| Iowa Academic Standards – Math | |
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| ***Standards for Mathmatcal Practice*** | |
| SMP1: Make sense of problems and persevere in solving them. | ☑ |
| SMP 2: Reason abstractly and quantitatively. | ☑ |
| SMP 3: Construct viable arguments and critique the reasoning of others. | ☑ |
| SMP 4: Model with mathematics. | ☑ |
| SMP 5: Use appropriate tools strategically | ☑ |
| SMP 6: Attend to precision. | ☑ |
| SMP 7: Look for and make use of structure. | ☑ |
| SMP 8: Look for and express regularity in repeated reasoning. | ☑ |
| 1.1.1.3 Analyze the interdisciplinary nature of STEM | ☑ |
| ***Grade 7*** | |
| Analyze proportional relationships and use them to solve real-world and mathematical problems. | ☑ |
| Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. | ☑ |
| Use properties of operations to generate equivalent expressions. | ☑ |
| Solve real-life and mathematical problems using numerical and algebraic expressions and equations. | ☑ |
| 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. | ☑ |
| Draw informal comparative inferences about two populations. | ☑ |
| Investigate and model chance processes. | ☑ |
| ***Grade 8*** | |
| Work with numbers that are not rational, and approximate them by rational numbers. | ☑ |
| 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. | ☑ |
| Define, evaluate, and compare functions. | ☑ |
| Use functions to model relationships between quantities. | ☑ |
| Demonstrate congruence and similarity using physical models, patty paper or geometry software | ☑ |
| Explain and apply the Pythagorean Theorem. | ☑ |
| Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. | ☑ |
| Investigate patterns of association in bivariate data. | ☑ |

| Algebra | |
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| Use properties of rational and irrational numbers | ☑ |
| Reason quantitatively and use units to solve problems | ☑ |
| Interpret the structure of expressions. | ☑ |
| Write expressions and equations in equivalent forms to solve problems. | ☑ |
| Create equations that describe numbers or relationships. | ☑ |
| 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. | ☑ |
| Understand the concept of a function and use function notation. | ☑ |
| Interpret functions that arise in applications in terms of the context. | ☑ |
| Analyze functions using different representations. | ☑ |
| Build a function that models a relationship between two quantities. | ☑ |
| Build new functions from existing functions. | ☑ |
| Construct and compare linear, quadratic, and exponential models and solve. | ☑ |
| Interpret expressions for functions in terms of the situation they model. | ☑ |
| 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. | ☑ |
| **Geometry** | |
| Experiment with transformations in the plane. | ☑ |
| Understand congruence in terms of rigid motions. | ☑ |
| Prove geometric theorems | ☑ |
| Make geometric constructions. | ☑ |
| Understand similarity in terms of similarity transformations | ☑ |
| Prove theorems using similarity. | ☑ |
| Define trigonometric ratios and solve problems involving right triangles. | ☑ |
| Understand and apply theorems about circles | ☑ |
| Find arc lengths and areas of sectors of circles. | ☑ |
| Translate between the geometric description and the equation for a conic section. | ☑ |
| Use coordinates to prove simple geometric theorems algebraically. | ☑ |
| Explain volume formulas and use them to solve problems | ☑ |
| Visualize relationships between two-dimensional and three-dimensional objects. | ☑ |
| Apply geometric concepts in modeling situations. | ☑ |
| Use independence and conditional probability to interpret data. | ☑ |

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| Use the rules of probability to compute probabilities of compound events in a uniform probability model | ☑ |
| Use probability to evaluate outcomes of decisions. | ☑ |
| ***Algebra 2*** | |
| Extend the properties of exponents to rational exponents. | ☑ |
| Reason quantitatively and use units to solve problems. | ☑ |
| Perform arithmetic operations with complex numbers. | ☑ |
| Perform arithmetic operations with complex numbers. | ☑ |
| Use complex numbers in polynomial identities and equations. | ☑ |
| Interpret the structure of expressions. | ☑ |
| Write expressions in equivalent forms to solve problems. | ☑ |
| Perform arithmetic operations on polynomials. | ☑ |
| Understand the relationship between zeros and factors of polynomials. | ☑ |
| Rewrite rational expressions. | ☑ |
| 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. | ☑ |
| Interpret functions that arise in applications in terms of the context. | ☑ |
| Analyze functions using different representations. | ☑ |
| Build a function that models a relationship between two quantities. | ☑ |
| Build new functions from existing functions. | ☑ |
| Construct and compare linear, quadratic, and exponential models and solve problems. | ☑ |
| Interpret expressions for functions in terms of the situation they model. | ☑ |
| Extend the domain of trigonometric functions using the unit circle. | ☑ |
| Model periodic phenomena with trigonometric functions. | ☑ |
| Summarize, represent, and interpret data on a single count or measurement variable. | ☑ |
| Make inferences and justify conclusions from sample surveys, experiments and observational studies | ☑ |
| ***Statistics and Probablilty*** | |
| 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. | ☑ |
| Understand and evaluate random processes underlying statistical experiments. | ☑ |
| Make inferences and justify conclusions from sample surveys, experiments, and observational studies. | ☑ |

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| 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. | ☑ |

| Pre Calculus | |
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| Identify, graph, analyze functions and perform function operations. | ☑ |
| Analyze, graph, and solve problems using polynomial and rational functions | ☑ |
| Analyze, graph, and solve problems using exponential and logarithmic functions. | ☑ |
| Analyze, graph, and solve problems using trigonometric functions. | ☑ |
| Use trigonometric identities to solve problems. | ☑ |
| Solve problems using properties of analytic geometry. | ☑ |
| Solve problems involving sequences and series. | ☑ |
| Reason with functions involving parameters, vectors, and matrices. | ☑ |
| **Calculus** | |
| Compute limits of functions. | ☑ |
| Solve problems involving continuity determine the continuity of functions. | ☑ |
| Use limits to compute derivatives. | ☑ |
| Compute derivatives. | ☑ |
| Apply the concept of the derivative. | ☑ |
| Define and interpret integrals. | ☑ |
| Compute integrals. | ☑ |
| Use integrals to solve problems. | ☑ |
| Solve and interpret solutions of differential equations. | ☑ |
| Apply calculus and related skills to advanced topics. | ☑ |