South Carolina Mathematics

Discrete Mathematics

Mathematical Process Standards MPS

1 Problem Solving MPS.PS

1a Make sense of problems and persevere in solving them strategically. MPS.PS.1

2 Representation & Communication MPS.RC

2a Explain ideas using precise and contextually appropriate mathematical language, tools, and models. MPS.RC.1

3 Connections MPS.C

3a Demonstrate a deep and flexible conceptual understanding of mathematical ideas, operations, and relationships while making real-world connections. MPS.C.1

4 Analyze & Justify MPS.AJ

4a Use critical thinking skills to reason both abstractly and quantitatively. MPS.AJ.1

5 Structure & Patterns MPS.SP

5a Identify and apply regularity in repeated reasoning to make generalizations. MPS.SP.1

Data, Probability, and Statistical Reasoning DM.DPSR

1 Analyze, model, and solve problems involving fair outcomes. DM.DPSR.1

1a Investigate and describe the results of various election methods. DM.DPSR.1.1

1b Explain fairness and equity in relation to the paradoxes of voting. DM.DPSR.1.2

1c Solve apportionment problems using a variety of methods. DM.DPSR.1.3

1d Compare voting methods to determine the method most appropriate for the situation. DM.DPSR.1.4

1e Determine power indexes for weighted voting systems. DM.DPSR.1.5

Measurement, Geometry, and Spatial Reasoning DM.MGSR

1 Use graph theory to model relationships and solve problems. DM.MGSR.1

- 1a Distinguish between inductive and deductive reasoning. DM.MGSR.1.1
- 1b Determine statements and rephrase them symbolically. DM.MGSR.1.2
- 1c Use negation, disjunction, and conjunction to determine if statements are logically equivalent. DM.MGSR.1.3
- 1d Write statements in words and symbolically using converse, inverse, and contrapositive. DM.MGSR.1.4
- 1e Verify arguments and syllogisms. DM.MGSR.1.5
- 1f Represent real-world situations using a vertex-edge graph. DM.MGSR.1.6
- 1g Test graphs and digraphs for paths and circuits. DM.MGSR.1.7

Numerical Reasoning DM.NR

1 Investigate principles of set theory. DM.NR.1

- 1a Define basic terms and concepts in set theory. DM.NR.1.1
- 1b Compare sets with appropriate language and notation. DM.NR.1.2
- 1c Determine and explain the cardinality of sets. DM.NR.1.3

2 Analyze numbers with different bases in real-world situations. DM.NR.2

- 2a Perform arithmetic operations using modular arithmetic properties. DM.NR.2.1
- 2b Solve problems involving modular arithmetic in real-world situations. DM.NR.2.2
- 2c Explain and apply binary and hexadecimal number systems DM.NR.2.3

3 Determine the number of ways an event can occur. DM.NR.3

- 3a Calculate combinations and permutations. DM.NR.3.1

Patterns, Algebra, and Functional Reasoning DM.PAFR

1 Classify and compare objects using estimation and sets for real-world situations. DM.PAFR..1

- 1a Use estimation to get an approximate answer in real-world situations. DM.PAFR.1.1
- 1b Perform operations on sets. DM.PAFR.1.2

2 Develop an understanding of and carry out proofs by mathematical induction using the Principle of Mathematical Induction. DM.PAFR.2

- 2a Create mathematical induction proofs using the Principle of Mathematical Induction. DM.PAFR.2.1

3 Use matrices to model and solve mathematical and real-world situations. DM.PAFR.3

- 3a Manipulate matrices using addition, subtraction, multiplication, inverse, and power properties. DM.PAFR.3.1
- 3b Write and evaluate matrices drawn from real-world situations. DM.PAFR.3.2