> <li>☛ Perform arithmetic operations on polynomials.</li> <li>☛ Understand the relationship between zeros and factors of polynomials.</li> </ul> <p>Creating Equations</p> <ul style="list-style-type: none"> <li>☛ Create equations that describe numbers or relationships.</li> </ul> <p>Reasoning with Equations and Inequalities</p> <ul style="list-style-type: none"> <li>☛ Understand solving equations as a process of reasoning and explain the reasoning.</li> <li>☛ Solve equations and inequalities in one variable.</li> <li>☛ Solve systems of equations.</li> </ul>	<p>Arithmetic with Polynomials and Rational Expressions</p> <ul style="list-style-type: none"> <li>☐ Rewrite rational expressions.</li> </ul> <p>Reasoning with Equations and Inequalities</p> <ul style="list-style-type: none"> <li>☐ Represent and solve equations and inequalities graphically.</li> </ul>	<p>Arithmetic with Polynomials and Rational Expressions</p> <ul style="list-style-type: none"> <li>☐ Use polynomial identities to solve problems.</li> </ul>

**Depth Opportunities:**

A–SSE 2, 3; A–APR 1; A–CED 3; A–REI 4

## High School: Functions

Major	Supporting	Additional
<p><b>Interpreting Functions</b></p> <ul style="list-style-type: none"> <li>☛ Understand the concept of a function and understand function notation.</li> <li>☛ Interpret functions that arise in applications in terms of the context.</li> <li>☛ Analyze functions using different representations.</li> </ul> <p><b>Building Functions</b></p> <ul style="list-style-type: none"> <li>☛ Build a function that models a relationship between two quantities.</li> </ul> <p><b>Linear, Quadratic and Exponential Models</b></p> <ul style="list-style-type: none"> <li>☛ Construct and compare linear, quadratic, and exponential models and solve problems.</li> <li>☛ Interpret expressions for functions in terms of the situation they model.</li> </ul>	<p><b>Building Functions</b></p> <ul style="list-style-type: none"> <li>☐ Build new functions from existing functions.</li> </ul>	<p><b>Trigonometric Functions</b></p> <ul style="list-style-type: none"> <li>☐ Extend the domain of trigonometric functions using the unit circle.</li> <li>☐ Model periodic phenomena with trigonometric functions.</li> <li>☐ Prove and apply trigonometric identities.</li> </ul>

**Depth Opportunities:**

F-IF 4, 8, 9; F-LE 1

## High School: Geometry

Major	Supporting	Additional
<p>Congruence</p> <ul style="list-style-type: none"> <li>▣ Prove geometric theorems.</li> </ul> <p>Expressing Geometric Properties with Equations</p> <ul style="list-style-type: none"> <li>▣ Use coordinates to prove simple theorems algebraically.</li> </ul> <p>Similarity, Right Triangles, and Trigonometry</p> <ul style="list-style-type: none"> <li>▣ Define trigonometric ratios and solve problems involving right triangles.</li> </ul> <p>Modeling with Geometry</p> <ul style="list-style-type: none"> <li>▣ Apply geometric concepts in modeling situations.</li> </ul>	<p>Congruence</p> <ul style="list-style-type: none"> <li>□ Experiment with transformations in the plane.</li> <li>□ Understand congruence in terms of rigid motions.</li> <li>□ Make geometric constructions.</li> </ul> <p>Circles</p> <ul style="list-style-type: none"> <li>□ Understand and apply theorems about circles.</li> <li>□ Find arc lengths and areas of sectors of circles.</li> </ul> <p>Similarity, Right Triangles, and Trigonometry</p> <ul style="list-style-type: none"> <li>□ Understand similarity in terms of similarity transformations.</li> </ul>	<p>Similarity, Right Triangles, and Trigonometry</p> <ul style="list-style-type: none"> <li>○ Prove theorems involving similarity.</li> <li>○ Apply trigonometry to general triangles.</li> </ul> <p>Geometric Measurement and Dimension</p> <ul style="list-style-type: none"> <li>○ Explain volume formulas and use them to solve problems.</li> <li>○ Visualize relationships between two-dimensional and three-dimensional objects.</li> </ul> <p>Expressing Geometric Properties with Equations</p> <ul style="list-style-type: none"> <li>○ Translate between the geometric description and the equation for a conic section. (Here because of circles.)</li> </ul>

**Depth Opportunities:**

GPE 1, 4, 7; G–MG 2

## High School: Statistics and Probability

Major	Supporting	Additional
<p><b>Interpreting Categorical and Quantitative Data</b></p> <ul style="list-style-type: none"> <li>■ Summarize, represent, and interpret data on a single count or measurement variable.</li> <li>■ Summarize, represent, and interpret data on two categorical and quantitative variables.</li> </ul> <p><b>Making Inferences and Justifying Conclusions</b></p> <ul style="list-style-type: none"> <li>■ Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</li> </ul>	<p><b>Making Inferences and Justifying Conclusions</b></p> <ul style="list-style-type: none"> <li>□ Understand and evaluate random processes underlying statistical experiments.</li> </ul> <p><b>Interpreting Categorical and Quantitative Data</b></p> <ul style="list-style-type: none"> <li>□ Interpret linear models.</li> </ul>	<p><b>Conditional Probability and the Rules of Probability</b></p> <ul style="list-style-type: none"> <li>□ Understand independence and conditional probability and use them to interpret data.</li> <li>□ Use the rules of probability to compute probabilities of compound events in a uniform probability model.</li> </ul> <p><b>Using Probability to Make Decisions</b></p> <ul style="list-style-type: none"> <li>□ Calculate expected values and use them to solve problems.</li> <li>□ Use probability to evaluate outcomes of decisions.</li> </ul>

**Depth Opportunities:**

S-ID 3, 5, 6, 9; S-IC 3