

**Applies Mathematical Operations, Concepts and Reasoning – Foundation Skills Framework and CCR Standards Alignment**
**FSF Skill Competency W 5.1: Demonstrates computations skills using whole numbers, fractions, decimals, and percentages**
**Standards of Mathematical Practice(s):**

- Make sense of problems and persevere in solving them. (MP.1)
- Reason abstractly and quantitatively. (MP.2)
- Look for and express regularity in repeated reasoning. (MP.8)

Competency Benchmark	CCR Domains and Standards	Level
<b>Identifies, classifies, writes numeric symbols as numerals and words</b>	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Understand place value; Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	B
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System) <b>Standard:</b> Generalize place value understanding for multi-digit whole numbers; Generalize place value understanding for multi-digit whole numbers; Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.	C
<b>Counts and associates numbers with quantities, including correct sequence</b>	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Understand Place Value; Count within 1000; skip-count by 5s, 10s, and 100s	B
<b>Identifies the values of whole numbers, fractions, decimals, and percentages</b>	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Understand place value; Understand that the two digits of a two-digit number represent amounts of tens and ones; Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones	A
	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Understand place value; Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones	B
	<b>Domain:</b> Number and Operations: Fractions <b>Standard:</b> Develop understanding of fractions as numbers; Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; Understand a fraction as a number on the number line; represent fractions on a number line diagram	B
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System) <b>Standard:</b> Understand the Place Value System; Read, write, and compare decimals to thousandths	C
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System)	D

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FSF Skill Competency W 5.1: Demonstrates computations skills using whole numbers, fractions, decimals, and percentages		
	<b>Standard:</b> Understand ratio concepts and use ratio reasoning to solve problems; Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 3 1 times the quantity); solve problems involving finding the whole, given a part and the percent	
<b>Adds and subtracts whole numbers, fractions, decimals, and percentages</b>	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Use place value understanding and the properties of operations to add and subtract; Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10; Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90	A
	<b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Understand and apply properties of operations and the relationship between addition and subtraction; Apply properties of operations as strategies to add and subtract.	A
	<b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Add and subtract with 20; Relate counting to addition and subtraction (e.g., by counting on 2 to add 2); Add and subtract within 20, demonstrating fluency for addition and subtraction within 10	A
	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Use place value understanding and properties of operations to add and subtract; Add up to four two-digit numbers using strategies based on place value and properties of operations; Add and subtract within 1000	B
	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic; Fluently add and subtract within 1000; Multiply one-digit whole numbers by multiples of 10 in the range 10–90	B
	<b>Domain:</b> Number and Operations: Operations and Algebraic Thinking <b>Standard:</b> Represent and solve problems involving addition and subtraction; Use addition and subtraction within 100 to solve one- and two-step word problems	B
	<b>Domain:</b> Number and Operations: Operations and Algebraic Thinking <b>Standard:</b> Add and subtract with 20; Fluently add and subtract within 20 using mental strategies	C
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System) <b>Standard:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic; Fluently add and subtract multi-digit whole numbers using the standard algorithm	C
	<b>Domain:</b> Number and Operations: Number System	C

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FSF Skill Competency W 5.1: Demonstrates computations skills using whole numbers, fractions, decimals, and percentages		
	<b>Standard:</b> Compute fluently with multi-digit numbers and find common factors and multiples; Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation	
	<b>Domain:</b> Number and Operations: Fractions <b>Standard:</b> Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers; Add and subtract mixed numbers with like denominators; Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators	C
	<b>Domain:</b> Number and Operations: Fractions <b>Standard:</b> Use equivalent fractions as strategy to add and subtract fractions; Add and subtract fractions with unlike denominators; Solve word problems involving addition and subtraction of fractions	C
<b>Multiplies &amp; divides whole numbers, fractions, decimals, &amp; percentages</b>	<b>Domain:</b> Number and Operations: Base 10 <b>Standard:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic; Multiply one-digit whole numbers by multiples of 10 in the range 10–90	B
	<b>Domain:</b> Number and Operations: Operations and Algebraic Thinking <b>Standard:</b> Represent and solve problems involving multiplication and division; Interpret products of whole numbers; Interpret whole-number quotients of whole numbers; Use multiplication and division within 100 to solve word problems	B
	<b>Domain:</b> Number and Operations: Operations and Algebraic Thinking <b>Standard:</b> Multiply and divide within 100; Fluently multiply and divide within 100	B
	<b>Domain:</b> Number and Operations: Operations and Algebraic Thinking <b>Standard:</b> Solve problems involving the four operations, and identify and explain patterns in arithmetic; Solve two-step word problems using the four operations	B
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System) <b>Standard:</b> Use place value understanding and properties of operations to perform multi-digit arithmetic; multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers; Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors	C
	<b>Domain:</b> Number and Operations: Base 10 (+ Number System) <b>Standard:</b> Perform operations with multi-digit whole numbers and with decimals to hundredths; Fluently multiply multi-digit whole numbers using the standard algorithm; Find whole-number quotients of whole	C

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FSF Skill Competency W 5.1: Demonstrates computations skills using whole numbers, fractions, decimals, and percentages		
	numbers with up to four-digit dividends and two-digit divisors; Add, subtract, multiply, and divide decimals to hundredths	
	<p><b>Domain:</b> The Number System</p> <p><b>Standard:</b> Compute fluently with multi-digit numbers and find common factors and multiples; Fluently divide multi-digit numbers using the standard algorithm; Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation</p>	C
	<p><b>Domain:</b> Number and Operations: Fractions</p> <p><b>Standard:</b> Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers; Apply and extend previous understandings of multiplication to multiply a fraction by a whole number</p>	C
	<p><b>Domain:</b> Number and Operations: Fractions</p> <p><b>Standard:</b> Apply and extend previous understanding of multiplication and division to multiply and divide fractions; Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction; Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem; Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions</p>	C
	<p><b>Domain:</b> Number and Operations: Fractions</p> <p><b>Standard:</b> Apply and extend previous understandings of multiplication and division to divide fractions by fractions; Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions</p>	C
	<p><b>Domain:</b> Operations and Algebraic Thinking</p> <p><b>Standard:</b> Use the four operations with whole numbers to solve problems; Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted</p>	C
	<p><b>Domain:</b> Number System</p> <p><b>Standard:</b> Understand ratio concepts and use ratio reasoning to solve problems; Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations (Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 3 1 times the quantity); solve problems involving finding the whole, given a part and the percent</p>	D

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FSF Skill Competency W 5.1: Demonstrates computations skills using whole numbers, fractions, decimals, and percentages		
	<p><b>Domain:</b> Number System</p> <p><b>Standard:</b> Analyze proportional relationships and use them to solve real-world and mathematical problems; Use proportional relationships to solve multistep ratio and percent problems.</p>	D
<b>Interprets and uses numbers involving dates, time, and temperature</b>	<p><b>Domain:</b> Data and Measurement</p> <p><b>Standard:</b> Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects; Tell and write time to the nearest minute and measure time intervals in minutes; Solve word problems involving addition and subtraction of time intervals in minutes</p>	B
	<p><b>Domain:</b> Data and Measurement</p> <p><b>Standard:</b> Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit; Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale</p>	C
	<p><b>Domain:</b> Number System</p> <p><b>Standard:</b> Apply and extend previous understandings of numbers to the system of rational numbers; Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation</p>	D
<b>Recognizes, interprets, and uses numbers, decimals, and fractions for currency</b>	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit</p>	C
<b>Recognizes and uses appropriate mathematical vocabulary</b>	<p><b>Mathematical Practice: Attend to precision. (MP.6);</b> Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem</p>	A-E

### Applies Mathematical Operations, Concepts and Reasoning – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.2: Measures Accurately		
Standards of Mathematical Practice(s):		
<ul style="list-style-type: none"> <li>• Use appropriate tools strategically. (MP.5)</li> <li>• Make sense of problems and persevere in solving them. (MP.1)</li> </ul>		
Competency Benchmark	CCR Domains and Standards	Level
<b>Selects and uses appropriate tools to accurately calculate measurements</b>	<b>Domain:</b> Measurement and Data <b>Standard:</b> Measure and estimate lengths in standard units; Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen; Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit	B
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch	B
<b>Recognizes, measures, and uses linear dimensions</b>	<b>Domain:</b> Measurement and Data <b>Standard:</b> Measure and estimate lengths in standard units; Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen; Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit	B
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch	B
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit; Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale	C
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Make a line plot to display a data set of measurements in fractions of a unit; Use operations on fractions for this grade to solve problems involving information presented in line plots	C

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FSF Skill Competency W 5.2: Measures Accurately		
	<p><b>Domain:</b> Functions</p> <p><b>Standard:</b> Define, evaluate, and compare functions; Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output; Interpret the equation <math>y = mx + b</math> as defining a linear function, whose graph is a straight line; give examples of functions that are not linear</p>	D
<b>Recognizes, measures, and uses geometric shapes and sizes</b>	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Reason with shapes and their attributes; Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.<sup>17</sup> Identify triangles, quadrilaterals, pentagons, hexagons, and cubes</p>	B
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Draw and identify lines and angles, and classify shapes by properties of their lines and angles; Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures</p>	C
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Classify two-dimensional figures into categories based on their properties; Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category</p>	C
	<p><b>Domain:</b> Data and Measurement</p> <p><b>Standard:</b> Geometric measurement: understand concepts of angle and measure angles; Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement; Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure; Recognize angle measure as additive</p>	C
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Draw, construct, and describe geometrical figures and describe the relationships between them; Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p>	D
<b>Recognizes, measures, and uses distance, weight, area, and volume</b>	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects; Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters; Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units</p>	B

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FSF Skill Competency W 5.2: Measures Accurately		
	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Geometric measurement: understand concepts of area and relate to area of multiplication and addition; Recognize area as an attribute of plane figures and understand concepts of area measurement; Measure areas by counting unit squares; Relate area to the operations of multiplication and addition (Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths; Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning)</p>	B
	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures; Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters</p>	B
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Solve real-world and mathematical problems involving area, surface area, and volume; Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems</p>	C
	<p><b>Domain:</b> Measurement and Data:</p> <p><b>Standard:</b> Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition; Recognize volume as an attribute of solid figures and understand concepts of volume measurement; Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units; Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.</p>	C
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume; Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms</p>	D

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FSF Skill Competency W 5.2: Measures Accurately		
<b>Recognizes and applies measurement formulas</b>	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit; Apply the area and perimeter formulas for rectangles in real world and mathematical problems</p>	C
	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition; Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume (Apply the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> 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)</p>	C
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume; Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</p>	D
	<p><b>Domain:</b> Geometry</p> <p><b>Standard:</b> Understand and apply the Pythagorean Theorem; Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions; Apply the Pythagorean Theorem to find the distance between two points in a coordinate system</p>	D
	<p><b>Domain:</b> Geometric Measurement and Dimension</p> <p><b>Standard:</b> Explain volume formulas and use them to solve problems; Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems</p>	E
<b>Interprets use of numbers in documents and in various settings</b>	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Represent and interpret data; Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another</p>	A
	<p><b>Domain:</b> Measurement and Data</p> <p><b>Standard:</b> Represent and interpret data; Solve simple put-together, take-apart, and compare problems using information presented in a bar graph; Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs</p>	B
	<p><b>Domain:</b> Expressions and Equations</p>	C

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FSF Skill Competency W 5.2: Measures Accurately		
	<b>Standard:</b> Represent and analyze quantitative relationships between dependent and independent variables; Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation	
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Use random sampling to draw inferences about a population; Understand that statistics can be used to gain information about a population by examining a sample of the population; Use data from a random sample to draw inferences about a population with an unknown characteristic of interest	D
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Investigate chance processes and develop, use, and evaluate probability models; Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams	D
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Summarize, represent, and interpret data on two categorical and quantitative variables; Recognize possible associations and trends in the data	E
	<b>Domain:</b> Statistics and Probability: Interpreting Categorical and Quantitative Data <b>Standard:</b> Interpret linear models; Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data; Distinguish between correlation and causation	E

FSF Skill Competency W 5.3: Estimates		
Standards of Mathematical Practice(s):		
<ul style="list-style-type: none"> <li>• Reason abstractly and quantitatively. (MP.2)</li> <li>• Use appropriate tools strategically. (MP.5)</li> <li>• Make sense of problems and persevere in solving them. (MP.1);</li> </ul>		
Competency Benchmark	CCR Domains and Standards	Level
<b>Estimates results without a calculator prior to making calculations</b>	<b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Solve problems involving the four operations, and identify and explain patterns in arithmetic; Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding	B
	<b>Domain:</b> Measurement and Data	B

**Applies Mathematical Operations, Concepts and Reasoning** – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.3: Estimates		
	<b>Standard:</b> Measure and estimate lengths in standard units; Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. Estimate lengths using units of inches, feet, centimeters, and meters	
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects; Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l)	B
	<b>Domain:</b> Expressions and Equations <b>Standard:</b> Work with radicals and integer exponents; Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other	D
<b>Uses estimation to check the reasonableness of an answer</b>	<b>Domain:</b> Expressions and Equations <b>Standard:</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations; Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically; Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies; Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities	D

FSF Skill Competency W 5.4: Uses math documents		
Standards of Mathematical Practice(s):		
<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them. (MP.1)</li> <li>• Model with mathematics. (MP.4)</li> </ul>		
Competency Benchmark	CCR Domains and Standards	Level
<b>Interprets charts, graphs, schedules, tables, diagrams, blueprints</b>	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another	A
	<b>Domain:</b> Measurement and Data	B

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FSF Skill Competency W 5.4: Uses math documents		
	<b>Standard:</b> Represent and interpret data; Solve simple put-together, take-apart, and compare problems using information presented in a bar graph; Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs	
	<b>Domain:</b> Number System <b>Standard:</b> Analyze proportional relationships and use them to solve real-world and mathematical problems; Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships	D
	<b>Domain:</b> Statistics and Probability <b>Standards:</b> Investigate patterns of association in bivariate data; Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities; Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table; Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects	D
	<b>Domain:</b> Functions <b>Standard:</b> Use functions to model relationships between quantities; Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values; Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear)	D
	<b>Domain:</b> Number and Quantity: Quantities <b>Standard:</b> Reason quantitatively and use units to solve problems; Choose and interpret the scale and the origin in graphs and data displays	E
	<b>Domain:</b> Functions: Interpreting Functions <b>Standard:</b> Interpret functions that arise in applications in terms of the context; For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship	E
	<b>Domain:</b> Functions: Interpreting Functions <b>Standard:</b> Analyze functions using different representations; Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)	E
	<b>Domain:</b> Statistics and Probability	E

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FSF Skill Competency W 5.4: Uses math documents		
	<b>Standard:</b> Summarize, represent, and interpret data on a single count or measurable variable; Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)	
<b>Constructs charts, graphs, schedules, tables, and diagrams</b>	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories; Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories	B
	<b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Make a line plot to display a data set of measurements in fractions of a unit	C
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Summarize and describe distributions; Display numerical data in plots on a number line, including dot plots, histograms, and box plots	C
	<b>Domain:</b> Number System <b>Standard:</b> Understand ratio concepts and use ratio reasoning to solve problems; Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations (Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane; Use tables to compare ratios	D
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Investigate chance processes and develop, use, and evaluate probability models; Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event	D
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Investigate patterns of association in bivariate data; Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities; Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects	D
	<b>Domain:</b> Functions	D

### Applies Mathematical Operations, Concepts and Reasoning – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.4: Uses math documents		
	<b>Standard:</b> Use functions to model relationships between quantities; Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph; Sketch a graph that exhibits the qualitative features of a function that has been described verbally	
	<b>Domain:</b> Functions: Interpreting Functions <b>Standard:</b> Interpret functions that arise in applications in terms of the context; For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship	E
	<b>Domain:</b> Functions: Interpreting Functions <b>Standard:</b> Analyze functions using different representations; Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases	E
	<b>Domain:</b> Statistics and Probability <b>Standard:</b> Summarize, represent, and interpret data on a single count or measurable variable; Represent data with plots on the real number line (dot plots, histograms, and box plots)	E

FSF Skill Competency W 5.5: Applies math concepts to understand and solve problems		
<b>Standards of Mathematical Practice(s):</b>		
<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them. (MP.1)</li> <li>• Reason abstractly and quantitatively. (MP.2)</li> <li>• Model with mathematics. (MP.4)</li> <li>• Look for and make use of structure. (MP.7)</li> <li>• Look for and express regularity in repeated reasoning. (MP.8)</li> </ul>		
Competency Benchmark	CCR Domains and Standards	Level
<b>Identifies key words to determine problem-solving operations</b>	<b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Represent and solve problems involving addition and subtraction; Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.	B
	<b>Domain:</b> Operations and Algebraic Thinking	B

**Applies Mathematical Operations, Concepts and Reasoning** – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.5: Applies math concepts to understand and solve problems		
	<p><b>Standard:</b> Represent and solve problems involving multiplication and division; Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities</p>	
	<p><b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Solve problems involving the four operations, and identify and explain patterns in arithmetic; Solve two-step word problems using the four operations.</p>	B
	<p><b>Domain:</b> Expressions and Equations <b>Standard:</b> Apply and extend previous understandings of arithmetic to algebraic expressions; Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity.</p>	C
<b>Identifies &amp; interprets basic algebraic functions, patterns, &amp; formulas, as required</b>	<p><b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Solve problems involving the four operations, and identify and explain patterns in arithmetic; Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations</p>	B
	<p><b>Domain:</b> Operations and Algebraic Thinking <b>Standard:</b> Generate and analyze patterns; Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself</p>	C
	<p><b>Domain:</b> Expressions and Equations <b>Standard:</b> Solve real-life and mathematical problems using numerical and algebraic expressions and equations; Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically; Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies; Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities</p>	D
	<p><b>Domain:</b> Functions <b>Standard:</b> Use functions to model relationships between quantities; Construct a function to model a linear relationship between two quantities; Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values; Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear); Sketch a graph that exhibits the qualitative features of a function that has been described verbally</p>	D

**Applies Mathematical Operations, Concepts and Reasoning** – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.5: Applies math concepts to understand and solve problems		
	<p><b>Domain:</b> Algebra: Creating equations  <b>Standard:</b> Create equations that describe numbers or relationships; Create equations and inequalities in one variable and use them to solve problems; Create equations in two or more variables to represent relationships between quantities; Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations</p>	E
Identifies and interprets basic geometric functions, patterns, and formulas, as required	<p><b>Domain:</b> Geometry  <b>Standard:</b> Analyze, compare, create, compose shapes; Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts</p>	A
	<p><b>Domain:</b> Geometry  <b>Standard:</b> Reason with shapes and their attributes; Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals); Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories</p>	B
	<p><b>Domain:</b> Geometry  <b>Standard:</b> Solve real-life and mathematical problems involving angle, measure, area, surface area, and volume; Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle</p>	D
	<p><b>Domain:</b> Geometry  <b>Standard:</b> Understand and apply the Pythagorean Theorem; Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions</p>	D
	<p><b>Domain:</b> Geometry: Geometric Measurement and Dimensions  <b>Standard:</b> Explain volume formulas and use them to solve problems; Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems</p>	E
Interprets basic statistical data (e.g., mean, median, mode, percentile)	<p><b>Domain:</b> Measurement and Data  <b>Standard:</b> Represent and interpret data; Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another</p>	A

**Applies Mathematical Operations, Concepts and Reasoning** – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.5: Applies math concepts to understand and solve problems		
	<p><b>Domain:</b> Statistics and Probability  <b>Standard:</b> Develop understanding of statistical variability; Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number</p>	C
	<p><b>Domain:</b> Statistics and Probability  <b>Standard:</b> Summarize and describe distributions; Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered</p>	D
	<p><b>Domain:</b> Statistics and Probability  <b>Standard:</b> Draw informal comparative inferences about two populations; Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations</p>	D
	<p><b>Domain:</b> Statistics and Probability: Interpreting Categorical and Quantitative Data  <b>Standard:</b> Summarize, represent, and interpret data on a single count or measurable variable; Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points; Recognize possible associations and trends in the data</p>	E
<b>Generalizes and applies results and methods in a variety of math contexts</b>	<p><b>Domain:</b> Operations and Algebraic Thinking  <b>Standard:</b> Understand and apply properties of operations and the relationship between addition and subtraction; Understand subtraction as an unknown-addend problem</p>	A
	<p><b>Domain:</b> Operations and Algebraic Thinking  <b>Standard:</b> Add and subtract with 20; Relate counting to addition and subtraction</p>	A
	<p><b>Domain:</b> Number and Operations: Base 10  <b>Standard:</b> Use place value understanding and properties of operations to add and subtract; Add up to four two-digit numbers using strategies based on place value and properties of operations; Explain why addition and subtraction strategies work, using place value and the properties of operations</p>	B
	<p><b>Domain:</b> Operations and Algebraic Thinking  <b>Standard:</b> Competency and Skill: Understand properties of multiplication and the relationship between multiplication and division; Understand division as an unknown-factor problem</p>	B
	<p><b>Domain:</b> Geometry</p>	B

**Applies Mathematical Operations, Concepts and Reasoning** – Foundation Skills Framework and CCR Standards Alignment

FSF Skill Competency W 5.5: Applies math concepts to understand and solve problems		
	<p><b>Standard:</b> Relate addition and subtraction to length; Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram</p>	
	<p><b>Domain:</b> Measurement and Data <b>Standard:</b> Represent and interpret data; Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph</p>	B
	<p><b>Domain:</b> Measurement and Data <b>Standard:</b> Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition; Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume</p>	C
	<p><b>Domain:</b> The Number System <b>Standard:</b> Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers; Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram; Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers</p>	D
	<p><b>Domain:</b> Expressions and Equations <b>Standard:</b> Use properties of operations to generate equivalent expressions; Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related</p>	D
	<p><b>Domain:</b> Functions <b>Standard:</b> Use functions to model relationships between quantities; Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph; Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values; Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear); Sketch a graph that exhibits the qualitative features of a function that has been described verbally</p>	D