## Math Practices

Throughout the program, students at every grade level

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

## Domains

| DOMAIN **Counting and Cardinality** K.CC | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** | |

| **Cluster K.CC.A** Know number names and the count sequence. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Count to 100 by ones. | Topics 11, 12 | | | | | | |
| Count to 100 by tens. | Topic 11 | | | | | | |
| Count forward from a given number. | Topics 3, 4, 9, 11 | | | | | | |
| Read and write numbers from 0 to 20. | Topics 1–3, 6–9 | | | | | | |
| Represent up to 20 objects with a written numeral. | Topics 1–3, 6–9 | | | | | | |

| **Cluster K.CC.B** Count to tell the number of objects. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Understand the relationship between numbers and quantities. | Topics 1, 3, 4, 9 | | | | | | |
| Connect counting to cardinality. | Topics 1, 3, 4, 9 | | | | | | |
| Count objects, saying the number names in the standard order. | Topics 1, 3 | | | | | | |
| Pair each object counted with one and only one number name and vice versa. | Topics 1, 3 | | | | | | |
| Connect the last number name said to the number of objects counted. | Topics 1, 3 | | | | | | |
| Understand that the number of objects is the same regardless of how they were counted. | Topics 1, 3 | | | | | | |
| Understand that each successive number name represents one more. | Topics 1, 3, 4, 9 | | | | | | |
| Count up to 10 things in a scattered configuration. | Topics 1–7, 9–10, 13 | | | | | | |
| Count up to 20 things in a line, rectangular array, or circle. | Topics 1–7, 9–10, 13 | | | | | | |
| Count out up to 20 objects. | Topics 1–7, 9–10, 13 | | | | | | |

| **Cluster K.CC.C** Compare numbers. | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compare the number of objects in two groups. | Topics 2–5, 13 | | | | | | |
| Compare two numbers between 1 and 10. | Topics 4, 5 | | | | | | |

**DOMAIN** **Operations and Algebraic Thinking** K.OA, 1.OA, 2.OA, 3.OA, 4.OA, 5.OA

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster K.OA.A** Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. | | | | | | |
| Represent addition using a variety of models. | Topics 6, 8 | | | | | |
| Represent subtraction using a variety of models. | Topics 7, 8 | | | | | |
| Add within 10 using objects and drawings. | Topics 6, 8 | | | | | |
| Solve addition word problems within 10. | Topics 6, 8 | | | | | |
| Subtract within 10 using objects and drawings. | Topic 7 | | | | | |
| Solve subtraction word problems within 10. | Topic 7 | | | | | |
| Solve word problems involving both addends unknown using objects, drawings, and equations. | Topic 8 | | | | | |
| Make 10 using objects and drawings. | Topics 8, 13 | | | | | |
| Record how to make 10 using a drawing or equation. | Topics 8, 13 | | | | | |
| Fluently add within 5. | Topics 6, 8 | | | | | |
| Fluently subtract within 5. | Topics 7, 8 | | | | | |
| **Cluster 1.OA.A** Represent and solve problems involving addition and subtraction. | | | | | | |
| Add within 20 to solve word problems. | | Topics 1–3, 5, 6 | | | | |
| Subtract within 20 to solve word problems. | | Topics 1, 2, 4–6 | | | | |
| Solve word problems within 20 with three addends. | | Topics 5, 14 | | | | |
| **Cluster 2.OA.A** Represent and solve problems involving addition and subtraction. | | | | | | |
| Add within 100 to solve one-step word problems. | | | Topics 1–4, 7, 8, 14, 15 | | | |
| Add within 100 to solve two-step word problems. | | | Topics 3, 4, 7, 8, 14, 15 | | | |
| Subtract within 100 to solve one-step word problems. | | | Topics 1, 3, 5–8, 14, 15 | | | |
| Subtract within 100 to solve two-step word problems. | | | Topics 5–8, 14, 15 | | | |
| Determine the unknown whole number in an equation relating four or more whole numbers. | | | Topics 1, 6, 7 | | | |
| **Cluster 1.OA.B** Understand and apply properties of operations and the relationship between addition and subtraction. | | | | | | |
| Apply properties of operations as strategies to add. | | Topics 2, 3, 5 | | | | |
| Apply properties of operations as strategies to subtract. | | Topic 3 | | | | |
| Understand subtraction as an unknown-addend problem. | | Topics 1, 2, 4 | | | | |
| **Cluster 1.OA.C** Add and subtract within 20. | | | | | | |
| Relate counting to addition. | | Topics 2, 3, 5 | | | | |
| Relate counting to subtraction. | | Topics 2, 4, 5 | | | | |
| Add within 20. | | Topics 2, 3 | | | | |
| Subtract within 20. | | Topics 3, 4 | | | | |
| Use the relationship between addition and subtraction. | | Topics 2, 4 | | | | |

| DOMAIN | Operations and Algebraic Thinking K.OA, 1.OA, 2.OA, 3.OA, 4.OA, 5.OA (continued) | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster 2.OA.B** Add and subtract within 20. | | | | | | |
| Fluently add within 20 using mental strategies. | | | Topics 1, 2, 7, 13 | | | |
| Fluently subtract within 20 using mental strategies. | | | Topics 1, 7 | | | |
| **Cluster 1.OA.D** Work with addition and subtraction equations. | | | | | | |
| Understand the meaning of the equal sign. | | Topics 1, 5 | | | | |
| Determine if equations involving addition are true or false. | | Topic 5 | | | | |
| Determine if equations involving subtraction are true or false. | | Topic 5 | | | | |
| Determine the unknown whole number in an addition equation. | | Topic 5 | | | | |
| Determine the unknown whole number in a subtraction equation. | | Topic 5 | | | | |
| **Cluster 2.OA.C** Work with equal groups of objects to gain foundations for multiplication. | | | | | | |
| Work with even and odd numbers. | | | Topic 2 | | | |
| Write an equation to express an even number as a sum of two equal addends. | | | Topic 2 | | | |
| Use addition to find the total number of objects arranged in rectangular arrays. | | | Topics 2, 13 | | | |
| **Cluster 3.OA.A** Represent and solve problems involving multiplication and division. | | | | | | |
| Interpret products of whole numbers. | | | | Topics 1, 2, 5 | | |
| Interpret whole-number quotients of whole numbers. | | | | Topics 1, 5 | | |
| Use multiplication within 100 to solve word problems. | | | | Topics 1–5, 7, 10, 14 | | |
| Use division within 100 to solve word problems. | | | | Topics 1, 4, 5, 7, 14 | | |
| Determine the unknown whole number in a multiplication equation. | | | | Topic 4 | | |
| Determine the unknown whole number in a division equation. | | | | Topic 4 | | |
| **Cluster 3.OA.B** Understand properties of multiplication and the relationship between multiplication and division. | | | | | | |
| Apply properties of multiplication. | | | | Topics 1–3 | | |
| Apply properties of division. | | | | Topic 4 | | |
| Understand division as an unknown-factor problem. | | | | Topic 4 | | |
| **Cluster 3.OA.C** Multiply and divide within 100. | | | | | | |
| Fluently multiply within 100. | | | | Topics 2–5 | | |
| Fluently divide within 100. | | | | Topics 2–5 | | |

| DOMAIN Operations and Algebraic Thinking K.OA, 1.OA, 2.OA, 3.OA, 4.OA, 5.OA (continued) | | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster 3.OA.D** Solve problems involving the four operations, and identify and explain patterns in arithmetic. | | | | | | |
| Solve two-step word problems. | | | | Topic 11 | | |
| Assess the reasonableness of answers to two-step word problems. | | | | Topic 11 | | |
| Identify and explain arithmetic patterns. | | | | Topics 2–5, 8 | | |
| **Cluster 4.OA.A** Use the four operations with whole numbers to solve problems. | | | | | | |
| Relate multiplication equations to multiplicative comparison. | | | | | Topic 6 | |
| Distinguish multiplicative comparison from additive comparison. | | | | | Topic 6 | |
| Multiply to solve word problems involving multiplicative comparison. | | | | | Topic 6 | |
| Divide to solve word problems involving multiplicative comparison. | | | | | Topic 6 | |
| Solve multi-step word problems. | | | | | Topics 2–6 | |
| Assess the reasonableness of answers to multi-step word problems. | | | | | Topics 2–5, 13 | |
| Use algebraic equations to represent multi-step word problems. | | | | | Topics 2–6, 13 | |
| **Cluster 5.OA.A** Write and interpret numerical expressions. | | | | | | |
| Use parentheses, brackets, or braces in numerical expressions. | | | | | | Topic 13 |
| Evaluate numerical expressions with parentheses, brackets, or braces. | | | | | | Topic 13 |
| Write numerical expressions that record calculations. | | | | | | Topic 13 |
| Interpret numerical expressions. | | | | | | Topic 13 |
| **Cluster 4.OA.B** Gain familiarity with factors and multiples. | | | | | | |
| Find factor pairs. | | | | | Topic 7 | |
| Recognize that a whole number is a multiple of each of its factors. | | | | | Topic 7 | |
| Determine whether one number is a multiple of another. | | | | | Topic 7 | |
| Identify prime or composite numbers. | | | | | Topic 7 | |
| **Cluster 4.OA.C** Generate and analyze patterns. | | | | | | |
| Generate a number pattern that follows a given rule. | | | | | Topic 14 | |
| Generate a shape pattern that follows a given rule. | | | | | Topic 14 | |
| Describe features of a pattern. | | | | | Topic 14 | |
| **Cluster 5.OA.B** Analyze patterns and relationships. | | | | | | |
| Generate two numerical patterns using two given rules. | | | | | | Topic 15 |
| Identify relationships between corresponding terms in two numerical patterns. | | | | | | Topic 15 |
| Form ordered pairs from two numerical patterns. | | | | | | Topic 15 |
| Graph ordered pairs generated by two patterns. | | | | | | Topic 15 |

| DOMAIN **Number and Operations in Base Ten** K.NBT, 1.NBT, 2.NBT, 3.NBT, 4.NBT, 5.NBT | | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster K.NBT.A** Work with numbers 11–19 to gain foundations for place value. | | | | | | |
| Compose and decompose numbers from 11 to 19 into ten ones and some further ones. | Topic 10 | | | | | |
| Record composition or decomposition. | Topic 10 | | | | | |
| Understand that numbers from 11 to 19 are composed of ten ones and one to nine ones. | Topic 10 | | | | | |
| **Cluster 1.NBT.A** Extend the counting sequence. | | | | | | |
| Count to 120 from a given number. | | Topics 8, 13, 14 | | | | |
| Read and write numerals to 120. | | Topics 8, 13, 14 | | | | |
| Represent up to 120 objects with a written numeral. | | Topics 8, 14 | | | | |
| **Cluster 1.NBT.B** Understand place value. | | | | | | |
| Understand that the two digits of a two-digit number represent amounts of tens and ones. | | Topics 8, 11, 13 | | | | |
| Understand that 10 can be thought of as a bundle of ten ones — called a "ten." | | Topics 7, 8, 10, 14 | | | | |
| Understand that numbers from 11 to 19 are composed of ten ones and one to nine ones. | | Topic 8 | | | | |
| Understand that the numbers 10, 20, ... 90 refer to one to nine tens (and 0 ones). | | Topics 7, 8, 10, 11, 14 | | | | |
| Understand that the two digits of a two-digit number represent amounts of tens and ones. | | Topics 8, 10 | | | | |
| Compare two two-digit numbers and use the symbols >, =, and <. | | Topic 9 | | | | |
| **Cluster 2.NBT.A** Understand place value. | | | | | | |
| Understand that the digits of a three-digit number represent amounts of hundreds, tens, and ones. | | | Topic 9 | | | |
| Understand that 100 can be thought of as a bundle of ten tens — called a "hundred." | | | Topic 9 | | | |
| Understand that the numbers 100, 200, ... 900 refer to one to nine hundreds (and 0 tens and 0 ones). | | | Topic 9 | | | |
| Count within 1000. | | | Topics 8, 9 | | | |
| Skip-count by 5s, 10s, and 100s. | | | Topics 8, 9 | | | |
| Read and write base-ten numerals to 1000. | | | Topic 9 | | | |
| Read and write number names to 1000. | | | Topic 9 | | | |
| Use expanded form for numbers to 1000. | | | Topic 9 | | | |
| Compare two three-digit numbers and use the symbols >, =, and <. | | | Topic 9 | | | |
| **Cluster 4.NBT.A** Generalize place value understanding for multi-digit whole numbers. | | | | | | |
| Recognize that a digit in one place represents ten times what it represents in the place to its right. | | | | | Topic 1 | |
| Read and write base-ten numerals for multi-digit numbers. | | | | | Topic 1 | |
| Read and write number names for multi-digit numbers. | | | | | Topic 1 | |
| Use expanded form for multi-digit numbers. | | | | | Topic 1 | |
| Compare two multi-digit numbers and use the symbols >, =, and <. | | | | | Topic 1 | |
| Round multi-digit whole numbers to any place. | | | | | Topic 1 | |

| DOMAIN  Number and Operations in Base Ten K.NBT, 1.NBT, 2.NBT, 3.NBT, 4.NBT, 5.NBT (continued) | | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster 5.NBT.A** Understand the place value system. | | | | | | |
| Understand how the value of a digit in one place compares to the value in the place to its right or left. | | | | | | Topic 1 |
| Explain patterns of zeros when multiplying a number by powers of 10. | | | | | | Topics 1, 3 |
| Use exponents to denote powers of 10. | | | | | | Topic 1 |
| Explain patterns in the placement of the decimal point when a decimal is multiplied by a power of 10. | | | | | | Topic 4 |
| Explain patterns in the placement of the decimal point when a decimal is divided by a power of 10. | | | | | | Topic 6 |
| Read and write decimals to thousandths. | | | | | | Topic 1 |
| Compare decimals to thousandths. | | | | | | Topic 1 |
| Read and write decimals to thousandths using base-ten numerals and number names. | | | | | | Topic 1 |
| Use expanded form for decimals. | | | | | | Topic 1 |
| Compare decimals to thousandths using the symbols >, =, and <. | | | | | | Topic 1 |
| Round decimals to any place. | | | | | | Topics 1, 2 |
| **Cluster 1.NBT.C** Use place value understanding and properties of operations to add and subtract. | | | | | | |
| Use concrete models and strategies to add within 100. | | Topic 10 | | | | |
| Add a two-digit number and a one-digit number. | | Topic 10 | | | | |
| Add a two-digit number and a multiple of 10. | | Topic 10 | | | | |
| Understand when to compose a ten when adding two-digit numbers. | | Topic 10 | | | | |
| Mentally find 10 more than a given number. | | Topics 9–11 | | | | |
| Mentally find 10 less than a given number. | | Topics 9, 11 | | | | |
| Subtract multiples of 10. | | Topic 11 | | | | |
| **Cluster 2.NBT.B** Use place value understanding and properties of operations to add and subtract. | | | | | | |
| Fluently add within 100. | | | Topics 3, 4, 7 | | | |
| Fluently subtract within 100. | | | Topics 5, 6, 7 | | | |
| Add up to four two-digit numbers. | | | Topics 3, 4, 7 | | | |
| Add within 1000. | | | Topics 10, 11 | | | |
| Understand place-value concepts for addition within 1000. | | | Topics 10, 11 | | | |
| Subtract within 1000. | | | Topic 11 | | | |
| Understand place-value concepts for subtraction within 1000. | | | Topic 11 | | | |
| Mentally add 10 or 100. | | | Topics 9, 10 | | | |
| Mentally subtract 10 or 100. | | | Topic 11 | | | |
| Explain why addition strategies work. | | | Topics 3, 4, 7, 10 | | | |
| Explain why subtraction strategies work. | | | Topics 5, 6, 7, 11 | | | |

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster 3.NBT.A** Use place value understanding and properties of operations to perform multi-digit arithmetic. | | | | | | |
| Round whole numbers to the nearest 10. | | | | Topic 8 | | |
| Round whole numbers to the nearest 100. | | | | Topic 8 | | |
| Fluently add within 1000. | | | | Topics 8, 9 | | |
| Fluently subtract within 1000. | | | | Topics 8, 9 | | |
| Fluently subtract within 1000 using the relationship between addition and subtraction. | | | | Topic 8 | | |
| Multiply one-digit whole numbers by multiples of 10. | | | | Topic 10 | | |
| **Cluster 4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic. | | | | | | |
| Fluently add multi-digit whole numbers using the standard algorithm. | | | | | Topics 2, 13 | |
| Fluently subtract multi-digit whole numbers using the standard algorithm. | | | | | Topics 2, 13 | |
| Multiply up to a four-digit number by a one-digit number. | | | | | Topics 3, 4, 6, 7, 14 | |
| Multiply two two-digit numbers. | | | | | Topics 4, 6 | |
| Model multi-digit multiplication. | | | | | Topics 3, 4, 6 | |
| Divide up to four-digit dividends by one-digit divisors. | | | | | Topics 5, 6 | |
| Model division of up to four-digit dividends by one-digit divisors. | | | | | Topics 5, 6 | |
| **Cluster 5.NBT.B** Perform operations with multi-digit whole numbers and with decimals to hundredths. | | | | | | |
| Fluently multiply multi-digit whole numbers using the standard algorithm. | | | | | | Topic 3 |
| Divide up to four-digit dividends by two-digit divisors. | | | | | | Topic 5 |
| Model division of up to four-digit dividends by two-digit divisors. | | | | | | Topic 5 |
| Add decimals to hundredths. | | | | | | Topic 2 |
| Subtract decimals to hundredths. | | | | | | Topic 2 |
| Subtract decimals using the relationship between addition and subtraction. | | | | | | Topic 2 |
| Multiply decimals to hundredths. | | | | | | Topic 4 |
| Divide decimals to hundredths. | | | | | | Topic 6 |
| Explain strategies used to perform decimal operations. | | | | | | Topics 2, 4, 6 |

**DOMAIN** **Number and Operations—Fractions** 3.NF, 4.NF, 5.NF

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster 3.NF.A** 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. | | | | Topic 12 | | |
| Relate fractions to numbers on the number line. | | | | Topic 12 | | |
| Interpret and show unit fractions on the number line. | | | | Topic 12 | | |
| Interpret and show fractions of the form a/b on the number line. | | | | Topic 12 | | |
| Explain equivalence of fractions. | | | | Topic 13 | | |
| Compare fractions by reasoning about their size. | | | | Topic 13 | | |
| Relate fraction equivalence to size. | | | | Topic 13 | | |
| Relate fraction equivalence to the number line. | | | | Topic 13 | | |
| Generate and model equivalent fractions. | | | | Topic 13 | | |
| Relate whole numbers and fractions. | | | | Topics 12, 13 | | |
| Compare two fractions with the same numerator or same denominator and use the symbols >, =, or <. | | | | Topic 13 | | |
| **Cluster 4.NF.A** Extend understanding of fraction equivalence and ordering. | | | | | | |
| Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b). | | | | | Topic 8 | |
| Recognize and generate equivalent fractions. | | | | | Topics 8, 11, 15 | |
| Compare two fractions with different numerators and different denominators and use the symbols >, =, or <. | | | | | Topics 8, 11 | |
| **Cluster 4.NF.B** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | | | | | | |
| Understand a fraction a/b with a > 1 as a sum of fractions 1/b. | | | | | Topic 9 | |
| Interpret addition of fractions. | | | | | Topic 9 | |
| Interpret subtraction of fractions. | | | | | Topic 9 | |
| Decompose fractions. | | | | | Topic 9 | |
| Add mixed numbers with like denominators. | | | | | Topic 9 | |
| Subtract mixed numbers with like denominators. | | | | | Topic 9 | |
| Solve word problems involving addition of fractions with like denominators. | | | | | Topics 9–11, 13 | |
| Solve word problems involving subtraction of fractions with like denominators. | | | | | Topics 9–11, 13 | |
| Multiply a fraction by a whole number. | | | | | Topic 10 | |
| Understand a fraction a/b as a multiple of 1/b. | | | | | Topic 10 | |
| Understand that n × (a/b) = (n × a)/b. | | | | | Topic 10 | |
| Solve word problems involving multiplication of a fraction by a whole number. | | | | | Topics 10, 13 | |

**Number and Operations—Fractions** 3.NF, 4.NF, 5.NF (continued)

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster 4.NF.C** Understand decimal notation for fractions, and compare decimal fractions. | | | | | | |
| Express a fraction with denominator 10 as an equivalent fraction with denominator 100. | | | | | Topic 12 | |
| Use equivalent fractions to add two fractions with respective denominators 10 and 100. | | | | | Topic 12 | |
| Use decimal notation for fractions with denominators 10 or 100. | | | | | Topic 12 | |
| Use decimal notation to describe length. | | | | | Topic 12 | |
| Show decimals on a number line. | | | | | Topic 12 | |
| Compare two decimals to hundredths and use the symbols >, =, and <. | | | | | Topic 12 | |
| **Cluster 5.NF.A** Use equivalent fractions as a strategy to add and subtract fractions. | | | | | | |
| Add fractions with unlike denominators. | | | | | | Topic 7 |
| Add mixed numbers with unlike denominators. | | | | | | Topic 7 |
| Subtract fractions with unlike denominators. | | | | | | Topic 7 |
| Subtract mixed numbers with unlike denominators. | | | | | | Topic 7 |
| Solve word problems involving addition of fractions. | | | | | | Topics 7, 10 |
| Solve word problems involving subtraction of fractions. | | | | | | Topics 7, 10 |
| Estimate mentally and assess the reasonableness of a fraction sum or difference. | | | | | | Topic 7 |
| **Cluster 5.NF.B** Apply and extend previous understandings of multiplication and division to multiply and divide fractions. | | | | | | |
| Interpret a fraction as division. | | | | | | Topic 9 |
| Solve word problems involving division of whole numbers with answers that are fractions or mixed numbers. | | | | | | Topic 9 |
| Multiply a whole number by a fraction. | | | | | | Topic 8 |
| Multiply a fraction by a fraction. | | | | | | Topic 8 |
| Interpret the product of a fraction and a whole number. | | | | | | Topic 8 |
| Relate multiplication of fractions and the area of a rectangle with fractional side lengths. | | | | | | Topic 8 |
| Interpret multiplication as scaling (resizing). | | | | | | Topic 8 |
| Predict the size of a product compared to the size of one factor on the basis of the size of the other factor. | | | | | | Topic 8 |
| Explain the effect of multiplying a given number by a fraction greater than 1, less than 1, or equal to 1. | | | | | | Topic 8 |
| Solve real-world problems involving multiplication of fractions. | | | | | | Topics 8, 10 |
| Solve real-world problems involving multiplication of mixed numbers. | | | | | | Topic 8 |
| Divide whole numbers and unit fractions. | | | | | | Topic 9 |
| Interpret division of a unit fraction by a whole number. | | | | | | Topic 9 |
| Interpret division of a whole number by a unit fraction. | | | | | | Topic 9 |
| Solve real-world problems involving division of fractions and whole numbers. | | | | | | Topics 9, 10 |

**DOMAIN** **Measurement and Data** K.MD, 1.MD, 2.MD, 3.MD, 4.MD, 5.MD

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster K.MD.A** Describe and compare measurable attributes. | | | | | | |
| Describe length as a measurable attribute of objects. | Topic 14 | | | | | |
| Describe weight as a measurable attribute of objects. | Topic 14 | | | | | |
| Describe several measurable attributes of a single object. | Topic 14 | | | | | |
| Directly compare and describe two objects with a measurable attribute in common. | Topic 14 | | | | | |
| Understand and use length units to measure objects. | Topic 14 | | | | | |
| **Cluster 1.MD.A** Measure lengths indirectly and by iterating length units. | | | | | | |
| Order three objects by length. | | Topic 12 | | | | |
| Compare the lengths of two objects indirectly by using a third object. | | Topic 12 | | | | |
| Understand and use length units. | | Topics 12, 14 | | | | |
| **Cluster 2.MD.A** Measure and estimate lengths in standard units. | | | | | | |
| Use rulers, yardsticks, meter sticks, and measuring tapes to measure the length of objects. | | | Topics 12, 13, 15 | | | |
| Describe the relationship between the size of a unit and the number of units needed to measure an object. | | | Topics 12, 13 | | | |
| Estimate lengths using units of inches, feet, yards, centimeters, and meters. | | | Topic 12 | | | |
| Find how much longer one object is than another in standard units. | | | Topic 12 | | | |
| **Cluster 2.MD.B** Relate addition and subtraction to length. | | | | | | |
| Use addition within 100 to solve word problems involving lengths. | | | Topics 12, 14 | | | |
| Use subtraction within 100 to solve word problems involving lengths. | | | Topics 12, 14 | | | |
| Represent whole numbers as lengths on a number line. | | | Topic 14 | | | |
| Show sums and differences within 100 on a number line. | | | Topic 14 | | | |
| **Cluster 1.MD.B** Tell and write time. | | | | | | |
| Tell and write time in hours. | | Topic 13 | | | | |
| Tell and write time in half-hours. | | Topic 13 | | | | |
| **Cluster 2.MD.C** Work with time and money. | | | | | | |
| Tell and write time from analog and digital clocks to the nearest five minutes. | | | Topic 8 | | | |
| Solve one- and two-step word problems involving dollar bills or coins. | | | Topics 8, 10 | | | |
| Use $ and ¢ symbols. | | | Topics 8, 10 | | | |
| Identify the value of coins and paper currency. | | | Topic 8 | | | |
| Compute the value of coins within one dollar. | | | Topic 8 | | | |
| Compute the value of dollars. | | | Topic 8 | | | |
| Relate the value of pennies, nickels, dimes, and quarters to other coins and to the dollar. | | | Topic 8 | | | |

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster 3.MD.A** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. | | | | | | |
| Tell and write time to the nearest minute. | | | | Topic 14 | | |
| Measure time intervals in minutes. | | | | Topic 14 | | |
| Solve word problems involving addition and subtraction of time intervals in minutes. | | | | Topic 14 | | |
| Represent a time problem on a number line. | | | | Topic 14 | | |
| Measure and estimate liquid volumes using standard units of liters (L). | | | | Topic 14 | | |
| Measure and estimate masses of objects using standard units of kilograms (kg) and grams (g). | | | | Topic 14 | | |
| Solve one-step word problems involving masses or liquid volumes. | | | | Topic 14 | | |
| **Cluster 4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. | | | | | | |
| Know relative sizes of measurement units within one system of units. | | | | | Topic 13 | |
| Know relative sizes of units of length. | | | | | Topic 13 | |
| Know relative sizes of units of mass. | | | | | Topic 13 | |
| Know relative sizes of units of weight. | | | | | Topic 13 | |
| Know relative sizes of units of liquid volume. | | | | | Topic 13 | |
| Know relative sizes of units of time. | | | | | Topic 13 | |
| Convert from larger units to smaller units. | | | | | Topic 13 | |
| Make a table of measurement equivalents. | | | | | Topic 13 | |
| Solve word problems involving distances. | | | | | Topics 10, 12, 13 | |
| Solve word problems involving intervals of time. | | | | | Topics 10, 12 | |
| Solve word problems involving money. | | | | | Topics 12, 13 | |
| Use the four operations to solve measurement word problems involving simple fractions. | | | | | Topics 10, 12, 13 | |
| Represent measurement quantities on number line diagrams. | | | | | Topics 10, 12, 13 | |
| Use the area formula for rectangles. | | | | | Topic 13 | |
| Use the perimeter formula for rectangles. | | | | | Topic 13 | |
| **Cluster 5.MD.A** Convert like measurement units within a given measurement system. | | | | | | |
| Convert measurement units. | | | | | | Topic 12 |
| Use conversions to solve real-world problems. | | | | | | Topic 12 |

| DOMAIN **Measurement and Data** K.MD, 1.MD, 2.MD, 3.MD, 4.MD, 5.MD (continued) | | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster 3.MD.C** Geometric measurement: understand concepts of area and relate area to multiplication and to addition. | | | | | | |
| Recognize area as an attribute of plane figures. | | | | Topic 6 | | |
| Understand concepts of area measurement. | | | | Topic 6 | | |
| Understand the concept of square unit. | | | | Topic 6 | | |
| Relate *n* unit squares to an area of *n* square units. | | | | Topic 6 | | |
| Measure areas by counting in square centimeters, square meters, square inches, and square feet. | | | | Topic 6 | | |
| Measure areas by counting unit squares in improvised units. | | | | Topic 6 | | |
| Relate area to the operation of multiplication. | | | | Topic 6 | | |
| Relate area to the operation of addition. | | | | Topic 6 | | |
| Find the area of a rectangle by tiling it. | | | | Topic 6 | | |
| Show that the area of a rectangle can be found by multiplying the side lengths. | | | | Topic 6 | | |
| Multiply side lengths to find areas of rectangles. | | | | Topics 6, 16 | | |
| Represent whole-number products as rectangular areas in mathematical reasoning. | | | | Topics 6, 16 | | |
| Use tiling to show that the area of a rectangle with side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$. | | | | Topic 6 | | |
| Use area models to represent the distributive property. | | | | Topic 6 | | |
| Find areas of rectilinear figures by decomposing them into non-overlapping rectangles. | | | | Topic 6 | | |
| **Cluster 3.MD.D** Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. | | | | | | |
| Solve perimeter problems. | | | | Topic 16 | | |
| Solve perimeter problems involving finding an unknown side length. | | | | Topic 16 | | |
| Exhibit rectangles with the same perimeter and different areas. | | | | Topic 16 | | |
| Exhibit rectangles with the same area and different perimeters. | | | | Topic 16 | | |
| **Cluster 4.MD.C** Geometric measurement: understand concepts of angle and measure angles. | | | | | | |
| Understand how angles are formed. | | | | | Topic 15 | |
| Understand concepts of angle measurement. | | | | | Topic 15 | |
| Relate angle measurement in degrees to circles. | | | | | Topic 15 | |
| Relate one-degree angles to *n*-degree angles. | | | | | Topic 15 | |
| Measure angles using a protractor. | | | | | Topic 15 | |
| Sketch angles of specified measure. | | | | | Topic 15 | |
| Recognize angle measure as additive. | | | | | Topic 15 | |
| Solve addition and subtraction problems to find unknown angles on a diagram. | | | | | Topic 15 | |

| | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Cluster 5.MD.C** Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. | | | | | | |
| Recognize volume as an attribute of solid figures. | | | | | | Topic 11 |
| Understand concepts of volume measurement. | | | | | | Topic 11 |
| Understand the concept of cubic unit. | | | | | | Topic 11 |
| Relate $n$ unit cubes to a volume of $n$ cubic units. | | | | | | Topic 11 |
| Measure volumes by counting in cubic inches and feet. | | | | | | Topic 11 |
| Measure volumes by counting unit cubes in improvised units. | | | | | | Topic 11 |
| Relate volume to the operations of multiplication and addition. | | | | | | Topic 11 |
| Solve real-world and mathematical problems involving volume. | | | | | | Topic 11 |
| Show that the volume of a right rectangular prism can be found by multiplying the edge lengths. | | | | | | Topic 11 |
| Show that the volume of a right rectangular prism can be found by multiplying the height by the area of the base. | | | | | | Topic 11 |
| Represent threefold whole-number products as volumes. | | | | | | Topic 11 |
| Use the formulas $V = \ell \times w \times h$ and $V = b \times h$ for rectangular prisms. | | | | | | Topic 11 |
| Find volumes of solid figures composed of two non-overlapping right rectangular prisms. | | | | | | Topic 11 |
| **Cluster K.MD.B** Classify objects and count the number of objects in each category. | | | | | | |
| Classify objects into given categories. | Topic 5 | | | | | |
| Count the numbers of objects in a category. | Topic 5 | | | | | |
| Sort categories by count. | Topic 5 | | | | | |
| **Cluster 1.MD.C** Represent and interpret data. | | | | | | |
| Organize, represent, interpret, and compare data with up to three categories. | | Topic 6 | | | | |
| **Cluster 2.MD.D** Represent and interpret data. | | | | | | |
| Measure objects to generate whole-number length data. | | | Topic 15 | | | |
| Make repeated measurements of the same object to generate length data. | | | Topic 15 | | | |
| Draw a picture graph to represent a data set with up to four categories. | | | Topic 15 | | | |
| Draw a bar graph to represent a data set with up to four categories. | | | Topic 15 | | | |
| Solve simple put-together, take-apart, and compare problems using data presented in a bar graph. | | | Topic 15 | | | |
| **Cluster 3.MD.B** Represent and interpret data. | | | | | | |
| Draw a scaled picture graph to represent a data set with several categories. | | | | Topic 7 | | |
| Draw a scaled bar graph to represent a data set with several categories. | | | | Topic 7 | | |
| Solve problems using information presented in scaled bar graphs. | | | | Topic 7 | | |
| Find lengths involving halves and fourths of a unit and display them in a line plot. | | | | Topic 12 | | |

| DOMAIN  Geometry K.G, 1.G, 2.G, 3.G, 4.G, 5.G | | | | | | |
|---|---|---|---|---|---|---|
| | **K** | **1** | **2** | **3** | **4** | **5** |
| **Cluster 4.MD.B** Represent and interpret data. | | | | | | |
| Solve problems involving addition and subtraction of fractions by using measurement data in line plots. | | | | | Topic 11 | |
| Make a line plot to display measurements involving halves, fourths, and eighths of a unit. | | | | | Topic 11 | |
| **Cluster 5.MD.B** Represent and interpret data. | | | | | | |
| Solve problems involving fraction operations by using measurement data in line plots. | | | | | | Topic 10 |
| Make a line plot to display a data set of measurements in fractions of a unit. | | | | | | Topic 10 |
| **Cluster K.G.A** Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). | | | | | | |
| Describe shapes in the environment. | Topics 12, 13 | | | | | |
| Describe position. | Topics 12, 13 | | | | | |
| Correctly name shapes regardless of their orientations. | Topic 12 | | | | | |
| Correctly name shapes regardless of their overall size. | Topic 12 | | | | | |
| Identify two-dimensional shapes as flat. | Topics 12, 13 | | | | | |
| Identify three-dimensional shapes as solid. | Topics 12, 13 | | | | | |
| **Cluster K.G.B** Analyze, compare, create, and compose shapes. | | | | | | |
| Analyze and compare two- and three-dimensional shapes in different sizes. | Topics 12, 13 | | | | | |
| Analyze and compare two- and three-dimensional shapes in different orientations. | Topics 12, 13 | | | | | |
| Build and draw shapes to model shapes in the world. | Topic 13 | | | | | |
| Compose simple shapes to form larger shapes. | Topic 13 | | | | | |
| **Cluster 1.G.A** Reason with shapes and their attributes. | | | | | | |
| Distinguish between defining attributes versus non-defining attributes. | | Topic 14 | | | | |
| Build and draw shapes with defining attributes. | | Topic 14 | | | | |
| Compose two- and three-dimensional shapes. | | Topic 14 | | | | |
| Compose new shapes from composite shapes. | | Topic 14 | | | | |
| Partition circles and rectangles into two equal shares and use related vocabulary. | | Topic 15 | | | | |
| Partition circles and rectangles into four equal shares and use related vocabulary. | | Topic 15 | | | | |
| Recognize that decomposing shapes into more equal shares creates smaller shares. | | Topic 15 | | | | |
| **Cluster 2.G.A** Reason with shapes and their attributes. | | | | | | |
| Recognize and draw two- and three-dimensional shapes having specified attributes. | | | Topic 13 | | | |
| Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. | | | Topic 13 | | | |
| Partition a rectangle into rows and columns of same-size squares and count the squares. | | | Topic 13 | | | |
| Partition circles and rectangles into two, three, or four equal shares, and use related vocabulary. | | | Topic 13 | | | |
| Recognize that equal shares of identical wholes need not have the same shape. | | | Topic 13 | | | |

| | K | 1 | 2 | 3 | 4 | 5 |
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| **Cluster 3.G.A** Reason with shapes and their attributes. | | | | | | |
| Understand that shapes in different categories may share attributes. | | | | Topic 15 | | |
| Understand that shared attributes of shapes can define a larger category. | | | | Topic 15 | | |
| Recognize rhombuses, rectangles, and squares as examples of quadrilaterals and draw quadrilaterals that are non-examples. | | | | Topic 15 | | |
| Partition shapes into parts with equal areas. | | | | Topic 12 | | |
| Express the area of each equal part of a shape as a unit fraction of the whole. | | | | Topic 12 | | |
| **Cluster 4.G.A** Draw and identify lines and angles, and classify shapes by properties of their lines and angles. | | | | | | |
| Draw and identify points, lines, line segments, and rays. | | | | | Topic 15 | |
| Draw and identify parallel and perpendicular lines. | | | | | Topic 16 | |
| Draw and identify angles. | | | | | Topics 15, 16 | |
| Draw and identify right, acute, and obtuse angles. | | | | | Topics 15, 16 | |
| Use parallel or perpendicular lines to classify figures. | | | | | Topic 16 | |
| Use angle measure to classify figures. | | | | | Topic 16 | |
| Categorize and identify right triangles. | | | | | Topic 16 | |
| Understand line symmetry. | | | | | Topic 16 | |
| Identify line-symmetric figures. | | | | | Topic 16 | |
| Draw lines of symmetry. | | | | | Topic 16 | |
| **Cluster 5.G.A** Graph points on the coordinate plane to solve real-world and mathematical problems. | | | | | | |
| Understand a coordinate system. | | | | | | Topic 14 |
| Graph points in the first quadrant of the coordinate plane. | | | | | | Topics 14, 15 |
| Interpret coordinate values of points in the first quadrant of the coordinate plane. | | | | | | Topics 14, 15 |
| **Cluster 5.G.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. | | | | | | Topic 16 |
| Classify two-dimensional figures in a hierarchy based on properties. | | | | | | Topic 16 |
| Use a Venn diagram to organize two-dimensional figures based on the attributes of the figures. | | | | | | Topic 16 |