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Colorado Mathematics Academic Standards, Grade 5 Alignments to SuccessMaker

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Colorado Mathematics Standards Code	Colorado Mathematics Academic Standards, Grade 5	SuccessMaker Item Description	Item ID
1	Number and Quantity		
5.NBT.A	Number & Operations in Base Ten: Understand the place value system.		
5.NBT.A.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	Multiply one- to five-digit whole numbers by powers of ten (10 to 100,000).	SMMA_LO_01078
		Explain patterns in the number of zeroes of the product and in the placement of the decimal point when multiplying a number by powers of ten.	SMMA_LO_02046
5.NBT.A.3	Read, write, and compare decimals to thousandths.	Compare decimal numbers (to thousandths).	SMMA_LO_00225
5.NBT.A.3.b	Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	Compare decimal numbers (to thousandths).	SMMA_LO_00225
5.NBT.A.4	Use place value understanding to round decimals to any place.	Round a decimal to the nearest tenth, hundredth, or whole number.	SMMA_LO_00230
	Academic Context and Connections		
	Personal Skills: Perseverance/Resilience		
2	Abstract place value reasoning with whole numbers to decimal numbers.	Enter a decimal number in a place-value chart (tenths to thousandths).	SMMA_LO_01089
5.NBT.B	Number & Operations in Base Ten: Perform operations with multi-digit whole numbers and with decimals to hundredths.		
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	Add or subtract decimals using mental math (sums less than 1.00, with or without regrouping).	SMMA_LO_00210
		Subtract metric length or weight measurements expressed as decimals (to tenths, difference 1.2 to 8.9, regrouping).	SMMA_LO_00159
		Subtract decimals numbers (minuends and subtrahends 0.01 to 9.99).	SMMA_LO_00207
		Multiply two decimals or multiply a decimal by a whole number (tenths to hundredths).	SMMA_LO_00223
		Align the decimal numbers in a vertical addition problem; then solve (hundredths, regrouping).	SMMA_LO_00211
		Divide a decimal by a decimal (horizontal division; dividends to tenths).	SMMA_LO_00237
		Add decimals numbers using mental math (sums 1.0 to 99.8, regrouping).	SMMA_LO_00217
		Multiply decimals displayed horizontally (0.2 x 0.6 to 0.9 x 0.12).	SMMA_LO_00232
		Add decimals using addition facts (sums 0.02-0.99).	SMMA_LO_00206
5.NF.A	Number & Operations-Fractions: Use equivalent fractions as a strategy to		

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	add and subtract fractions.		
	Academic Context and Connections		
MP6	Attend to precision.		
2	Assess the reasonableness of fraction calculations by estimating results using benchmark fractions and number sense.	Estimate the difference of two fractions.	SMMA_LO_01707
MP7	Look for and make use of structure.		
3	Look for structure in the multiplicative relationship between unlike denominators when creating equivalent fractions.	Find the missing numerator or denominator in an equivalent fraction (simplified fractions 1/2 to 3/4).	SMMA_LO_00451
		Find an equivalent fraction of a simplified fraction (simplified fractions 1/2 to 8/9).	SMMA_LO_00457
		Find the missing numerator or denominator in an equivalent fraction (simplified fractions 1/2 to 7/8).	SMMA_LO_00453
5.NF.B	Number & Operations-Fractions: Apply and extend previous understandings of multiplication and division.		
5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	Model multiplication of a whole number by a fraction; complete an equation to show the product; interpret a real-world context that can be modeled by this equation.	SMMA_LO_02048
		Model the multiplication of two fractions; complete an equation to show the product; interpret a real-world context that can be modeled by this equation.	SMMA_LO_02054
5.NF.B.4.b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	Find the area of a rectangle with fractional side lengths in two ways: by multiplying its side lengths and by tiling it with smaller rectangles.	SMMA_LO_02049
5.NF.B.5	Interpret multiplication as scaling (resizing), by:		
5.NF.B.5.b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = $(n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.	Find the missing numerator or denominator in an equivalent fraction (simplified fractions 1/2 to 3/4).	SMMA_LO_00451
		Find an equivalent fraction of a simplified fraction (simplified fractions 1/2 to 8/9).	SMMA_LO_00457
		Find the missing numerator or denominator in an equivalent fraction (simplified fractions 1/2 to 7/8).	SMMA_LO_00453
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in	Model the division of a unit fraction by a nonzero whole number, and compute the quotient.	SMMA_LO_02052

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	general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)		
5.NF.B.7.a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.	Model the division of a unit fraction by a nonzero whole number, and compute the quotient.	SMMA_LO_02052
	For example, create a story context for 1/3 ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 1/3 ÷ 4 = 1/12 because 1/12 × 4 = 1/3.		
5.NF.B.7.c	Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.	Model the division of a unit fraction by a nonzero whole number, and compute the quotient.	SMMA_LO_02052
	For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?		
	Academic Context and Connections		
	Entrepreneurial Skills: Critical Thinking/Problem Solving		
1	Solve problems requiring calculations that scale whole numbers and fractions.	Multiply whole numbers (student choice, products 11 x 11 to 15 x 99).	SMMA_LO_00899
		Multiply whole numbers (products 2 x 20 to 90 x 9, multiples of 10).	SMMA_LO_00885
		Multiply whole numbers (student choice, products 101 x 2 to 999 x 9).	SMMA_LO_00886
		Multiply a four-digit number by a one-digit number (student choice, products 1000 x 2 to 9999 x 9).	SMMA_LO_00892
		Multiply whole numbers (products 20 x 20 to 90 x 90, multiples of 10).	SMMA_LO_00889
		Model the multiplication of two fractions; complete an equation to show the product; interpret a real-world context that can be modeled by this equation.	SMMA_LO_02054
MP6	Attend to precision.		
3	Attend carefully to the underlying unit quantities when solving problems involving multiplication and division of fractions.	Multiply two decimals or multiply a decimal by a whole number (tenths to hundredths).	SMMA_LO_00223
		Divide a decimal by a decimal (horizontal division; dividends to tenths).	SMMA_LO_00237
		Multiply decimals displayed horizontally (0.2 x 0.6 to 0.9 x 0.12).	SMMA_LO_00232
		Model the multiplication of two fractions; complete an equation to show the product; interpret a real-world context that can be modeled by this equation.	SMMA_LO_02054
MP7	Look for and make use of structure.		
4	Contrast previous understandings of multiplication modeled as equal groups to multiplication as scaling, which is necessary to understand multiplying a	Determine whether multiplying a number by a factor results in scaling the number up or down.	SMMA_LO_02051

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	fraction or whole number by a fraction, and how the operation of multiplication does not always result in a product larger than both factors.		
		Determine whether multiplying a number by a factor results in scaling the number up or down.	SMMA_LO_02050
2	Algebra and Functions		
5.OA.B	Operations & Algebraic Thinking: Analyze patterns and relationships.		
5.OA.B.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.		
	For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.		
	Academic Context and Connections		
	Entrepreneurial Skills: Inquiry/Analysis		
MP8	Look for and express regularity in repeated reasoning.		
3	Look for repeated reasoning both within individual patterns and in mathematical relationships between pairs of patterns.	Determine whether two to six segments divide a figure into congruent parts.	SMMA_LO_00634
		Generate a table of values given a rule.	SMMA_LO_01724
3	Data, Statistics, and Probability		
5.MD.C	Measurement & Data: Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.		
5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.		
5.MD.C.3.a	A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume and can be used to measure volume.	Identify a unit cube and what attribute it is used to measure.	SMMA_LO_02041
5.MD.C.3.b	A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of nn cubic units.	Identify a unit cube and what attribute it is used to measure.	SMMA_LO_02041
5.MD.C.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	Find the volume of a prism by packing the prism with unit cubes.	SMMA_LO_02042
		Identify a unit cube and what attribute it is used to measure.	SMMA_LO_02041
5.MD.C.5	Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.	Determine the volume of a box given the height, width, and length (60 to 480 customary or metric cubic units).	SMMA_LO_00174
5.MD.C.5.a	Model the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge	Find the volume of a prism by packing the prism with unit cubes.	SMMA_LO_02042

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	lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.		
5.MD.C.5.b	Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.	Determine the volume of a box given the height, width, and length (60 to 480 customary or metric cubic units).	SMMA_LO_00174
		Compute the volume of right rectangular prisms using formulas.	SMMA_LO_02043
	Academic Context and Connections		
	Entrepreneurial Skills: Critical Thinking/Problem Solving		
1	Solve real-world problems involving volume.		
MP2	Reason abstractly and quantitatively.		
2	Make connections between the values being multiplied in a volume formula, the concept of cubic units, and the context within which volume is being calculated.		
MP5	Use appropriate tools strategically.		
3	Use unit cubes as a tool for finding or estimating volume and compare those results with those obtained with formulas.		
MP7	Look for and make use of structure.		
4	Extend the structure of two-dimensional space and the relationship between arrays and area to three-dimensional space and the relationship between layers of cubes and volume.		
1	How are volume and area related in a solid figure?		
2	Why is multiplication used when computing the volume of a solid figure, instead of another operation?		
1	This expectation represents major work of the grade.		
2	In previous grades, students connect area to the operation of multiplication and understand how to represent area problems as multiplication equations.		
3	In Grade 6, students solve real-world and mathematical problems involving area of right rectangular prisms with fractional side lengths, using fractional cubic units.		
4	Geometry		
5.G.A	Geometry: Graph points on the coordinate plane to solve real-world and mathematical problems.		
5.G.A.2	Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	Graph a point on a coordinate grid (Quadrant I).	SMMA_LO_01735
	Academic Context and Connections		
	Entrepreneurial Skills: Critical Thinking/Problem Solving		
1	Use the first quadrant of the coordinate	Graph a point on a coordinate grid	SMMA_LO_01735

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	plane to represent real-world and mathematical problems.	(Quadrant I).	
MP2	Reason abstractly and quantitatively.		
3	Reason quantitatively about a problem by abstracting and representing the situation in the first quadrant of the coordinate plane.	Graph a point on a coordinate grid (Quadrant I).	SMMA_LO_01735
MP5	Use appropriate tools strategically.		
4	Use the first quadrant of the coordinate plane as a tool to represent, analyze, and solve problems.	Graph a point on a coordinate grid (Quadrant I).	SMMA_LO_01735
5.G.B	Geometry: Classify two-dimensional figures into categories based on their properties.		
	Academic Context and Connections		
	Entrepreneurial Skills: Inquiry/Analysis		
MP3	Construct viable arguments and critique the reasoning of others.		
2	Critique the reasoning of others' classifications of two-dimensional shapes.	Classify and sort 2D geometric figures by properties and attributes.	SMMA_LO_01728
MP5	Use appropriate tools strategically.		
3	Strategically use measurement tools to help improve the classification of shapes.	Classify and sort 2D geometric figures by properties and attributes.	SMMA_LO_01728