

Item Position	Rationales	
1	Option A is correct	To determine which statement must be true based on the dot plot, the student should have added to find the total number of dots in the dot plot. The dot plot shows 1 dot above 1, 2 dots above 4, 1 dot above 6, 3 dots above 7, 3 dots above 8, 5 dots above 9, and 3 dots above 10, so the total number of dots is $1 + 2 + 1 + 3 + 3 + 5 + 3 = 18$. Since each dot represents 1 person, the student should have concluded there were 18 people who used the copy machine.
	Option B is incorrect	The student likely added only the numbers of dots above 9 and 10 ($5 + 3 = 8$), excluding people who used the copy machine exactly 8 times. The student needs to focus on understanding how to interpret information displayed in a dot plot.
	Option C is incorrect	The student likely misinterpreted the 10 on the number line (greatest number of times the copy machine was used) as representing most of the people. The student needs to focus on understanding how to interpret information displayed in a dot plot.
	Option D is incorrect	The student likely concluded that, because 6 is greater than 4, more people used the copy machine 6 times than 4 times. The student needs to focus on understanding how to interpret information displayed in a dot plot.

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Item Position	Rationales	
2	5, 80	To determine the number of gallons and the number of cups that are equivalent to 20 quarts, the student could have used conversion factors. The student could have first converted the measurement in quarts to gallons by dividing 20 by 4, since 1 gallon = 4 quarts, resulting in 5 gallons. Then the student could have converted the measurement in quarts to cups by multiplying 20 by 4, since 1 quart = 4 cups, resulting in 80 cups. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
3	Option C is correct	To determine the value of y , the amount Brandy earned for walking each dog, the student could have determined that the model represents the equation $12y = 72$ and solved by dividing each side of the equation by 12, resulting in $y = 6$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely solved the equation $12 + y = 72$ by subtracting 12 from each side of the equation, resulting in $y = 60$. The student needs to focus on modeling situations with one-variable, one-step equations and solving those equations.
	Option B is incorrect	The student likely used the number of pieces represented by y on the strip diagram, 12, as the amount Brandy earned for walking each dog. The student needs to focus on modeling situations with one-variable, one-step equations and solving those equations.
	Option D is incorrect	The student likely subtracted 2 from 12 and from 72 and solved the equation $10y = 70$ by dividing each side of the equation by 10, resulting in 7. The student needs to focus on modeling situations with one-variable, one-step equations and solving those equations.

Item Position	Rationales	
4	Option B is correct	To determine which number is NOT located between $\frac{2}{5}$ and 0.57 on a number line, the student could have recognized that the number must be less than $\frac{2}{5}$ or greater than 0.57. The student then could have converted the fraction $\frac{2}{5}$ to a decimal by dividing the numerator (top number) by the denominator (bottom number): $\frac{2}{5} = 0.4$. The student could have recognized that the number 0.049 is less than 0.4 and therefore is not located between $\frac{2}{5}$ and 0.57 on a number line. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely determined that $\frac{1}{2}$ is less than $\frac{2}{5}$ since the numerator 1 is less than the numerator 2. The student needs to focus on comparing rational numbers.
	Option C is incorrect	The student likely attempted to convert the fraction $\frac{3}{7}$ to a decimal by dividing the denominator (7) by the numerator (3), resulting in 2.333..., which is greater than 0.57. The student needs to focus on comparing rational numbers.
	Option D is incorrect	The student likely ignored the decimal points and compared 57 and 502: $57 < 502$. The student needs to focus on comparing rational numbers.

Item Position	Rationales	
5	Option B is correct	To determine when Juanita made an error in determining the new balance after one of the transactions, the student could have subtracted the withdrawal for the groceries, \$28.12, from the balance after the withdrawal for the gasoline, \$256.97: $256.97 - 28.12 = 228.85$. The check register shows a new balance of \$285.09 instead of \$228.85 and therefore reflects an error. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely reversed the meanings of the terms "deposit" and "withdrawal" and therefore determined that the amount for gasoline should have been added to the balance. The student needs to focus on understanding check registers and how to balance them.
	Option C is incorrect	The student likely reversed the meanings of the terms "deposit" and "withdrawal" and therefore determined that the amount for the direct deposit should have been subtracted from the balance. The student needs to focus on understanding check registers and how to balance them.
	Option D is incorrect	The student likely determined that all withdrawals must be calculated before any deposit and therefore subtracted \$15.13 from \$285.09 instead of subtracting from \$421.86. The student needs to focus on understanding check registers and how to balance them.

Item Position	Rationales	
6	$y = x + 12,$ $y = \frac{2}{10}x$	To determine the equation that correctly completes each statement, the student could have determined the type of relationship described by each statement. The first statement describes an additive relationship where the y-value is 12 more than the x-value. The equation $y = x + 12$ shows this relationship. The second statement describes a multiplicative relationship where the y-value is $\frac{2}{10}$ of the x-value. The equation $y = \frac{2}{10}x$ shows this relationship. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
7	Option C is correct	To determine how much more an accountant will earn than an agricultural technician over a period of 15 years, the student could have first subtracted the annual salary for an agricultural technician (\$41,800) from the annual salary of an accountant (\$78,000): $78,000 - 41,800 = 36,200$. The student then could have multiplied this difference by 15 years, resulting in $(36,200)(15) = 543,000$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely calculated the difference between the earnings of an accountant and an agricultural technician over a period of 5 years rather than 15 years: $(36,200)(5) = 181,000$. The student needs to focus on understanding how to calculate and compare annual salaries over a given period.
	Option B is incorrect	The student likely calculated the difference between the annual salaries of an accountant and an agricultural technician ($78,000 - 41,800 = 36,200$) but did not multiply by the number of years (15). The student needs to focus on understanding how to calculate and compare annual salaries over a given period.
	Option D is incorrect	The student likely used the annual salary for an acupuncturist (\$72,200) instead of an agricultural technician, resulting in $78,000 - 72,200 = 5,800$ and $(5,800)(15) = 87,000$. The student needs to focus on understanding how to calculate and compare annual salaries over a given period.

Item Position	Rationales	
8	Option A is correct	To determine the number of kilograms of paper items the students collected, the student should have multiplied 30.8 kilograms by $2\frac{1}{2}$. The student should have converted $2\frac{1}{2}$ to the equivalent decimal 2.5 and used the standard multiplication algorithm to calculate the product (answer to a multiplication problem): $(30.8)(2.5) = 77$ kilograms.
	Option B is incorrect	The student likely converted $2\frac{1}{2}$ to the equivalent decimal 2.5 but multiplied the digit 2 as though it were in the tenths place when multiplying using the standard algorithm, resulting in $(30.8)(0.5) = 15.40$, $(30.8)(0.2) = 6.16$, and finally $15.40 + 6.16 = 21.56$ kg. The student needs to focus on multiplying positive rational numbers fluently.
	Option C is incorrect	The student likely rounded $2\frac{1}{2}$ to 3 and 30.8 to 31 and then multiplied, resulting in $(3)(31) = 93$ kg. The student needs to focus on multiplying positive rational numbers fluently.
	Option D is incorrect	The student likely divided 30.8 by $2\frac{1}{2}$, resulting in 12.32 kg. The student needs to focus on multiplying positive rational numbers fluently.

Item Position	Rationales	
9	Option C is correct	To determine which set of measures could be the angle measures of a triangle, the student should have recalled that the angle measures of a triangle must have a sum (the result when two or more quantities are added together) of 180° . The student should have determined that 40° , 50° , and 90° could be the angle measures of a triangle because $40 + 50 + 90 = 180$.
	Option A is incorrect	The student likely determined that the sum of the three angle measures of a triangle must be 90° . The student likely added the set of measures, resulting in $10 + 40 + 40 = 90$. The student needs to focus on extending previous knowledge of triangles and their properties, including the sum of the angle measures of a triangle.
	Option B is incorrect	The student likely determined that the sum of the three angle measures of a triangle must be greater than 180° . The student likely added the set of measures, resulting in $40 + 50 + 100 = 190$. The student needs to focus on extending previous knowledge of triangles and their properties, including the sum of the angle measures of a triangle.
	Option D is incorrect	The student likely determined that three equivalent angle measures create an equilateral triangle but did not consider that the sum of the given angle measures is 120° , not 180° . The student needs to focus on extending previous knowledge of triangles and their properties, including the sum of the angle measures of a triangle.

Item Position	Rationales	
10	Equation, Expression, Expression, Equation	To determine whether each statement can be written as an expression or as an equation, the student could have used the structure of each statement to represent each statement algebraically. "Three plus w is 7" can be written as the equation $3 + w = 7$ since "is" indicates equals (=). "Eight times w " can be written as the expression $8w$. "Eighteen divided by w plus 6.1" can be written as the expression $\frac{18}{w} + 6.1$. "One hundred is twice w " can be written as the equation $100 = 2w$ since "is" indicates equals (=). This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
11	Option B is correct	To determine which statement about the variables on the graph is true, the student should have recognized that the y-axis (vertical number line) of a graph represents the dependent variable in a graphed relationship. Therefore, only the number of grams of protein is a dependent variable.
	Option A is incorrect	The student likely determined that the x-axis (horizontal number line) of a graph represents the dependent variable in a graphed relationship. Therefore, the student likely concluded that only the weight of the fish is a dependent variable. The student needs to focus on understanding how independent and dependent quantities are represented in a graph.
	Option C is incorrect	The student likely determined that both axes (number lines) of a graph represent dependent variables in a graphed relationship. Therefore, the student likely concluded that both the weight of the fish and the number of grams of protein are dependent variables. The student needs to focus on understanding how independent and dependent quantities are represented in a graph.
	Option D is incorrect	The student likely determined that both axes of a graph represent independent variables in a graphed relationship. Therefore, the student likely concluded that neither the weight of the fish nor the number of grams of protein is a dependent variable. The student needs to focus on understanding how independent and dependent quantities are represented in a graph.

Item Position	Rationales	
12	Option A is correct	To determine the median (middle value in an ordered set with an odd number of data or the mean of the two middle values in an ordered set with an even number of data) number of minutes it takes a student in Ms. Aguilar's class to walk to school, the student could have first recognized that each dot in the dot plot represents one student and one number in the data set. The student could then have counted the total number of dots (20) and determined that the median is the mean of the values represented by the 10th dot (7) and 11th dot (9). The student could have found the sum of these two values, $7 + 9 = 16$, and divided by 2, resulting in $16 \div 2 = 8$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option B is incorrect	The student likely determined the median value to be 10 since 10 is half of the total number of dots (20). The student needs to focus on finding the median of a data set.
	Option C is incorrect	The student likely determined the median to be the value of the 10th dot from the right (9) since 10 is half of the total number of dots (20). The student needs to focus on finding the median of a data set.
	Option D is incorrect	The student likely selected the mode (value in a set of numbers that repeats most often) of the data. The student needs to focus on finding the median of a data set.

Item Position	Rationales	
13	Option D is correct	To determine which situation can be represented by the equation $n + 10 = 40$, the student should have recognized that the equation represents an additive relationship in which the total, 40, is equal to the sum (total) of 10 and an unknown value. The situation describes two hallways that have a total of 40 classrooms, where one of the hallways has 10 classrooms. The student should have determined that the sum of 10 classrooms from one hallway and an unknown number of classrooms in the other hallway is equal to a total of 40 classrooms. This situation can be represented by the equation $n + 10 = 40$, where n is the unknown number of classrooms in the other hallway.
	Option A is incorrect	The student likely misinterpreted the meaning of addition in the equation and chose a situation that can be represented by $n - 10 = 40$ instead. The student needs to focus on understanding how to write real-world problems based on equations.
	Option B is incorrect	The student likely misinterpreted the meaning of addition in the equation and chose a situation that can be represented by $\frac{n}{10} = 40$ instead. The student needs to focus on understanding how to write real-world problems based on equations.
	Option C is incorrect	The student likely misinterpreted the meaning of addition in the equation and chose a situation that can be represented by $10n = 40$ instead. The student needs to focus on understanding how to write real-world problems based on equations.

Item Position	Rationales	
14	3, 7, 2	To determine the prime factorization of 392, the student could have used a factor tree (diagram that uses branches to show a number broken down into factors [numbers multiplied by other numbers] that are prime numbers). The student could have recognized that $392 = (2)(196) = (2)(2)(98) = (2)(2)(2)(49) = (2)(2)(2)(7)(7)$. The student then could have used exponents to rewrite $(2)(2)(2)$ as 2^3 and $(7)(7)$ as 7^2 , resulting in the prime factorization expression $2^3 \cdot 7^2$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
15	Option A is correct	To determine which fraction can be substituted for n to give the expression a value greater than 6, the student should notice that n is being multiplied by 6 in the expression $6n$. The student should have understood that when a whole number is multiplied by a fraction that is greater than 1, the product (answer to a multiplication problem) is greater than the whole number. Since $\frac{3}{2} > 1$, $6\left(\frac{3}{2}\right) > 6$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option B is incorrect	The student likely determined that 6 multiplied by a fraction with a numerator (top number) and denominator (bottom number) greater than 6 would result in a product greater than 6. The student needs to focus on understanding whether a quantity is increased or decreased when it is multiplied by a fraction.
	Option C is incorrect	The student likely determined that 6 multiplied by a fraction equivalent to 1 would result in a product greater than 6. The student needs to focus on understanding whether a quantity is increased or decreased when it is multiplied by a fraction.
	Option D is incorrect	The student likely confused the operation in the expression with division and determined that $6 \div \frac{99}{100} = (6)\left(\frac{100}{99}\right)$, which is greater than 6. The student needs to focus on understanding whether a quantity is increased or decreased when it is multiplied by a fraction.

Item Position	Rationales	
16	First option is correct	To determine which statements are true based on the histogram, the student should have added the heights of all the bars. The bar for 0–39 jumps has a height of 20, the bar for 40–79 jumps has a height of 15, the bar for 80–119 jumps has a height of 40, the bar for 120–159 jumps has a height of 20, and the bar for 160–199 jumps has a height of 5. These heights have a sum of $20 + 15 + 40 + 20 + 5 = 100$. Therefore, a total of 100 students jumped rope.
	Second option is correct	To determine which statements are true based on the histogram, the student should have determined the number of students who jumped 79 times or fewer by adding the heights of the bars for 0–39 jumps and 40–79 jumps: $20 + 15 = 35$. Then the student should have determined the number of students who jumped 120 times or more by adding the heights of the bars for 120–159 jumps and 160–199 jumps: $20 + 5 = 25$. The student then should have determined that 35 is greater than 25. Therefore, more students jumped 79 times or fewer than jumped 120 times or more.
	Third option is incorrect	The student likely determined the number of students who jumped 0–39 times (20 students) and the number of students who jumped 80–119 times (40) but reversed the comparison: $40 = (2)(20)$. The student needs to focus on interpreting numeric data summarized in histograms.
	Fourth option is incorrect	The student likely determined the number of students who jumped 120–159 times (20 students) but did not include the number of students who jumped 160–199 times (an additional 5 students). The student needs to focus on interpreting numeric data summarized in histograms.
	Fifth option is incorrect	The student likely interpreted 120–159 being farther to the right than 0–39 on the histogram horizontal axis as indicating a greater number of students. The student needs to focus on interpreting numeric data summarized in histograms.

Item Position	Rationales	
17	Option D is correct	To determine the area of the trapezoid in square centimeters, the student should have substituted the given values into the area formula for a trapezoid, $A = \frac{1}{2}(b_1 + b_2)h$, where A represents the area, b_1 represents one of the parallel sides of the trapezoid, b_2 represents the other parallel side of the trapezoid, and h represents the height. The student should have substituted $b_1 = 3 + 6 + 3 = 12$, $b_2 = 6$, and $h = 4$ into the formula, resulting in $A = \frac{1}{2}(12 + 6)(4) = 36 \text{ cm}^2$.
	Option A is incorrect	The student likely used only $3 + 6 = 9$ for b_1 , resulting in $A = \frac{1}{2}(9 + 6)(4) = 30 \text{ cm}^2$. The student should focus on understanding and applying the area formula for a trapezoid.
	Option B is incorrect	The student likely used the area formula for a rectangle, $A = bh$, and substituted $b = 3 + 6 + 3 = 12$ and $h = 4$, resulting in $A = (12)(4) = 48 \text{ cm}^2$. The student should focus on understanding and applying the area formula for a trapezoid.
	Option C is incorrect	The student likely attempted to decompose the trapezoid into a rectangle and two triangles but included the base of the rectangle and the bases of both triangles as part of each triangle base length. The area of the middle rectangle is $A = bh$, where $b = 6$ and $h = 4$, resulting in $A = (6)(4) = 24 \text{ cm}^2$. The student likely calculated the total area of the two triangles by multiplying the formula for the area of a triangle by 2, $A = (2)(\frac{1}{2})bh$, substituting $b = 3 + 6 + 3 = 12$ and $h = 4$, resulting in $A = (2)(\frac{1}{2})(12)(4) = 48 \text{ cm}^2$. This results in a total area of $24 + 48 = 72 \text{ cm}^2$. The student should focus on understanding and applying the area formula for a trapezoid.

Item Position	Rationales	
18	Option C is correct	To determine which expression is equivalent to the expression shown, $5(x + 3) - 18$, the student should have first applied the distributive property, $a(b + c) = ab + ac$, multiplying 5 by each term within the parentheses, resulting in $5x + 15 - 18$. Then the student should have combined like terms within the expression, resulting in $5x - 3$.
	Option A is incorrect	The student likely distributed 5 to x but did not distribute 5 to 3, resulting in $5x + 3 - 18 = 5x - 15$. The student needs to focus on determining whether two expressions are equivalent using algebraic representations.
	Option B is incorrect	The student likely distributed 5 correctly but reversed the signs when combining like terms, resulting in $5x - 15 + 18 = 5x + 3$. The student needs to focus on determining whether two expressions are equivalent using algebraic representations.
	Option D is incorrect	The student likely distributed 5 correctly but treated the term -15 as 15 when combining like terms, resulting in $5x + 15 + 18 = 5x + 33$. The student needs to focus on determining whether two expressions are equivalent using algebraic representations.

Item Position	Rationales	
19	Option D is correct	To determine which expression is represented by the number line, the student should have recognized that the number line shows 5 equal increments that each represent -2 and that adding -2 five times represents $-2(5)$.
	Option A is incorrect	The student likely determined that 5 increments of -2 represent subtraction rather than multiplication, resulting in $5 - 2$. The student needs to focus on representing integer operations with concrete models.
	Option B is incorrect	The student likely confused the endpoint of the model (-10) with the starting point and determined that increments of -2 represent subtraction rather than multiplication, resulting in $-10 - 2$. The student needs to focus on representing integer operations with concrete models.
	Option C is incorrect	The student likely determined that the number of increments should be represented by -5 since the increments are all on the negative side of the number line, resulting in $-5(-2)$. The student needs to focus on representing integer operations with concrete models.

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20	number of miles, divided by, amount of time and any equivalent values are correct	To describe a method of determining the rate (a quantity measured against another quantity) at which the train is traveling, the student could have recognized that the number of miles should be divided by the amount of time to find the rate of travel in miles per hour. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
21	Option D is correct	To determine the value of the expression $(18 + 46) \div (-5 - 3)$, the student should have recalled the order of operations (the order expressions should be solved in, beginning with parentheses, then exponents, followed by multiplication and division from left to right, and then addition and subtraction from left to right). The student should have first evaluated $18 + 46$ within the parentheses, resulting in 64, and $-5 - 3$ within the parentheses, resulting in -8 . The student then should have divided: $64 \div (-8) = -8$.
	Option A is incorrect	The student likely subtracted $3 - 5$ instead of $-5 - 3$ within the parentheses, resulting in -2 . The student likely evaluated $64 \div -2 = -32$. The student needs to focus on adding, subtracting, multiplying, and dividing integers fluently.
	Option B is incorrect	The student likely made a sign error when subtracting $-5 - 3$ within the parentheses, resulting in 8. The student likely evaluated $64 \div 8 = 8$. The student needs to focus on adding, subtracting, multiplying, and dividing integers fluently.
	Option C is incorrect	The student likely subtracted $5 - 3$ instead of $-5 - 3$ within the parentheses, resulting in 2. The student likely evaluated $64 \div 2 = 32$. The student needs to focus on adding, subtracting, multiplying, and dividing integers fluently.

Item Position	Rationales	
22	top left, middle	To determine the models that can be used to justify the formula for the area of a triangle, the student could have first recognized that the area formula for a triangle is $A = \frac{1}{2}bh$, where A = area, b = base, and h = height. Next, the student could have recognized that the formula for the area of a rectangle is $A = bh$, where A = area, b = base, and h = height. The student could have then recognized that the top left figure shows a rectangle formed by two congruent triangles and therefore concluded that the area of one of the triangles must be half the area of the rectangle with the same base and height. The student also could have recognized that the middle figure shows a rectangle with the same base and height as the triangle. The triangle is divided into two smaller triangles, which each make up half of a smaller rectangle with the same base and height as the smaller triangle. Therefore, the student could have concluded that the area of each of the smaller triangles must be half the area of one of the smaller rectangles. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
23	Option D is correct	To determine which information would NOT appear on a consumer's credit report, the student should have recalled that open and closed credit accounts, individual credit card account balances, and payment history on loans with a financial institution are all included in a credit report. The consumer's most commonly purchased items are not included on a credit report.
	Option A is incorrect	The student likely misunderstood what is in a credit report and did not recall that open and closed credit accounts are included. The student needs to focus on knowing the information contained in a credit report.
	Option B is incorrect	The student likely misunderstood what is in a credit report and did not recall that individual credit card account balances are included. The student needs to focus on knowing the information contained in a credit report.
	Option C is incorrect	The student likely misunderstood what is in a credit report and did not recall that payment history on loans with a financial institution is included. The student needs to focus on knowing the information contained in a credit report.

Item Position	Rationales	
24	Option A is correct	To determine the original price of the jacket, the student could have first determined that the price Alma paid, \$75, is 60% of the original price of the jacket. The student could have converted 60% to the decimal 0.6 and modeled this relationship with the equation $75 = 0.6x$, where x is the original price of the jacket. The student could have solved the equation by dividing both sides of the equation by 0.6, resulting in $125 = x$. Therefore, the original price of the jacket, x , was \$125. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option B is incorrect	The student likely calculated 40% of the amount Alma paid, \$75, since 60% is 40% off the original price, resulting in $(0.4)(75) = 30$. The student likely then added the result to the amount she paid, resulting in $30 + 75 = 105$. The student needs to focus on solving for the whole when given a part and a percentage.
	Option C is incorrect	The student likely calculated 60% of the amount Alma paid, \$75, resulting in $(0.6)(75) = 45$. The student likely then added the result to the amount she paid, resulting in $45 + 75 = 120$. The student needs to focus on solving for the whole when given a part and a percentage.
	Option D is incorrect	The student likely divided the amount Alma paid, \$75, by 40%, or 0.4 as a decimal, rather than 60%, since the amount she paid was 40% off the original price, resulting in $75 \div 0.4 = 187.50$. The student likely rounded to the nearest dollar, \$188. The student needs to focus on solving for the whole when given a part and a percentage.

Item Position	Rationales	
25	Option A is correct	To determine which point is best represented by the ordered pair $(-2, 2)$, the student should have determined that the first value in the ordered pair is the x -coordinate (horizontal position from zero), and the second value in the ordered pair is the y -coordinate (vertical distance from zero). The student should have determined that the point is 2 units to the left of and 2 units up from the origin (the point of intersection of the axes in a coordinate system), resulting in point K .
	Option B is incorrect	The student likely determined that a negative x -coordinate indicated a point that was 2 units to the right of the origin and 2 units up, resulting in point L . The student needs to focus on graphing points in all four quadrants using ordered pairs of rational numbers.
	Option C is incorrect	The student likely reversed the x - and y -coordinates, resulting in point M , a point that is 2 units to the right of the origin and 2 units down. The student needs to focus on graphing points in all four quadrants using ordered pairs of rational numbers.
	Option D is incorrect	The student likely determined that a positive y -coordinate indicated a point that was 2 units below the origin and 2 units to the left, resulting in point N . The student needs to focus on graphing points in all four quadrants using ordered pairs of rational numbers.

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26	125	To determine the point on the number line that represents the solution to the equation $0.8d = 100$, the student should have first divided both sides of the equation by 0.8, resulting in $d = 125$. The student then should have recognized that the point on the number line halfway between 120 and 130 represents 125.

Item Position	Rationales	
27	Option A is correct	To determine the value that is NOT equivalent to the decimal 0.56, the student could have written the decimal as a percentage by multiplying by 100, which moves the decimal point two places to the right, resulting in 56%. The student then could have concluded that 5.6% is not equivalent to 0.56. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option B is incorrect	The student likely wrote the decimal 0.56 as the fraction $\frac{56}{10}$ rather than $\frac{56}{100}$, resulting in the simplified fraction $5\frac{2}{5}$. The student likely then concluded that $\frac{14}{25}$ was not equivalent to 0.56. The student needs to focus on converting decimals to fractions.
	Option C is incorrect	The student likely multiplied the decimal 0.56 by 10 instead of 100, resulting in 5.6%. The student likely concluded that 56% was not equivalent to 0.56. The student needs to focus on converting decimals to percentages.
	Option D is incorrect	The student likely wrote the decimal 0.56 as the fraction $\frac{56}{100}$ and simplified the fraction by dividing the numerator (top number) and denominator (bottom number) by 4, resulting in $\frac{14}{25}$. The student likely did not consider other equivalent forms of the fraction and concluded that $\frac{42}{75}$ was not equivalent to 0.56. The student needs to focus on converting decimals to fractions.

Item Position	Rationales	
28	Option B is correct	To determine how many green beads will be in an extra-large bag, the student could have interpreted the relationship between x and y in the table to represent the ratio (comparison of one quantity to another) of the number of blue beads to the number of green beads in each bag. The student could have recognized that the small bag shows a ratio of 12 blue beads to 18 green beads, the medium bag shows a ratio of 36 blue beads to 54 green beads, and the large bag shows a ratio of 40 blue beads to 60 green beads. The student could have determined that all these ratios are equivalent to 2:3, which is written as the fraction $\frac{2 \text{ blue beads}}{3 \text{ green beads}}$. The student then could have solved the proportion $\frac{2 \text{ blue beads}}{3 \text{ green beads}} = \frac{64 \text{ blue beads}}{x \text{ green beads}}$, resulting in $2x = 192$. The student could have divided both sides of the equation by 2, resulting in $x = 96$ green beads. The student could have then concluded that since the extra-large bag has 64 blue beads, it would have 96 green beads. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely identified an additive relationship, $40 + 20 = 60$, between the numbers of blue beads and green beads in the large bag and added 20 to 64 for the number of green beads in the extra-large bag, resulting in 84. The student needs to focus on understanding how to determine equivalent ratios.
	Option C is incorrect	The student likely determined the correct number of green beads in the extra-large bag but then added the number of blue beads to calculate the total number of beads in the bag: $64 + 96 = 160$. The student needs to focus on understanding how to determine equivalent ratios.
	Option D is incorrect	The student likely identified an additive relationship, $12 + 7 = 18$, between the numbers of blue beads and green beads in the small bag and added 7 to 64 for the number of green beads in the extra-large bag, resulting in 71. The student needs to focus on understanding how to determine equivalent ratios.

Item Position	Rationales	
29	32, grape	To determine the true statements about the students' favorite juice flavors, the student could have added the relative frequencies for apple juice and orange juice, resulting in a total relative frequency of $0.25 + 0.15 = 0.40$. Then the student could have multiplied the total relative frequency by the number of students surveyed, resulting in $(0.40)(80) = 32$ students. The student then could have recognized that the greatest relative frequency in the table represents the mode of the data. Since 0.40 is the greatest relative frequency, the flavor of juice that represents the mode is grape. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
30	Option D is correct	To determine which expression is equivalent to $8(m + 1) + 2$, the student should have applied the distributive property, $a(b + c) = ab + ac$, and multiplied 8 by each term within the parentheses, resulting in $8m + 8 + 2$. The student then should have combined like terms, resulting in $8m + 10$.
	Option A is incorrect	The student likely distributed 8 to m but did not distribute 8 to 1, resulting in $8m + 1 + 2 = 8m + 3$. The student needs to focus on generating equivalent expressions using the distributive property.
	Option B is incorrect	The student likely added the constant terms before applying the distributive property, resulting in $8(m + 3)$. The student needs to focus on generating equivalent expressions using the distributive property.
	Option C is incorrect	The student likely ignored the parentheses indicating multiplication in the expression and improperly applied the commutative property of addition, resulting in $8(m + 2) + 1$. The student needs to focus on generating equivalent expressions using the distributive property.

STAAR Spring 2026 Grade 6 Mathematics Rationales

Item Position	Rationales	
31	$11\frac{1}{2}$ or any equivalent value	To determine the inequality that represents x , all possible weights of the second package, the student could have solved the inequality $x + 15 < 26\frac{1}{2}$ by subtracting 15 from each side, resulting in $x < 11\frac{1}{2}$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
32	top middle, bottom left	To determine which shapes each have an area in square inches that is greater than the area of Jeremy's shape, the student could have first calculated the area of Jeremy's shape using the area formula for a parallelogram. The formula is $A = bh$, where A = area, b = base, and h = height (vertical distance from top to bottom). The student could have substituted $b = 12.3$ and $h = 8$, resulting in $A = (12.3)(8) = 98.4 \text{ in.}^2$. The student then could have used the same formula to calculate the area of the top middle rectangle, since a rectangle is a parallelogram. The student could have substituted $b = 15$ and $h = 7$, resulting in $A = (15)(7) = 105 \text{ in.}^2$. The student could have compared this area to the area of Jeremy's shape and determined that $105 > 98.4$. The student then could have used the same formula to calculate the area of the bottom left parallelogram. The student could have substituted $b = 6$ and $h = 17$, resulting in $A = (6)(17) = 102 \text{ in.}^2$. The student could have compared this area to the area of Jeremy's shape and determined that $102 > 98.4$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
33	Option D is correct	To determine which value is equivalent to 15%, the student could have converted the percentage to a fraction by writing the percentage value (15) as the numerator (top number) 100 as the denominator (bottom number) and then simplified the fraction: $15\% = \frac{15}{100} = \frac{3}{20}$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.
	Option A is incorrect	The student likely determined that a percentage could be written as a fraction with a denominator of 10 rather than 100, resulting in $\frac{15}{10} = 1.5$. The student needs to focus on generating equivalent forms of fractions, decimals, and percentages.
	Option B is incorrect	The student likely reversed the numerator and denominator when converting the percentage to a fraction, resulting in $\frac{100}{15}$. The student needs to focus on generating equivalent forms of fractions, decimals, and percentages.
	Option C is incorrect	The student likely reversed the numerator and denominator when converting the percentage to a fraction ($\frac{100}{15}$) and then divided the numerator by the denominator to determine an equivalent decimal, resulting in approximately 6.67. The student needs to focus on generating equivalent forms of fractions, decimals, and percentages.

Item Position	Rationales	
34	x , 20, 75 or any other equivalent value	To complete the inequality to represent all possible values of x , the number of additional points Emilio could earn to win the game, the student could have determined that the expression (the sum of products of numbers and variables) representing Emilio's total number of points is the sum (the result when two or more quantities are added together) of x , the number of points he needs to earn, and 20, the number of points he already has: $x + 20$. Then the student could have determined that since Emilio must score at least 75 points, the expression must be greater than or equal to 75, resulting in the inequality $x + 20 \geq 75$. This is an efficient way to solve the problem; however, other methods could be used to solve the problem correctly.

Item Position	Rationales	
35	Option B is correct	To determine the range of the data, the student should have recalled that range is the difference between the greatest (highest) value in a data set and the least (lowest) value in the data set. The student should have determined that the greatest number of minutes in the data set is 60, and the least number of minutes is 25. The student then should have subtracted the least number from the greatest number: $60 - 25 = 35$ minutes.
	Option A is incorrect	The student likely subtracted the first number in the list (50) from the last number in the list (60), resulting in $60 - 50 = 10$ minutes. The student needs to focus on finding the range of a data set.
	Option C is incorrect	The student likely found the mean (average of a set of numbers) by adding the numbers in the set and dividing the sum (total) by the number of data points in the set: $\frac{50+45+30+50+25+55+60}{7} = 45$ minutes. The student needs to focus on finding the range of a data set.
	Option D is incorrect	The student likely determined the mode (value in a set of numbers that repeats most often) of the data, which is 50 minutes. The student needs to focus on finding the range of a data set.

Item Position	Rationales	
36	Option C is correct	To determine which table shows values that represent $y = x + 8$, the student should have determined that the equation represents an additive relationship such that each y -value is 8 more than the corresponding x -value. The student then should have determined that since $16 + 8 = 24$, $24 + 8 = 32$, $32 + 8 = 40$, and $40 + 8 = 48$, the values represent the equation $y = x + 8$.
	Option A is incorrect	The student likely interpreted the equation as representing a multiplicative relationship where each y -value is $\frac{1}{8}$ the corresponding x -value, $y = \frac{1}{8}x$. The student then likely determined that since $16 \cdot \frac{1}{8} = 2$, $24 \cdot \frac{1}{8} = 3$, $32 \cdot \frac{1}{8} = 4$, and $40 \cdot \frac{1}{8} = 5$, the table represents the equation. The student needs to focus on understanding how to represent a relationship in the form $y = x + b$ with a table.
	Option B is incorrect	The student likely determined that the equation indicated an additive relationship where each x -value is 8 more than the corresponding y -value $x = y + 8$. The student then likely determined that since $8 + 8 = 16$, $16 + 8 = 24$, $24 + 8 = 32$, and $32 + 8 = 40$, the table represents the equation. The student needs to focus on understanding how to represent a relationship in the form $y = x + b$ with a table.
	Option D is incorrect	The student likely determined that the equation indicated a multiplicative relationship where each y -value is 8 times the corresponding x -value, $y = 8x$. The student then likely determined that since $16 \cdot 8 = 128$, $24 \cdot 8 = 192$, $32 \cdot 8 = 256$, and $40 \cdot 8 = 320$, the table represents the equation. The student needs to focus on understanding how to represent a relationship in the form $y = x + b$ with a table.