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Discrete Mathematics (DM) is the study of big data analytics. Students will study the principles of number, graph and logic theories. Students will learn how to manage large-scale data. Topics addressed are applicable to the fields of computer science, management sciences, statistics, voting and social choice, fairness and game theory, and money and resources.

Prerequisite courses: *Geometry with Statistics* > *Algebra 1* > *Algebra 2 with Probability*

DATA, PROBABILITY, AND STATISTICAL REASONING

Discrete Mathematics (DM) students will continue their learning from Algebra 2 with Probability to analyze, model and solve problems involving fair outcomes.

- Investigate, solve, and compare voting methods to determine the most appropriate method.
- Determine power indexes for weighted voting systems.

MEASUREMENT, GEOMETRY AND SPATIAL REASONING

Discrete Mathematics (DM) students will continue their learning from Geometry with Statistics, Algebra 1 and Algebra 2 with Probability. Students will use graph theory to model relationships and solve problems.

- Distinguish between inductive and deductive reasoning.
- Determine statements and rephrase them symbolically.
- Write statements using converse, inverse and contrapositive.
- Verify arguments and syllogisms.
- Use negation, disjunction and conjunction to determine if statements are logically equivalent.
- Test graphs and digraphs for paths and circuits.

NUMERICAL REASONING

Discrete Mathematics (DM) students will continue their learning from Geometry with Statistics, Algebra 1 and Algebra 2 with Probability. Students will investigate principles of set theory and analyze numbers with different bases.

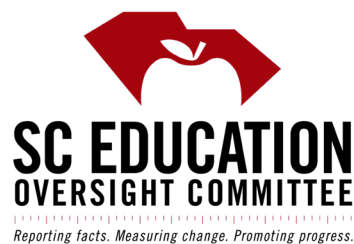
- Define basic terms and concepts in set theory.
- Compare sets.
- Determine and explain the cardinality of sets.
- Perform and solve problems using modular arithmetic properties.
- Explain and apply binary and hexadecimal number systems.
- Calculate combinations and permutations.

PATTERNS, ALGEBRA AND FUNCTIONAL REASONING

Discrete Mathematics (DM) students will continue their learning from Geometry with Statistics, Algebra 1 and Algebra 2 with Probability. Students will classify and compare objects using estimation and sets for real-world situations.

- Understand and carry out proofs using the Principle of Mathematical Induction.
- Use matrices to model and solve mathematical and real-world situations.
- Perform operations on sets.
- Write, manipulate and evaluate matrices using addition, subtraction, multiplication, inverse and power properties.

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The South Carolina Education Oversight Committee (EOC) is an independent, nonpartisan group of 18 educators, business people, and elected officials appointed by the legislature and governor. The EOC enacts the South Carolina Education Accountability Act of 1998, which sets standards for improving the state's K-12 educational system. The EOC reviews the state's education improvement process, assesses how schools are doing, and evaluates the standards schools must meet to build the education system needed to compete in this century.