CCS Standards for Mathematics
Advanced Academy
10th-12th Grade
2017

	Astronomy Night-Celestial Marathon	Early Space History	Exploration Systems	Flight Hardware	Future of Spaceflight	International Space Programs	Model Rocket Challenge	Robotics-Rover Engineering Challenge	Russian Culture & Lab	Space Meds	Space Suits	Thermal Protection Systems
The Real Number System												
Extend the properties of exponents to rational exponents												
Use properties of rational and irrational numbers.												
Quantities												
Reason quantitatively and use units to solve problems												
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												
Vector & Matrix Quantities												
Represent and model with vector quantities												
Perform operations on vectors.												
Perform operations on matrices and use matrices in applications.												
Seeing Structure in Expressions												
Interpret the structure of expressions												
Write expressions in equivalent forms to solve problems												
Arithmetic with Polynomials & Rational Functions												
Perform arithmetic operations on polynomials												
Understand the relationship between zeros and factors of polynomials												
Use polynomial identities to solve problems												
Rewrite rational functions												
Creating Equations												
Create equations that describe numbers or relationships												
Reasoning with Equations and Inequalities												
Understand solving equations as a process of reasoning and explain the												
Solve equations and inequalities in one variable												
Solve systems of equations												
Represent and solve equations and inequalities graphically												
Interpreting Functions												
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												
Building Functions												
Build a function that models a relationship between two quantities												
Build new functions from existing functions												
Linear, Quadratic & Exponential Models												
Construct and compare linear and exponential models and solve problems												
Interpret expressions for functions in terms of the situation they model												
Trigonometric Functions												
Extend the domain of trigonometric functions using the unit circle												
Model periodic phenomena with trigonometric functions												
Prove and apply trigonometric identities												
Congruence												
Experiment with transformations in the plane												
Understand congruence in terms of rigid motions												
Prove geometric theorems												
Make geometric constructions												
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												
Circles												
Understand and apply theorems about circles												
Find arc lengths and areas of sectors of circles												
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												
Geometric Measurement and Dimension												
Explain volume formulas and use them to solve problems												
Visualize relationships between two-dimensional and three-dimensional objects												
Modeling with Geometry												
Apply geometric concepts in modeling situations								X	X				
Interpreting Categorical & 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												
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												
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												
Using Probability to Make Decisions												
Calculate expected values and use them to solve problems												
Use probability to evaluate outcomes of decisions												