6th Grade Major Work: Ratios and proportional relationships; early expressions and equations

MAJOR clusters ≈ 75% of time

6.RP.A Standards 1-3	Understand ratio concepts and use ratios reasoning to solve problems.
6.NS.A Standard 1	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
6.NS.C Standards 5-8	Apply and extend previous understandings of numbers to the system of rational numbers.
6.EE.A Standards 1-4	Apply and extend previous understandings of arithmetic to algebraic expressions.
6.EE.B Standards 5-8	Reason about and solve one-variable equations and inequalities.
6.EE.C Standard 9	Represent and analyze quantitative relationships between dependent and independent variables.

SUPPORTING clusters ≈15% of time

6.G.A Standards 1-4	Solve real-world and mathematical problems involving area, surface area, and volume

ADDITIONAL clusters ≈ 10% of time

6.NS.B Standards 2-4	Compute fluently with multi-digit numbers and find common factors and multiples
6.SP.A Standards 1-3	Develop understanding of statistical variability.
6.SP.B Standards 4-5	Summarize and describe distributions

7th Grade Major Work: Ratios and proportional relationships; arithmetic or rational numbers

MAJOR clusters ≈ 65% of time

7.RP.A Standards 1-3	Analyze proportional relationships and use them to solve real-world and mathematical problems.
7.NS.A Standards 1-3	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
7.EE.A Standards 1- 2	Use properties of operations to generate equivalent expressions.
7.EE.B Standards 3-4	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

SUPPORTING clusters ≈20 - 25% of time

7.SP.A Standards 1-2	Use random sampling to draw inferences about a population.
7.SP.C Standards 5-8	Investigate chance processes and develop, use, and evaluate probability models.

ADDITIONAL clusters ≈ 10 - 15% of time

7.G.A Standards 1-3	Draw, construct, and describe geometrical figures and describe the relationships between them.
7.G.B Standards 4-6	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
7.SP.B Standards 3-4	Draw informal comparative inferences about two populations.

8th Grade Major Work: Linear Algebra and Linear Functions

MAJOR clusters ≈ 75- 80% of time

8.EE.A Standards 1- 4	Work with radicals and integer exponents
8.EE.B Standards 5-6	Understand the connections between proportional relationships, lines, and linear equations.
8.EE.C Standards 7-8	Analyze and solve linear equations and pairs of simultaneous linear equations.
8.F.A Standards 1-3	Define, evaluate, and compare functions.
8.F.B Standards 4-5	Use functions to model relationships between quantities.
8.G.A Standards 1-5	Understand congruence and similarity using physical models, transparencies, or geometry software.
8.G.B Standards 6-8	Understand and apply the Pythagorean Theorem.

SUPPORTING clusters ≈ 15 - 20% of time

8.NS.A Standards 1-2	Know that there are numbers that are not rational, and approximate them by rational numbers.
8.SP.A Standards 1-4	Investigate patterns of association in bivariate data.

ADDITIONAL clusters ≈ 5% of time

8.G.C Standard 9	Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

11th Grade Major Work: Algebra and Functions

Multiple Opportunities throughout HS

N.Q.1-3	Reason quantitatively and use units to solve problems.
A.SSE.1-2	Interpret the structure of expressions
A.SSE.3-4	Write expressions in equivalent forms to solve problems
A.CED.1-4	Create equations that describe numbers or relationships
A.REI.1-2	Understand solving equations as a process of reasoning and explain the reasoning
A.REI.3-4	Solve equations and inequalities in one variable
A.REI-5-7	Solve systems of equations
A.REI.10-12	Represent and solve equations and inequalities graphically
F.IF.1-3	Understand the concept of a function and use function notation
F.IF.4-6	Interpret functions that arise in applications in terms of the context
F.IF.7-9	Analyze functions using different representations
F.BF.1-2	Build a function that models a relationship between two quantities

First 2 years clusters

N.RN.1-2	Extend the properties of exponents to rational exponents.
N.RN.3	Use properties of rational and irrational numbers.
A.APR.1	Perform arithmetic operations on polynomials
A.APR.2-3	Understand the difference between zeros and factors of polynomials
A.APR.4	Use polynomial identities to solve problems
A.APR.6	Rewrite rational expressions
F.LE.1-4	Construct and compare linear and exponential models and solve problems
F.LE.5	Interpret expressions for functions in terms of the situation they model
S.ID.1-4	Summarize, represent, and interpret data on a single count or measurement variable
S.ID.7-9	Interpret linear models
S.IC.1-2	Understand and evaluate random processes underlying statistical experiments
G.CO.1-5	Experiment with transformations in the plane
G.CO.6-8	Understand congruence in terms of rigid motions
G.CO.9-11	Prove geometric theorems
G.SRT.1-3	Understand similarity in terms of similarity transformations
G.SRT.4-5	Prove theorems involving similarity
G.SRT.6-8	Define trigonometric ratios and solve problems involving right triangles

3rd Year clusters

F.BF.3-4	Build new functions from existing functions
F.TF.1-2	Extend the domain of trigonometric functions using the unit circle
F.TF.5	Model periodic phenomena with trigonometric functions
F.TF.8	Prove and apply trigonometric identities
S.ID.5-6	Summarize, represent, and interpret data on two categorical and quantitative variables
S.IC.3-6	Make inferences and justify conclusions from sample surveys, experiments, and observational studies
S.CP.1-5	Understand independence and conditional probability and use them to interpret data
G.GMD.1-3	Explain volume formulas and use them to solve problems
G.MG.1-3	Apply geometric concepts in modeling situations

4th Year clusters

N.CN.1-2	Perform arithmetic operations with complex numbers.
N.CN.7	Use complex numbers in polynomial identities and equations.
S.CP.6-7	Use the rules of probability to compute probabilities of compound events in a uniform probability model
G.CO.12-13	Make geometric constructions
G.C.1-4	Understand and apply theorems about circles
G.C.5	Find arc lengths and areas of sectors of circles
G.GPE.1-2	Translate between the geometric description and the equation for a conic section
G.GPE.4-7	Use coordinates to prove simple geometric theorems algebraically
G.GMD.4	Visualize relationships between two-dimensional and three dimensional objects