4th Grade Iowa Core - I Cans...

ICC - STANDARDS	I Cans…
Operations and Algebraic Thinking 4.OA	Operations and Algebraic Thinking 4.OA
Use the four operations with whole numbers to solve problems.	**Use the four operations with whole numbers to solve problems.**
1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.1.)	I can explain that multiplication equations can be seen as a comparison. Ex. 35 = 5 X 7, where 35 is 5 times as many as 7 and 7 times as many as 5.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[1] (4.OA.2.)	I can multiply or divide to solve word problems that use multiplication to compare.
3. 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. 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. (4.OA.3.)	I can create a number model with a variable to solve multi-step word problems using four operations, including those which may have remainders that need to be interpreted.
Gain familiarity with factors and multiples.	
4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. (4.OA.4.)	a. I can find all factor pairs for a number within 100, and know whether it is prime or composite. b. I can determine if a number is a multiple of a one-digit number.
Generate and analyze patterns.	**Generate and analyze patterns.**

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5. 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. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (4.OA.5.)	I can create a number or shape pattern that follows a rule and identify and explain other patterns that are present.
Number and Operations in Base Ten[2] 4.NBT	Number and Operations in Base Ten[2] 4.NBT
Generalize place value understanding for multi-digit whole numbers.	**Generalize place value understanding for multi-digit whole numbers.**
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division. (4.NBT.1.)	I can determine that a digit represents 10 times what it would be in the place value to its right.
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (4.NBT.2.)	a. I can read and write multi-digit whole numbers using numerals, number names, and expanded form(up to 1,000,000). b. I can compare two mult-digit numbers using symbols.
3. Use place value understanding to round multi-digit whole numbers to any place. (4.NBT.3.)	I can round mulit-digit whole numbers to any place value.
Use place value understanding and properties of operations to perform multi-digit arithmetic.	**Use place value understanding and properties of operations to perform multi-digit arithmetic.**
4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (4.NBT.4.)	I can quickly and correctly add and subtract multi-digit whole number using an algorithm
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.5.)	I can multiply a four-digit number by a one-digit number and two two-digit numbers and explain my reasoning. (equations, area model, arrays, etc.)

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6. Find whole-number quotients and remainders with up to four-digit dividends and one-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. (4.NBT.6.)	I can divide four-digit numbers by one-digit numbers to find a whole number quotient with/without remainders and explain my reasoning. (equations, area model, arrays, etc.)
Number and Operations—Fractions[3] 4.NF	Number and Operations—Fractions[3] 4.NF(Denominators can be, 2, 3, 4, 5, 6, 8, 10, 12 and 100
Extend understanding of fraction equivalence and ordering.	**Extend understanding of fraction equivalence and ordering.**
1. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.1.)	I can explain using a model that two fractions can be equal due to different sizes and/or number of parts of the whole.
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. (4.NF.2.)	I can compare two fractions(including mixed numbers).
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	**Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.(Denominators can be, 2, 3, 4, 5, 6, 8, 10, 12 and 100)**
3. Understand a fraction a/b with a > 1 as a sum of fractions 1/b.	
a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	I can add and subtract fractions with like denominators (including mixed numbers).

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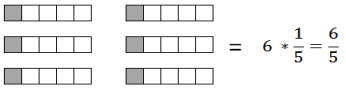
b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.	I can break apart a fraction into parts with the same denominators in more than one way(including mixed numbers)
c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	*(this standard was combined with 3a into one "I Can")*
d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. (4.NF.3.)	I can solve word problems using addition and subtraction of fractions with like denominators(including mixed numbers)
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	
a. Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).	I can understand that a fraction is a multiple of a unit fraction.  $6 * \frac{1}{5} = \frac{6}{5}$
b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)	I can demonstrate understanding how to multiple a fraction by a whole number.
c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie? (4.NF.4.)	I can solve word problems involving multiplication of a fraction and a whole number.

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Understand decimal notation for fractions, and compare decimal fractions.	**Understand decimal notation for fractions, and compare decimal fractions.((Denominators can be, 2, 3, 4, 5, 6, 8, 10, 12 and 100)**
5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[4] For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. (4.NF.5.)	I can add two fractions with denominators of 10 and 100 by understanding fraction equivalence.
6. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram. (4.NF.6.)	I can express a fraction with a denominator of 10 and 100 as a decimal.
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. (4.NF.7.)	I can compare two decimals to the hundredths when referring to the same whole.(use > , < , =)
Measurement and Data 4.MD	Measurement and Data 4.MD
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**
1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... (4.MD.1.)	I can convert and record into a table, units of measure from a larger to a smaller unit with in a system of units.

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2. 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. (4.MD.2.)	I can solve word problems using the four operations involving measurement.
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. (4.MD.3.)	I can find the area and perimeter using a formula for rectangles in real world situations.
Represent and interpret data.	**Represent and interpret data.**
4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. (4.MD.4.)	I can create a line plot displaying fractional measurements and answer questions about the values using addition and subtraction (fractional units should include 1/2, 1/4, 1/8).
Geometric measurement: understand concepts of angle and measure angles.	**Geometric measurement: understand concepts of angle and measure angles.**
5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	
a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.	I can understand that there are 360° in one full turn of a circle, and therefore 1° = 1/360 of a circle.
b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. (4.MD.5.)	

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6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (4.MD.6.)	I can estimate,measure and draw angles with accuracy within 2°(including benchmark angles: 30°, 45°, 90°, 180°, 270°, 0°/360°)
7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. (4.MD.7.)	I can compose and decompose angle measures and use addition and subtractions problems to solve real world problems.
Geometry 4.G	Geometry 4.G
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	**Draw and identify lines and angles, and classify shapes by properties of their lines and angles.**
1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4.G.1.)	I can draw and identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. (4.G.2.)	I can categorize 2-dimensional shapes based on lines segments and angles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4.G.3.)	I can identify and draw the lines of symmetry
[1] See Glossary, Table 2.	
[2] Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.	
[3] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	

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[4] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.	