College Math Pacing Guide

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| Unit | Time Frame | Activities | Assessments | Standard/ Objective |
| Unit 1: Problem Solving* 1.1 Solving Problems by Inductive Reasoning
* 1.2 Application of Inductive Reasoning: Number Patterns
* 1.3 Strategies for Problem Solving
 | Two weeksAugust to September (tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each)
 | * Students will take a test over the chapter (40 points)
 | Objectives:* Use inductive reasoning to solve problems
* Discover and apply different problem solving strategies for all types of real world problems
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| Unit 2: The Basic Concepts of Set Theory* 2.1 Symbols and Terminology
* 2.2 Venn Diagrams and Subsets
* 2.3 Set Operations and Cartesian Products
* 2.4 Cardinal Numbers and Surveys
 | Two weeksSeptember | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will take a test over the chapter (40 points)
 | Objectives:* Apply the basic terminology and symbols of set theory
* Use Venn Diagrams to organize sets and their subsets
* Use set operations
* Find Cardinal numbers of sets
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| Unit 4: Numeration and Mathematical Systems4.1 Historical Numeration Systems4.2 Arithmetic in Hindu-Arabic System4.3 Conversion Between Number Bases4.4 Finite Mathematical Systems4.5 Groups | Four weeksSeptember to November(tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will choose an ancient numerical system and research it. They will make a presentation to the class on their findings and show how it worked. (100 points)
* Students will take a test over the chapter (around 40 points)
 | Objectives:* Explore Historical Numeration Systems and apply them.
* Explore the Hindu-Arabic Number system, its beginnings and basic properties
* Convert numbers between number bases
* Use the properties of finite sets
* Use mathematical groups
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| Unit 5: Number Theory* 5.1 Prime and Composite Numbers
* 5.2 Selected Topics from Number Theory
* 5.3 Greatest Common Factor and Least Common Multiple
* 5.4 Clock Arithmetic and Modular Systems
* 5.5 The Fibonacci Sequence and the Golden Rule
 | Four weeksNovember to December(tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each)
* Students will look up the Fibonacci Sequence and the Golden Rule and give a brief explanation of each; Then find real life examples of The Fibonacci Sequence and the Golden rule.
 | * Students will choose a famous mathematician to research. They will make a presentation to the class. (100 points)
* Students will take a test over the chapter. (around 40 points)
 | * Discover Properties of Prime and Composite Numbers
* Use Divisibility Tables and rules
* Use Selected topics in Number theory such as the Fibonacci Sequence and Fermat’s Last Theorem.
* Find the GCF and LCF of huge numbers
* Use Modular Arithmetic and Binary Code
* Explore how the Golden rule and the Fibonacci Sequence occur naturally, or are used in the world.
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| Unit 6: The Real Numbers and Their Representations* 6.1 Real Numbers, Order and Absolute Value
* 6.2 Operations, Properties and Applications of Real Numbers
* 6.3 Rational Numbers and Decimal Representations
* 6.4 Irrational Numbers and Decimal Representations
* 6.5 Applications of Decimals and Percents
 | Three WeeksJanuary(tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will take a quiz over Real Numbers and Rational Numbers (30 points)
* Students will take a test over Real numbers and their representations (50 points)
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| **Domain**  | ***The Real Number System***  |
| ***Cluster***  | ***Extend the properties of exponents to rational exponents***  |
| **Standards**  | 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.  |

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| Unit 7: The Basic Concepts of Algebra* 7.1 Linear Equations
* 7.2 Applications of Linear Equations
* 7.3 Ratio, Proportion, and Variation
* 7.4 Linear Inequalities
* 7.5 Properties of Exponents and Scientific Notation
* 7.6 Polynomials and Factoring
* 7.7 Quadratic Equations and Applications
 | Four WeeksFebruary to March (tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will do a Collage of mathematics for a project. They must make it out of famous mathematicians, or any other math items they can picture. They must explain at least 15 items from their board. (100 points)
* Students will take a test over the chapter (50-60 points)
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| **Domain**  | **Cluster**  |
| **Seeing Structure in Expressions**  | Interpret the structure of expressions Write expressions in equivalent forms to solve problems.  |

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| **Arithmetic with Polynomials and Rational Expressions**  | Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials.  |

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| **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.  |

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| Unit 8: Graphs, Functions, and Systems of Equations* 8.1 The Rectangular Coordinate System and Circles
* 8.2 Lines and Slopes
* 8.3 Equations of Lines and Linear Models
* 8.4 An Introduction to Functions: Linear Functions, Applications, and Models
* 8.5 Quadratic Functions, Applications and Models
* 8.6 Exponential and Logarithmic Functions, Applications and Models
* 8.7 Systems of Equations and Applications
* 8.8 Linear Inequalities, Systems, and Linear Programming
 | Three weeks March | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will take a quiz over the first four sections of the chapter. (30-40 points)
* Students will take a test over the chapter (50-60 points)
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| Domain  | Cluster  |
| Interpreting Functions  | Understand the concept of a function and use function notation. Interpret functions that arise in applications in terms of the context.  |

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| Linear, Quadratic, and Exponential Models  | Construct and compare linear, quadratic, and exponential models and solve problems.  |

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| Unit 9: Geometry* 9.1 Points, Lines, Planes, and Angles
* 9.2 Curves, Polygons, and Circles
* 9.3 Perimeter, Area, and Circumference
* 9.4 The Geometry of Triangles: Congruence, Similarity, and the Pythagorean Theorem
* 9.5 Space Figures, Volume and Surface Area
* 9.6 Transformational Geometry
* Non-Euclidean Geometry, Topology and Networks
* 9.7 Chaos And Fractal Geometry
 | Three weeksApril(tentative Schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each)
* Students will look up Fractals. They will try to create one using cardboard and glue.
 | * Students will take a quiz over the first four sections of the unit. (30-40 points)
* Students will take a test over the unit. (50-60 points)
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| Domain  | Cluster  |
| **Congruence**  | Experiment with transformations in the plane Understand congruence in terms of rigid motions  |

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| **Similarity, Right Triangles, and Trigonometry**  | Understand similarity in terms of similarity transformations  |

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| **Circles**  | Understand and apply theorems about circles.  |

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| **Geometric Measurement and Dimension**  | Explain volume formulas and use them to solve problems.  |

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| Unit 10 Trigonometry* 10.1 Angles and their measures
* 10.2 Trigonometric Functions and Angles
* 10.3 Trigonometric Identities
* 10.4 Right Triangles and Function Values
* 10.5 Applications of Right Triangles
* 10.6 The Laws of Sines and Cosines; Area Formulas
* 10.7 The Unit Circle and Graphs
 | Four Weeks April to May(tentative schedule) | * Students will take guided notes for the chapter. These can sometimes be used on assessments to add to their worth.
* Students will complete Exercises to practice the learned skills (10 points each
 | * Students will research an important topic or Person in Mathematics. They will present this to the class in a creative way of their choice. (song, movie, story book, or other approved option of their choice)(100 points)
* Students will take a Test over the unit (50-60 points)
 | Domain:

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| **Similarity, Right Triangles, and Trigonometry**  |

Cluster:

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| ***Apply trigonometry to general triangles***  |

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