Grade 5 Common Core Mathematics "I CAN" Statements

CRITICAL AREA OF FOCUS #1

Develop fluency (accuracy, efficiency, with understanding) with addition and subtraction of fractions and develop understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions)

I CAN...

- use equivalent fractions as a strategy to add and subtract fractions.
- add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions to produce an equivalent sum or difference of fractions with like denominators.
- solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators,
- build 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.*
- interpret a fraction as division of the numerator by the denominator.
- solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers
- use visual fraction models or equations to represent a problem.
  (For example, 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?)
- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- interpret the product (a/b) X q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a = q \div b$.
- *use visual fraction models to show (2/3) X 4 = 8/3, and create a story context for this equation. Do the same with (2/3) X (4/5) = 8/15.*
  (In general, (a/b) X (c/d) = ac/bd.)
- find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths.
- show that the area of a tiled figure 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.
- interpret multiplication as scaling (resizing), by comparing the size of a product to the size of one factor
- explain 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);
- explain 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.
- solve real world problems involving multiplication of fractions and mixed numbers 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.
- divide 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.*

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- *use the relationship between multiplication and division to explain how (1/3) ÷ 4 = 1/12 because (1/12) x 4 = 1/3.*
- divide 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 how 4 ÷ (1/5) = 20 because 20 x (1/5) = 4.*
- solve real world problems involving dividing unit fractions by non-zero whole numbers and dividing whole numbers by unit fractions 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?)*
- make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).
- perform 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.)*

CRITICAL AREA OF FOCUS #2

Extend division to 2-digit divisors, integrating decimal fractions into the place value system. Develop understanding of operations with decimals to hundredths, and develop fluency (accuracy, efficiency, and with understanding) with whole number and decimal operations.

I CAN...

- write and interpret numerical expressions.
- use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- **r**ecognize 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.
- 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.
- read, write, and compare decimals to thousandths.
- read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = [3 x 100] + [4 x 10] + [7 x 1] + [3 x (1/10)] + [9 x (1/100)] + [2 x (1/1000)].
- compare two decimals to thousandths based on meanings of the digits in each place.
- use >, =, and < symbols to record the results of comparisons.
- use place value understanding to round decimals to any place.
- perform operations with multi-digit whole numbers and with decimals to hundredths.
- fluently (accurately, efficiently, and with understanding) multiply multi-digit whole numbers using the standard algorithm.
- 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 calculations by using equations, rectangular arrays, and/or area models.
- 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 problem-solving strategies to a written method and explain the reasoning used.
- 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 to solve multi-step, real world problems.

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CRITICAL AREA OF FOCUS #3

Develop understanding of volume

I CAN...

- recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- demonstrate how unit cubes can be used to measure volume.
- explain how 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.
- 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.
- 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
- demonstrate that multiplying the height of a right rectangular prism by the area of the base gives an equivalent representation of volume.
- represent threefold whole-number products as volumes to represent the associative property of multiplication.
- 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
- solve real world mathematical problems using concepts of volume.
- 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.
- represent measurements of volume using and recording cubic units as part of the measurement.
- find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit 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.
- interpret multiplication as scaling (resizing) by comparing the size of a product to the size of one factor.
- represent measurements of area using and recording square units as part of the measurement.

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