This Item Analysis is provided so that teachers, parents, and students may gain a better understanding of the Grade 7 iLEAP math test structure and the Common Core State Standards (CCSS) as applied to assessment. The table below is organized by practice test sequence number, CCSS, rationale for alignment, and connection to the practice test. The CCSS is the standard to which the item is aligned. The rationale for alignment explains an item's alignment to the standard listed. The language of the standards, any clarifications and/or tables offered by the CCSS, and the progression documents published by the University of Arizona were used when aligning items to the CCSS. The final column highlights specific qualities in each practice test item which adhere the rationale for alignment. The practice test can be found here, and a detailed explanation of assessment structure can be found here.

Sequence Number	CCSS	Rationale for Alignment	Connection to the Practice Test
1	7.NS.A.2b	Language of the standard: "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 $-(p/q) = (-p)/q = p/(-q)$." Progression Document *6-8, The Number System*, pages 9-13	Recognize the opposite of a negative quotient as a positive quotient.
2	7.EE.A.2	Language of the standard: "Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related." Similar to example given in the standard. Progression Document *6-8, Expressions and Equations*, page 8	Rewrite the expression $5 + 5 - 5(10\%)$ as $5 + 5(0.9)$ because it shows how the quantities are related better than the original expression.
3	7.NS.A.1c	Language of the standard: "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." Progression Document *6-8, The Number System*, page 10	Recognize the distance from -7 to 7 is the same as finding the absolute value of $-7 - 7$.
4	7.EE.B.4a	Language of the standard: "Solve word 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."	Solve the equation $4p - 4 = 48$ for p.

5	7.EE.A.1	Language of the standard: "Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients." Used example in standard for 6.EE.3 to determine grade-level appropriateness.	Simplify the expression $2(4.50 - c) + 8s$ by using the distributive property.
6	7.G.A.3	Language of the standard: "Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms." Progression Document *K-6, Geometry*, page 19	Recognize the rectangle slicing the cube vertically will create a rectangle.
7	7.SP.A.1	Language of the standard: "Understand that 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." Progression Document *6-8, Statistics and Probability*, pages 8-9	Recognize the appropriate sample population required to meet the given criteria.
8	7.EE.B.4b	Language of the standard: "Solve word problems leading to inequalities of the form $px + q > r$, where p, q, and r are specific rational numbers." Similar to example given in the standard. Progression Document *6-8, Expressions and Equations*, pages 9-10	Recognize $35 - 3b \geq 10$ as the inequality that can be used to solve the word problem to find the number of comic books.
9	7.NS.A.1b	Language of the standard: "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." Progression Document *6-8, The Number System*, page 10	Use the number line to find a number 4 units from -1.

10	7.RP.A.2c	Language of the standard: "Represent proportional relationships by equations."	Recognize $\dfrac{40}{8} = \dfrac{200}{w}$ represents an equation that could be used to find the weight of 200 quarters when the ratio is 40 quarters to 8 ounces.
11	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). Assess the reasonableness of answers using estimation strategies." Similar to example given in the standard.	Accurately round 2.82, 3.75, and 2.13 to the nearest whole number. Total exact decimal sum. Compare estimated decimal sum to exact decimal sum.
12	7.NS.A.2d	Language of the standard: "Convert a rational number to a decimal using long division."	Convert $\dfrac{1}{11}$ to decimal form.
13	7.SP.C.5	Language of the standard: "Larger numbers indicate greater likelihood. A probability near 1 indicates a likely event." Progression Document *6-8, Statistics and Probability*, page 7	Identify the event with highly likely probability as the one with 4 out of 6 A's.
14	7.RP.A.2c	Language of the standard: "Represent proportional relationships by equations." Similar to example given in the standard.	Recognize the correct equation, $b = ps$, to represent the proportional relationship.
15	7.SP.C.8a	Language of the standard: "Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs."	Determine the compound probability of rolling a 3 on number cube and spinning a 3 on the spinner.
16	7.EE.A.1	Language of the standard: "Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients."	Simplify the expression $\dfrac{3}{4}\left(2(2+4k)+2\left(3+\dfrac{3}{2}k\right)\right)$ to $\dfrac{15}{2}+\dfrac{33}{4}k$.
17	7.NS.A.2a	Language of the standard: "Interpret products of rational numbers by describing real-world contexts." Progression Document *6-8, The Number System*, pages 10-11	Given the expression $-\dfrac{3}{4}\times\dfrac{2}{5}$, identify the correct description $\dfrac{2}{5}$ of owing $(-)\dfrac{3}{4}$ of the original price.

18	7.G.B.5	Language of the standard: "Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to solve for an unknown angle in a figure."	Using the definition of complementary angles, recognize that the largest measure of angle G could be $89°$. Using the definition of supplementary angles, recognize that the smallest measure of angle H could be $91°$.
19	7.EE.B.4b	Language of the standard: "Solve word problems leading to inequalities of the form $px + q > r$, where p, q, and r are specific rational numbers." Progression Document *6-8, Expressions and Equations*, pages 9-10	Solve the $9 + 6x \geq 87$ for x.
20	7.NS.A.1d	Language of the standard: "Apply properties of operations as strategies to add and subtract rational numbers." Progression Document *6-8, The Number System*, pages 9-10	Add $0 + 50 + (-80) + 10$. Choose the number line showing the correct solution.
21	7.RP.A.2c	Language of the standard: "Represent proportional relationships by equations." Similar to example given in the standard.	Given the equation for the proportional relationship $y = 8x$, identify the corresponding context with 8 as the constant of proportionality (unit rate), x as the independent variable (number of items), and y as the dependent variable (total spent).
22	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). Assess the reasonableness of answers using estimation strategies." Similar to example given in the standard.	Accurately estimate $2\frac{1}{4}$ and $3\frac{3}{4}$ to the nearest whole numbers, 2 and 4. Calculate the exact product, $8\frac{7}{16}$. Recognize the estimated product is less than the exact product, but the difference is less than 1 square inch.
23	7.NS.A.2c	Language of the standard: "Apply properties of operations as strategies to multiply and divide rational numbers." Progression Document *6-8, The Number System*, page 10-13	Recognize that multiplying $-\frac{1}{3}$ by the reciprocal $\frac{1}{27}$ is a way to solve the equation $\left(-\frac{1}{3}\right) \div 27 = x$.

24	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate."	Solve the word problem by subtracting $25 - 6.25$. Divide the difference by $3\frac{3}{4}$ to find the number of portions.
25	7.NS.A.3	Language of the standard: "Solve mathematical problems involving the four operations with rational numbers."	Divide $-1\frac{1}{5} \div -1\frac{5}{6}$.
26	7.NS.1d	Language of the standard: "Apply properties of operations as strategies to add and subtract rational numbers." Progression Document *6-8, The Number System*, page 9-10	Recognize a correct set of steps to solve $-\frac{6}{15} + \frac{10}{22}$. First, change it to subtraction of two positive numbers. Then, reduce each fraction to simplest form. Finally, find common denominators and subtract the fractions.
27	7.EE.B.4b	Language of the standard: "Solve word problems leading to inequalities of the form $px + q > r$, where *p*, *q*, and *r* are specific rational numbers." Progression Document *6-8, Expressions and Equations*, pages 9-10	Identify the correct inequality, $8p + 22 \geq 60$, that could be used to solve the word problem. Recognize the sum on the left side represents the total number of paintbrushes. Recognize "at least" means greater than or equal to.
28	7.EE.A.1	Language of the standard: "Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients."	Recognize the expression $20 + 8y - 9y - 21$ as equivalent to $4(5 + 2y) - 3(3y + 7)$. They are equivalent because the distributive property is applied twice.
29	7.SP.C.5	Language of the standard: "Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring." Progression Document *6-8, Statistics and Probability*, pages 7-8	Recognize the two events as equally likely because the events have the same probability of happening, $\frac{8}{20}$ and $\frac{3+5}{20}$.
30	7.SP.C.8b	Language of the standard: "Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams." Progression Document *6-8, Statistics and Probability*, page 8	Identify the most appropriate sample space for the described compound event.

31	7.RP.A.2b	Language of the standard: "Identify the constant of proportionality (unit rate) in tables."	Identify which store has the same constant of proportionality as the proportion shown, $1.89.
32	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio problems."	Use the proportional relationship described, $\frac{2}{3}:4$, to determine the number of cups of almonds needed to make 9 cups of trail mix. Students can divide to find a unit rate and multiply the rate by 9.
33	7.G.A.1	Language of the standard: "Solve problems involving scale drawings of geometric figures, including computing actual lengths from a scale drawing."	Determine the distance in miles, 3.75, equivalent to the distance shown on the scale drawing in inches, $4\frac{1}{2}$, using the scale provided, 3 inches $= 2\frac{1}{2}$ miles.
34	7.SP.C.7b	Language of the standard: "Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process." Progression Document *6-8, Statistics and Probability*, pages 7-8	Determine the experimental probability, $\frac{11}{40}$, of getting in the 180-189 range by reading the histogram showing the frequencies.
35	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems."	Recognize 32% as 0.32 in decimal form. Multiply 0.32×25 to find the number that her collection increased by. Add the product to 25 to find her total with the increase. Subtract $25-6$ to calculate how many she has after giving 6 to her brother.
36	7.RP.A.1	Language of the standard: "Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units."	Identify the ratio of fractions that has a unit rate of $1\frac{3}{5}$, $\frac{4}{5}:\frac{1}{2}$.
37	7.SP.B.3	Language of the standard: "Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities." Progression Document *6-8, Statistics and Probability*, page 10	Compare the medians, Friday > Saturday, and interquartile ranges of the box plots (boxes are the same size).

38	7.EE.A.1	Language of the standard: "Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients."	Simplify the given expression $(2t-8)-\frac{1}{2}(9-4t)+\frac{5}{2}$ to $4t-10$. Apply the distributive property, and then combine like terms.
39	7.RP.A.2b	Language of the standard: "Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships."	Identify the graph having the same constant of proportionality as the verbal description, $\frac{56}{6}=\frac{336}{36}=9\frac{1}{3}$.
40	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems."	Determine the proportional relationship between a specific class size (30) and possible class sizes (22 to 34), using the ratio given (3:7).
41	7.G.B.6	Language of the standard: "Solve real-world and mathematical problems involving surface area of right prisms."	Given the set of dimensions 18 by 6 by 3, calculate the surface area of a rectangular prism using the formula $Surface\ Area = 2lw+2lh+2wh$.
42	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems."	Calculate the percent of difference by finding the difference of the dollar amounts and dividing the difference by the original amount.
43	7.RP.A.1	Language of the standard: "Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units."	Compute the unit rate for given ratio of fractions, $110\div 2\frac{3}{4}$. Use unit rate (40) to compute the number of words typed in $4\frac{1}{4}$ minutes, 170.
44	7.EE.A.2	Language of the standard: "Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related."	Eliminate the variable and multiply decimals by 100. Reveals a simpler expression to represent the percentage.

45	7.RP.A.1	Language of the standard: "Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units." Similar to example given in the standard.	Compute the unit rate, $1\frac{1}{3}$ trees per hour, for the given ratio of fractions, $\frac{2}{3}:\frac{1}{2}$.
46	7.SP.C.6	Language of the standard: "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." Progression Document *6-8, Statistics and Probability*, pages 7-8	Estimate the probability of the next customer ordering a certain combination, using the data provided in the frequency table.
47	7.RP.A.2	Language of the standard: "Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in verbal descriptions of proportional relationships."	Identify the unit rate described by proportional relationship. Use the unit rate to calculate a proportional relationship.
48	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate."	Find 20% of 80, and subtract it from 80. Find $\frac{1}{4}$ of 80 and subtract it from the previous difference.
49	7.NS.A.3	Language of the standard: "Solve real-world and mathematical problems involving the four operations with rational numbers."	Divide $40\frac{1}{3} \div 3$. Subtract $3\frac{3}{4}$ from the quotient.
50	7.G.B.4	Language of the standard: "Know the formula for circumference of a circle and use it to solve problems."	Given the circumference of a circle (72π), use the formula for circumference of a circle $(C = \pi d)$ determine the radius $(72 \div 2)$.
51	7.SP.C.7	Language of the standard: "Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process." Progression Document *6-8, Statistics and Probability*, pages 7-8	Determine the experimental probability of the next car being red or blue, $\frac{70+50}{250}$.

52	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems."	Divide 480 by 3 to determine the combined unit rate. Divide the combined unit rate by 2 to get the individual unit rate.
53	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate."	Subtract $20-\left(\dfrac{2}{5}\times 20\right)-\left(0.25\times 20\right)-4$.
54	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems."	Determine the price per pound at each cost, then find the difference between each price per pound.
55	7.EE.B.4a	Language of the standard: "Solve word 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."	Solve the word problem by solving the equation $\dfrac{1}{3}g+6=12$ for g.
56	7.EE.B.3	Language of the standard: "Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals). Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate."	Subtract $443.87-8-\left(2\times 9.49\right)-2.87$ to determine the cost of the jeans.
57	7.SP.C.7	Language of the standard: "Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies." Progression Document *6-8, Statistics and Probability*, pages 7-8	Determine the theoretical (10 out of 30) and experimental probabilities (30 out of 120) of selecting the key of G.
58	7.G.B.6	Language of the standard: "Solve real-world and mathematical problems involving volume three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms."	Calculate the volume of the triangular prism $\left(12\times 9\times 18\times\dfrac{1}{2}\right)$. Identify the three-dimensional object with double the volume of the given triangular prism $\left(12\times 9\times 18\right)$.

59	7.RP.A.3	Language of the standard: "Use proportional relationships to solve multistep ratio and percent problems.'	Calculate a number of books at each rate and identify the number that fits within that range.
60	7.RP.A.1	Language of the standard: "Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units."	Compute the unit rate, $\frac{1}{8}$ of a scarf, for the ratio of fractions, $\frac{1}{10} : \frac{4}{5}$.
61	7.G.A.2	Language of the standard: "Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle."	Given sets of angle measures and side lengths, determine whether each set creates a unique triangle, more than one triangle, or no triangle. Explain why a given set of measures creates a unique triangle. Modify a set of measures to create the condition of no triangle.
62	7.NS.A.3	Language of the standard: "Solve real-world and mathematical problems involving the four operations with rational numbers."	Multiply $\frac{2}{5} \times 200$. Explain two different ways to determine the number of sixth graders. Either take $\frac{3}{5}$ of 200 or subtract the answer from part A from 200. Find 30% of 80. Divide that number by 120. Determine the percent.