

Item#	Rationale	
1	Option C is correct	<p>To determine this, the student should have compared the numbers in order from greatest (largest) to least (smallest). The student should have compared the digits in each place value for each number. Since 58,702 and 50,716 both have five digits and 58 only has three digits, 58 must be the number with the least value, making its correct position in the list last. Next, the student should have compared the digits in the ten-thousands place (leftmost digits). 58,702 and 50,716 and determined that the digits represented the same value. Then the student should have compared the digits in the thousands place (second digit from the left). 58,702 and 50,716 and determined that since 8 is greater than 0, the number 58,702 is the greatest number and should come first in the list. The student should have determined that the order from greatest to least is 58,702, 50,716, and 581 last.</p>
	Option A is incorrect	<p>The student likely understood that because 38,945 has five digits and 9,052 and 9,181 each have only four digits, 38,945 is the greatest number and should come first in the list. The student likely</p>

Item#	Rationale	
2	Options correct	To

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3	Option A is correct	<p>To determine the correct dot plot (graph that uses dots to display data), the student should have counted the number of tally marks in the table for each distance. The student should have chosen the plot that has dots matching the number of tally marks for each distance (two dots for 1 mile, five dots for $1\frac{1}{2}$ miles, three dots for 2 miles, four dots for $2\frac{1}{2}$ miles, and two dots for 3 miles).</p>
	Option B is incorrect	<p>The student likely miscounted the number of dots in the plot for $1\frac{1}{2}$ miles and $2\frac{1}{2}$ miles. The student needs to focus on understanding how to accurately represent data in a plot.</p>
	Option C is incorrect	<p>The student reversed the data for $1\frac{1}{2}$ miles and $2\frac{1}{2}$ miles, choosing the plot with four instead of five dots for $1\frac{1}{2}$ miles and five instead of four dots for $2\frac{1}{2}$ miles. The student needs to focus on understanding how to accurately represent data in a plot.</p>
	Option D is incorrect	<p>The student chose a plot with one dot for each unique value instead of a plot with a dot for each occurrence of a value in the table. The student needs to focus on understanding that each number in the data should be represented with one dot in a plot.</p>

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4	Option is correct	<p>To determine the standard form of the number (90,241), the student should have put the digits from the expanded form in place-value order. From left to right, the place-value orders are ten-thousands place, thousands place, hundreds place, tens place, and ones place. The student should have used a 9 in the ten-thousands place of the 90,000 in the expanded form, a 0 in the thousands place because the expanded form is an indication of value for the thousands place, a 2 in the hundreds place of the 200 in the expanded form, a 4 in the tens place of the 40 in the expanded form, and a 1 in the ones place of the 1 in the expanded form.</p>
	Option is incorrect	<p>The student likely confused 90,000 with 9,000 and placed the digit 9 in the thousands place instead of the ten-thousands place. The student needs to understand that 90,000 is 9 tens of thousands.</p>

Item#	Rationale	
6	Option F is correct	To determine which numbers do not divide evenly by 2, the student should have looked at the digit in the ones place (rightmost digit). The digit 5 in the number 205 is odd.
	Option G is correct	The student likely considered a number with a 0 in the ones place to be odd. The student needs to focus on understanding that numbers that have zeros in the ones place are even (can be evenly divided by 2).
	Option H is correct	The student likely looked at the digit in the hundreds place (leftmost digit) instead of the digit in the ones place. The student needs to focus on understanding how to determine whether a number is even or odd using divisibility rules.
	Option I is correct	The student likely looked at the digit in the hundreds place (leftmost digit) and the digit in the tens place (second digit from left) instead of the digit in the ones place. The student needs to focus on understanding how to determine whether a number is even or odd using divisibility rules.

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7	Option D is correct	<p>To determine the equation that is based on the amount of money Freddie had in his bank account after taking out money on Tuesday, the student should have first identified the equation that began with Freddie's starting amount of \$256. Then the student should have chosen the equation $(256 + 50) - 10$ for the \$50 Freddie put into his account on Tuesday and the \$10 Freddie took out of his account on Wednesday.</p>

Item#	Rationale	
8	Option A correct	<p>To determine which statement is true, the student should have understood that dividing a square into 2 congruent (same size and shape) triangular parts results in parts that are each $\frac{1}{2}$ of the area of the whole square. The student should have also understood that dividing a square into 2 congruent rectangular parts also results in parts that are each $\frac{1}{2}$ of the area of the whole square.</p>
	Option B incorrect	<p>The student likely thought that the triangular parts looked bigger than the rectangular parts. The student needs to focus on understanding that figures can be divided in different ways to represent the same fraction.</p>
	Option C incorrect	<p>The student likely understood that figures can be divided in different ways to represent the same fraction but confused the fraction represented where each square was divided into 2 congruent parts.</p>

Item#	Rationale	
9	Option C is correct	<p>To determine the total amount of time Felix spends swimming, riding his bike, and running the race, the student should have added 9 minutes, 21 minutes, and 30 minutes, resulting in 70 minutes. The student should have understood that since 60 minutes is equal to 1 hour, 70 minutes is equal to 1 hour and 10 minutes. The student could have also used the clock face provided to determine the total amount of time by counting the spaces between the 60 marks that go around the clock face (1 space = 2 spaces = 3 spaces = 7 spaces). Using this method, the student should have understood that once all 60 spaces on the clock face had been counted, an hour had been represented. The student should also have understood that the extra 10 spaces counted represent 10 minutes in an hour.</p>
	Option A is incorrect	<p>The student likely added correctly to get a total of 70 minutes, but then made an error when finding the same amount of time represented in hours and minutes. The student needs to focus on understanding how to determine solutions for problems involving addition of time intervals when the solutions are greater than 1 hour.</p>
	Option B is incorrect	

Item#	Rationale	
10	Option C is correct	To determine the table that shows the relationship between the number of bags and the number of oranges in the bag, the students should have multiplied each number of bags by 8 and used the result to confirm each number of oranges listed in the table ($2 \times 8 = 16$, $3 \times 8 = 24$, $4 \times 8 = 32$ and $5 \times 8 = 40$).
	Option F is incorrect	The student likely chose the table with multiples of numbers like 8, 16, 24, and 32 that are found when multiplying by 8 but did not consider the relationship between each number of bags and each number of oranges in the table. The student needs to focus on understanding the relationship between numbers paired in a table.
	Option H is incorrect	The student likely added each number of bags instead of multiplying by 8. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.
	Option J is incorrect	The student likely chose the table showing the correct relationship between the numbers in the first pair in the table but did not look at the remaining pairs of numbers in the table. The student needs to focus on understanding the relationship between numbers paired in a table.



Item#	Rationale	
12	Option G is correct	To determine the equation that is based on the number of bows Stacy made with the ribbon (7) the student should have divided the total amount of ribbon (2 feet) by the same amount of ribbon used for each bow (3 feet).
	Option F is incorrect	The student likely thought the values should be multiplied instead of divided. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.
	Option H is incorrect	The student likely thought the values should be added instead of divided. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.
	Option D is incorrect	The student likely thought the values should be subtracted instead of divided. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.

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Item#	Rationale	
15	Option A is correct	To determine the number of nails Roge has in these two boxes, the student should have added 38 to 775. $(438 + 375 = 813)$.
	Option B is incorrect	The student likely added the values but did not group the tens place (second digit from the right) and the hundreds place (leftmost digit). The student needs to focus on understanding how to group when adding.
	Option C is incorrect	The student likely attempted to add the values but made an error when adding the digits in the ones place (rightmost digit), resulting in $8 + 5 = 14$. The student needs to focus on adding numbers accurately.
	Option D is incorrect	The student likely added the values but did not group the hundreds place (leftmost digit). The student needs to focus on understanding how to group when adding.

Item#	Rationale	
18	Option F is correct	To determine the number of students who share each hoop, the students should have divided the 27 students in the problem by 9 hoops, resulting in 3 students sharing each hoop. $(27 \div 9 = 3)$.
	Option G is incorrect	The student likely subtracted 9 from 27 instead of dividing 27 by 9. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.
	Option H is incorrect	The student chose the number of hoops given in the problem. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.
	Option J is incorrect	The student likely added 9 to 27 instead of dividing 27 by 9. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.

Item#	Rationale	
19	Options correct	To determine the equiv — —
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Item#	Rationale	
	Option D incorrect	<p>The student likely identified the point P can represent $\frac{1}{4}$ but did not understand how to find an equivalent fraction. The student likely chose $\frac{1}{4}$ and another fraction with the same denominator (bottom number) because the student needs to focus on understanding how to represent equivalent fractions on number lines.</p>

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Item#	Rationale	
20	Option D is correct	To determine the number of photographs on pages in the album, the student could have multiplied the 6 photographs on each page by 9 pages ($6 \times 9 = 54$).
	Option F is incorrect	The student likely multiplied by the additional pages of photographs that are not shown, omitting the photographs on the page already shown in the problem ($6 \times 8 = 48$). The student needs to focus on attending to details in questions.
	Option G is incorrect	The student likely understood that multiplication should be used to solve the problem but confused the product (answer of $6 \times 9 = 54$) with the product of $5 \times 9 = 45$. The student needs to focus on multiplying numbers accurately.
	Option H is incorrect	The student likely added 69 instead of multiplying by 9. The student needs to focus on understanding the mathematical operations (+, -, ×, ÷) needed to solve real-world problems.



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Item#	Rationale	
22	Option H is correct	To determine the answer choice that does NOT represent the information in the table, the student should have seen that the first, second, and fourth answer choices represent the values 4 for White, 24 for Yellow, 4 for Blue, and 8 for Red. While the bag plot in this item, the answer choice does represent 4 for White and 24 for Yellow, it incorrectly represents the value 6 for Blue and the value 6 for Red.
	Option F is incorrect	The student chose an answer choice that does represent the information in the table instead of one that does NOT. The student made an error in counting the number of tally marks or groups of tally marks in the table. The student needs to focus on attending to the details of the question and/or the student needs to focus on understanding how tally marks are used to represent data in tables.
	Option G is incorrect	The student chose an answer choice that does represent the information in the table instead of one that does NOT. The student made an error in using the key of the pictograph (graph that uses picture icons to represent numbers) or understanding that each icon represents 2 boxes and each half icon represents 1 box (1/2). The student needs to focus on attending to the details of the question and/or the student needs to focus on understanding how icons and half icons are used to represent data in a pictograph.

Item#	Rationale	
23	Options correct	<p>To determine the factor that would most likely affect the amount of money Ms. Pattersen gets paid by the company, the students should have recognized that certain factors like education and work experience are considered by companies when deciding the amounts of money to pay workers.</p>

Item#	Rationale	
25	Option B is correct	<p>To determine the perimeter (distance around the outside) of the calculator, the student should have used the centimeter side of the ruler provided to measure the length and width of the calculator and then added all side lengths together. The student should have lined up the corner of the calculator with the zero on the ruler to find the length approximately 10 centimeters and the width approximately 6 centimeters. The student could have found the perimeter by adding $10 + 10 + 6 + 6 = 32$.</p>
	Option A is incorrect	

Item#	Rationale	
28	Option A is correct	To determine which statement is true, the student should have interpreted the multiplication symbol in the expression as times as many. There are 2 spoons in the drawer and the drawer indicating that the number of forks is 2 times the number of spoons. (\times) 2×18 forks
	Option B is incorrect	The student likely confused the words describing addition $(+)$, more than, with the words describing multiplication, times as many, and reversed the numbers of spoons and forks in the drawer. The student needs to focus on understanding how to describe a multiplication expression using words such as times as many or times as much. The student also needs to focus on understanding the greater and lesser values when using words to describe these expressions.
	Option C is incorrect	The student likely confused the words describing addition $(+)$, more than, with the words describing multiplication, times as many. The student needs to focus on understanding how to describe a multiplication expression using words such as times as many or times as much.
	Option D is incorrect	The student likely reversed the numbers of spoons and forks in the drawer. The student needs to focus on understanding the greater and lesser values when using words to describe multiplication expressions such as times as many or times as much.

Item#	Rationale	
29	Option B is correct	To determine the number on which point J represents a position that is $\frac{1}{2}$ mile from a viewer's house, the student should have found the point that is the end of the first of same-size sections from the 1-mile mark halfway between the 0 and 1-mile mark.
	Option A is incorrect	The student likely considered the fraction $\frac{1}{2}$ to be represented on a number line as point at the end of the first section from 0 with 2 same-size sections between point J and the 1-mile mark. The student needs to focus on understanding that a fraction is composed of a numerator (top number) and a denominator (bottom number) and that when representing a fraction on a number line that goes from 0 to the denominator is represented by the total number of sections.
	Option C is incorrect	The student likely considered only the numerator (top number) of the fraction and found the number line where point J was one section back from the 1-mile mark. The student needs to focus on understanding that a fraction is composed of a numerator and a denominator (bottom number) and that when representing a fraction on a number line that goes from 0 to the denominator is represented by the total number of sections. The student also needs to focus on moving from left to right on a number line when representing fractions.
	Option D is incorrect	The student likely moved from right to left on the number line and considered the fraction $\frac{1}{2}$ to be represented on a number line as point at the end of the first section from 1 with 2 same-size sections between point J and 0. The student needs to focus on moving from left to right on a number line when representing fractions. The student also needs to focus on understanding that a fraction is composed of a numerator (top number) and a denominator (bottom number) and that when representing a fraction on a number line that goes from 0 to the denominator is represented by the total number of sections.

Item#	Rationale	
30	Option F is correct	To determine the correct way to group the figures, the students should have classified each figure according to its attributes (characteristics). The first figure is a pentagon because it has five sides. The second, fourth, and fifth figures are quadrilaterals because they each have four sides. The third figure is a triangle because it has three sides.
	Option G is incorrect	The student likely confused the pentagon for a quadrilateral. The student needs to focus on understanding the attributes of quadrilaterals and pentagons.
	Option H is incorrect	The student likely confused the pentagon for a hexagon (figure with six sides). The student needs to focus on understanding the attributes of pentagons and hexagons.
	Option J is incorrect	The student likely confused one of the quadrilaterals for a pentagon. The student needs to focus on understanding the attributes of quadrilaterals and pentagons.

Item#	Rationale	
31	Option B correct	To determine the amount of money Dan used to buy the snack, the student could have added the values of the dollar, quarter, nickel, and pennies shown using dollar notation ($\$1.00 + \$0.25 + \$0.05 + \$0.01 + \$0.01 = \1.32). The student could have also thought about the values in terms of cents and then changed to dollar notation ($100 + 25 + 5 + 1 + 1 = 132$ cents = $\$1.32$).
	Option A incorrect	The student likely confused the nickel for a dime and added $\$0.10$ instead of $\$0.05$ ($\$1.00 + \$0.25 + \$0.10 + \$0.01 + \$0.01 = \1.37). The student needs to focus on distinguishing between nickels and dimes and understanding the values of the coins.
	Option C incorrect	The student likely confused the pennies for nickels and added $\$0.05$ instead of $\$0.01$ for each one ($\$1.00 + \$0.25 + \$0.05 + \$0.05 + \$0.05 = \1.40). The student needs to focus on distinguishing between pennies and nickels and understanding the values of the coins.
	Option D incorrect	The student likely omitted the nickel when determining the value of the dollar bills and coins ($\$1.00 + \$0.25 + \$0.01 + \$0.01 = \$1.27$). The student needs to focus on accurately determining the values of the collection of bills and coins.

