

Criterion 1: Focus on Major Work: In any single grade, students and teachers using the materials as designed spend the large majority of their time on the major work of each grade.

Which pacing guide (A or B) meets criterion 1?

Pacing outlines times when standards are introduced & taught to mastery. Once a standard is introduced, it should be maintained throughout the year.

Pacing Guide A (Third Grade)

Weeks	Domain	Focus Standards
1-2	Numbers & Operations in Base Ten	<p>3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.</p> <p>3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p>
3-4	Measurement & Data	<p>3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p>3.MD.C.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.</p> <p>3.MD.C.6 Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units).</p>
5-7	Operations & Algebraic Thinking	<p>3.OA.A.1 Interpret products of whole number, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as 5×7.</i></p>
	Measurement & Data	<p>3.MD.C.7 Relate area to the operations of multiplication and addition</p> <p>a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.</p> <p>d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.</p> <p>3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>
8-10	Numbers & Operations in Base Ten	<p>3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80, 5×60) using strategies based on place value and properties of operations.</p>
	Operations & Algebraic Thinking	<p>3.OA.B.5 Apply properties of operations as strategies to multiply and divide. <i>2Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)</i></p> <p>3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.</p>
11-13	Operations & Algebraic Thinking	<p>3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i></p> <p>3.OA.B.6 Understand division as an unknown-factor problem .<i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i></p>

14-16	Operations & Algebraic Thinking	<p>3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups ,arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48, 5 = _ \div 3, 6 \times 6 = ?$</i></p>
17-20	Operations & Algebraic Thinking	<p>3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p> <p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>
21-23	Measurement & Data	<p>3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p>
24-25	Geometry	<p>3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</p> <p>3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape.</i></p>
26-29	Measurement & Data	<p>3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.</p>
	Numbers & Operations - Fractions	<p>3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.</p> <p>b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.</p>
30-33	Numbers & Operations - Fractions	<p>3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p>b. Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4, 4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p>c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.</i></p> <p>d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.</p>
34-36	Measurement & Data	<p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms(kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p>

Criterion 1: Focus on Major Work: In any single grade, students and teachers using the materials as designed spend the large majority of their time on the major work of each grade.

Which pacing guide (A or B) meets criterion 1?

Pacing Guide B (Third Grade)

Pacing outlines times when standards are introduced & taught to mastery. Once a standard is introduced, it should be maintained throughout the year.

Weeks	Domain	Focus Standards
1-4	Numbers & Operations in Base Ten	<p>3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.</p> <p>3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</p>
5-8	Measurement & Data	<p>3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p> <p>3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.</p>
9-12	Operations & Algebraic Thinking	<p>3.OA.A.1 Interpret products of whole number, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as 5×7.</i></p>
	Measurement & Data	<p>3.MD.C.7 Relate area to the operations of multiplication and addition</p> <p>a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.</p> <p>d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.</p>
	Operations & Algebraic Thinking	<p>3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. <i>For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.</i></p> <p>3.OA.B.6 Understand division as an unknown-factor problem .<i>For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</i></p> <p>3.OA.B.5 Apply properties of operations as strategies to multiply and divide. <i>2Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known.(Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$.(Associative property of multiplication.)Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$.(Distributive property.)</i></p> <p>3.OA.D.9 Identify arithmetic patterns(including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why4 times a number can be decomposed into two equal addends.</p>
13-15	Number and Operations in Base Ten	<p>3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80, 5×60) using strategies based on place value and properties of operations.</p>

16-19	Operations & Algebraic Thinking	<p>3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups ,arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</p> <p>3.OA.A.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48, 5 = _ \div 3, 6 \times 6 = ?$</i></p> <p>3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p> <p>3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>
20-23	Measurement & Data	<p>3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p>
24-31	Geometry	<p>3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.</p> <p>3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape.</i></p>
	Measurement & Data	<p>3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>
32-33	Measurement & Data	<p>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms(kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p>
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34-36	Numbers and Operations	<p>Understand and apply the algorithms for mean, mode, median and range.</p>

Criterion 2: Focus in Early Grades: Materials do not assess any of the topics in table 2 before the indicated grade.

Which book's table of contents (C or D) meets criterion 2?

Table of Contents C (Fifth Grade)

Table of Contents D (Fifth Grade)

BOOK C

Chapter 1	Use Place Value
Chapter 2	Add and Subtract Whole Numbers and Decimals
Chapter 3	Multiply Whole Numbers
Chapter 4	Divide Whole Numbers
Chapter 5	Use Algebraic Expressions
Chapter 6	Use Equations and Function Tables
Chapter 7	Display and Interpret Data
Chapter 8	Multiply Fractions
Chapter 9	Divide Fractions
Chapter 10	Model Adding and Subtracting Fractions
Chapter 11	Use Measures in the Customary System
Chapter 12	Use Measures in the Metric System
Chapter 13	Use Probability to Make Predictions
Chapter 14	Geometry: Classify Figures, Similarity and Congruence
Chapter 15	Finding Mode, Median and Mean

BOOK D


Chapter 1	Understand Place Value
Chapter 2	Add and Subtract Whole Numbers and Decimals
Chapter 3	Multiply and Divide Whole Numbers
Chapter 4	Multiply and Divide Decimals
Chapter 5	Add and Subtract Fractions
Chapter 6	Multiply and Divide Fractions
Chapter 7	Use Measures in the Customary and Metric System
Chapter 8	Geometry: Understand Concepts of Volume
Chapter 9	Geometry: Coordinate Plane and Two-Dimensional Shapes

Criterion 3: Focus and Coherence through Supporting Work: Supporting content enhances focus and coherence simultaneously by engaging students in the major work of the grade.

Which 1st grade worksheet (E or F) meets criterion 3?

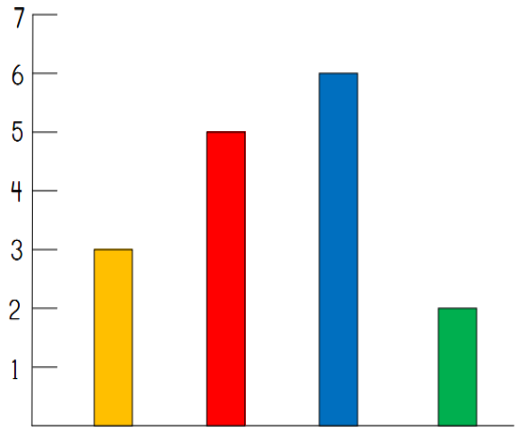
Worksheet E (1st Grade (1.MD.C.4))

Worksheet F (1st Grade (1.MD.C.4))



Name _____
 Graphing Worksheet
Learning to Read Graphs

This graph shows kids favorite drinks. Write how many kids like each drink in the spaces below the graph.



Milk	Juice	Water	Punch
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Fill in the blanks below to answer how many kids like each drink.

Milk _____


Water _____

Juice _____

Punch _____






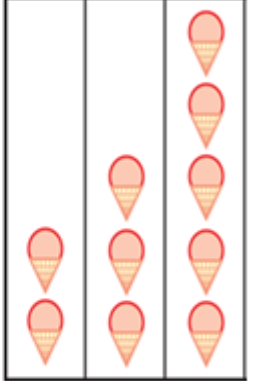
ICE CREAM FOR SALE! #20



Sam, Kate and Becky are selling ice cream cones.

Use the chart below to complete the graph and answer the questions.

 Sam	2
 Kate	3
 Becky	5



Number of Ice Cream Cones Sold

1. Who sold the most ice cream? _____
2. Who sold the least ice cream? _____
3. How many more ice cream cones did Becky sell than Sam? _____
4. How many ice cream cones were sold in all? _____

Criterion 4: Rigor and Balance: Materials and tools reflect the balances in the Standards and help students meet the Standards' rigorous expectations. (Conceptual understanding, procedural skill and fluency, and application.)

Which Chapter Test (G or H) meets Criterion 4?

Test G (8th or 9th grade systems test)

CHAPTER
7

Chapter Test

Graph and check to solve the linear system.

1. $y = 2x - 3$ $-y = 2x - 1$	2. $6x + 2y = 16$ $-2x + y = -2$	3. $4x - y = 10$ $-2x + 4y = 16$
4. $-4x + y = -10$ $6x + 2y = 22$	5. $3x + 5y = -10$ $-x + 2y = 18$	6. $2x - 3y = 12$ $-x - 3y = -6$

Use the substitution method to solve the linear system.

7. $-4x + 7y = -2$ $-x - y = 5$	8. $7x + 4y = 5$ $x - 6y = -19$	9. $-3x + 6y = 24$ $-2x - y = 1$
10. $5x - y = 7$ $4x + 8y = -12$	11. $x + 6y = 9$ $-x + 4y = 11$	12. $8x + 3y = 0$ $-x - 9y = 92$

Use linear combinations to solve the linear system.

13. $6x + 7y = 5$ $4x - 2y = -10$	14. $-7x + 2y = -5$ $10x - 2y = 6$	15. $-3x + 3y = 12$ $4x + 2y = 20$
16. $3x + 4y = 9$ $4y - 3x = -1$	17. $8x - 2 + y = 0$ $9x - y = 219$	18. $5y - 3x = 1$ $4y + 2x = 80$

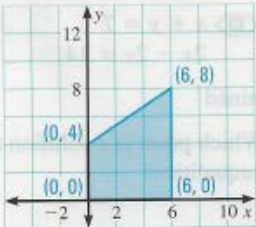
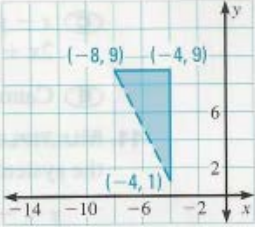
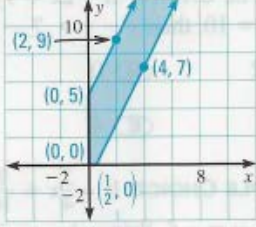
Solve the system using the method of your choice and tell how many solutions the system has.


19. $8x + 4y = -4$ $2x - y = -3$	20. $-6x + 3y = -6$ $2x + 6y = 30$	21. $-x + \frac{1}{3}y = -6$ $3x - y = -16$
22. $3x + y = 8$ $4x + 6y = 6$	23. $3x - 4y = 8$ $\frac{9}{2}x - 6y = 12$	24. $6x + y = 12$ $-4x - 2y = 0$

Graph the system of linear inequalities.

25. $x \leq 4$ $y \geq 1$ $y \leq x + 2$	26. $x < 5$ $y \leq 6$ $y > -2x + 3$	27. $y > \frac{3}{2}x + \frac{3}{2}$ $y < -\frac{1}{4}x - \frac{1}{2}$
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Write a system of linear inequalities that defines the shaded region.

<p>28. </p>	<p>29. </p>	<p>30. </p>
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31.  **WILD BIRD FOOD** You buy six bags of wild bird food to fill the feeders in your yard. Oyster shell grit, a natural calcium source, sells for \$4.00 a bag, and sunflower seeds sell for \$4.45 a bag. If you spend \$25.80, how many bags of each type of feed are you buying?

Criterion 4: Rigor and Balance: Materials and tools reflect the balances in the Standards and help students meet the Standards' rigorous expectations. (Conceptual understanding, procedural skill and fluency, and application.)

Which Chapter Test (G or H) meets Criterion 4?

Test H (8th or 9th grade systems test)

1. How can graphing a system of equations help you find its solution?

Solve the linear system.

2. $7x + 4y = 5$

$-3x + 6y = 24$

3. $x - 6y = -19$

$y = -\frac{2}{3}x - 1$

4. $4x + 3 = 2y - 7$

$2(2x - y) = -10$

5. $2x + 4y = 12$

$5 + 2(x - 5) = y - 3.5$

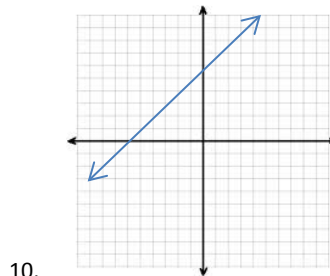
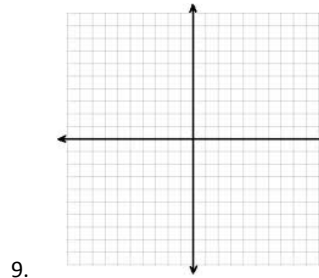
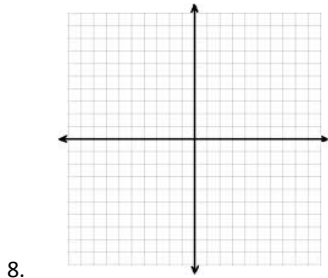
6. $3(x + 4) = y$

$2y - 2x - 10 = 4x$

7. $\frac{1}{2}x - 4 = \frac{3}{4}y + 2$

$\frac{1}{3}x + 2 = \frac{2}{3}y - 1$

Check your solutions for two of the systems from #2-#6 above by graphing them below.



- Draw a line that intersects this line.
- Write a system of equations that is represented by these two lines.
- What is the solution to the system?

11. Olivia said she can solve the system $2x + 5y = 12$ and $2x + 5y = 4$ in her head without doing any written work. Explain what you think she did, what you think her solution was and how you know you are right.

12. Your grandparents are going to get a new cell phone and need to choose between two cell phone companies. They have narrowed their choice to two plans. Bell Phone Company charges \$40 per month. It offers unlimited calling and \$0.05 per text sent. Ring Phone Company charges \$60 per month. It costs \$0.01 per text sent. How many texts would they have to send for the two plans to cost the same? Show the steps you used to solve this.

13. You have been selected by the members of your eighth-grade team (Team A) to participate in a one-mile race (5280 ft.) on Field Day. Another student from Team B will race against you. You are able to run 12 feet per second. Since the student from Team B runs 10 feet per second, you have been asked to let him have a 1000-ft. head start. If both of you maintain the estimated rates (12 feet per second and 10 feet per second), would you be able to beat your opponent? Show how this can be solved using a system of equations.

14. "Give me 8 sheep and then we will have an equal number," said Shepherd Sam to Shepherd Pat. "No, you give 8 sheep and then I will have twice as many as you," replied Shepherd Pat. How many sheep did each shepherd have to start with? Show your work.

Criterion 5: Consistent Progressions: Materials are consistent with the progressions in the Standards.

Which excerpt from a Middle School Scope and Sequence (I or J) meets criterion 5?

Scope and Sequence I

<i>Numbers and Operations, continued</i>	Course 1	Course 2	Course 3
<i>Decimals, cont.</i>			
Represent decimals on a number line	x	x	x
Multiply and Divide multi-digit decimals	x	x	x
Convert rational numbers to decimals	x	x	x
Terminating and repeating decimals	x	x	x
Convert a decimal expansion which repeats into a rational number		x	x
Non-repeating decimals/irrational numbers		x	x
<i>Percent</i>			
Percent as rate per 100	x	x	
Find a percent of a quantity	x	x	x
Solve percent problems for the whole	x	x	
Percent proportion	x	x	x
Percent equation	x	x	x
Simple interest	x	x	x
Sales tax and gratuities		x	x
Markups and markdowns		x	x
Commissions and fees		x	
Percent increase and decrease		x	x
Percent error		x	x
<i>Ratio and proportional reasoning</i>			
Ratio concepts	x	x	
Understand the concept of ratio	x	x	
Use ratio and rate language	x	x	
Understand the concept of a unit rate	x		
Solve real-world problems using ratios and rates	x	x	
Tables of equivalent ratios	x	x	
Graph ratio tables	x		
Unit pricing	x		
Constant speed	x		
Use ratios to convert measurements	x	x	
Unit rates involving fractions		x	
Ratio and probability		x	
Interpret unit rate as the slope			x
Rate of change of a linear function			x

Scope and Sequence J

<i>Numbers and Operations, continued</i>	Course 1	Course 2	Course 3
<i>Decimals, cont.</i>			
Represent decimals on a number line	x		
Multiply and Divide multi-digit decimals	x		
Convert rational numbers to decimals		x	
Terminating and repeating decimals		x	x
Convert a decimal expansion which repeats into a rational number			x
Non-repeating decimals/irrational numbers			x
<i>Percent</i>			
Percent as rate per 100	x		
Find a percent of a quantity	x		
Solve percent problems for the whole	x		
Percent proportion		x	
Percent equation		x	
Simple interest		x	
Sales tax and gratuities		x	
Markups and markdowns		x	
Commissions and fees		x	
Percent increase and decrease		x	
Percent error		x	
<i>Ratio and proportional reasoning</i>			
Ratio concepts	x		
Understand the concept of ratio	x		
Use ratio and rate language	x		
Understand the concept of a unit rate	x		
Solve real-world problems using ratios and rates	x	x	
Tables of equivalent ratios	x	x	
Graph ratio tables	x		
Unit pricing	x		
Constant speed	x		
Use ratios to convert measurements	x	x	
Unit rates involving fractions		x	
Ratio and probability		x	
Interpret unit rate as the slope			x
Rate of change of a linear function			x

Criterion 6: Coherent Connections. Materials foster coherence through connections at a single grade, where appropriate and where required by the Standards.

Which Algebra 1 Unit 1 learning objectives (K or L) meets criterion 6?

Learning Objectives K (Algebra 1 Unit 1)

#	STUDENT LEARNING OBJECTIVES	CCSS STANDARDS
1	Solve multi-step problems that can be represented algebraically with accurate and appropriately defined units, scales, and models (such as graphs, tables, and data displays).	N-Q.A
2	Interpret terms, factors, coefficients and expressions (including complex linear and exponential expressions) in terms of context.	A-SSE.A.1
3	Solve linear equations and inequalities in one variable (Including literal equations). Justify each step in the process and solution	A-CED.A.4, A-REI.B.3
4	Create linear equations and inequalities in one variable and use them to solve problems. Justify each step in the process and the solution.	A-CED.A.1, A-REI.A.1, A-REI.B.3
5	Create linear equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	A-CED.A.2
6	Model and describe constraints with linear equations and inequalities and systems of equations and/or inequalities to determine if solutions are viable or non-viable.	A-CED.A.3, A-REI.A.1

Learning Objectives L (Algebra 1 Unit 1)

#	STUDENT LEARNING OBJECTIVES	CCSS STANDARDS
1	Use units as a way to understand problems.	N-Q.A.1
2	Choose and interpret units consistently in formulas.	N-Q.A.1
3	Define appropriate quantities for the purpose of descriptive modeling	N-Q.A.2
4	Interpret terms, factors, coefficients and expressions (including complex linear and exponential expressions) in terms of context.	A-SSE.A.1
5	Create equations and inequalities in one variable and use them to solve problems.	A-CED.A.1
6	Create linear equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	A-CED.A.2
7	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	A-CED.A.3
8	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	A-CED.A.4
9	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	A-REI.A.1
10	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	A-REI.B.3

Criterion 7: Practice-Content Connections: Materials meaningfully connect content standards and practice standards.

Which 5th grade task (M or N), meets criterion 7?

Task M (Fifth Grade)

Training for the Big Race

In this unit, students will develop and expand the concept of rational numbers by using several interpretations and different types of physical models.

Task Description: Students use fractional parts of a whole, addition and subtraction of fractions, and comparison, to determine if two children did or did not run the same distance.

Standards for Mathematical Content:

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. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$.)

5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.

Standards for Mathematical Practice:

MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.6 Attend to precision.

TASK: Joe and Marta are both training to run the end-of-year race! On Monday, Joe ran one-fourth of a mile. On Wednesday, Joe ran three-eighths of a mile and Marta ran one-half of a mile. On Friday, Joe ran one-half of a mile and Marta ran five-eighths of a mile. Joe says he ran farther because Marta did not run on Monday. Marta says they each ran the same amount. Who is correct? Show all your mathematical thinking.

Criterion 7: Practice-Content Connections: Materials meaningfully connect content standards and practice standards.

Which 5th grade task (M or N), meets criterion 7?

Task N (Fifth Grade)

CHECK WRITING

Objective: Students will engage in the following practices:

MP.3: Construct viable arguments and critique the reasoning of others

MP.6: Attend to precision

A check is a written order to pay someone a specific amount of money on a certain date.

Payee (Pay to the order of): the party that receives the check.

Payor (bottom right line): That party that writes the check.

\$: amount of money written in numerals (i.e. \$25.14)

Next line: amount of money written in words with cents being written as a fraction of a dollar (i.e. Twenty-five dollars and 14/100)

Practice:

Write the following dollar amounts as you would need to on a check. It is important to attend to precision **(MP.6)**

1. \$36.14 _____

2. \$132.88 _____

Write the following in numeral form. Don't forget the dollar sign!! **(MP.6)**

3. Sixteen and 12/100 dollars _____

4. One thousand, two hundred twenty-two and 75/100 dollars _____

Give two reasons why it may be important to have the dollar amounts written in two different forms. **(MP.3) Write your reasons in complete sentences.**

Criterion 8: Focus and Coherence via Practice Standards: Materials promote focus and coherence by connecting practice standards with content that is emphasized in the Standards.

Which 4th grade math project, (O or P), meets criterion 8?

Project O (Geometry Map, Fourth Grade)

Alignment: 4.G.A.1, 4.G.A.2, 3.G.A.1, MP.1, MP.4, MP.5, MP.6, MP.7

Over the next few days in class, you will create a map that includes lines, angles, and triangles. The map can be of a neighborhood town, city or state. The map must include the following as a minimum:

- Two sets of streets that are parallel
- Two sets of streets that are perpendicular
- One street that intersects another street to form an obtuse angle
- One street intersects another to form an acute angle
- One street that is a line segment
- One street that is a line
- One street that is a ray
- One building in the shape of an equilateral triangle
- One building that is in the shape of a scalene triangle
- One building that combines three different geometric shapes in its design

Project P (Freaky Fractions portfolio, Fourth Grade)

Alignment: 3.NF.A.2, 4.NF.A.1, 4.NF.A.2, 4.NF.B.3, MP.2, MP.3, MP.4, MP.5, MP.6

Over the next few days in class, you will create a booklet to send to outer space for aliens to read that demonstrates your understanding of fractions. (Pretend that the alien that reads this understands English and our words, but knows nothing of our math system or numbers.) The booklet must have at least seven pages and include the following as a minimum:

- A creative cover that in some way uses fractions in either pictures or words
- A page, using your own words, that defines what a fraction is. Use pictures and/or words to help explain fractions. (You may need to include a basic explanation of our number system and how it works so that the alien can understand your words.)
- A page where you write the following fractions as numerals and plot them on a number line: one-half, two-thirds, seven-fourths, three-fifths, eight-sixths, nine-thirds, four-thirds, seven-fifths, three-eighths, four-halves and eight-thirds.
- A page where you give at least three specific examples of how you used fractions in your daily life. Draw pictures to help explain these examples.
- A page explaining why the fraction $\frac{2}{4}$ is equivalent to $2 \times \frac{3}{4} \times 3$. Use visual models to help explain. Using this principal, create 2 more examples of equivalent fractions and show why they are equivalent.
- A page where you create 5 problems that compare fractions with unlike denominators. Use $<$, $>$, or $=$ to compare them and justify your answers.
- A page with a total of 6 addition and subtraction problems, involving mixed numbers with like denominators. Describe to the alien how to solve these.

Criterion 9: Careful attention to each practice standard: Materials attend to the full meaning of each practice standard.

In the table below, choose one Standard for Mathematical Practice and determine which of the two problems in that row meets criterion 9.

Standards for Mathematical Practice																							
MP.1: Make sense of problems and persevere in solving them.	1. Three halls contained 9,876 chairs altogether. One-fifth of the chairs were transferred from the first hall to the second hall. Then, one-third of the chairs were transferred from the second hall to the third hall and the number of chairs in the third hall doubled. In the end, the number of chairs in the three halls became the same. How many chairs were in the second hall at first? (HS)	2. Eva had 415 red shirts, 688 blue pants and 487 blue shirts. How many shirts does she have altogether? (Grade 3)																					
MP.3: Construct viable arguments and critique the reasoning of others.	3. A bank customer has \$172 in a bank account. She withdraws \$85 per month for the next 3 months. She also writes 4 checks for \$45.75 each. How much money should she deposit to ensure that her balance is at least \$25 at the end of the 3 months? Show your work. (Grade 5)	4. You need to buy 10 lb of rice. A 2-lb bag costs \$1.39. A 10-lb bag costs \$6.99. You want to buy a 10-lb bag. Your friend thinks buying five 2-lb bags is a better deal because the unit rate is lower. Is your friend correct? Justify your answer. (Grade 6)																					
MP.5: Use appropriate tools strategically.	5. Using a ruler, measure the length from the elbow to the wrist of 5 of your classmates and find the mean, mode, median and range of the lengths you measured. Use a calculator for your calculations. (Grade 6)	6. The table shows how many blocks a group of friends live in relation to school. Using the information, determine which two friends live furthest from each other. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Friend</th> <th>Blocks East or West of school</th> <th>Blocks North or South of school</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1 block W</td> <td>0 blocks N</td> </tr> <tr> <td>B</td> <td>0 blocks E</td> <td>2 blocks S</td> </tr> <tr> <td>C</td> <td>2 blocks E</td> <td>1 block S</td> </tr> <tr> <td>D</td> <td>1 block E</td> <td>1 block N</td> </tr> <tr> <td>E</td> <td>1 block E</td> <td>3 blocks N</td> </tr> <tr> <td>F</td> <td>1 block W</td> <td>2 blocks N</td> </tr> </tbody> </table> (Grade 6)	Friend	Blocks East or West of school	Blocks North or South of school	A	1 block W	0 blocks N	B	0 blocks E	2 blocks S	C	2 blocks E	1 block S	D	1 block E	1 block N	E	1 block E	3 blocks N	F	1 block W	2 blocks N
Friend	Blocks East or West of school	Blocks North or South of school																					
A	1 block W	0 blocks N																					
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E	1 block E	3 blocks N																					
F	1 block W	2 blocks N																					
MP.7: Look for and make use of structure.	7. Leo and Silvia are looking at the following problem: How does the product of 60×225 compare to the product of 30×225 ? Silvia says she can compare these products without multiplying the numbers out. Explain how she might do this. Draw pictures to illustrate your explanation. How can your findings help you to solve 15×225 ? (Grade 4)	8. Complete the table <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">16</td> </tr> <tr> <td style="text-align: center;">11</td> <td style="text-align: center;">24</td> </tr> <tr> <td style="text-align: center;">18</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">78</td> </tr> </tbody> </table> (Grade 5)	3	8	4	10	7	16	11	24	18			78									
3	8																						
4	10																						
7	16																						
11	24																						
18																							
	78																						
MP.8: Look for and express regularity in repeated reasoning.	9. Find the sums of the following pairs of addition problems: $5 + 6 = ?$ $5 + 7 = ?$ $3 + 5 = ?$ $4 + 5 = ?$ $7 + 7 = ?$ $8 + 7 = ?$ What do you notice about each pair? Can you come up with a statement that applies to all the examples? (Grade 1)	10. Determine and extend the following pattern: 1, 3, 5, _____, _____, _____ (Grade 1)																					

Criterion 10: Emphasis on Mathematical Reasoning. Materials support the Standards' emphasis on mathematical reasoning.

In the table below, determine which of the two problems in each row meets criterion 10.

<p>10a. Prompt students to construct viable arguments and critique the arguments of others concerning key grade-level mathematics that is detailed in the content standards.</p>	<p>1 (Grade 3)</p> <p>One friend said $\frac{1}{4}$ and $\frac{2}{8}$ are equivalent. Another friend said $\frac{2}{8}$ was bigger than $\frac{1}{4}$. Using a visual model, explain who is right.</p>	<p>2 (Grade 5)</p> <p>Cece was given two congruent figures and said that if you take one and transform it by a series of rotations, reflections and translations, the two figures will no longer be congruent. Using examples, verify if Cece is correct.</p>
<p>10b. Engaging students in problem solving as a form of argument.</p>	<p>3 (Grade 4)</p> <p>Ben's class is collecting bottled water for a service project. The goal is to collect 300 bottles of water. On the first day, Max brings in 3 packs with 6 bottles in each container. Sarah wheels in 6 packs with 6 bottles in each container. How many bottles of water still need to be collected? If the rest of the class brings in 6 bottles each, will Ben's class reach its goal? How do you know?</p>	<p>4 (Grade 8)</p> <p>Solve:</p> $3x + 5 = 23$ <p>Show your work.</p>