5th Grade Math: I Can Statements

Processes, Content Statements & Expectations (Disciplinary Knowledge)	**I Can Statement**
Operations and Algebraic Thinking	
Write and interpret numerical expressions.	
5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	I can use grouping symbols when solving multi-step problems.
5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*	I can write a numerical expression when given a word phrase. I can explain how two numerical expressions relate to each other without finding the answer to the expressions.
Analyze Patterns and relationships.	
5.OA.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.*	I can create an input/output table for two given rules. I can explain how two input/output tables are related. I can graph the lines formed from an input-output table. I can draw conclusions about the data from a double line graph.
Number and Operations in Base Ten	
Understand the place value system.	
5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	I can recognize that a digit in one place represents 10 times as much as it represents in the place to its right. I can recognize that a digit in one place represents 1/10 of what it represents in the place to its left.

5.NBT.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.	I can write powers of tens using exponents. I can mentally multiply a number by a power of ten and explain the pattern. I can mentally divide a number by a power of ten and explain the pattern.
5.NBT.3 Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	I can write decimals to thousandths. I can write the number name of decimals to thousandths. I can write expanded form of decimals to thousandths. I can compare two decimals to thousandths using >, =, and <.
5.NBT.4 Use place value understanding to round decimals to any place.	I can round decimals to any place.
Perform operations with multi-digit whole numbers and with decimals to hundredths.	
5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.	I can easily multiply multi-digit whole numbers.
5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	I can divide a four-digit number by a two-digit number. I can explain how I multiplied a multi-digit number by a two-digit number.

5.NBT.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.	I can add, subtract, multiply and divide decimals to the hundredths. I can create models to show how to add, subtract, multiply and divide decimals. I can explain in writing how to add, subtract, multiply and divide decimals.
Numbers and Operations - Fractions	
Use equivalent fractions as a strategy to add and subtract fractions.	
5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*	I can add and subtract fractions with unlike denominators using equivalent fractions. I can add and subtract mixed numbers with unlike denominators using equivalent fractions.
5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*	I can solve real world problems that involve adding and subtracting fractions and mixed numbers with unlike denominators. I can estimate answers to real world problems involving adding and subtraction fractions and mixed numbers with unlike denominators. I can explain why an answer is/isn't reasonable.
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	

5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	I can write a fractions as a division problem. I can use models to show the relationship between fractions and division. I can solve word problems involving division of whole numbers with fraction or mixed number answers. I can explain what the fraction or mixed number answers mean.
5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)* 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.	I can use models to solve multiplication of fractions by whole numbers. I can use models to solve multiplication of fractions by fractions. I can create a story problem for multiplying fractions by whole numbers or fractions. I can solve multiplication problems involving fractions. I can find the area of a rectangle with fractional sides using tiling. I can find the area of a rectangle with fractional sides by multiplying the length and width.

5.NF.5 Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. 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.	I can compare the size of a product to the size of one of its factors without finding the product. I can compare the products of two problems without solving them. I can explain why multiplying a number by a fraction greater than one results in a product greater than the given number. I can explain why multiplying a number by a fraction less than one results in a product less than the given number.
5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	I can solve real world problems involving multiplication of fractions and mixed numbers using models. I can solve real world problems involving multiplication of fractions and mixed numbers using equations.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *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.* b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.* 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. *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?*	I can create a story for a dividing a fraction by a whole number. I can use a model to solve a division problem of a fraction by a whole number. I can use a related multiplication problem to solve a division problem of a fraction by a whole number. I can create a story for dividing a whole number by a fraction. I can use a model to solve a division problem of a whole number by a fraction. I can use a related multiplication problem to solve a division problem of a whole number by a fraction. I can solve real world problems involving division of fractions and whole numbers.
Measurement and Data	
Convert like measurement units within a given measurement system.	
5.MD.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	I can convert measurements in the customary system. I can convert measurements in the metric system. I can use conversions to solve real world multi-step problems.
Represent and interpret data.	

5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*	I can make a line plot to display data involving fractions. I can solve problems involving line plots with fractional data.
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	
5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. 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. b. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	I can explain what a unit cube is. I can use a unit cube to measure volume.
5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	I can measure volume by counting unit cubes. I can measure volume by using cubic cm, cubic in, and cubic ft.

5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find 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 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. 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. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	I can find the volume of a right rectangular prism using unit cubes. I can find the volume of a right rectangular prism using base area times height. I can find the volume of a right rectangular prism using V= *l* x *w* x *h.* I can solve real world problems involving rectangular prisms. I can find the volume of a solid figure composed of two non-overlapping right rectangular prisms by adding the volumes.
Geometry	
Graph points on the coordinate plane to solve real-world and mathematical problems.	
5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).	I can draw a coordinate system. I can place points on a coordinate system using ordered pairs (coordinates). I can explain that the first number tells horizontal distance. I can explain that the second number tells vertical distance. I know the meaning of the x-axis and the y-axis.

5.G.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.	I can graph real world problems on a coordinate plane. I can explain the values of points in a coordinate plane given a real world context.
Classify two-dimensional figures into categories based on their properties.	
5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*	I can categorize two-dimensional figures using common attributes. I can explain how different two-dimensional figures relate to each other using attributes.
5.G.4 Classify two-dimensional figures in a hierarchy based on properties.	I can classify two-dimensional figures in a hierarchy based on properties.