

Introduction:

The following Instructional Materials Scoring Rubric for Mathematics is designed to score materials in the following categories:

- Instructional Focus
- Math Practices
- Aspects of Rigor
- Accessibility Features

Scoring:

Each section is to be scored using a 0, 1, or 2. For all sections, except for Rigor, use the following rubric when deciding on the appropriate rating:

- 0: The metric is not present within the material.
- 1: The metric is present within the material. The intent and/or frequency component of the metric is not fully met.
- 2: A rating of 2 indicates the metric is present and all aspects of the metric are fully met.

For Rigor:

- 0: The standard is not instructionally present within the material.
- 1: The standard is instructionally present but does not have an instructional focus on the indicated type of rigor.
- 2: The standard is instructionally present and has a clear instructional focus on the indicated type of rigor.

Note: Some standards appear under multiple aspects of rigor (i.e., Conceptual Understanding, Procedural Fluency, or Application). When scoring these standards, only score the part of the standard relevant to that aspect of rigor, which is identified by a bold, italics, larger font.

Gateway: The publisher must provide a Tennessee standards alignment guide as a part of the scope and sequence for the material. If this gateway is not met, the materials will not be scored.

Instructional Focus				
	0	1	2	Evidence
Connections to content from prior grades are clearly identified and explicitly related to grade-level work.				
Materials embed a minimum of 3 tasks in every unit. Each task has multiple entry-points and can be solved using a minimum of 2 solution strategies and/or representations.				
Materials give students opportunities to work problems within each lesson. Each problem set: <ul style="list-style-type: none"> Covers the full breadth of the standard(s) covered in the lesson Is aligned to on grade level expectations as identified in the standard(s) 				
Teacher resources indicate common student misconceptions in every unit and provide guidance on how to instructionally address the identified misconceptions.				
Materials provide educative supports (e.g., adult level explanations of the standards) in every lesson for teachers to ensure standards are taught accurately and to the appropriate level of rigor (i.e., conceptual understanding, procedural fluency, and application) as indicated by the standards.				
Materials develop student understanding of multiple representations (i.e., concrete, representational, abstract) for relevant standards which are identified in the state's Instructional Focus Documents.				
Materials include problems and activities in every unit that connect two or more grade level standards in a domain (e.g., 7.EE.A.1 and 7.EE.A.2).				
Materials include problems and activities in every unit that connect two or more grade level domains. (e.g., 7.RP.A.3 and 7.EE.B.3)				
Materials provide opportunities for students to participate in a spiraled review in every unit.				
Total				

Gateway: The publisher must provide a Tennessee standards alignment guide as a part of the scope and sequence for the material. If this gateway is not met, the materials will not be scored.

Mathematical Practices				
Math Practices/Literacy Skills for Math Proficiency	0	1	2	Evidence
Materials embed the eight math practice standards in every unit.				
Math practice standards are clearly identified in both teacher and student materials.				
Materials use appropriate math vocabulary which is aligned to the grade level standards.				
Materials support students in discussing and articulating mathematical ideas. Within each lesson students either write or verbally justify their thoughts.				
Total				

Accessibility Features				
Digital Materials	0	1	2	Evidence
All lessons within the materials are available in digital form and include a printable option.				
In every lesson, materials include recommended supports, accommodations, and modifications for Students with Disabilities and English Language Learners that will support their regular and active participation in accessing on grade level material (e.g., modifying vocabulary words within word problems, sentence starters, etc.).				
Total				

Aspects of Rigor				
Conceptual Understanding: The materials support the intentional development of students' conceptual understanding of key mathematical concepts, especially where called for in specific content standards or clusters.	0	1	2	Evidence
5.OA.A.2 Write numerical expressions that record calculations with numbers and <i>interpret numerical expressions without evaluating them.</i>				
5.OA.B.3a Identify relationships between corresponding terms in two numerical patterns.				
5.NBT.A.1 Recognize 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.				
5.NBT.A.2 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.				
5.NBT.A.3 Read and write decimals to thousandths using standard form, word form, and expanded notation (e.g., the expanded notation of 347.392 is written as $(3 \times 100) + (4 \times 10) + (7 \times 1) + (3 \times (1/10)) + (9 \times (1/100)) + (2 \times (1/1000))$). <i>Compare two decimals to thousandths based on meanings of the digits in each place and use the symbols $>$, $=$, and $<$ to show the relationship.</i>				
5.NBT.A.4 Round decimals to the nearest hundredth, tenth, or whole number <i>using understanding of place value, and use a number line to explain how the number was rounded.</i>				
5.NBT.B.6 Find whole-number quotients and remainders of whole numbers with up to four-digit dividends and two-digit divisors, <i>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.</i>				
5.NBT.B.7 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 operations. <i>Assess the reasonableness of answers using estimation</i>				

strategies. (Limit multiplication problems so that the product does not exceed thousandths. Limit division problems so that either the dividend or the divisor is a whole number.)				
5.NF.A.2 Solve contextual problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. <i>Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.</i>				
5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$).				
5.NF.B.4 Apply and <i>extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction by a fraction.</i>				
5.NF.B.4a Interpret the product $a/b \times q$ as $a \times (q \div b)$ (partition the quantity q into b equal parts and then multiply by a). Interpret the product $a/b \times q$ as $(a \times q) \div b$ (multiply a times the quantity q and then partition the product into b equal parts)..)				
5.NF.B.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and <i>show that the area is the same as would be found by multiplying the side lengths.</i> Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.				
5.NF.B.5 Interpret multiplication as scaling (resizing).				
5.NF.B.5a Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.				
5.NF.B.5b 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 between 0 and 1 results in a product less than the given number; and relate the principle of fraction equivalence $a/b = (a \times n)/(b \times n)$ to the effect of multiplying a/b by 1.				
5.NF.B.7 Apply and <i>extend previous understandings of division to divide unit</i>				
5.NF.B.7a Interpret division of a unit fraction by a non-zero whole number and compute such quotients.				
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5.NF.B.7b Interpret division of a whole number by a unit fraction and compute such quotients.				
5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.				
5.MD.C.3a Understand that a cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume and can be used to measure volume.				
5.MD.C.3b Understand that 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.				
5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume of right rectangular prisms.				
5.MD.C.5a 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, equivalently by multiplying the height by the area of the base. Represent whole-number products of three factors as volumes (e.g., to represent the associative property of multiplication).				
5.MD.C.5c Recognize volume as additive. 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.				
5.G.A.1 Graph ordered pairs and label points using the first quadrant of the coordinate plane. Understand in the ordered pair that the first number indicates the horizontal distance traveled along the x-axis from the origin and the second number indicates the vertical distance traveled along the y-axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).				
5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.				
5.G.B.3 Classify two-dimensional figures in a hierarchy based on properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.				
Procedural Skill and Fluency: The materials provide intentional opportunities for students to develop procedural skills and fluencies, especially where called for in specific content standards or clusters	0	1	2	Evidence

<p>5.OA.A.1 Use parentheses and/or brackets in numerical expressions involving whole numbers and evaluate expressions having these symbols using the conventional order by applying the Order of Operations. (When applying the order of operations, the evaluation of exponents need not be included.)</p>				
<p>5.OA.A.2 Write numerical expressions that record calculations with numbers and interpret numerical expressions without evaluating them.</p>				
<p>5.OA.B.3 Generate two numerical patterns using two given rules.</p>				
<p>5.OA.B.3b Form ordered pairs (limited to first quadrant) consisting of corresponding terms from two numerical patterns and graph the ordered pairs on a coordinate plane.</p>				
<p>5.NBT.A.3 Read and write decimals to thousandths using standard form, word form, and expanded notation (e.g., the expanded notation of 347.392 is written as $(3 \times 100) + (4 \times 10) + (7 \times 1) + (3 \times (1/10)) + (9 \times (1/100)) + (2 \times (1/1000))$). Compare two decimals to thousandths based on meanings of the digits in each place and use the symbols $>$, $=$, and $<$ to show the relationship.</p>				
<p>5.NBT.A.4 Round decimals to the nearest hundredth, tenth, or whole number using understanding of place value, and use a number line to explain how the number was rounded.</p>				
<p>5.NBT.B.5 Fluently multiply multi-digit whole numbers (up to three-digit by four-digit factors) using efficient strategies and algorithms.</p>				
<p>5.NBT.B.6 Find whole-number quotients and remainders 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 the calculation by using equations, rectangular arrays, and/or area models.</p>				
<p>5.NBT.B.7 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 operations. Assess the reasonableness of answers using estimation strategies. (Limit multiplication problems so that the product does not exceed thousandths. Limit division problems so that either the dividend or the divisor is a whole number.)</p>				
<p>5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.</p>				
<p>5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction by a fraction.</p>				

<p>5.NF.B.4b Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. <i>Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.</i></p>				
<p>5.NF.B.7 Apply and extend previous understandings of division to <i>divide unit fractions by whole numbers and whole numbers by unit fractions.</i></p>				
<p>5.NF.B.7b Interpret division of a whole number by a unit fraction and <i>compute such quotients.</i></p>				
<p>5.MD.A.1 Convert customary and metric measurement units within a single system by expressing measurements of a larger unit in terms of a smaller unit. Use these conversions to solve multi-step real-world problems involving distances, intervals of time, liquid volumes, masses of objects, and money (including problems involving simple fractions or decimals).</p>				
<p>5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.</p>				
<p>5.MD.C.4 Measure volume by counting unit cubes, using cubic centimeters, cubic inches, cubic feet, and improvised units.</p>				
<p>5.MD.C.5a 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, equivalently by multiplying the height by the area of the base. Represent whole-number products of three factors as volumes (e.g., to represent the associative property of multiplication).</p>				
<p>5.MD.C.5b Know and apply the formulas $V = l \times w \times h$ and $V = B \times h$ (where B represents the area of the base) for rectangular prisms with whole number edge lengths in the context of solving real-world and mathematical problems.</p>				
<p>5.MD.C.5c Recognize volume as additive. <i>Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts</i>, applying this technique to solve real-world problems.</p>				
<p>5.G.A.1 Graph ordered pairs and label points using the first quadrant of the coordinate plane. Understand in the ordered pair that the first number indicates the horizontal distance traveled along the x-axis from the origin and the second number indicates the vertical distance traveled along the y-axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x- coordinate, y-axis and y-coordinate).</p>				

<p>5.G.A.2 Represent real-world and mathematical problems by <i>graphing points in the first quadrant of the coordinate plane</i> and interpret coordinate values of points in the context of the situation.</p>				
<p>Applications: The materials support the intentional development of students' ability to utilize mathematical concepts and skills in engaging applications, especially where called for in specific content standards or clusters.</p>	0	1	2	Evidence
<p>5.NF.A.2 <i>Solve contextual problems</i> involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.</p>				
<p>5.NF.B.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). <i>Solve contextual problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using visual fraction models or equations to represent the problem.</i></p>				
<p>5.NF.B.6 Solve real-world problems involving multiplication of fractions and mixed numbers by using visual fraction models or equations to represent the problem.</p>				
<p>5.NF.B.7 <i>Apply</i> and extend previous <i>understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</i></p>				
<p>5.NF.B.7c Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions and non-unit fractions by using visual fraction models and equations to represent the problem.</p>				
<p>5.MD.A.1 Convert customary and metric measurement units within a single system by expressing measurements of a larger unit in terms of a smaller unit. Use these conversions to <i>solve multi-step real-world problems involving distances, intervals of time, liquid volumes, masses of objects, and money (including problems involving simple fractions or decimals).</i></p>				
<p>5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit ($1/2, 1/4, 1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots.</p>				
<p>5.MD.C.5 Relate volume to the operations of multiplication and addition and <i>solve real-world and mathematical problems involving volume of right rectangular prisms.</i></p>				
<p>5.MD.C.5b Know and apply the formulas $V = l \times w \times h$ and $V = B \times h$ (where B represents the area of the base) for rectangular prisms with whole number edge lengths in the context of <i>solving real-world and mathematical problems.</i></p>				

<p>5.MD.C.5c Recognize volume as additive. 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.</p>				
<p>5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.</p>				
Total				