This document identifies bridging standards in the 2016 *Mathematics Standards of Learning.* Bridging standards allow for the identification of content that can be connected when planning instruction and promote deeper student understanding.

 Bridging standards (indicated by bold text in the grade level column below) are ones that meet one or more of the following criteria:

* Functions as a bridge to which other content within the grade level/course is connected, either horizontally or vertically;
* Serves as prerequisite knowledge for content to be addressed in future grade levels/courses; or
* Possesses endurance beyond a single unit of instruction within a grade level/course.

The selection of content focus areas, potential connections, and the sequencing of content in this document serve as examples only and are intended to assist with curricular development.

| **Grade 4 Content Focus Areas** | **Prerequisite Knowledge (Linked to JIT Quick Checks)****Grade 2** | **Prerequisite Knowledge (Linked to JIT Quick Checks)****Grade 3** | **Grade 4****(Linked to Just in Time Mathematics Quick Checks)** | **-** | **Possible Grade 4****Connections Across Content Focus Areas** | **Possible Future Grade Level/Course Content Connections** |
| --- | --- | --- | --- | --- | --- | --- |
|  | [2.1a](https://www.doe.virginia.gov/home/showpublisheddocument/24422/), [2.1b](https://www.doe.virginia.gov/home/showpublisheddocument/24426/) | [3.1a](https://www.doe.virginia.gov/home/showpublisheddocument/24558/) | [4.1a](https://www.doe.virginia.gov/home/showpublisheddocument/24700/) Read, write, and identify the place and value of each digit in a nine-digit whole number  |  | Practical Problems with Whole Numbers |  |
| **Using Place Value to Compare and Order Whole Numbers** | [2.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24430/) | [3.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24566/) | [4.1b](https://www.doe.virginia.gov/home/showpublisheddocument/24704/) Compare and order whole numbers expressed through millions  |  |  | Compare and Order Fractions and Decimals(Grade 5) |
|  | [2.1d](https://www.doe.virginia.gov/home/showpublisheddocument/24434/) | [3.1b](https://www.doe.virginia.gov/home/showpublisheddocument/24562/) | [4.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24708/) Round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand  |  | Practical Problems with Whole Numbers | Rounding Decimals(Grade 5) |
|  | [2.5a](https://www.doe.virginia.gov/home/showpublisheddocument/24470/), [2.6a](https://www.doe.virginia.gov/home/showpublisheddocument/24478/), [2.6b](https://www.doe.virginia.gov/home/showpublisheddocument/24482/), [2.6c](https://www.doe.virginia.gov/home/showpublisheddocument/24486/) | [3.3a](https://www.doe.virginia.gov/home/showpublisheddocument/24582/), [3.3b](https://www.doe.virginia.gov/home/showpublisheddocument/24586/), [3.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24596/), [3.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24602/) | [**4.4b**](https://www.doe.virginia.gov/home/showpublisheddocument/24744/) **Estimate and determine sums, differences, and products of whole numbers**  |  | Practical Problems with Fractions and Decimals |  Practical Problems with Whole Numbers(Grade 5) |
| **Solving Problems with Whole Numbers** | [2.5a](https://www.doe.virginia.gov/home/showpublisheddocument/24470/), [2.6a](https://www.doe.virginia.gov/home/showpublisheddocument/24478/), [2.6b](https://www.doe.virginia.gov/home/showpublisheddocument/24482/), [2.6c](https://www.doe.virginia.gov/home/showpublisheddocument/24486/) | [3.3a](https://www.doe.virginia.gov/home/showpublisheddocument/24582/), [3.3b](https://www.doe.virginia.gov/home/showpublisheddocument/24586/), [3.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24596/), [3.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24602/), [3.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24604/), [3.4d](https://www.doe.virginia.gov/home/showpublisheddocument/24608/) | [**4.4d**](https://www.doe.virginia.gov/home/showpublisheddocument/24752/) **Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication of whole numbers and single step practical problems with division**  |  | Interpreting Data | Practical Problems with Whole Numbers(Grade 5) |
|  | [2.17](https://www.doe.virginia.gov/home/showpublisheddocument/24544/) | [3.17](https://www.doe.virginia.gov/home/showpublisheddocument/24682/) | [**4.16**](https://www.doe.virginia.gov/home/showpublisheddocument/24844/) **Recognize and demonstrate the meaning of equality in an equation**  |  |  | Variables and Equations(Grade 5) |
|  | [2.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24438/), [2.5b](https://www.doe.virginia.gov/home/showpublisheddocument/24474/) | [3.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24596/), [3.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24604/) | [**4.4a**](https://www.doe.virginia.gov/home/showpublisheddocument/24740/) **Demonstrate fluency with multiplication facts through 12 x 12, and corresponding division facts**  |  |  | Practical Problems with Whole Numbers(Grade 5) |
|  |  | [3.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24596/), [3.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24602/), [3.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24604/), [3.4d](https://www.doe.virginia.gov/home/showpublisheddocument/24608/) | [**4.4c**](https://www.doe.virginia.gov/home/showpublisheddocument/24748/) **Estimate and determine quotients of whole numbers, with and without remainders**  |  | Decimal Place Value | Practical Problems with Whole Numbers (Grade 5) |
|  | [2.6c](https://www.doe.virginia.gov/home/showpublisheddocument/24486/), [2.16](https://www.doe.virginia.gov/home/showpublisheddocument/24540/) | [3.3b](https://www.doe.virginia.gov/home/showpublisheddocument/24586/), [3.4d](https://www.doe.virginia.gov/home/showpublisheddocument/24608/), [3.16](https://www.doe.virginia.gov/home/showpublisheddocument/24678/) | [**4.15**](https://www.doe.virginia.gov/home/showpublisheddocument/24840/) **Identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables**  |  | Compare and Order Whole Numbers | Number Patterns(Grade 5) |
|  | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/), [2.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24466/) | [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.2c](https://www.doe.virginia.gov/home/showpublisheddocument/24578/) | [**4.2a**](https://www.doe.virginia.gov/home/showpublisheddocument/24712/) **Compare and order fractions and mixed numbers**  |  | Compare and Order Whole Numbers | Compare and Order Fractions and Decimals (Grade 5) |
|  | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/), [2.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24466/) | [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.2c](https://www.doe.virginia.gov/home/showpublisheddocument/24578/) | [**4.2b**](https://www.doe.virginia.gov/home/showpublisheddocument/24716/) **Represent equivalent fractions**  |  |  | Fraction and Decimal Equivalency(Grade 5) |
| **Connecting Fractions and Decimals** | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/) | [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/) | [**4.2c**](https://www.doe.virginia.gov/home/showpublisheddocument/24720/) **Identify the division statement that represents a fraction, with models and in context**  |  |  | Fraction and Decimal Equivalency(Grade 5) |
|  |  | [3.1a](https://www.doe.virginia.gov/home/showpublisheddocument/24558/), [3.1b](https://www.doe.virginia.gov/home/showpublisheddocument/24562/), [3.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24566/), [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.2c](https://www.doe.virginia.gov/home/showpublisheddocument/24578/) | [**4.3a**](https://www.doe.virginia.gov/home/showpublisheddocument/24724/) **Read, write, represent, and identify decimals expressed through thousandths**  |  | Whole Number Place Value | Fraction and Decimal Equivalency(Grade 5) |
|  | [2.1d](https://www.doe.virginia.gov/home/showpublisheddocument/24434/) | [3.1b](https://www.doe.virginia.gov/home/showpublisheddocument/24562/) | [4.3b](https://www.doe.virginia.gov/home/showpublisheddocument/24728/) Round decimals to the nearest whole number |  | Round Whole Numbers | Rounding Decimals(Grade 5) |
|  | [2.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24430/) | [3.1c](https://www.doe.virginia.gov/home/showpublisheddocument/24566/), [3.2c](https://www.doe.virginia.gov/home/showpublisheddocument/24578/) | [**4.3c**](https://www.doe.virginia.gov/home/showpublisheddocument/24732/) **Compare and order decimals**  |  | Compare and Order Whole Numbers | Compare and Order Fractions and Decimals(Grade 5) |
|  | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/), [2.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24466/) | [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.2c](https://www.doe.virginia.gov/home/showpublisheddocument/24578/) | [**4.3d**](https://www.doe.virginia.gov/home/showpublisheddocument/24736/) **Given a model, write the decimal and fraction equivalents**  |  |  | Fraction and Decimal Equivalency(Grade 5) |
|  | [2.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24438/) | [3.4c](https://www.doe.virginia.gov/home/showpublisheddocument/24604/) | [**4.5a**](https://www.doe.virginia.gov/home/showpublisheddocument/24756/) **Determine common multiples and factors, including LCM and GCF**  |  | Multiplication Fact Fluency | Prime and Composite Numbers (Grade 5) |
|  | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/) | [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.5](https://www.doe.virginia.gov/home/showpublisheddocument/24612/) | [**4.5b**](https://www.doe.virginia.gov/home/showpublisheddocument/24780/) **Add and subtract fractions and mixed numbers having like and unlike denominators**  |  | Equivalent Fractions | Practical Problems with Adding and Subtracting Fractions(Grade 5) |
| **Solving Problems with Fractions and Decimals** | [2.4a](https://www.doe.virginia.gov/home/showpublisheddocument/24458/), [2.4b](https://www.doe.virginia.gov/home/showpublisheddocument/24462/) | [3.2a](https://www.doe.virginia.gov/home/showpublisheddocument/24570/), [3.2b](https://www.doe.virginia.gov/home/showpublisheddocument/24576/), [3.5](https://www.doe.virginia.gov/home/showpublisheddocument/24612/) | [**4.5c**](https://www.doe.virginia.gov/home/showpublisheddocument/24786/) **Solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers**  |  | Equivalent Fractions | Practical Problems with Adding and Subtracting Fractions (Grade 5) |
|  | [2.6a](https://www.doe.virginia.gov/home/showpublisheddocument/24478/), [2.6b](https://www.doe.virginia.gov/home/showpublisheddocument/24482/) | [3.3a](https://www.doe.virginia.gov/home/showpublisheddocument/24582/) | [**4.6a**](https://www.doe.virginia.gov/home/showpublisheddocument/24788/) **Add and subtract with decimals**  |  | Decimal Place Value | Practical Problems with Decimals(Grade 5) |
|  | [2.6c](https://www.doe.virginia.gov/home/showpublisheddocument/24486/) | [3.3b](https://www.doe.virginia.gov/home/showpublisheddocument/24586/) | [**4.6b**](https://www.doe.virginia.gov/home/showpublisheddocument/24792/) **Solve single-step and multistep practical problems involving addition and subtraction with decimals**  |  | Practical Problems with Whole Numbers | Practical Problems with Decimals(Grade 5) |
|  |  | [3.11](https://www.doe.virginia.gov/home/showpublisheddocument/24646/) | [**4.10a**](https://www.doe.virginia.gov/home/showpublisheddocument/24760/) **Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices**  |  |  | Measure Angles(Grade 5) |
| **Using Geometry to Describe My World** |  | [3.11](https://www.doe.virginia.gov/home/showpublisheddocument/24646/) | [4.10b](https://www.doe.virginia.gov/home/showpublisheddocument/24764/) Identify and describe intersecting, parallel, and perpendicular lines |  |  | Measure Angles(Grade 5) |
|  | [2.13](https://www.doe.virginia.gov/home/showpublisheddocument/24524/) | [3.12a](https://www.doe.virginia.gov/home/showpublisheddocument/24650/), [3.12b](https://www.doe.virginia.gov/home/showpublisheddocument/24654/) | [4.11](https://www.doe.virginia.gov/home/showpublisheddocument/24768/) Identify, describe, compare, and contrast plane and solid figures according to characteristics (number of angles, vertices, edges, and the number and shape of faces) using concrete models and pictorial representations |  |  | Classify Triangles(Grade 5) |
|  |  | [3.13](https://www.doe.virginia.gov/home/showpublisheddocument/24662/) | [4.12](https://www.doe.virginia.gov/home/showpublisheddocument/24772/) Classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids  |  |  | Combining and Subdividing Polygons(Grade 5) |
|  | [2.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24498/) | [3.7a](https://www.doe.virginia.gov/home/showpublisheddocument/24628/), [3.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24636/), [3.8b](https://www.doe.virginia.gov/home/showpublisheddocument/24640/) | [4.7](https://www.doe.virginia.gov/home/showpublisheddocument/24796/) Solve practical problems involving perimeter and area  |  | Practical Problems with Whole Numbers | Perimeter, Area,and Volume(Grade 5) |
| **Using Measurement to Describe My World** | [2.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24498/) | [3.7a](https://www.doe.virginia.gov/home/showpublisheddocument/24628/), [3.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24636/) | [**4.8a**](https://www.doe.virginia.gov/home/showpublisheddocument/24800/) **Estimate and measure length and describe the result in U.S. Customary and metric units**  |  | Fraction and Decimal Equivalency | Metric System(Grade 5) |
|  | [2.8b](https://www.doe.virginia.gov/home/showpublisheddocument/24502/) |  | [**4.8b**](https://www.doe.virginia.gov/home/showpublisheddocument/24804/) **Estimate and measure weight/mass and describe the result in U.S. Customary and metric units**  |  | Fraction and Decimal Equivalency | Metric System(Grade 5) |
|  | [2.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24498/), [2.8b](https://www.doe.virginia.gov/home/showpublisheddocument/24502/) | [3.7a](https://www.doe.virginia.gov/home/showpublisheddocument/24628/), [3.7b](https://www.doe.virginia.gov/home/showpublisheddocument/24632/) | [4.8c](https://www.doe.virginia.gov/home/showpublisheddocument/24808/) Given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume in U.S. Customary units |  | Practical Problems with Whole Numbers | Metric System(Grade 5) |
|  | [2.8a](https://www.doe.virginia.gov/home/showpublisheddocument/24498/), [2.8b](https://www.doe.virginia.gov/home/showpublisheddocument/24502/) | [3.7a](https://www.doe.virginia.gov/home/showpublisheddocument/24628/), [3.7b](https://www.doe.virginia.gov/home/showpublisheddocument/24632/) | [**4.8d**](https://www.doe.virginia.gov/home/showpublisheddocument/24812/) **Solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units**  |  |  | Metric System(Grade 5) |
|  | [2.9](https://www.doe.virginia.gov/home/showpublisheddocument/24550/) | [3.9a](https://www.doe.virginia.gov/home/showpublisheddocument/24688/), [3.9b](https://www.doe.virginia.gov/home/showpublisheddocument/24692/), [3.9c](https://www.doe.virginia.gov/home/showpublisheddocument/24696/) | [4.9](https://www.doe.virginia.gov/home/showpublisheddocument/24848/) Solve practical problems related to elapsed time in hours and minutes within a 12-hour period |  |  | Elapsed Time(Grade 5) |
|  | [2.14](https://www.doe.virginia.gov/home/showpublisheddocument/24528/) | [3.14](https://www.doe.virginia.gov/home/showpublisheddocument/24666/) | [4.13a](https://www.doe.virginia.gov/home/showpublisheddocument/24776/) Determine the likelihood of an outcome of a simple event |  |  | FundamentalCounting Principle(Grade 5) |
|  | [2.14](https://www.doe.virginia.gov/home/showpublisheddocument/24528/) | [3.14](https://www.doe.virginia.gov/home/showpublisheddocument/24666/) | [4.13b](https://www.doe.virginia.gov/home/showpublisheddocument/24820/) Represent probability as a number between 0 and 1, inclusive |  | Comparing Fractions | FundamentalCounting Principle(Grade 5) |
| **Using Data and Probability to Describe My World** | [2.14](https://www.doe.virginia.gov/home/showpublisheddocument/24528/) | [3.14](https://www.doe.virginia.gov/home/showpublisheddocument/24666/) | [4.13c](https://www.doe.virginia.gov/home/showpublisheddocument/24824/) Create a model or practical problem to represent a given probability |  |  | FundamentalCounting Principle(Grade 5) |
|  | [2.15a](https://www.doe.virginia.gov/home/showpublisheddocument/24532/) | [3.15a](https://www.doe.virginia.gov/home/showpublisheddocument/24670/) | [4.14a](https://www.doe.virginia.gov/home/showpublisheddocument/24828/) Collect, organize, and represent data in bar graphs and line graphs |  |  | Line Plots and Stem-and-Leaf Plots(Grade 5) |
|  | [2.15b](https://www.doe.virginia.gov/home/showpublisheddocument/24536/) | [3.15b](https://www.doe.virginia.gov/home/showpublisheddocument/24674/) | [**4.14b**](https://www.doe.virginia.gov/home/showpublisheddocument/24832/) **Interpret data represented in bar graphs and line graphs**  |  | Comparing Numbers | Line Plots and Stem-and-Leaf Plots(Grade 5) |
|  | [2.15a](https://www.doe.virginia.gov/home/showpublisheddocument/24532/), [2.15b](https://www.doe.virginia.gov/home/showpublisheddocument/24536/) | [3.15a](https://www.doe.virginia.gov/home/showpublisheddocument/24670/), [3.15b](https://www.doe.virginia.gov/home/showpublisheddocument/24674/) | [4.14c](https://www.doe.virginia.gov/home/showpublisheddocument/24836/) Compare two different representations of the same data (e.g., a set of data displayed on a chart and a bar graph, a chart and a line graph, or a pictograph and a bar graph) |  |  | Line Plots and Stem-and-Leaf Plots(Grade 5) |

NOTES: Once concepts have been introduced, many (i.e., place value, problem solving, and developing fluency with multiplication, etc.) will need to be revisited throughout the year.