Colorado Extended Evidence Outcomes: Mathematics

Grade 5

Number & Operations in Base Ten: Understand the place value system. 5.NBT.A

1 **Recognize that in a multi-digit number with tenths or hundredths, a digit in one place represents 10 times what it represents in the place to its right.** 5.NBT.A.1

- a For example, in an amount of money written as $19.99, the nine in the tenths place (90 cents) is ten times as much as the 9 in the hundredths place (9 cents). 5.NBT.A.1.A

2 **Use patterns in the number of zeroes of the product when multiplying oneor two-digit numbers by 10 or one-digit numbers by 100.** 5.NBT.A.2

- a Understand that multiplying by 10 twice is the same as multiplying by 100 once because 10 x 10 = 100. 5.NBT.A.2.A

3 **Compare two three-digit whole numbers based on the meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.** 5.NBT.A.3

- a Read and write decimals to hundredths using base-ten numerals, number names, and expanded form, e.g., 4.57 = 4 + 5 x (1) + 7 X (1). 5.NBT.A.3.A
- b Compare two decimals to hundredths based on meanings of the digits in each place, using >, +, and < symbols to record the results of comparisons. 5.NBT.A.3.B

4 **Use place value understanding to round whole numbers 1-1000 to any place.** 5.NBT.A.4

Number & Operations in Base Ten: Perform operations with multi-digit whole numbers and with decimals to hundredths. 5.NBT.B

5 **Multiply one-digit whole numbers using models and illustrations using equations, rectangular arrays, and/or area models.** 5.NBT.B.5

- a Products should include values up to at least 50. 5.NBT.B.5.A

6 **Find whole-number quotients with dividends up to at least 50 and one-digit divisors, using strategies based on the concept of division using fair and equal shares.** 5.NBT.B.6

- a Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 5.NBT.B.6.A

7 **Add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.** 5.NBT.B.7

Number & Operations—Fractions: Use equivalent fractions as a strategy to add and subtract fractions. 5.NF.A

1 **Add and subtract fractions with single-digit numerators and like denominators up to at least 12.** 5.NF.A.1

2 **Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of like denominators up to at least 12, e.g., by using visual fraction models or equations to represent the problem.** 5.NF.A.2

- a Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example: a pizza is cut evenly into 8 slices. If you eat 2 of the pizza and I eat 3 of the 8 8 pizza, what fraction did we eat all together? 5.NF.A.2.A

Number & Operations—Fractions: Apply and extend previous understandings of multiplication and division. 5.NF.B

3 **Interpret a fraction as division of the numerator by the denominator (a/b = a divided by b).** 5.NF.B.3

- a Solve word problems involving division of whole numbers up to at least 12 leading to answers in the form of fractions, e.g., by using visual fraction models or equations to represent the problem. For example, interpret the problem of dividing two sandwiches equally amongst 3 people as the fraction 2 , meaning that each person should get 2 of a 3 3 sandwich. 5.NF.B.3.A

4 **Apply and extend previous understandings of multiplication to multiply the following fractions: 1 x 1 , 1 x 1 , 1 x 1 , and 2 x 1 .** 5.NF.B.4

- a Compose and decompose visual fraction models to illustrate these relationships. 5.NF.B.4.A
- b Solve word problems involving multiplication of these fractions by using visual fraction models to represent the problem. For example, what is 1 2 of 1 of a pizza? 5.NF.B.4.B

5 **Interpret multiplication as scaling (resizing) by understanding how 8 x 1 2 makes sense when described as "scale 8 so it is half as big," but does not make sense when described as repeated addition, such as "add 8 to itself half a time."** 5.NF.B.5

- a Recognize that multiplying by a fraction <1 makes a factor smaller. 5.NF.B.5.A

6 **Solve real-world problems involving multiplication of fractions, e.g., by using visual fraction models or equations to represent the problem.** 5.NF.B.6

- a Fractions should include single-digit numerators and denominators up to at least 12. 5.NF.B.6.A

7 **Apply and extend previous understandings of division to divide unit fractions (1 , 1 , and 1) by whole numbers (2, 3, 4) and whole numbers by unit 2 3 4 fractions, e.g., by using visual fraction models or equations to represent the problem.** 5.NF.B.7

- a For example, students should understand that dividing 1 of a pie into 3 2 equal pieces yields pieces that are 1 of the whole pie. Similarly, students 6 should understand that dividing 2 pies into pieces the size of 1 of each 4 pie yields a total of 8 pieces. 5.NF.B.7.A

Operations & Algebraic Thinking: Write and interpret numerical expressions. 5.OA.A	**1** **Use one set of parentheses in numerical expressions, and evaluate expressions with these symbols.** 5.OA.A.1 a For example, in the expression (2+4) , 2 should be added to 4 before 3 dividing by 3. 5.OA.A.1.A **2** **Identify simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.** 5.OA.A.2 a For example, express the calculation “add 8 and 7, then multiply by 2” as 2 x (8+7). 5.OA.A.2.A
Operations & Algebraic Thinking: Analyze patterns and relationships. 5.OA.B	**3** **Generate a number pattern that follows a given rule.** 5.OA.B.3 a Identify a relationship between the sequence number and the number in the pattern. For example, given the rule “add 3,” write the number pattern 3, 6, 9, 12,… and describe 3 as the first number, 9 as the third number, etc. 5.OA.B.3.A
Measurement & Data: Convert like measurement units within a given measurement system. 5.MD.A	**1** **Convert among different-sized standard measurement units within a given measurement system where the quantities yield whole units (e.g., convert 24 inches to 2 feet).** 5.MD.A.1
Measurement & Data: Represent and interpret data. 5.MD.B	**2** **Make a line plot to display a data set of measurements in whole and half units.** 5.MD.B.2 a Use operations to solve problems involving information presented in line plots. 5.MD.B.2.A
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 by filling rectangular prisms with unit cubes.** 5.MD.C.3 **4** **Measure volumes by counting unit cubes.** 5.MD.C.4 **5** **Solve real-world problems involving volume.** 5.MD.C.5 a For example, find out how many smaller boxes will fit inside a larger box. 5.MD.C.5.A

Geometry: Graph points on the coordinate plane to solve real-world and mathematical problems. 5.G.A

1 **Use a pair of perpendicular 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.** 5.G.A.1

- a 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 $-$-coordinate, y-axis and y-coordinate). 5.G.A.1.A

2 **Interpret real-world and mathematical problems using given single-digit, first-quadrant coordinate values of points in the context of a situation.** 5.G.A.2

- a For example, a map aligned with a coordinate plane might indicate a point one block east and two blocks north of the origin can be labeled (1, 2). 5.G.A.2.A

Geometry: Classify two-dimensional figures into categories based on their properties. 5.G.B

3 **Demonstrate an understanding that the attributes of some shapes allow the shape to belong to two categories of shapes.** 5.G.B.3

- a For example, a square is both a square and a rectangle, while a triangle can be both right and isosceles. 5.G.B.3.A

4 **Identify and sort two-dimensional figures using the presence or absence of angles of a specified size.** 5.G.B.4

- a For example, sort right triangles from a group of all triangles. 5.G.B.4.A