Grade 7 Mathematics Instructional Materials Scoring Rubric

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.

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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: • 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 and strategies) 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.				

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.				

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**
7.RP.A.2 ***Recognize*** and represent ***proportional relationships between quantities.***				
7.RP.A.2a ***Decide whether two quantities are in a proportional relationship*** (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and ***observing whether the graph is a straight line through the origin***).				
7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.				
7.RP.A.2c ***Use the concept of equality*** to represent proportional relationships with equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*.				
7.RP.A.2d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.				
7.NS.A.1 ***Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers;*** represent addition and subtraction on a horizontal or vertical number line diagram.				
7.NS.A.1a Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real- world contexts.				

7.NS.A.1b ***Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference***, and apply this principle in real-world contexts.				
7.NS.A.1c ***Apply properties of operations as strategies*** to add and subtract rational numbers.				
7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.				
7.NS.A.2a Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.				
7.NS.A.2b ***Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number***. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). ***Interpret quotients of rational numbers*** by describing real-world contexts.				
7.NS.A.2c ***Apply properties of operations as strategies*** to multiply and divide rational numbers.				
7.NS.A.2d Convert a rational number to a decimal using long division***; know that the decimal form of a rational number terminates or eventually repeats***.				
7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.				
7.EE.A.2 Rewrite and ***connect equivalent expressions in different forms*** in a contextual problem ***to provide multiples ways of interpreting the problem and investigating how the quantities in it are related***. *For example, shoes are on sale at a 25% discount. How is the discounted price P related to the original cost C of the shoes? C – 0.25C = P. In other words, P is 75% of the original cost since C – 0.25C can be written as 0.75C.*				
7.EE.B.3a ***Apply properties of operations*** to calculate with numbers in any form; convert between forms as appropriate.				
7.EE.B.3b Assess the reasonableness of answers using mental computation and				
7.EE.B.4 ***Use variables to represent quantities*** in a real-world and mathematical problem, and construct simple equations and inequalities to ***solve problems by reasoning about the quantities.***				

7.EE.B.4a Solve real-world and mathematical problems leading to equations of the form *px + q = r and p(x + q) = r* where *p, q,* and *r* are specific rational numbers. Solve equations of these forms fluently**. *Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.*** *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*				
7.EE.B.4b Solve real-world and mathematical problems leading to inequalities of the form *px + q > r, px + q < r, px + q ≥ r*, and *px + q ≤ r,* where *p, q,* and *r* are specific rational numbers. Graph the solution set of the inequality on a number line and ***interpret it in the context of the problem.*** *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*				
7.G.A.2 Draw triangles with given conditions: three angle measures or three side measures. ***Notice when the conditions determine a unique triangle, more than one triangle, or no triangle.***				
7.G.B.3 ***Know the formulas for the area and circumference of a circle*** and use them to solve problems. ***Explore the relationships between the radius, the circumference, and the area of a circle, and the number π.***				
7.G.B.4 ***Know and use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem*** to write and solve simple equations for an unknown angle in a figure.				
7.SP.A.2 Collect and use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data.* ***Gauge how far off the estimate or prediction might be.***				
7.SP.B.3 ***Informally compare the measures of center (mean, median, mode) of two numerical data distributions with similar variabilities.*** *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team; on a dot plot or box plot, the separation between the two distributions of heights is noticeable.*				
7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a 7th grade science book are generally longer than the words in a chapter of a 4th grade science book.*				

7.SP.C.5 Recognize that the probability of a chance event is a number between 0 and 1 and interpret the likelihood of the event occurring.				
7.SP.C.6a ***Approximate the probability of a chance event*** *by* collecting data on the chance process that produces it and ***observing its long-run relative frequency, and predict the approximate relative frequency given the probability*****.**				
7.SP.C.6c Compare theoretical probabilities to experimental probabilities; explain any possible sources of discrepancy. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*				
7.SP.C.7 ***Develop a probability model*** and use it to find experimental or theoretical probabilities of events.				
7.SP.C.7a ***Use a uniform probability model, with equal probability assigned to all outcomes, to determine probabilities of events****. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*				
7.SP.C.7b ***Develop a probability model, including non-uniform models, by observing frequencies in data generated from a chance process.*** Use the model to estimate the probabilities of events. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*				
7.SP.D.8 ***Summarize a numerical data set*** in relation to its context.				
7.SP.D.8a Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range), as well as ***describe any overall pattern and any striking deviations from the overall pattern*** with reference to the context in which the data were gathered.				
7.SP.D.8b ***Relate and understand the choice of measures of center (median and/or mean) and variability (range and/or interquartile range) to the shape of the data distribution*** and the context in which the data were gathered.				
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**
7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 15 minutes, compute the unit rate as the complex fraction (1/2) / (1/4) miles per hour, equivalently 2 miles per hour.				

7.RP.A.2 Recognize and ***represent proportional relationships between quantities.***				
7.RP.A.2a Decide whether two quantities are in a proportional relationship (e.g., ***by testing for equivalent ratios in a table or graphing on a coordinate plane*** and observing whether the graph is a straight line through the origin).				
7.RP.A.2c Use the concept of equality to ***represent proportional relationships with equations.*** *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*.				
7.RP.A.3 ***Use proportional relationships to solve*** multi-step ratio and percent problems. *Examples: batting averages, recipes, simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, etc*.				
7.NS.A.1 Apply and extend previous understandings of addition and subtraction to ***add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram***.				
7.NS.A.1c Apply properties of operations as strategies to add and ***subtract rational numbers.***				
7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to ***multiply and divide rational numbers***.				
7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then ***–(p/q) = (–p)/q = p/(–q).*** Interpret quotients of rational numbers by describing real-world contexts.				
7.NS.A.2c Apply properties of operations as strategies to ***multiply and divide rational numbers.***				
7.NS.A.2d ***Convert a rational number to a decimal using long division;*** know that the decimal form of a rational number terminates or eventually repeats.				
7.NS.A.3 ***Solve*** real-world and ***mathematical problems involving the four operations with rational numbers.*** (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)				
7.EE.A.1 Apply properties of operations as strategies to ***add, subtract, factor, and expand linear expressions with rational coefficients.***				
7.EE.A.2 ***Rewrite*** and connect ***equivalent expressions in different forms*** in a contextual problem to provide multiples ways of interpreting the problem and investigating how the quantities in it are related. *For example, shoes are on sale at a 25% discount. How is the discounted price P related to the original cost C of the shoes? C – 0.25C = P. In other words, P is 75% of the original cost since C – 0.25C can be written as 0.75C.*				

7.EE.B.3 ***Solve multi-step*** real-world and ***mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals).***				
7.EE.B.3a Apply properties of operations to ***calculate with numbers in any form; convert between forms as appropriate.***				
7.EE.B.4 Use variables to represent quantities in a real-world and mathematical problem, and ***construct simple equations and inequalities to solve problems by reasoning about the quantities.***				
7.EE.B.4a ***Solve*** real-world and ***mathematical problems leading to equations of the form px + q = r and p(x + q) = r where p, q, and r are specific rational numbers. Solve equations of these forms fluently.*** Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*				
7.EE.B.4b ***Solve real-world*** and mathematical ***problems leading to inequalities of the form px + q > r, px + q < r, px + q ≥ r, and px + q ≤ r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality on a number line*** and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*				
7.G.A.1 ***Solve problems involving scale drawings*** of congruent and similar geometric figures, including computing actual lengths and areas from a scale drawing and ***reproducing a scale drawing at a different scale.***				
7.G.A.2 ***Draw triangles with given conditions: three angle measures or three side measures.*** Notice when the conditions determine a unique triangle, more than one triangle, or no triangle.				
7.G.B.3 Know the formulas for the area and circumference of a circle and ***use them to solve problems.*** Explore the relationships between the radius, the circumference, and the area of a circle, and the number π.				
7.G.B.4 Know and use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and ***solve simple equations for an unknown angle in a figure.***				
7.G.B.5 ***Solve*** real-world and ***mathematical problems involving area of two-dimensional figures composed of triangles, quadrilaterals, and polygons, and volume and surface area of three-dimensional objects composed of cubes and right prisms.***				
7.SP.A.1 Explore how statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are				

valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.				
7.SP.A.2 ***Collect and use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.*** *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data.* Gauge how far off the estimate or prediction might be.				
7.SP.C.6 Calculate theoretical and experimental probability of simple events.				
7.SP.C.6a Approximate the probability of a chance event *by* ***collecting data on the chance process that produces it*** and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.				
7.SP.C.6b Calculate the theoretical probability of a simple event.				
7.SP.C.7 Develop a probability model and ***use it to find experimental or theoretical probabilities of events.***				
7.SP.C.7a ***Use a uniform probability model, with equal probability assigned to all outcomes, to determine probabilities of events****. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*				
7.SP.C.7b Develop a probability model, including non-uniform models, by observing frequencies in data generated from a chance process. ***Use the model to estimate the probabilities of events.*** *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*				
7.SP.D.8a ***Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range),*** as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.				
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.	**0**	**1**	**2**	**Evidence**
7.RP.A.3 Use proportional relationships to ***solve multi-step ratio and percent problems.*** *Examples: batting averages, recipes, simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, etc.*				

7.NS.A.1b Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, ***and apply this principle in real-world contexts.***				
7.NS.A.2b Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by ***describing real-world contexts.***				
7.NS.A.3 ***Solve real-world*** and mathematical problems ***involving the four operations with rational numbers*.** (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)				
7.EE.A.2 Rewrite and connect equivalent expressions in different forms in a ***contextual problem*** to provide multiples ways of interpreting the problem and investigating how the quantities in it are related. *For example, shoes are on sale at a 25% discount. How is the discounted price P related to the original cost C of the shoes? C – 0.25C = P. In other words, P is 75% of the original cost since C – 0.25C can be written as 0.75C.*				
7.EE.B.3 ***Solve multi-step real-world*** and mathematical problems ***posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals).***				
7.EE.B.4 ***Use variables to represent quantities in a real-world*** and mathematical problem, ***and construct simple equations and inequalities to solve problems by reasoning about the quantities.***				
7.EE.B.4a ***Solve real-world*** and mathematical problems ***leading to equations of the form px + q = r and p(x + q) = r where p, q, and r are specific rational numbers. Solve equations of these forms fluently*.** Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*				
7.EE.B.4b ***Solve real-world*** and mathematical problems ***leading to inequalities of the form px + q > r, px + q < r, px + q ≥ r, and px + q ≤ r, where p, q, and r are specific rational numbers***. Graph the solution set of the inequality on a number line and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*				
7.G.A.1 Solve problems involving ***scale drawings of congruent and similar geometric figures***, including computing ***actual lengths and areas from a scale drawing*** and reproducing a scale drawing at a different scale.				
7.G.B.5 ***Solve real-world*** and mathematical problems ***involving area of two-dimensional figures composed of triangles, quadrilaterals, and polygons, and***				

volume and surface area of three-dimensional objects composed of cubes and right prisms.				
7.SP.A.2 ***Collect and use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.*** *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data.* ***Gauge how far off the estimate or prediction might be.***				
7.SP.B.3 Informally compare the ***measures of center (mean, median, mode) of two numerical data distributions with similar variabilities.*** *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team; on a dot plot or box plot, the separation between the two distributions of heights is noticeable.*				
7.SP.C.7 Develop a probability model and use it to find ***experimental or theoretical probabilities of events.***				
7.SP.C.7a ***Use a uniform probability model, with equal probability assigned to all outcomes, to determine probabilities of events****. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*				
7.SP.C.7b Develop a probability model, including non-uniform models, by observing frequencies in data generated from a chance process. ***Use the model to estimate the probabilities of events.*** *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*				
7.SP.D.8 Summarize a numerical data set ***in relation to its context.***				
7.SP.D.8a Give quantitative measures of center (median and/or mean) and variability (range and/or interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern ***with reference to the context in which the data were gathered.***				
7.SP.D.8b Relate and understand the choice of measures of center (median and/or mean) and variability (range and/or interquartile range) to the shape of the data distribution and ***the context in which the data were gathered.***				

Accessibility Features

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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.).				