South Carolina Mathematics

Grade 7 & 8 Compacted Math

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 78.DPSR

1 Analyze data sets to identify their statistical elements. 78.DPSR.1

1a Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations. 7.DPSR.1.1

1b Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set. 7.DPSR.1.2

1c Calculate and interpret the measures of center (mean, median, mode) and spread (mean absolute deviation, interquartile range, range) in mathematical and real-world situations. 7.DPSR.1.3

1d Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets. 7.DPSR.1.4

2 Calculate and interpret probability. 78.DPSR.2

2a Identify the sample space for a simple event. 7.DPSR.2.1

2b Calculate and interpret the theoretical probability of a simple random event. 7.DPSR.2.2

2c Calculate and interpret the experimental probability of a random event related to a simple experiment. 7.DPSR.2.3

2d Compare and contrast the experimental and theoretical probabilities for a simple experiment. 7.DPSR.2.4

Measurement, Geometry, and Spatial Reasoning 78.MGSR

1 Determine the measurements of geometric figures. 78.MGSR.1

1a Identify the parts of a circle. Limit parts to center, radius, diameter, and chord. 7.MGSR.1.1

1b Describe the relationship between the radius, diameter, and circumference of a circle. 7.MGSR.1.2

1c Solve mathematical and real-world situations involving circumference or area of circles. 7.MGSR.1.3

1d Determine if three given side lengths can form a triangle using the Triangle Inequality Theorem. 7.MGSR.1.4

1e In mathematical and real-world situations, find the volume of right prisms and right pyramids having triangular or quadrilateral bases. 7.MGSR.1.5

1f In mathematical and real-world situations, find the surface area of right prisms and right pyramids having triangular or quadrilateral bases. 7.MGSR.1.6

1g Given the geometric formulas, find the volume of cones, cylinders, and spheres in mathematical and real-world situations. 8.MGSR.1.1

2 Determine angle and/or side relationships. 78.MGSR.2

2a Determine the measure of the third angle given the measure of the other two angles of a triangle using the Triangle Sum Theorem. 7.MGSR.2.1

2b Solve mathematical and real-world situations involving dimensions and areas of geometric figures including scale drawings and scale factors. 7.MGSR.2.2

2c Identify the relationships and measures among angles formed by two intersecting lines, given the measure of one angle. Limit to supplementary, complementary, vertical, and adjacent relationships. 7.MGSR.2.3

2d Write and solve equations to solve mathematical and real-world situations involving the relationships among angles formed by two intersecting lines. Limit to supplementary, complementary, vertical, and adjacent relationships. 7.MGSR.2.4

2e Determine missing angle measurements created when parallel lines are cut by a transversal. 8.MGSR.2.1

2f Determine if two-dimensional figures are congruent or similar. 8.MGSR.2.2

2g Identify the congruent corresponding angles of similar polygons. 8.MGSR.2.3

2h Apply proportional reasoning to find the missing side lengths of two similar figures. 8.MGSR.2.5

3 Graph on the coordinate plane. 78.MGSR.3

3a Find distances between ordered pairs on the coordinate plane, limited to the same x-coordinate or the same y-coordinate. 7.MGSR.3.1

3b Identify the transformation as a rotation, reflection, and/or translation. Limit rotations to multiples of 90 degrees centered on the origin. 8.MGSR.3.1

3c Translate geometric figures vertically and/or horizontally. 8.MGSR.3.3

3d Reflect geometric figures with respect to the x-axis and/or y-axis. 8.MGSR.3.4

3e Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin in a coordinate plane. 8.MGSR.3.5

3f Create a dilation using a given scale factor and describe the effect of a dilation. 8.MGSR.3.6

3g Describe the effect of a series of transformations, including dilations, translations, rotations, and reflections, on two-dimensional figures using coordinates on the coordinate plane. 8.MGSR.3.7

Numerical Reasoning 78.NR

1 Translate among multiple representations of rational numbers. 78.NR.1

1a Convert rational numbers into equivalent forms among fractions (including mixed numbers), decimals, and percentages. Exclude the conversion of repeating decimals to fractions. 7.NR.1.1

1b Convert any form of a rational number to any other form including fractions (mixed numbers), decimals, and percentages. 8.NR.1.1

2 Utilize real numbers in mathematical and real-world situations 78.NR.2

2a Compare two rational numbers and write statements using is equal to (=), is not equal to (≠), is less than (<), is greater than (>), is greater than or equal to (≥), and/or is less than or equal to (≤) in mathematical and real-world situations. 7.NR.2.1

2b Compare real numbers and write statements using is equal to (=), is not equal to (≠), is less than (<), is greater than (>), is greater than or equal to (≥), or is less than or equal to (≤). 8.NR.2.1

2c Classify and order the subsets of real numbers in the number system including natural, whole, integer, rational, and irrational numbers. 8.NR.2.2

Patterns, Algebra, and Functional Reasoning 78.PAFR

1 Determine if a table, graph, verbal description, or equation represents a function and describe its characteristics. 78.PAFR.1

1a Apply proportional reasoning to solve problems in mathematical and real-world situations involving ratios and percentages. 7.PAFR.1.1

1b Create a model with functions that address a proportional relationship in real-world situations. 7.PAFR.1.2

1c Identify the constant of proportionality within proportional relationships. 7.PAFR.1.3

1d Define an equation in slope-intercept form (y = mx + b) as being a linear function. 8.PAFR.1.1

1e Identify and describe the constant rate of change and the y-intercept of a linear function. 8.PAFR.1.2

1f Determine if a graph, table, mapping, or verbal description is a function (linear or nonlinear) or not a function. 8.PAFR.1.3

1g Describe the key features of given functions, including domain, range, intervals of increasing or decreasing, constant, discrete, continuous, and intercepts. 8.PAFR.1.4

1h Translate among the multiple representations including mappings, tables, graphs, verbal description, and equations (only when linear) of a function. 8.PAFR.1.6

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2 Write, simplify, and evaluate algebraic expressions; write and solve algebraic equations and inequalities. 78.PAFR.2

1a Write and solve multi-step equations and inequalities in one variable involving rational numbers in mathematical and real-world situations. 7.PAFR.2.1

1b Write and evaluate expressions in one variable that model mathematical and real-world situations 7.PAFR.2.2

1c Compute unit rates, including those involving complex fractions with like or different units. 7.PAFR.2.3

1d Use dimensional analysis to convert units between metric and customary systems. 7.PAFR.2.4

1e Solve multi-step one variable equations and inequalities with variables on both sides with rational coefficients. 8.PAFR.2.1

1f Identify the rate of change for a linear function as the slope of the line. 8.PAFR.2.3

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3 Apply mathematical patterns, properties, and algorithms to the set of rational numbers to find sums, differences, products, and quotients and to write equivalent expressions. 78.PAFR.3

1a Simplify numerical expressions that include integer exponents using the laws of exponents: the Product of Powers, Quotient of Powers, Power of a Power, Power of a Product, Power of a Quotient, Zero Power, and Negative Exponent. 7.PAFR.3.1

1b Identify linear expressions that are equivalent. 7.PAFR.3.2

1c Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation. 7.PAFR.3.3

1d Factor linear expressions with integer coefficients using the greatest common factor (GCF). 7.PAFR.3.4

1e Apply all operations with rational numbers to solve problems in mathematical and real-world situations. 7.PAFR.3.5

1f Apply laws of exponents to simplify algebraic expressions involving no more than three variables and integer exponents. 8.PAFR.3.3